

IV-INTERNATIONAL CONFERENCE OF FOOD, AGRICULTURE, AND VETERINARY SCIENCES

On the occasion of the 40th Anniversary of Van Yüzüncü Yıl University

May 27-28, 2022
Van, TÜRKİYE

ABSTRACT BOOK

Editor

Prof. Dr. Murat TUNÇTÜRK

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ABSTRACT BOOK

Edited by

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CONGRESS ID

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DATE-PLACE

**27-27 MAY 2022
Van Yüzüncü Yıl University
Van / TÜRKİYE**

EDITOR

Prof. Dr. Murat TUNÇTÜRK

EVALUATION PROCESS

All applications have undergone a double-blind peer review process

TOTAL NUMBER OF PAPERS: 345

THE NUMBER OF PAPERS FROM TURKEY: 168

OTHER COUNTRIES: 177

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Dr. Jiban SHRESTHA: Nepal Agricultural Research Council/ Nepal

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IV-INTERNATIONAL CONFERENCE OF FOOD, AGRICULTURE, AND VETERINARY SCIENCES

On the occasion of the 40th Anniversary of Van Yüzüncü Yil University

27-28 May 2022



CONFERENCE PROGRAM

Online (with Video Conference) Presentation



Meeting ID: 892 9798 7118

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VETERİNER
BİLİMLERİ KONGRESİ**

Van Yüzüncü Yıl Üniversitesi
40. Kuruluş Yılı Münasebetiyle
27-28 Mayıs 2022

**IV-INTERNATIONAL
CONFERENCE OF
FOOD, AGRICULTURE,
AND VETERINARY
SCIENCES**

On the occasion of the 40th Anniversary of
Van Yüzüncü Yıl University
May 27-28, 2022



-Opening Ceremony-
27.05.2022

Time (Ankara): 09:30-10:00

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FACE TO FACE PRESENTATIONS

27.05.2022



ANKARA LOCAL TIME



10:00-12:00 | Hall-1



Van Yüzüncü Yil University

HEAD OF SESSION: Prof. Dr. Ahmad Nematollahi

AUTHORS	AFFILIATION	TOPIC TITLE
Hossein ZEINALZADEH-TABRIZI Hassan AMIRI OGHAN	Ardabil Agricultural and Natural Resources Research and Education Center, Ardabil, Iran	HERITABILITY AND GENETIC VARIABILITY OF OIL YIELD AND AGRONOMIC TRAITS IN SPRING CANOLA GENOTYPES
Prof. Dr. Yousry A. El-Kassaby Eduardo P. Cappa Blaise Ratcliffe Charles Chen Milan Lstiburek	The University of British Columbia, Vancouver, BC, Canada Instituto Nacional de Tecnología Agropecuaria (INTA), Buenos Aires, Argentina Oklahoma State University, Oklahoma, USA Czech University of Life Sciences, Prague, Czech Republic	BREEDING WITHOUT BREEDING: THE SECOND GENERATION
Assist. Prof. Dr. Garayev Sadiq	Central Botanical Garden of Azerbaijan National Academy of Sciences Azerbaijan, Baku	ХАРАКТЕРИСТИКА РЕЛИКТОВ III ПЕРИОДА ДЕНДРОФЛОРЫ АЗЕРБАЙДЖАНА ПО ИСТОРИЧЕСКИМ ГРУППАМ
Prof. Dr. Ahmad Nematollahi Razi-allah Jafari Joozani Parisa shahbazi Babak Saeed Abadi Amir Mollazadeh Yamchi	University of Tabriz, Iran.	EVALUATION OF ANTIOXIDANT PROFILE IN CATTLE INFECTED WITH <i>Theileria annulata</i>
Fatih ERDİN Assoc. Prof. Dr. Haluk KULAZ	Van Yüzüncü Yil University, Van, Türkiye	THE EFFECT OF INORGANIC AND MICROBIAL FERTILIZER APPLICATIONS ON THE GRAIN YIELD AND SOME AGRONOMIC CHARACTERS OF THE BEAN (<i>Phaseolus vulgaris</i> L.)
Yekbun ÖZMEN Prof. Dr. Işık TEPE Assoc. Prof. Dr Emre DEMİRER DURAK	Van Yüzüncü Yil University, Van, Türkiye	EFFECT OF JIMSONWEED (<i>Datura stramonium</i> L.) EXTRACTS ON ROOT ROT DISEASE (<i>Rhizoctonia solani</i> AG-4) IN TOMATO
Assoc. Prof. Dr Haluk Kulaz İşhak Baran	Van Yüzüncü Yil University, Van, Türkiye	THE EFFECTS OF DIFFERENT SALT CONCENTRATIONS ON SOME GROWTH PARAMETERS OF LENTIL (<i>LENS CULINARIS</i> MEDIC.) VARIETIES IN THE EARLY GROWTH PERIOD
Evvel Naşide UYAN Assoc. Prof. Dr Erol ORAL	Van Yüzüncü Yil University, Van, Türkiye	ANALYSIS OF CORRELATION BETWEEN PHYSIOLOGICAL AND BIOCHEMICAL PROPERTIES IN SOME WHEAT VARIETIES (<i>Triticum durum</i> L.) SEEDLING DEVELOPMENT PERIOD

Fatma AYTEMİŞ Assistant Professor Dr. Adnan DOĞAN Assistant Professor Dr. Cüneyt UYAK	Van Yüzüncü Yıl University, Van, Türkiye	DETERMINATION OF PHENOLOGICAL CHARACTERS AND EFFECTIVE HEAT SUMMATION REQUIREMENTS OF LOCAL GRAPE CULTIVARS GROWN IN MUŞ PROVINCE
Sema KÜSMÜŞ Assistant Professor Dr. Adnan DOĞAN Assistant Professor Dr. Cüneyt UYAK	Van Yüzüncü Yıl University, Van, Türkiye	DETERMINATION OF PHENOLOGICAL CHARACTERS AND EFFECTIVE HEAT SUMMATION REQUIREMENTS OF STANDARD AND LOCAL SOME GRAPE CULTIVARS GROWN IN MALATYA PROVINCE
Enes FİDAN Prof.Dr.Işık TEPE	Van Yüzüncü Yıl University, Van, Turkey	EFFECTS OF PLANT GROWTH- PROMOTING RHIZOBACTERIA (PGPR) AND <i>Trichoderma harzianum</i> ON GERMINATION OF BROOMRAPE (<i>Phelipanche ramosa</i> (L.) Pomel) PROBLEM IN TOMATO

**FACE TO FACE PRESENTATIONS**

27.05.2022



ANKARA LOCAL TIME



Van Yüzüncü Yıl University



13:30-15:00 | Hall-2

**HEAD OF SESSION: Prof. Dr. Işık TEPE**

AUTHORS	AFFILIATION	TOPIC TITLE
Assist. Prof. Dr. Nergis Ulaş	Atatürk University, Yakutiye, Erzurum, Türkiye	CORONAVIRUS INFECTIONS IN ANIMALS: EPIDEMIOLOGY, CLINICAL SYMPTOMS, TREATMENT AND PREVENTION
Assoc. Prof. Dr. Aysel GÜVEN Dr. Olcay ÖZTÜRKLER Assoc. Prof. Dr. Ulviye BUNYATOVA	Başkent University, Ankara, Türkiye Kafkas University, Kars, Türkiye	A BIOCHEMICAL STUDY ON KIDNEY STONE CASES IN CATTLE
Necmettin YİĞİT Assoc. Prof. Dr Cemal BUDAĞ	Van Yüzüncü Yıl University, Van, Türkiye	A SURVEY STUDY ON RUMINANT FEEDING HABITS OF FARMERS IN EASTERN ANATOLIA: A CASE OF AĞRI
Assoc. Prof. Dr Elif BABACANOĞLU Research assistant Dr.Mehmet Reşit KARAGEÇİLİ	Van Yüzüncü Yıl University, Van, Türkiye	EFFECT OF INJECTED VITAMIN E TO YOLK SAC OF EMBRYO ON THE TOTAL LIPID, PROTEIN AND PHOSPHOLIPID LEVELS IN THE BLOOD SERUM OF BROILER CHICKS
Assoc. Prof. Dr Elif BABACANOĞLU Research assistant Dr.Mehmet Reşit KARAGEÇİLİ	Van Yüzüncü Yıl University, Van, Türkiye	EFFECT OF VITAMIN E INJECTION IN YOLK SAC OF EMBRYO ON LIPID PEROXIDATION IN BRAIN AND WATER-SOLUBLE ANTIOXIDANTS LEVELS IN LIVER TISSUES IN THE BROILER CHICKS
Assist. Prof. Dr. Ataman Altuğ ATICI Assoc. Prof. Dr Ertuğrul KANKAYA	Van Yüzüncü Yıl University, Van, Türkiye	A STUDY ON THE MAXIMUM SIZE OF SIRAZ FISH (<i>Capoeta kosswigi</i> KARAMAN, 1969) IN THE KARASU RIVER (VAN, TURKEY)
Nergis ULAŞ Hüseyin ALTIN Başak HANEDAN Rıdvan KİRMAN	Atatürk University, Yakutiye, Erzurum, Türkiye	TREATMENT WITH IVERMECTIN AND VITAMINS OF RABBITS INFESTED WITH <i>Sarcoptes scabiei</i>
Ayca Nur SAHİN DEMIREL	Iğdir University, Iğdir, TURKEY	AN EVALUATION OF ORGANIC EGG PRODUCTION IN TURKEY BETWEEN 2022-2026 BASED ON TIME SERIES ANALYSIS
Cemal ERTAŞ Mehmet Ali BOZKURT	Erciş İlçe Tarım Müdürlüğü, Erciş, Van, Türkiye Van Yüzüncü Yıl Üniversitesi, Van, Türkiye	FERTILITY AND NUTRITION STATUS OF POTATO CULTIVATED SOILS IN AHLAT DISTRICT OF BITLİS PROVINCE

Coffee Break: 15:00-15:30



FACE TO FACE PRESENTATIONS

27.05.2022



ANKARA LOCAL TIME



Van Yüzüncü Yıl University



15:30-18:00 | Hall-3



HEAD OF SESSION: Prof. Dr. Rüveyde TUNÇTÜRK

AUTHORS	AFFILIATION	TOPIC TITLE
Ümit AVCIOĞLU Adem AKSOY Abdulkaki BİLGİÇ M. Sinan AKTAŞ M. Ali TUNÇ	Atatürk University, Yakutiye, Erzurum, Türkiye	CALF LOSSES AND ECONOMIC EFFECTS IN ERZURUM DAIRY FARMS
Mehmet YÜKSEL Arzu KAVAZ YÜKSEL	Atatürk University, Yakutiye, Erzurum, Türkiye	OLIVE OILS WITH REGISTERED GEOGRAPHICAL INDICATION (GI) IN THE TURKEY: GEOGRAPHICAL ORIGIN, QUALITY AND AUTHENTICITY
Arzu KAVAZ YÜKSEL Mehmet YÜKSEL	Atatürk University, Yakutiye, Erzurum, Türkiye	ASSESSMENT OF AUTHENTICITY AND ORIGIN IN DAIRY PRODUCTS WITH ANALYTICAL METHODS AND CHEMOMETRICS
Serdar Uğurlu Assoc. Prof. Emre Bakkalbaşı	Van Yüzüncü Yıl University, Van, Türkiye	EFFECT OF ETHANOL PRE- TREATMENT ON THE QUALITY OF DRIED FRUIT AND VEGETABLES
Research assistant Dilek Özcan Yardım Assist. Prof. Dr. Bilgin Taşkın	Van Yüzüncü Yıl University, Van, Türkiye	IN VITRO ANTIBACTERIAL EFFECT OF SEVERAL ENDOPHYTIC BACTERIA ISOLATED FROM VARIOUS CEREAL PLANTS AGAINST ERWINIA AMYLOVORA (EA) AND CLAVIBACTER MICHIGANENSIS SUBSP. MICHIGANENSIS (CMM) PLANT PATHOGENS
Prof. Dr Mehmet Salih ÖZGÖKÇE Research assistant Furkan Harun BAŞI Dr.Esra KINA Research assistant Dr.Hilmi KARA	Van Yüzüncü Yıl University, Van, Türkiye	SOMEDEMOGRAPHIC CHARACTERISTICS OF BLACK BEAN APHID (Aphis fabae) ON BROAD BEAN (Vicia fabae)
Şadiye DEMİR ATMACA Burak ÖZDEMİR Sana JAMAL SALİH Assist. Prof. Dr. Fevzi ALTUNER Assoc. Prof. Erol ORAL Prof.Dr.Mehmet ÜLKER	Van Yüzüncü Yıl University, Van, Türkiye	DETERMINATION OF DIFFERENT POPULATIONS OF THE WHEAT (Triticum aestivum L.) LANDRACES CULTIVATED IN VAN LAKE BASIN
Tülay TOPRAK Prof. Dr. Rüveyde TUNÇTÜRK Prof. Dr. Murat TUNÇTÜRK Research assistant Lütfi NOHUTÇU Ezelhan ŞELEM	Van Yüzüncü Yıl University, Van, Türkiye	THE EFFECT OF BORON DOSES ON GERMINATION PROPERTIES IN FENUGREEK (TRIGONELLA FOENUM- GRAECUML.) SEEDS SUBJECTED TO SALICYLIC ACID PRETREATMENTS

Prof. Dr. Rüveyde TUNÇTÜRK Tülay TOPRAK Prof. Dr. Murat TUNÇTÜRK Ezelhan ŞELEM Lütfi NOHUTÇU	Van Yüzüncü Yıl University, Van, Türkiye	THE EFFECT OF BORON DOSES ON GERMINATION PROPERTIES OF GALEGA OFFICINALIS L. (GOAT SEED) SEEDS SUBJECTED TO SALICYLIC ACID PRE-APPLICATION
Lütfi NOHUTÇU Prof. Dr Murat TUNÇTÜRK Ezelhan ŞELEM Prof. Dr Rüveyde TUNÇTÜRK Tülay TOPRAK	Van Yüzüncü Yıl University, Van, Türkiye	DETERMINATION OF MINERAL CONTENT OF <i>Plantago atrata</i> HOPPE SPECIES NATURALLY DISTRIBUTED IN VAN REGION
Ezelhan ŞELEM Prof. Dr Murat TUNÇTÜRK Prof. Dr Rüveyde TUNÇTÜRK Lütfi NOHUTÇU Tülay TOPRAK	Van Yüzüncü Yıl University, Van, Türkiye	A STUDY ON MINERAL CONTENT OF <i>Cardaria draba</i> (L.) DESV. Subsp.draba SPECIES NATURALLY GROWN IN EASTERN ANATOLIA OF TURKEY
Lect. Dr. Zeynep KILIÇ	Bitlis Eren University, Bitlis, Türkiye	A NEW PROTECTIVE AND THERAPEUTIC GENE FAMILY AGAINST CHILLING STRESS AND THE DAMAGE STEMMING FROM CHILLINESS FOR PLANTS: PLANT MITOCHONDRIAL UNCOUPLERS (PUMP)

ONLINE (with Video Conference) PRESENTATIONS

27-28 May 2022



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SESSION-1, HALL-1/OTURUM-1, SALON-1

MODERATOR: Dr. Subhashish Dey

AUTHOR(S)	AFFILIATION	TITLE
Kamlesh Kumar C M Parihar	Division of Agronomy, ICAR-Indian Agricultural Research Institute, New Delhi 110012	MAIZE-WHEAT SYSTEM: TILLAGE AND NITROGEN MANAGEMENT FOR HIGHER YIELD AND NUTRIENT USE EFFICIENCY
Mahendra Kumar Savita Vinay Dwivedi Prachi Srivastava	Amity University, Uttar Pradesh, Lucknow Campus. 227105	IN-SILICO ANALYSIS UNCOVER ANTIBACTERIAL PROPERTIES OF ALLIUM SATIVUM AGAINST AEROMONAS HYDROPHILA
Aminu, F.O.	Department of Agricultural Technology, School of Technology, Yaba College of Technology, Epe Campus, P. M. B. 2011, Yaba, Lagos State, Nigeria	ANALYSIS OF FACTORS INFLUENCING YIELD OF YAM IN OSUN STATE, NIGERIA
Gazmend MEÇO	Agriculture University of Tirana	ALBANIAN FARMING SYSTEM, FACTS AND NUMBERS
Dr. Ihim Augustine Chinedu	Nnamdi Azikiwe University, Awka, Nigeria	LIPID PROFILE, FREE FATTY ACID, APOLIPOPROTEIN B, APOLIPOPROTEIN B 48, APOLIPOPROTEIN B 100 AND MALONDIALDEHYDE IN MYCOBACTERIUM TUBERCULOSIS INFECTED INDIVIDUALS BEFORE, DURING AND AFTER TREATMENT
Dr. Subhashish Dey	Department of Civil Engineering, Gudlavalleru Engineering College, Andhra Pradesh, India	IMPORTANCE OF IRRIGATION FOR THE GROWTH OF ECONOMICAL CONDITIONS OF THE COUNTRY
Dr. Subhashish Dey	Department of Civil Engineering, Gudlavalleru Engineering College, Andhra Pradesh, India	APPLICATION OF BIOSORBENTS FOR REMOVAL OF NITRITE FROM CONTAMINATED WATER
Subhashish Dey	Department of Civil Engineering, Gudlavalleru Engineering College, Andhra Pradesh, India	APPLICATIONS OF FOOD COLOUR AND PRESERVATIVES IN ARTIFICIAL FOOD AND ITS RESULT ON HUMAN HEALTH
Balasubramani G L Rinky Rajput Manish Gupta Pradeep Dahiya Jitendra K Thakur Rakesh Bhatnagar Abhinav Grover	Jawaharlal Nehru University, New Delhi - 110067. National Institute of Plant Genome Research, Aruna Asaf Ali Marg, New Delhi. Banaras Hindu University, Banaras, Uttar Pradesh-221005, India	STRUCTURE-BASED DRUG REPURPOSING TO INHIBIT THE DNA GYRASE OF Mycobacterium tuberculosis

<i>Nurulain Mustafa Udin</i> <i>Sharifah Norkhadijah Syed</i> <i>Ismaila</i> <i>Vivien How</i> <i>Emilia Zainal Abidin</i>	Universiti Putra Malaysia, Malaysia	ANALYSIS OF PESTICIDE DISTRIBUTION THROUGH DERMAL EXPOSURE ASSESSMENT (DREAM) AMONG PESTICIDE SPRAYERS IN MALAYSIA
<i>ANUJ B</i> <i>KAVIN KUMAR P</i> <i>SANKAR PRASATH S</i> <i>PRAGUSHPATHI P</i> <i>SRIDEEPANRAJ S</i> <i>VINOTH KUMAR C M</i>	Bannari Amman Institute Of Technology	FOOD

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SESSION-1, HALL-2/OTURUM-1, SALON-2

MODERATOR: Dr. Omar MARDENLI

AUTHOR(S)	AFFILIATION	TITLE
<i>Mehzabin Rehman Bhaben Tanti</i>	Gauhati University, Assam, India	EVALUATION OF BORO RICE CULTIVARS OF ASSAM, INDIA FOR THEIR COLD AND HEAT STRESS TOLERABILITY BASED ON VARIOUS MORPHO-PHYSIOLOGICAL PARAMETERS
<i>Dr. Omar MARDENLI Assist. Prof. Dr. Mahdi Saleh Mohammad AL-KERWI Prof. Dr. Ali Sami Amin AL-TAWASH Assist. Prof. Dr. Ali Abd Al-Jabbar IBRAHIM</i>	University of Aleppo, Faculty of Agriculture, Syria University Of Al-Qadisiah, Faculty Of Agriculture, Iraq	ASSESSMENT OF THE CONSEQUENCES OF APPLYING GENE EXPRESSION MODULARITY ON QUANTITATIVE TRAITS OF RUMINANTS AND POULTRY
<i>Anvar Ghaderi Assist. Prof. Dr. Behnam Dovlati Prof. Dr. Ebrahim Sepehr Assist. Prof. Dr. Mohsen Barin Assist. Prof. Dr. Amir Rahimi</i>	Faculty of Agriculture, Urmia University	EFFECT OF RESIDUES AND FRESH EXTRACT OF MEDICINAL PLANTS ON SOIL NUTRIENTS AND Zea mays L. YIELDS
<i>Madalina-Lorena Medeleanu Fărcaș Anca Corina Cristina Coman Loredana Leopold Carmen Pop Socaci Sonia Ancuța</i>	University of Agricultural Sciences and Veterinary Medicine, Romania	CITRUS OIL NANO-EMULSIONS - SO MANY OPTIONS BUT ONE CHOICE: PHYSICAL STABILITY AND ANTIBACTERIAL ACTIVITY IN THE FOOD FIELD
<i>Gamajunova V.V. Sydiakina O.V. Honenko L.G. Garo I.M. Baklanova T.V. Iskakova O.Sh.</i>	Mykolaiv National Agrarian University, Mykolaiv, Ukraine Kherson State Agrarian and Economic University, Kherson, Ukraine	PRODUCTIVITY OF WINTER RAPE IN UKRAINE DEPENDING ON THE METHOD, DEPTH OF TILLAGE, ROW SPACING AND SOWING DATE
<i>Rui ISIDORO Ana GALAIO</i>	Polytechnic Institute of Beja, Engineering Department, Beja, Portugal	OCCUPATIONAL SAFETY IN AGRICULTURAL TRACTOR OPERATIONS
<i>RAKESH M RAJESH M MOHAMED SHAIKNA LEBBAI A M SANJAY V Y</i>	Bannari Amman Institute Of Technology, Department Of Aeronautical Engineering, Erode , India	AUTOMATED IRRIGATION SYSTEM

<i>Gergana Zaemdzhikova</i>	Forest Research Institute – Sofia, Bulgarian Academy of Sciences	SURVIVAL OF SUMMER AND WINTER FORM OF THAUMETOPOEA PITYOCAMPA IN THE HIBERNATION PERIOD
<i>B. A. Darius Gnihatın Aristide B. Akpo</i>	Université d'Abomey-Calavi, Bénin, 01 BP 526 Cotonou, Bénin	ANALYSIS OF THE LENGTH OF DRY PERIODS FOR AGRICULTURAL PRODUCTION USING THE MARKOV CHAIN MODEL: CASE OF SYNOPTIC STATIONS IN BENIN
<i>Segun O. Oladele</i>	Adekunle Ajasin University Akungba Akoko, Nigeria	EFFECT OF BIOCHAR ON NITROGEN MINERALIZATION DYNAMICS OF A PERI- URBAN CROPLAND AMENDED WITH POULTRY MANURE

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SESSION-1, HALL-3/OTURUM-1, SALON-3

MODERATOR: Prof. Dr. E. Sepehr

AUTHOR(S)	AFFILIATION	TITLE
<i>Svetlana CHERNENKO</i> <i>Sofia LAVRENKO</i> <i>Sergiy LAVRENKO</i>	Kherson specialized school of I-III degrees №30, Kherson, Ukraine	ASPECTS OF GROWING MICROGREENS AT HOME
<i>Svetlana CHERNENKO</i> <i>Anastasiia SUROVTSOVA</i> <i>Sergiy LAVRENKO</i>	Kherson specialized school of I-III degrees №30, Kherson, Ukraine	GREEN TOURISM IN RECREATIONAL AREAS OF THE KHERSON REGION
<i>Olexander LAVRENKO</i> <i>Natalia KOSHEVA</i> <i>Sergiy LAVRENKO</i>	Kherson specialized school of I-III degrees №30, Kherson, Ukraine	BIOLOGICAL PEST CONTROL MEASURES IN PARKS
<i>Maria RIZAK</i> <i>Sergiy LAVRENKO</i> <i>Nataliia LAVRENKO</i>	Student of the Faculty of Agronomy, Kherson State Agrarian and Economic University, Ukraine	METHODS OF USING NATURAL DYE FROM PAPRIKA IN THE FOOD INDUSTRY
<i>Ayesha Javed</i> <i>Usman Haider</i> <i>Bilal Aslam</i> <i>Muhammad Naeem Faisal</i>	Institute of Physiology and pharmacology, University of Agriculture Faisalabad, Pakistan	EXPRESSION LEVEL OF SRc (HIGH) AND MDM2 (DOWN) GENES IN FEMALE BREAST CANCER
<i>Dr. Moneer K. Faraj</i> <i>Dr. Bassam Mahmood</i> <i>Flamerz Arkawazi</i>	University Of Baghdad, Iraq	TREATMENT OF PRIMARY TRIGEMINAL NEURALGIA: A COMPARATIVE STUDY OF MICROVASCULAR DECOMPRESSION SURGERY AND STEREOTACTIC GAMMA KNIFE RADIOSURGERY
<i>Nader Ghaffari Khaligh</i> <i>Hayedeh Gorjianb</i>	University of Malaya, 50603 Kuala Lumpur Malaysia Sari Agricultural Sciences and Natural Resources University, Sari, Iran	INFLUENCE OF TWEEN NATURE AND TYPE ON PHYSICOCHEMICAL PROPERTIES AND STABILITY OF SPEARMINT ESSENTIAL OIL (MENTHA SPICATA L.) STABILIZED WITH BASIL SEED MUCILAGE NANOEMULSION
<i>Prof. Dr. E. Sepehr</i> <i>M. A. Shiriazar</i>	Urmia University, Urmia, Iran	METHODS OF ARSENIC DECONTAMINATION OF SOIL AND WATER
<i>E. Sepehr</i> <i>J. Abdollahi</i> <i>V. Feiziasl</i> <i>M.H. Rasouli-Sadaghiani</i> <i>A. Samadi</i>	Urmia University, Urmia, Iran Agricultural Research Education and Extension Organization (AREEO), Maragheh, Iran	THE KINETICS OF N MINERALIZATION IN SALT- AFFECTED SOILS WITH DIFFERENT PLANT RESIDUES

<i>Zeynep ERGÜN</i> <i>Murat GÜNEY</i>	Adana Alparslan Türkeş Science and Technology University, Adana, Turkey Yozgat Bozok University, Yozgat, Turkey	THE IMPORTANCE OF MICROPROPAGATION
<i>Zeynep ERGÜN</i> <i>Murat GÜNEY</i>	Adana Alparslan Türkeş Science and Technology University, Adana, Turkey Yozgat Bozok University, Yozgat, Turkey	PRODUCTION OF SECONDARY METABOLITES VIA PLANT MICROPROPAGATION

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SESSION-1, HALL-4/OTURUM-1, SALON-4

MODERATOR: Assoc. Prof. Dr. Gökhan BORAN

AUTHOR(S)	AFFILIATION	TITLE
<i>Assoc. Prof. Dr. Emine NAKİLCİOĞLU</i>	Ege University, Izmir, Turkey	PUMPKIN SEED OIL: CHEMICAL COMPOSITION AND BIOLOGICAL ACTIVITY
<i>Assoc. Prof. Dr. Emine NAKİLCİOĞLU</i>	Ege University, Izmir, Turkey	NUTRITIVE AND HEALTH PROPERTIES OF HUMAN MILK
<i>Büşra TURAN Zeynep Hazal TEKİN ÇAKMAK Selma KAYACAN ÇAKMAKOĞLU Salih KARASU</i>	Yıldız Technical University , Istanbul, TURKEY Istinye University , Istanbul, TURKEY	EFFECT OF DIFFERENT DRYING TECHNIQUES ON BIOACTIVE PROPERTIES AND PHENOLIC COMPOSITION OF GOJI BERRY FRUITS
<i>Gülistan OKUTAN Güneş KOÇ Ümran CANSU Gökhan BORAN</i>	Van Yüzüncü Yıl University, Van, Türkiye	CHANGES IN SOME PHYSICAL AND MECHANICAL FEATURES DURING STORAGE OF EDIBLE FILMS MADE BY DIFFERENT PROTEINS
<i>Ümran CANSU Gülistan OKUTAN Gökhan BORAN</i>	Van Yüzüncü Yıl University, Van, Türkiye	EFFECT OF LOCUST BEAN GUM ADDITION ON SOME PHYSICAL AND FUNCTIONAL FEATURES IN GELATIN SOLUTIONS AND GELS
<i>Araş. Gör. Dr. Oğuzhan KAHRAMAN Araş. Gör. Zekeriya Safa İNANÇ Prof. Dr. Fatma İNAL Prof. Dr. Huzur Derya ARIK</i>	Selçuk University, Konya, Türkiye	THE CHEMICAL COMPOSITION AND USAGE OF DATE AND IT'S BY-PRODUCTS IN RUMINANT NUTRITION
<i>Binnur KAYA Prof. Dr. Zeynep Dilek HEPERKAN</i>	İstanbul Aydın University, Istanbul, TURKEY	INVESTIGATION OF QUALITY PARAMETERS IN GRAPE MOLASSES
<i>Şebnem İPEK Prof. Dr. Zeynep Dilek HEPERKAN</i>	İstanbul Aydın University, Istanbul, Turkey	QUALITY PROPERTIES OF BUTTERS SOLD IN MARKET
<i>Emine OKUMUŞ</i>	Van Yüzüncü Yıl University, Van, Turkey	COMPUTER VISION SYSTEMS AND FOOD APPLICATIONS

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SESSION-1, HALL-5/OTURUM-1, SALON-5

MODERATOR: Assoc. Prof. Dr. Selçuk Seçkin TUNCER

AUTHOR(S)	AFFILIATION	TITLE
<i>Barış GÜNER</i>	Balıkesir University, Balıkesir, Türkiye	THE EFFECT OF GnRH ADMINISTRATION BEFORE PROSTAGLANDIN-BASED PROTOCOL ON REPRODUCTIVE PERFORMANCE IN MERINO SHEEP
<i>Assoc. Prof. Dr. Murat ŞEVİK</i>	Necmettin Erbakan University, Konya, Turkey	SERO-EPIDEMIOLOGICAL SURVEY OF PESTE DES PETITS RUMINANTS IN UNVACCINATED FLOCKS IN MEDITERRANEAN REGION OF TURKEY
<i>Assoc. Prof. Dr. Selçuk Seçkin TUNCER</i>	Van Yüzüncü Yıl University, Van, Turkey	CHANGES IN WOOL PRODUCTION IN THE WORLD AND TURKEY
<i>Assoc. Prof. Dr. Selçuk Seçkin TUNCER</i>	Van Yüzüncü Yıl University, Van, Turkey	HOMOCYSTEINE METABOLISM, ITS RELATIONS WITH FOLIC ACID AND VITAMIN B12 IN RUMINANTS
<i>Sıtkıcan Okur</i>	Atatürk University, Erzurum, Türkiye	TREATMENT OF CONGENITAL FLEXURAL DEFORMITY IN CALVES
<i>Assist. Prof. Dr. Uğur ERSÖZ</i>	Atatürk University, Erzurum, Türkiye	UMBILICAL CORD CARE AND MAJOR UMBILICAL LESIONS IN CALVES
<i>Suphi DENİZ Gökhan ŞENGÖNÜL</i>	Van Yüzüncü Yıl University, Van, Türkiye	AN ALTERNATIVE SOURCE OF PROTEIN IN ITS WING FEEDING: BLACK SOLDIER FLY LARVA
<i>Assist. Prof. Dr. Nüvit COŞKUN</i>	Kafkas University, Kars, Türkiye	INVESTIGATION OF DNA AND RNA VIRUSES FROM PARAFFIN EMBEDDED TISSUE BLOCKS USING MOLECULAR METHODS

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SESSION-1, HALL-6/OTURUM-1, SALON-6

MODERATOR: Prof. Dr. Şefik TÜFENKÇİ

AUTHOR(S)	AFFILIATION	TITLE
Sema BAŞBAĞ Şilan Çiçek Nazlı AYBAR YALINKILIÇ	Dicle University, Diyarbakır, Türkiye	INVESTIGATION OF YIELD AND YIELD PARAMETERS OF SOME COTTON (GOSSYPIMUM HIRSUTUM L.) VARIETIES AT DIFFERENT İNTRA-ROW SPACING
Zeynep Nisa KARADUMAN Murat KARTAL	Bezmialem Vakıf University, İstanbul, Türkiye	USE OF SUMAK (Rhus coriaria) PLANT IN NUTRITION AND PHYTOTHERAPY
Ayşe Türkhan Elif Duygu KAYA	Iğdır University, Iğdır, Türkiye	PARTIAL PURIFICATION AND CHARACTERIZATION OF CATALASE FROM <i>Marasmius oreades</i>
Abdullah Esat ALTINIŞIK Berna TUNALI	Ondokuz Mayıs University, Samsun, Türkiye	PATHOGENICITY OF <i>FUSARIUM POAE</i> AND <i>FUSARIUM EQUSETI</i> ISOLATES ISOLATED FROM WHEAT CULTURES IN DIFFERENT AGROECOLOGIES
Gülşen Berat TORUSDAĞ Dr. Emre BAKKALBAŞI	Van Yüzüncü Yıl University, Van, Türkiye	ANTHOCYANIN EXTRACTION FROM <i>ROSA × DAMASCENA</i> MILLER PLANT GROWING IN VAN PROVINCE
Nurhan KESKİN Sena YILDIZ	Van Yüzüncü Yıl University ,Van, Türkiye	TOTAL PHENOLIC COMPOUNDS CONTENT IN CANES OF SOME GRAPE CULTIVARS
Nurhan KESKİN Sena YILDIZ	Van Yüzüncü Yıl University, Van, Türkiye	INCREASING ANTHOCYANIN PRODUCTION IN CALLUS CULTURE OF VAKKAS GRAPE CULTIVAR AFTER UV-C TREATMENT
Erdal Aglar Burhan Ozturk Onur Saracoglu	Van Yuzuncu Yil University, Van, Turkey Ordu University, Ordu, Turkey Tokat Gaziosmanpasa University, Tokat, Turkeyey	EFFECTS OF ROOTSTOCKS AND TRAINING SYSTEMS ON VEGETATIVE GROWTH AND FRUIT QUALITY PROPERTIES OF 0900 ZIRAAT AND REGINA SWEET CHERRY CULTIVARS
Emine KUCUKER Erdal AGLAR	Siirt University, Siirt, Turkey	THE EFFECT OF AMINOETHOXY VINYL GLYCINE (AVG) APPLICATION ON FRUIT QUALITY İN SWEET CHERRY
Prof. Dr. Şefik TÜFENKÇİ Assist. Prof. Dr. Cüneyt UYAK	Van Yüzüncü Yıl University, Van, Türkiye	EFFECT OF IRRIGATION WATER DEFICIT ON PROTEIN CONTENT OF QUINOA (CHENOPODIUM QUINOA WILLD.)

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SESSION-2, HALL-1/OTURUM-2, SALON-1

MODERATOR: Prof. Dr. Füsün GÜLSER

AUTHOR(S)	TITLE	AFFILIATION
<i>Yogita Nain Nitin Chawla S.K. Goyal</i>	SKNAU, Jobner, Department- Plant Pathology, Jobner, India.	IMPACT OF WEATHER PARAMETERS ON ROOT ROT PEA INCITED BY FUSARIUM SOLANI F. SP. PISI
<i>Sushma Verma Yogita Nain</i>	Department of Plant Pathology, College of Agriculture, JNKVV, Jabalpur (M.P.)	In-vitro and In-vivo MANAGEMENT OF ANTHRACNOSE CAUSED BY Colletotrichum gloeosporioides (Penz. & Sacc)
<i>Roheela Yasmeen Khadija Summia</i>	Department of Biology, Lahore Garrison University, Lahore, Pakistan	DETECTION AND DETOXIFICATION OF AFLATOXINS B1 FROM LAYER AND BROILER FEED SAMPLES
<i>Sheetal kumawat Yogita Nain</i>	SKNAU, Jobner, Department- Entomology, Jobner, India	INCIDENCE OF HELICOVERPA ARMIGERA(HUBNER) IN CHICKPEA, CICER ARIETINUM (L.)
<i>Abdelghani Aboukhalaf Sara Moujabbir Belkassem El Amraoui Rekia Belahsen</i>	Chouaib Doukkali University, El Jadida, 24000, Morocco Ibn Zohr University, Agadir, Morocco	ASSESSMENT OF TOTAL PHENOLIC AND FLAVONOID CONTENT, ANTIOXYDANT AND ANTIMICROBIAL ACTIVITIES OF SOME MEDICINAL PLANTS IN MOROCCO
<i>H. Khan J. Khan S. Gul M. I. Khan H. Khan M. A.Khan</i>	University of Swat, Pakistan; Kohat University of Science & Technology, Kohat, Pakistan Abdul Wali Khan University Mardan, Pakistan	POTENTIAL USE OF CARIUM CARVI AND CURCUMA LONGA FOR THE REMEDY OF SKIN AND SOFT TISSUES PATHOGENS
<i>Maram Norouzi Zahra sarkheil</i>	Faculty Member And Msc Student Of Department Of Horticulture, Collage Of Aburaihan, University Of Tehran, Tehran, Iran	EVALUATION OF SEED GERMINATION IN FIROOZKOOH POPULATION OF GLAUCIUM FLAVUM (PAPAVERACEAE) IN TEHRAN PROVICE IN IRAN
<i>Mr. Manohar Rathod</i>	Department of Chemistry, Karnatak Science College, Dharwad-580001, India	CORROSION INHIBITION EFFECT OF BIXA ORELLANA LEAVES EXTRACT AS AN ECO-FRIENDLY INHIBITOR FOR MILD STEEL IN ACIDIC MEDIA
<i>Füsün GÜLSER İlhan KARAÇAL</i>	Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Toprak Bilimi ve Bitki Besleme Bölünü	LEAF AND SHOOT GROWTH IN APPLE TREES APPLYING IRON AND ZINC FERTILIZERS

Chelsea Imuetinyan Osayande
Theophilus Ogie Eramah

University of Benin, School of Basic
Medical Sciences, Department of Medical
Laboratory Science, Benin City, Nigeria

EFFECTS OF *Zingiber officinale* RHIZOME
EXTRACT ON THE HISTOMORPHOLOGY
OF OVARIES AND HORMONAL INDICES
OF FEMALE WISTAR RATS

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SESSION-2, HALL-2/OTURUM-2, SALON-2

MODERATOR: Assoc. Prof. Dr. Mehmet KARAMAN

AUTHOR(S)	AFFILIATION	TITLE
Assoc. Prof. Dr. Mehmet KARAMAN	Muş Alparslan University, Muş, Türkiye	INVESTIGATION OF SOME BREAD WHEAT (<i>Triticum aestivum</i> L.) CULTIVARS IN TERMS OF YIELD AND QUALITY IN MUŞ PROVINCE CONDITIONS
Chado, Z. M. Azare, B. A. Isah, M. C. Gimba U. N. Mohammed M. Aliyu H.	University of Abuja, Nigeria Ibrahim Badamasi Babangida University, Lapai, Nigeria FCT College of Education, Zuba-Abuja, Nigeria	INSECTICIDAL ACTIVITIES OF TOTAL CRUDE EXTRACTS OF CITRUS PEELS ON <i>Dermestes maculatus</i> (DEGEER, 1774) PEST OF SMOKED FISH
Azare B. A. Idowu, R. T. Chado, Z. M.	University of Abuja, Nigeria Ibrahim Badamasi Babangida University, Lapai, Nigeria FCT College of Education, Zuba-Abuja, Nigeria	SCREENING FOR THE INSECTICIDAL PROPERTIES OF TOTAL CRUDE AQUEOUS EXTRACTS OF CITRUS PEELS ON <i>Dermestes maculatus</i> (DEGEER, 1774) PEST OF SMOKED FISH
SAGHOURI EL IDRISSE Imane KETTANI Rajae FERRAHI Moha BRHADDA Najiba ZIRI Rabea	Regional Agricultural Research Center of Meknes, Morocco University of Ibn Tofail, Morocco National Institute of Regional Agricultural Research Center of Meknes, Morocco	EFFECT OF DROUGHT ON YIELD AND BIOCHEMICAL PARAMETERS OF DURUM WHEAT (<i>Triticum durum</i> Desf.) IN SEMI-ARID REGIONS
Tsvetelina Gerasimova Gabriele Jovtchev Svetla Gateva Tsveta Angelova Alexander Stankov Margarita Topashka Ana Dobрева Milka Mileva	Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria	IN VIVO AND IN VITRO CYTOGENETICAL ANALYSIS ON THE EFFECT OF ROSA ALBA L. HYDROSOL
Mahdi GHYASI Soheyla MOHAMMADI ALAGOZ Reza AMIRNIA	Department of Plant Production and Genetics, Faculty of Agriculture, Urmia University, Urmia, Iran	THE MICROWAVE EFFECT ON GERMINATION AND SEEDLING GROWTH OF WHEAT (<i>TRITICUM AESTIVUM</i>)
Soheyla MOHAMMADI ALAGOZ Mahdi GHYASI	Department of Plant Production and Genetics, Faculty of Agriculture, Urmia University, Urmia, Iran	QUANTIFYING OF BIO-PRIMING WITH TRICHODERMA ON DRY

Reza AMIRNIA		MATTER OF WHEAT SEEDLING STEM UNDER SALINITY STRESS
Najoua. SOULO Nor el houda. TAHIRI Abderrazak. ABOULGHAZI Badiaa. LYOUSSI Zineb. BENZIANE-OUARITINI	Sidi Mohamed Ben Abdellah University (USMBA)-Fez, Morocco	ANTIOXIDANT ACTIVITY, AND DIURETIC EFFECT OF <i>Moringa oleifera</i> IN RATS
Mohammed Chado Isah Kabir Mohammed Adamu Zainab Mustapha Hamzat Aliyu Christopher Didigu Nwani	Ibrahim Badamasi Babangida University, Lapai, Nigeria University of Nigeria Nsukka, Nigeria	ACUTE TOXICITY OF <i>Senna occidentalis</i> LEAF DUST ON <i>Clarias gariepinus</i> FINGERLING
Zahra Tavakolizadeh Reza Sadeghi	University of Tehran	THE EFFECT OF CUMIN ESSENTIAL OIL ON BLOOD CELLS OF <i>Galleria mellonella</i>

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SESSION-2, HALL-3/OTURUM-2, SALON-3

MODERATOR: Dr. Ahmad Ali

AUTHOR(S)	AFFILIATION	TITLE
Ceyda DADALI Yeşim ELMACI	Ege University, İzmir, Turkey	USE OF PROPOLIS AS FUNCTIONAL INGREDIENT IN FOODS
Dr. Ahmad Ali	Department of Life Sciences, University of Mumbai, Vidyanagari, Mumbai, INDIA	ANALYSIS OF TOXICITY OF SUGAR-INDUCED MODIFICATION OF PROTEINS DURING GLYCATION AND ITS SUPPRESSION BY THYMOQUINONE
PhD. Candidate Gazmend Meço Prof. Asoc. Ilir Kapaj	Faculty of Economy and Agribusiness, Agricultural University of Tirana	CUSTOMER PREFERENCE ON ORGANIC RED MEAT
Much. Mabru Rizky ANDREAN Hendri Hermawan ADINUGRAHA	IAIN Pekalongan	COMPETENCY PROBLEMS OF HALAL SLAPPERS IN INDONESIA: A LITERATURE STUDY
Tanveer Alam Murtaza Gani	HNB Garhwal University Srinagar (Garhwal) Utrtrakhand India Shere Kashmir University of Agricultural Sciences & Technology, Jammu, India. High End Instrumentation Lab, Public Health Laboratory Dalgate Srinagar J & K India.	HPLC QUANTIFICATION OF THE CHEMICAL CONSTITUENTS FROM INDIGENOUS FRUITS AND VEGETABLES OF INDIAN HIMALAYAN REGION
Arezoo ALLAMEH HAERI Ehsan KHAKSAR Iradj ASHRAFI TAMAI	Garmsar Branch, Islamic Azad University, Garmsar, Iran	EVALUATION OF SALMONELLA CONTAMINATION IN VARIOUS COMMERCIAL CANINE FOOD IN IRAN
Dr. Bijender Singh Pragya	Maharshi Dayanand University, Rohtak-124001, Haryana, India. Central University of Haryana, Jant-Pali, Mahendergarh-123031, Haryana, India	ENHANCED PRODUCTION OF PHYTASE FROM <i>Aspergillus oryzae</i> IN SOLID STATE FERMENTATION AND ITS UTILITY IN IMPROVING FOOD NUTRITION
Muhametov Almas Erekevich Kazhymurat Assemay Talgatkyzy	Kazakh National Agrarian Research University, Faculty Of Technology And Bioresources Almaty, Kazakhstan	MODERN STATE OF PRODUCTION TECHNOLOGY OF OXYSTABLE COMPOSITIONS OF PLANT MATTER FOR FUNCTIONAL NUTRITION
Liana C. Salanță Maria Tofană Carmen R. Pop Anamaria Pop Anca C. Fărcaș	University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Romania	DEVELOPMENT AND CHARACTERIZATION OF A MULBERRY SAUCE

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SESSION-2, HALL-4/OTURUM-2, SALON-4

MODERATOR: Assoc. Prof. Dr. Seyit Battal UĞURLU

AUTHOR(S)	AFFILIATION	TITLE
<i>Assoc. Prof. Dr. Nurhan KOÇAN Hilal BESKİSİZ Assoc. Prof. Dr. Ömer Lütfü ÇORBACI</i>	Bartın University, Bartın, Turkey	EVALUATION OF BEYSEHIR (KONYA) RURAL TOURISM POTENTIAL
<i>Nurhan KOÇAN Merve ÖZEREN ALKAN Erden AKTAŞ</i>	Bartın University, Bartın, TÜRKİYE	PLANNING AND RESTORATION SUGGESTIONS FOR BEDESTEN SURROUNDINGS IN AMASRA CITY
<i>Elnur ALLAHVERDIYEV</i>	Director of Baku Business and Cooperation College, Baku, Azerbaijan	A QUALITATIVE ANALYSIS OF HUMAN POWER PRODUCTIVITY INDICATORS IN AGRICULTURE
<i>Assoc. Prof. Dr. Oktay TOMAR Alptekin Mert YILMAZ Özge Can NİYAZ</i>	Kocaeli University, Kocaeli, Türkiye.	EVALUATION OF THE CURRENT STATUS OF ORGANIC AGRICULTURE IN TURKEY
<i>Alptekin Mert YILMAZ Oktay TOMAR</i>	Kocaeli University, Kocaeli, Turkey.	THE EFFECTS OF UKRAINE CRISIS ON FOOD SECURITY
<i>Oktay TOMAR Alptekin Mert YILMAZ</i>	Kocaeli University, Kocaeli, Türkiye.	USE OF RENEWABLE ENERGY RESOURCES IN AGRICULTURAL PRODUCTION
<i>Eylem DURMUŞ Prof. Dr. Arif SEMERCİ</i>	Çanakkale Onsekiz Mart University	AN ANALYSIS AND SUGGESTIONS ON TRANSFERRING THE ECONOMIC CONTRIBUTIONS OF GEOGRAPHICAL INDICATION TO THE MARKET
<i>Eylem DURMUŞ Prof. Dr. Arif SEMERCİ</i>	Çanakkale Onsekiz Mart University	TURKEY'S TOMATO PRODUCTION AND ANALYSIS OF COMPETITIVENESS
<i>Seyit Battal UĞURLU</i>	Van Yüzüncü Yıl University, Van, TURKEY	YAŞAR KEMAL'S VIEW ON FORESTRY PROBLEMS
<i>Kenan ÇİFTÇİ Mustafa TERİN Melike CEYLAN İbrahim YILDIRIM</i>	Van Yüzüncü Yıl University, Van, TURKEY	DETERMINATION OF TECHNICAL INFORMATION SOURCES RELATED TO DAIRY CATTLE BREEDING OF FARMS THAT ARE MEMBERS OF VAN PROVINCE CATTLE BREEDERS ASSOCIATION AND WHICH ARE NOT MEMBERS

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SESSION-2, HALL-5/OTURUM-2, SALON-5

MODERATOR: Assoc. Prof. Dr. Nurhan KESKİN

AUTHOR(S)	AFFILIATION	TITLE
<i>Pınar ANKARALIGİL</i> <i>Buket AYDENİZ-GÜNEŞER</i>	Uşak İl Tarım ve Orman Müdürlüğü, Uşak	OLEOJELS: ALTERNATIVE STRUCTURES AS A DEEP FRYING MEDIUM
<i>Assoc. Prof. Dr. Mehmet Emre</i> <i>EREZ</i>	Van Yüzüncü Yıl University, Van, Türkiye	PHYSIOLOGICAL AND MOLECULAR BASIS OF ALTERNATE BEARING IN PERENNIAL FRUIT CROPS
<i>Hanife BAYINDIR</i> <i>Prof. Dr. Birol KILIÇ</i>	Süleyman Demirel University	USE OF HERBAL ANTIOXIDANT RESOURCES IN MEAT PRODUCT PROCESSING
<i>Şeyda ÖZTURUNÇ</i> <i>Prof. Dr. Birol KILIÇ</i> <i>Assist. Prof. Dr. Azim</i> <i>ŞİMŞEK</i>	Süleyman Demirel University	EFFECTS OF FAT REPLACERS USAGE ON QUALITY ATTRIBUTES OF FERMENTED MEAT PRODUCTS
<i>Assoc. Prof. Dr. Sercan KARAV</i> <i>Eda NTELITZE</i>	Çanakkale Onsekiz Mart University	DETERMINATION OF BIOACTIVE MILK COMPONENTS IN VARIOUS CATTLE BREEDS
<i>Şule TURHAN</i> <i>Ersin Göktuğ TABAK</i>	Bursa Uludağ University	ORGANIC POULTRY PRODUCTION AND ECONOMY IN TURKEY
<i>Ersin Göktuğ TABAK</i> <i>Şule TURHAN</i>	Bursa Uludağ University	ORGANIC VEGETABLE PRODUCTION IN TURKEY
<i>Mahmut İNAL</i> <i>Prof. Dr. Yusuf TUNÇTÜRK</i>	Van Yüzüncü Yıl University, Van/Türkiye	METAGENOMIC ANALYSIS IN THE DETERMINATION OF CHEESE MICROBIOTA
<i>Aysun KULUÇLU</i> <i>Assoc. Prof. Dr. Tuğba KÖKTAŞ</i>	Süleyman Demirel University, Isparta	MICROENCAPSULATION OF PROBIOTIC MICROORGANISMS - USE IN DIFFERENT NICH PRODUCTS
<i>Assoc. Prof. Dr. Sercan KARAV</i> <i>Tuba ÇAĞIRTEKİN</i>	Çanakkale Onsekiz Mart University	PROTEIN ISOLATION AND N- GLYCAN CHARACTERIZATION OF DIFFERENT MUSHROOM SPECIES BY USING PNGase F ENZYME
<i>Meryem Kübra SATILMIŞ</i> <i>Prof. Dr. Nihat AKIN</i> <i>Dr. Arş. Gör. Talha DEMİRCİ</i> <i>Dr. Öğr. Üyesi Hale İnci ÖZTÜRK</i>	Van Yüzüncü Yıl University, Van/Türkiye Selçuk University, Konya,Türkiye Konya Gıda ve Tarım University	DETERMINATION OF PROTEOLYTIC ACTIVITIES AND PROTEASE GENES OF VARIOUS LACTOBACILLI, AND FERMENTED MILK PRODUCTION AND FOLLOW-UP WITH THE STRAIN WITH THE HIGHEST PROTEOLYTIC ACTIVITY

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SESSION-2, HALL-6/OTURUM-2, SALON-6

MODERATOR: Prof. Dr. Sıddık KESKİN

AUTHOR(S)	AFFILIATION	TITLE
Sena ÇANKAYA Prof.Dr.Miray ARLI-SÖKMEN	Ondokuz Mayıs University, Samsun, Türkiye	INVESTIGATION ON PERSIMMON CRYPTIC VIRUS INFECTION IN PERSIMMON (<i>DIOSPYROS KAKI</i> L.) ORCHARDS IN SAMSUN PROVINCE
İshak Baran Assoc. Prof. Dr. Haluk Kulaz	Van Yüzüncü Yıl University, Van, Türkiye	DETERMINATION OF THE EFFECT OF BIOLOGICAL AND ORGANIC FERTILIZATION ON YIELD AND YIELD CHARACTERISTICS OF COWPEA (<i>VIGNA SINENSIS</i>) IN VAN ECOLOGICAL CONDITIONS
Assoc. Prof. Dr. Aytekin EKİNCİALP Assoc. Prof. Dr. Çeknas ERDİNÇ Lect. Dr. Selma BİTİK Prof. Dr. Suat ŞENSOY	Van Yüzüncü Yıl University, Van, Türkiye	DETERMINATION OF SOME BIOCHEMICAL CONTENTS OF TOMATO FRUITS WHICH WERE HARVESTED IN DIFFERENT FERTILIZER APPLICATIONS AND DIFFERENT MATURITY PERIODS
Prof.Dr.Nalan TÜRKOĞLU Prof.Dr.Sıddık KESKİN	Van Yüzüncü Yıl University, Van, Türkiye	INVESTIGATION OF THE RELATIONSHIP BETWEEN SOME MORPHOLOGICAL CHARACTERISTICS IN GLADIOLUS (<i>Gladiolus grandiflorus</i>) BY CATEGORICAL PRINCIPAL COMPONENTS ANALYSIS
Elif ÖZTÜRK Hakan ÇELİK	Bursa Uludağ University, Bursa, TÜRKİYE	SOIL PRODUCTIVITY AND PLANT NUTRITION CONDITIONS OF DEVECİ PEAR GARDENS IN BURSA PROVINCE
Gökhan BOYNO Rojbin ÇEVİK Prof.Dr.Semra DEMİR	Van Yüzüncü Yıl University, Van, Türkiye	THE EFFECT OF CLONOSTACHYS ROSEA AGAINST PYTHIUM DEBARYANUM AND SCLEROTINIA SCLEROTIUM IN SOME REDUCED-DOSAGE FUNGICIDE MEDIA
Nisa Asel TATAR Eylül Hüsna AYDOĞAN Oktay CALAYIR Gökhan BOYNO Assoc. Prof. Dr. Emre DEMİRER DURAK Prof.Dr.Semra DEMİR	Van Yüzüncü Yıl University, Van, Türkiye	THE EFFECTS OF SOME ORGANIC FERTILIZERS AND GROWTH REGULATORS ON GERMINATION AND SCLEROTINIA SCLEROTIUM IN TOMATOES IN VITRO CONDITIONS
Mürşide HATİPOĞLU Muhsin YILDIZ Hasret GÜNEŞ Selma BİTİK Prof.Dr.Semra DEMİR	Van Yüzüncü Yıl University, Van, Türkiye	DETERMINATION OF THE EFFECTS OF TRICHODERMA SPECIES AGAINST FUSARIUM AND PYTHIUM DISEASE IN CUCUMBER APPLIED TO DIFFERENT GAMMA RAY DOSES (60Co)

<i>Assoc. Prof. Dr. Çeknas ERDİNÇ</i>		
<i>Rustam Kazumov</i>	Azerbaijan Agrarian University	ASSESSMENT OF THE IMMUNOGENICITY OF VACCINES AGAINST INFECTIOUS BRONCHITIS OF CHICKEN
<i>Низами Сейідаліев Мина Мамедова</i>	Azerbaijan Agrarian University	THE INFLUENCE OF A COMPLEX OF AGRICULTURAL PRACTICES ON THE GROWTH AND DEVELOPMENT OF COTTON

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SESSION-3, HALL-1/OTURUM-3, SALON-1

MODERATOR: Prof. Dr. Afaq Ahmad

AUTHOR(S)	AFFILIATION	TITLE
K Chandana P B Harshitha Afreen T Gayatri M Nissi Rebca	BRECW, JNTUH, Telangana	AUTOMATIC RAINROOF PROTECTION FOR AGRICULTURE PURPOSES
Iyswariya A Subhashini E Swathi M Thanga Dhiwan V Vijayalakshmi V	Department of ECE, R.M.K. Engineering College, Chennai, Tamilnadu	SMART AGRI-FARM MONITORING USING AN IOT SYSTEM
Prof. Dr. Afaq Ahmad Prof. Dr. Syed Mohammed Rizwan	Sultan Qaboos University, Muscat, Oman	MATHEMATICAL MORPHOLOGICAL IMAGE PROCESSING IN AGRICULTURE
VEERAPAKURAJA .T BALA KANNAN .T BHARATHI .P	Bannari Amman Institute of Technology, India	DRONE USAGE IN AGRICULTURE
Vahid Gholami Mohammad Reza Khaleghi	University of Guilan, Sowmeh Sara, 1144, Guilan, Iran.	FLOOD HAZARD ZONING USING HEC-RAS MODEL AND GEOGRAPHIC INFORMATION SYSTEM (GIS) IN THE BABOL CITY
Vahid Gholami Mohammad Reza Khaleghi	University of Guilan, Sowmeh Sara, 1144, Guilan, Iran.	MODELING THE HYDRAULIC BEHAVIOR OF RIVERS TO DESIGN A SURFACE RUNOFF DRAINAGE NETWORK (CASE STUDY: RASHT CITY)
Roghayeh Mousavi MirHassan Rasouli-Sadaghiani Ebrahim Sepehr Mohsen Barin	Urmia University, Urmia, Iran	ENRICHED-BIOCHAR EFFECTS ON PHOSPHORUS ADSORPTION BEHAVIOR IN SALINE AND NON-SALINE SOILS OF LAKE URMIA BASIN
Roghayeh Vahedi MirHassan Rasouli-Sadaghiani Mohsen Barin	Urmia University, Urmia, Iran	EFFECT OF BIOCHAR AND MICROBIAL INOCULATION ON P, Fe, and Zn BIOAVAILABILITY IN A CALCAREOUS SOIL
R. Mashhadi B. Akbari M. Karimi	University of Tehran, Tehran, 1439957131, Iran	SURFACE MODIFICATION OF POLYPROPYLENE WITH SINGLE POSS MOIETY NANOPARTICLES FOR SUPERHYDROPHOBIC APPLICATIONS

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SESSION-3, HALL-2/OTURUM-3, SALON-2

MODERATOR: Dr. Abubakar Abdulkadir

AUTHOR(S)	AFFILIATION	TITLE
<i>Aysel ERASLAN ŞAKAR Oğuz Kaan YALÇIN Ali MAZI Cengiz YILDIZ</i>	Hatay Mustafa Kemal University, Türkiye	THE EFFECT OF COENZYME Q10 ADDED TO EXTENDER ON THE ENDOPLASMIC RETICULUM STRESS PATHWAY IN FREEZING MOUSE SPERM
<i>Moses Adeolu AGOI Oluwadamilola Peace AGOI</i>	Lagos State University of Education, Lagos Nigeria.	HEALTH AND DNA COMPUTING: IMPLICATION ON HUMAN AND ANIMALS
<i>Nikola PUVAČA Erinda LIKA</i>	University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Department of Biotechnology, Novi Sad, Serbia	INFLUENCE OF KETAMINE-BASED ANESTHESIA ON THE SURVIVAL RATE OF SPHYNX CATS
<i>Nikola PUVAČA Erinda LIKA Vojislava BURSIC Aleksandra PETROVIĆ Gorica VUKOVIĆ</i>	University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Department of Biotechnology, Novi Sad, Serbia	EFFECTS OF ESSENTIAL OIL IN MYCOPLASMA (Mycoplasma synoviae) THERAPY AND TABLE EGGS QUALITY OF LAYING HENS
<i>Onyinyechukwu Ada AGINA Mohd Rosly SHAARI Nur Mahiza Md ISA Mokrish AJAT Mohd Zamri SAAD Hazilawati HAMZAH</i>	University of Nigeria, Nsukka, Enugu State, Nigeria Malaysian Agricultural Research and Development Institute, Serdang, Selangor, Malaysia Universiti Putra Malaysia, Selangor, Malaysia	DETERMINING THE STAGE OF ANAPLASMA MARGINALE INFECTION IN FIELD BLOOD SAMPLES FROM CATTLE USING REAL-TIME PCR: HAEMATOLOGY AND SERUM BIOCHEMISTRY FINDINGS
<i>Alaa Sabeeha Ekaterina N. Lazarevaa Omnia Hamdyc Valery V. Tuchina</i>	Saratov State University, Saratov 410012, Russia University of Baghdad, Baghdad, Iraq Cairo University, Giza Governorate 12613, Egypt Tomsk State University, Tomsk, Russia FRC "Saratov Scientific Centre of the Russian Academy of Sciences," Saratov 410028, Russia	ANIMAL TISSUE OPTICAL PROPERTIES ESTIMATION FOR USE IN VETERINARY MEDICINE AND FOOD INDUSTRY
<i>Kaberi PRAMANIK</i>	Banasthali Vidyapith University, India	VETERINARY AN OVERVIEW
<i>Dr. Abubakar Abdulkadir</i>	Department of Islamic Studies, Umaru Musa Yar'adua University, Katsina, Nigeria	ISLAMIC LEGAL TRADITION AND ANIMAL WELFARE: A SURVEY OF THE ATTITUDE OF LIVESTOCK HOLDERS VIS-A-VIS ANIMAL

		WELFARE IN KATSINA STATE, NIGERIA
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SESSION-3, HALL-3/OTURUM-3, SALON-3

MODERATOR: Dr. SZJ Zaidi

AUTHOR(S)	AFFILIATION	TITLE
<i>Narimane Mahani Oumaima Bourzik Khadija Baba Mohammed Lamrani Abderrahman Nounah</i>	Civil Engineering and Environment Laboratory (LGCE), Mohammadia Engineering School, Mohammed V University, Rabat, Morocco	WOOD WASTE REUSE FOR ACOUSTIC INSULATION PANELS IN RESIDENTIAL BUILDINGS
<i>Nouman Rahisuddin</i>	Jamia Millia Islamia, New Delhi 110025, India	4-BROMO-1,8-NAPHALAMIDE DERIVATIVES AS AN ANTIFUNGAL AGENT: SYNTHESIS, CHARACTERIZATION, DNA BINDING, MOLECULAR DOCKING, ANTIOXIDANT AND ADMET STUDIES
<i>Prairna Balyan Ahmad Ali</i>	Department of Life Sciences, University of Mumbai, Mumbai, India	PHYTOCHEMICAL ANALYSIS AND BIOLOGICAL ACTIVITIES OF DIFFERENT EXTRACTS OF NIGELLA SATIVA SEEDS
<i>Additiya Paramanya Ahmad Ali</i>	Department of Life Sciences, University of Mumbai, Mumbai, India	PHYTOCHEMICAL ANALYSIS AND BIOLOGICAL ACTIVITIES OF DIFFERENT EXTRACTS OF NIGELLA SATIVA SEEDS
<i>Dr. Ihim Augustine Chinedu Ifekandu Odumodu Prof. Dr. Meludu Samuel Chukwuemeka Mr Chukwudi Victor Nkwachukwu Dr Okwara John Ekenedirichukwu</i>	Nnamdi Azikiwe University, Awka, Nigeria Imo State University Owerri, Nigeria	EVALUATION OF PLASMA GLUCOSE, INSULIN AND GLYCATED HAEMOGLOBIN LEVELS AMONG MALE DAILY BREAD CONSUMERS
<i>Afifa Baig Radhey Mohan Yadav Kapil Pandey Saimah Khan</i>	Department of Chemistry, Integral University, India	THE COMPARISON STUDY OF EXTRACTION PROCESSES OF ESSENTIAL OIL OBTAINED FROM BLACK PEPPER
<i>Nehakumari N. Gohil</i>	M. K. Amin Arts and Science College & College of Commerce, Padra, The M. S. University of Baroda, Vadodara-391440, Gujarat, India	SYNTHESIS, CHARACTERIZATION AND EVALUATION OF SOME BIOLOGICAL ACTIVITY OF NEW [1,2,3]-TRIAZOLE-CHALCONE DERIVATIVES

<i>Dr. SZJ Zaidi</i>	Institute of Chemical Engineering and Technology, University of the Punjab, Lahore, Pakistan	POINT OF CARE DIAGNOSTICS BY USING BENDABLE ENGINEERED NANO BIOSENSORS FOR CANCER AND VIRAL DETECTION
<i>Lekan Taofeek Popoola Adeyinka Sikiru Yusuff</i>	Afe Babalola University, Ado-Ekiti, Ekiti State, Nigeria	BIODEGRADATION EFFECTS OF CRUDE OIL-POLLUTED WATER USING BACTERIA ISOLATES FROM SUNFLOWER HUSK ON FISH GROWTH: PARAMETRIC OPTIMIZATION USING TAGUCHI APPROACH
<i>Anuradha Pandey Dubey Madhuri Sharon</i>	Parishkar College of Global Excellence, Jaipur, Rajasthan, India	CNF A COUSIN OF CNT IS OFFERING A NEW ARENA FOR NANOMEDICINE STUDIES

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SESSION-3, HALL-4/OTURUM-3, SALON-4

MODERATOR: Assoc. Prof. Dr. Gülsüm YALDIZ

AUTHOR(S)	AFFILIATION	TITLE
Bahtiyar Aydın ÜRÜN Assoc. Prof. Dr. Erdinç BAL	Tekirdağ Namık Kemal University, Tekirdağ	EFFECTS OF SEMPERFRESH, SALICYLIC ACID AND METHYL SALICYLATE APPLICATIONS ON FRUIT QUALITY OF DURING STORAGE OF DEVECİ PEAR VARIETY
Assoc. Prof. Dr. Tülay TUNÇAY	Toprak Gübre ve Su Kaynakları Merkez Araştırma Enstitüsü, Yenimahalle, Ankara	THE EXTENT OF DESERTIFICATION AND LAND DEGRADATION IN THE WORLD AND TURKEY AND ITS INTERACTION WITH CLIMATE CHANGE
Assoc. Prof. Dr. Ahmet Raif ERYAŞAR	Recep Tayyip Erdoğan University	INVESTIGATIONS ON THE DISCARD REDUCTION IN THE BEAM TRAWLS USED IN THE VEINED RAPA WHELK FISHERY IN THE EASTERN BLACK SEA
Mahmut ÇAMLICA Assoc. Prof. Dr. Gülsüm YALDIZ	Bolu Abant İzzet Baysal University	DETERMINATION OF SOME PHENOLOGICAL CHARACTERISTICS OF WINTER-SOWN OF SELECTED FENUGREEK GENOTYPES UNDER BOLU ECOLOGICAL CONDITIONS
Assoc. Prof. Dr. Gülsüm YALDIZ Mahmut ÇAMLICA	Bolu Abant İzzet Baysal University	DETERMINATION OF THE GENETIC DIFFERENCES OF THE SELECTED FENNEL GENOTYPES BASED ON SOME PHENOLOGICAL CHARACTERISTICS
İsmail NANELİ	Sakarya University of Applied Sciences, Sakarya	DETERMINATION OF YIELD AND YIELD COMPONENTS OF SOME PADDY CULTIVARS IN DIFFERENT LOCATIONS
Ünal KARIK	Ege Tarımsal Araştırma Enstitüsü- Menemen/İZMİR	THE EFFECT OF TUBER SIZE ON YIELD AND QUALITY IN SALEP ORCHIDS
Assist. Prof. Dr. Duygu BUDAK Prof. Dr. Aydan YILMAZ	Aksaray University, Aksaray, Turkey Ankara University, Ankara, Turkey	RELATIONS BETWEEN ROUGHAGE AND INACTIVE YEAST
Mevlûde TATAR	Alata Horticulture Research Institute, 33740, Mersin, Turkey	GRAFTING STUDIES ON VEGETABLES

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SESSION-3, HALL-5/OTURUM-3, SALON-5

MODERATOR: Assoc. Prof. Dr. Reyhan YERGIN ÖZKAN

AUTHOR(S)	AFFILIATION	TITLE
<i>Alpaslan Şevket ACAR Seyid Amjad ALİ Muhammad ASİM</i>	Sivas University of Science and Technology, Sivas, Turkey	APPLICATION OF MACHINE LEARNING AND ARTIFICIAL NEURAL NETWORK MODELS FOR IN VITRO REGENERATION OF BLACK MULBERRY (<i>Morus nigra</i> L.)
<i>Elen İNCE</i>	Biological Control Research Institute, Adana, Turkey	EFFECTS OF CLIMATE CHANGE ON PLANT DISEASES
<i>Merve KEKLİK Melike BAKIR</i>	Erciyes University, Kayseri, Türkiye	DETERMINATION OF TRANSFERABILITY OF GENOMIC SSR MARKERS DEVELOPED IN CULTIVATED LENTIL (<i>LENS CULINARIS</i> MEDIK.) TO WILD LENTIL SPECIES
<i>Hasan KARAOSMANOĞLU</i>	Giresun University	DETERMINATION OF CHLOROPHYLL LEVELS OF NATURAL, ROASTED HAZELNUTS AND THEIR SKINS GROWN BY DIFFERENT METHODS
<i>Eren ATEŞ Assoc. Prof. Dr. M. Alp FURAN Merve Dilek KARATAŞ Gülistan GENLİ</i>	Van yüzüncü Yıl University, Van, Türkiye	COMPARISON OF SOME YIELD AND QUALITY CHARACTERISTICS OF HULLED AND HULL-LESS BARLEY CULTIVARS IN SOUTHEASTERN ANATOLIA REGION CONDITIONS
<i>Abdulveli SİRAT</i>	Gümüşhane University	DETERMINATION OF YIELD AND YIELD COMPONENTS OF SOME TWO-ROWED BARLEY (<i>Hordeum vulgare</i> conv. <i>distichon</i>) CULTIVARS CULTIVATED IN SEMI-ARID CONDITIONS
<i>Azat BALİ Assoc. Prof. Dr. Reyhan YERGIN ÖZKAN</i>	Van Yüzüncü Yıl University, Van, Türkiye	WEED PROBLEM IN CORN PRODUCTION IN DİYARBAKIR, TURKEY
<i>Zuhal Zeynep AVŞAROĞLU Aidana SUGİRBKOVA Mehmet HAMURCU Sait GEZGİN</i>	Selçuk University, Konya, Türkiye	THE EFFECT OF TREHALOSE APPLICATION UNDER BORON STRESS ON THE ANTIOXIDANT DEFENSE MECHANISM OF BREAD WHEAT ROOTS
<i>Elhan Recep Allahverdiyev Medine Hasan Abışova</i>	Azərbaycan Devlet Təric Üniərsiteti, Gence, Azərbaycan	EFFECT OF INTERCROPPING OF CORN AND SOYBEAN ON FORAGE YIELD AND ROOT PROPERTIES

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SESSION-3, HALL-6/OTURUM-3, SALON-6

MODERATOR: Prof. Dr. Mehmet Ufuk KASIM

AUTHOR(S)	AFFILIATION	TITLE
<i>Rezzan Kasım</i> <i>Prof. Dr. Mehmet Ufuk KASIM</i>	Kocaeli University, Kocaeli, Turkey	POSTHARVEST USE IN HORTICULTURAL CROPS OF PLANT-BASED ANAEROBIC RESPIRATION PRODUCTS
<i>Prof. Dr. Mehmet Ufuk KASIM</i> <i>Rezzan Kasım</i>	Kocaeli University, Kocaeli, Turkey	A NEW APPROACH IN CROP PRODUCTION: TERRACE-BALCONY GARDENS
<i>Dr. İlker DEMİRBOLAT</i> <i>Ezgi ERKAN</i> <i>Murat KARTAL</i> <i>Prof. Dr. Murat TUNÇTÜRK</i>	Sage Botanyics Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölümü	CHEMICAL COMPOSITION, ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES OF EVERLASTING (<i>Helichrysum italicum</i> (Roth) G. Don) ESSENTIAL OIL
<i>Sema BAŞBAĞ</i> <i>Nazlı AYBAR YALINKILIÇ</i> <i>Şilan ÇİÇEK</i>	Dicle University, Diyarbakır, Türkiye Muş Alparslan Üniversitesi, Muş, Türkiye	INVESTIGATION OF THE AGRONOMIC CHARACTERISTICS OF SOME FALSE FLAX (<i>CAMELINA SATIVA</i> L. CRANTZ) GENOTYPES UNDER DIYARBAKIR ECOLOGICAL CONDITIONS
<i>Assistant Professor Dr. Ramazan</i> <i>GÜRBÜZ</i> <i>Harun ALPTEKİN</i>	Iğdır University, Iğdır, Türkiye	THE EFFECT OF ORGANIC MULCH MATERIALS ON WEED CONTROL IN CUCUMBER (<i>CUCUMIS SATIVUS</i> L.) CULTIVATION
<i>Mustafa YILMAZ</i> <i>Cenk Burak ŞAHİN</i>	Oil Seed Research Institute, Cevdetiye-Osmaniye/TURKEY	THE EFFECT OF DIFFERENT PLANT GROWTH REGULATORS ON SOME YIELD AND QUALITY CHARACTERISTICS OF PEANUT (<i>Arachis hypogaea</i> L.)
<i>Prof. Dr. Belgin COŞGE</i> <i>ŞENKAL</i> <i>Tansu USKUTOĞLU</i>	Yozgat Bozok University, Yozgat, Turkey	EVALUATION OF CHEMICAL COMPOSITION AND BIOAVAILABILITY OF INDUSTRIAL HEMP (<i>Cannabis sativa</i> L.) ESSENTIAL OIL
<i>Tansu USKUTOĞLU</i>	Yozgat Bozok University, Yozgat, Turkey	MICROPROPAGATION OF <i>Origanum acutidens</i> (Hand.-Mazz.) Ietswaart UNDER IN VITRO CONDITIONS AND DETERMINATION OF SOME AGRONOMIC PROPERTIES
<i>Prof. Dr. Işık TEPE</i> <i>Eren ERGÜN</i>	Van Yüzüncü Yıl University, Van, Türkiye	EFFECT OF ABSINTH WORMWOOD (<i>Artemisia</i> <i>absinthium</i> L.) AND WALNUT (<i>Juglans regia</i> L.) EXTRACTS ON SEED GERMINATION OF SOME CULTIVATED PLANTS AND WEEDS

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SESSION-1, HALL-1/OTURUM-1, SALON-1

MODERATOR: Dr. Amir KARIMI

AUTHOR(S)	AFFILIATION	TITLE
Sonila COCOLI Nikola PUVAČA	Agricultural University of Tirana, Faculty of Veterinary Medicine, Tirana, Albania	CAPABILITY OF BIOFILM DEVELOPMENT THE DIFFERENT STRAINS OF SALMONELLA ENTERITIDIS AND INHIBITORY EFFECT OF ESSENTIAL OILS ON THE INITIAL ADHESION
Galapago, Ma. Christel M. Pilien, David P. De Guzman, Ronel S.	President Ramon Magsaysay State University, Zambales, Philippines	IN SITU SOIL CHEMICAL AND PHYSICAL ANALYSIS OF THE SWEETEST CARABAO MANGOES OF ZAMBALES
Amir KARIM Parvaneh BANDEH-ELAHI Shahryar BEHROUZI Elham HAGHVIRDILOU	University of Tabriz, Faculty of Ahar Agriculture & Natural Resources, Department of Animal Science, Tabriz, Iran	STUDY OF RED MEAT PRODUCTION IN BROILER CHICKS BY MANIPULATION OF THYROID HORMONES
Amir KARIMI Najm-aldin MOHAMMADI Shahryar BEHROUZI Davoud KĀNĪFARD	University of Tabriz, Faculty of Ahar Agriculture & Natural Resources, Department of Animal Science, Tabriz, Iran	EFFECTS OF TRANSIENT HYPO-AND HYPERTHYROIDISM IN SEMINIFEROUS TUBULAR DIAMETER AND SERTOLI CELL POPULATION IN MALE JAPANESE QUAILS
Amir KARIMI Behzad PARSA Shahryar BEHROUZI Davoud KĀNĪFARD Zabihallah NEMATI	University of Tabriz, Faculty of Ahar Agriculture & Natural Resources, Department of Animal Science, Tabriz, Iran	EFFECTS OF HYDROALCOHOLIC EXTRACTS OF MEDICINAL PLANTS ON HISTOLOGICAL INDICES INDICES OF REPRODUCTIVE ORGANS IN MALE JAPANESE QUAILS
Tehreem Ali Arslan Sarwar Mian Muhammad Khubaib Sattar Rabia Manzoor Muhammad Asad Ali Aftab Ahmad Anjum	University of Central Punjab, Lahore, Pakistan The Islamia University of Bahawalpur, Bahawalpur, Punjab, Pakistan University of Veterinary and Animal Sciences, Lahore, Pakistan	MOLECULAR CHARACTERIZATION AND ANTIBIOTICS RESISTANCE PATTERN OF CLOSTRIDIUM PERFRINGENS TYPE A ISOLATED FROM NECROTIC ENTERITIS
ANDERSINA-SIMINA PODAR Anca-Corina FĂRCAȘ Sonia-Ancuța SOCACI	University of Agricultural Sciences and Veterinary Medicine from Cluj- napoca, Romania, Faculty of Food Science and	RECENT RESEARCHES FOR COENZYME Q10 FROM FOOD

<i>Cristina-Anamaria SEMENIUC</i> <i>Maria-Ioana SOCACIU</i> <i>Melinda FOGARASI</i>	Technology, Department of Food Science, Cluj-Napoca, Romania	MATRICES. SUPPLEMENTATION IN AGING AND DISEASES
<i>Ehizogie J. FALODUN</i> <i>Phebe Asanga</i>	University of Benin, Nigeria	PRODUCTIVITY OF SOYBEAN (<i>Glycine max</i> (L.) Merrill) AS INFLUENCED BY TIME OF FERTILIZER APPLICATION AND ROW SPACING

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SESSION-1, HALL-2/OTURUM-1, SALON-2

MODERATOR: Assoc. Prof. Gökşen ÇAPAR

AUTHOR(S)	AFFILIATION	TITLE
ADENIRAN Adebayo Adeniyi AGBAJE, IyanuOluwa OLADIRAN Sunday OGUNTADE Mariam Iyabode	Federal College of Agriculture, Ibadan, Oyo State, Nigeria	FACTORS INFLUENCING ADOPTION OF SUSTAINABLE AGRICULTURAL PRACTICES AMONG MAIZE FARMERS IN AKINYELE LOCAL GOVERNMENT AREA OF OYO STATE
Adeniran A. A. Akinpelu O. A. Omoyajowo A. O. Oyediran W. O.	Federal College of Agriculture, Ibadan, Oyo State, Nigeria Federal Ministry of Agriculture, Abeokuta, Ogun State, Nigeria	KNOWLEDGE AND PREVENTIVE MEASURES OF COVID-19 AMONG ARABLE CROP FARMERS' IN IDO LOCAL GOVERNMENT AREA OF OYO STATE, NIGERIA
Arigbo Precious Obinna	University of Nigeria Nsukka	EFFECTS OF NATIONAL YOUTH SERVICE CORPS COMMUNITY DEVELOPMENT SERVICE (NYSC CDS) ON COMMUNITIES IN ABIA STATE, NIGERIA
YEOH ZHI YEE HERMAN SHAH ANUAR	University Utara Malaysia, Malaysia	THE IMPACT OF HEAD OF INTERNAL AUDIT GENDER, INTERNAL AUDIT RESOURCES AND INTERNAL AUDIT SPENDING ON INTERNAL AUDIT EFFECTIVENESS: EVIDENCE FROM MALAYSIA
Ojo, O.F Dimelu, M.U	University of Nigeria, Nsukka. Nigeria	CONSTRAINTS AND STRATEGIES FOR IMPROVING AGRICULTURAL INTERVENTION PROJECTS IN NIGERIA: EXPERIENCE FROM MULTINATIONAL NERICA RICE DISSEMINATION PROJECT IN EKITI STATE, NIGERIA
Assoc. Prof. Gökşen Çapar Özlem Taşkın Buse Uçar Tolga Pilevneli Dr. Ertuğ Erçin	Ankara University, Water Management Institute, Ankara, Turkey	CROSS-BORDER CLIMATE VULNERABILITIES OF AGRI-FOOD TRADE SYSTEMS: TURKEY-EUROPE-AFRICA
Nguyen Thanh Binh Le Van Thuy Tien	Can Tho University, Vietnam	AGRICULTURAL DEVELOPMENT UNDER CLIMATE CHANGE CONTEXT – A CASE OF RICE PRODUCTION IN THE VIETNAMESE MEKONG DELTA

<i>Jane Mbolle Chah Ifeoma Quinette Anugwa Ifeanyi Miracle Nwafor</i>	University of Nigeria, Nsukka, Nigeria	FACTORS DRIVING ADOPTION AND CONSTRAINING THE NON-ADOPTION OF BIOFORTIFIED ORANGE FLESHED SWEET POTATOES (OFSP) AMONG FARMERS IN ABIA STATE, NIGERIA
<i>Ifeoma Quinette Anugwa Precious Chinenye Agbo Agwu Ekwe Agwu</i>	University of Nigeria, Nsukka, Nigeria	GENDER DIFFERENCES IN PERCEIVED VULNERABILITY AND ADAPTATION STRATEGIES TO CLIMATE CHANGE EFFECTS ON ARABLE CROP PRODUCTION IN ENUGU STATE, NIGERIA

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SESSION-1, HALL-3/OTURUM-1, SALON-3

MODERATOR: Dr. K.S Chandrasekar

AUTHOR(S)	AFFILIATION	TITLE
<i>Naureen Maqbool Mumtaz Ahmed, PhD</i>	Department of Economic Comsats University Islamabad	EVIDENCE OF BUBBLES IN PAKISTAN AND ITS MAJOR TRADING PARTNERS' STOCKS MARKET'S
<i>Asha Devi.J. Sumi A M Dr. K.S Chandrasekar</i>	University of Kerala, Thiruvananthapuram, Kerala, INDIA.	FUTURE OF FOOD SUPPLY CHAIN MANAGEMENT IN INDIAN AGRICULTURE
<i>Dr. Ehsan Rasoulinezhad</i>	Faculty of World Studies, University of Tehran, Iran	HOW ARE ENERGY AND AGRICULTURAL COMMODITY PRICES RELATED?
<i>Marija SUDAR Nikola PUVAČA Marko CARIĆ</i>	University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Novi Sad, Serbia	CONCEPTUALISING SUSTAINABLE DEVELOPMENT OF AGRICULTURAL ECONOMICS IN EUROPEAN UNION FRAMEFORK
<i>Marija SUDAR Nikola PUVAČA Sandra BRKANLIĆ Jelena VAPA TANKOSIĆ Marko CARIĆ</i>	University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Novi Sad, Serbia	THE SERBIA CYCLICAL EVOLUTION OF AGRICULTURAL ECONOMICAL GROWTH AND AGRICULTURAL SUPPORT POLICIES
<i>Fawad Ullah Baig Mumtaz Ahmed</i>	COMSATS University Islamabad (CUI), Islamabad, Pakistan	TIME VARYING CONNECTEDNESS AMONG FUEL PRICES IN ENERGY ECONOMY USING A TIME- FREQUENCY BASED FRAMEWORK
<i>Saman Razzaq Mumtaz Ahmed</i>	COMSATS University Islamabad (CUI), Islamabad, Pakistan	INTERCONNECTEDNESS AMONG EXCHANGE RATE MARKETS OF PAKISTAN WITH ITS MAJOR TRADING PARTNERS
<i>Masoumeh Hosseini Mohsen Barin Mir Hassan Rasouli- Sadaghiani Farrokh Asadzadeh</i>	Urmia University, Urmia, Iran	OPTIMIZATION OF BIOFERTILIZER FORMULATION FOR PHOSPHORUS SOLUBILIZING: APPLICATION OF RESPONSE SURFACE METHODOLOGY
<i>Muhammad Tahir Mumtaz Ahmed, Ph.D.</i>	Department of Economics, COMSATS University Islamabad	GENERALIZED FINANCIAL STRESS INDEX AND REGIMES IN CASE OF PAKISTAN

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SESSION-1, HALL-4/OTURUM-1, SALON-4

MODERATOR: Assist. Prof. Dr. Hasan KOYUN

AUTHOR(S)	AFFILIATION	TITLE
Assist. Prof. Dr. Hasan KOYUN Selahaddin KİRAZ Seyrani KONCAGÜL	Van-Yuzuncu Yil University, Van, Turkey	EXPLOITING OF NEXT GENERATION SEQUENCING (NGS) PLATFORMS IN LIVESTOCK GENOMES
Ferit YILDIZ Prof.Dr.Musa GENCCLEP	Ministry Of Agriculture And Forestry, Provincial Directorate Of Mus, Mus, Türkiye Van-Yuzuncu Yil University, Van, Turkey	THE USE OF TILMICOSIN AND CEFQUINOMA IN THE TREATMENT OF FOOT ROT
Assist. Prof. Dr. Şükrü DEĞİRMENÇAY	Atatürk University, Erzurum, Türkiye	CONGESTIVE HEART FAILURE IN A CALF WITH RESPIRATORY DISTRESS SYNDROME
Berna YANMAZ	Burdur Mehmet Akif Ersoy University, Burdur, Turkey	USE OF INFRARED THERMOGRAPHY FOR DETERMINING MEAT QUALITY
Nurşin AYDIN Şerife YAY Fatma ÇELENK Bayram BAYRAM	Dicle University, Turkey	HISTOLOGICAL STRUCTURE OF THE TRACHEA AND THE HISTOCHEMICAL PROFILE OF MUSINS SYNTHETIC FROM EPITELS AND GLANDS IN PARTRIDGE (ALECTORIS CHUKAR)
Merve İDER	Selçuk Üniversitesi University, Turkey	THE RELATIONSHIP OF SOME BLOOD GAS PARAMETERS WITH MORTALITY IN CALVES WITH VIRAL ORIGIN NEONATAL DIARRHEA
Assist. Prof. Dr. Halil YAVUZ Assist. Prof. Dr. Muhammet Hanifi SELVİ Assist. Prof. Dr. Yavuzkan PAKSOY	Necmettin Erbakan University, Konya, Türkiye	EVALUATION OF SOME BIOCHEMICAL PARAMETERS RELATED TO LIVER DISEASES IN RACE HORSES
Özden SARIKAYA Kürşat ALKOYAK Yusuf KAPLAN Şerife SERTKAYA Süleyman ASLAN	T.C. Tarım ve Orman Bakanlığı, Tarımsal Araştırmalar ve Politikalar Genel Müdürlüğü, Hayvancılık ve Su Ürünleri Araştırma Daire Başkanlığı Ankara, Türkiye	HISTORICAL DEVELOPMENT AND SUPPORT MODEL OF THE ANATOLIAN WATER BUFFALO BREEDING PROJECT IMPLEMENTED IN TÜRKİYE

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SESSION-1, HALL-5/OTURUM-1, SALON-5

MODERATOR: Assist. Prof. Dr. Fevzi ALTUNER

AUTHOR(S)	AFFILIATION	TITLE
Elif ÇELİK Doğan AKÇA	Kafkas University, Kars, Türkiye	THE COURSE OF DISEASE, CURRENT SITUATION, AND CONTROL AND ERADICATION APPROACHES TO BRUCELLOSIS IN ANIMALS IN KARS REGION (TURKEY)
Çağrı KALE Nuriye Tuğba BİNGÖL	Van Yüzüncü Yıl University, Van, Türkiye	THE EFFECTS OF SUNFLOWER OIL AND SELENIUM SUPPLEMENTATION TO LAYING HEN DIET ON EGG YOLK FATTY ACID COMPOSITION, EGG SELENIUM CONCENTRATION AND SOME BLOOD PARAMETERS
Aliye GÜLMEZ SAĞLAM Semra KAYA	Kafkas University, Kars, Türkiye	RESEARCHES ON ETIOLOGY AND PREVALENCE OF SUBCLINICAL MASTITIS IN CATTLE, AND PROTECTION OF UDDER HEALTH
Assoc. Prof. Dr. Muhammet Kaya Esra Gül	Eskişehir Osmangazi University, Eskişehir, Türkiye	INVESTIGATION OF ENDOGENOUS VIRUSES IN TURKISH DOMESTIC CHICKEN BREEDS
Ilkin Ganbarly Emma Agayeva	Azərbaycan Tarım Universiteti, Bakü, Azərbaycan Azərbaycan Tıp Universiteti, Bakü, Azərbaycan	DETECTION OF CAUSATIVE AGENTS OF DIARRHEAL DISEASES OF VIRUS-BACTERIAL ETIOLOGY IN SERVICE DOGS IN AZERBAIJAN
Eda Nur OKMAN Süleyman KOZAT	Yuzuncu Yil University, Van, Turkey	BACTERIAL AGENTS CAUSING DIARRHEA IN NEWBORN LAMBS
Eda Nur OKMAN Süleyman KOZAT	Yuzuncu Yil University, Van, Turkey	VIRAL AGENTS CAUSING DIARRHEA IN NEWBORN LAMBS
Assist. Prof. Dr. Fevzi ALTUNER Burak ÖZDEMİR Sana JAMAL SALİH Assoc. Prof.Dr.Erol ORAL Prof.Dr.Mehmet ÜLKER	Van Yüzüncü Yıl University, Van, Turkey	THE EFFECTS OF CHEMICAL FERTILIZER AND RHISOBACTERIAL (PGPR) COMBINATIONS ON YIELD AND YIELD PROPERTIES IN BARLEY VARIETIES
Ozay GULES Mustafa YILDIZ	University of Afyon Kocatepe, Afyonkarahisar, Turkey Canakkale Onsekiz Mart University, Canakkale, Turkey	THE EFFECT OF HERBAL EXTRACT MIXTURE (DIGESTAROM) SUPPLEMENTATION TO DIETS ON DUODENUM AND ILEUM HISTOLOGY IN BROILER CHICKENS

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SESSION-2, HALL-1/OTURUM-2, SALON-1

MODERATOR: Dr.C.Vijai

AUTHOR(S)	AFFILIATION	TITLE
<i>Major Giurgiu Gheorghe Prof. Dr. Cojocaru Manole</i>	Deniplant-Aide Sante Medical Center, Biomedicine, Bucharest, Romania	GUT DYSBIOSIS IN DOGS WITH SPINAL CORD INJURY: IMPACT OF POLENOPLASMIN
<i>Anamika GAUTAM</i>	Banasthali Vidyapith, Jaipur, India	COMBINATION THERAPY IN ASTHMA: A REVIEW
<i>Momna Mehmood Muhammad Naeem Faisal Alishbah Roobi Noreen Aslam Aiza Kamal Khan</i>	University of Agriculture Faisalabad, Pakistan	IDENTIFYING THE WNT/BETA CANTENINPATHWAY AND miRNA CROSS TALK OVER THE EXPRESSION LEVEL OF CHEK2 AND LRPIB TUMOR SUPPRESSOR GENE IN BREAST CANCER
<i>Rupal Devi</i>		HEALTH AND CULTURE
<i>Dr.C.Vijai Dr.Worakamol Wisetsri Dr.Purushothaman.N</i>	Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology-INDIA King Mongkut's University of Technology North Bangkok, THAILAND, Patrician College of Arts and Science, Chennai, INDIA	AIR POLLUTION IMPACTS OF HUMAN HEALTH AND THE ENVIRONMENT
<i>Parisa Ehteshamnia Maziar Mozaffari Falarti</i>	University of Tehran	POPULARITY OF HERBAL, HOLISTIC AND ALTERNATIVE REMEDIES IN FIGHTING AGAINST COVID-19 IN THE TRADITIONAL MEDICINES OF THE INDIAN SUBCONTINENT
<i>Deema Rahme</i>	Beirut Arab University, Beirut, Lebanon	PREVALENCE OF ANTIBIOTIC SELF- MEDICATION BY LEFTOVERS IN THE LEBANESE POPULATION
<i>Sabina Khanam</i>	Yobe State University, Nigeria	THE INCIDENCE OF MALARIA AMONG PATIENTS WITH DIFFERENT BLOOD GROUPS ATTENDING SPECIALIST HOSPITAL DAMATURU, YOBE STATE
<i>Assoc. Prof. Dr. Sevgi Gezici Prof. Dr. Nazim Sekeroglu</i>	Gaziantep University, Faculty of Medicine, Department of Medical Biology	PHARMACOLOGICAL AND BIOLOGICAL ACTIVITIES OF POMEGRANATE PEELS

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SESSION-2, HALL-2/OTURUM-2, SALON-2

MODERATOR: Prof. Syed Ibrahim Rizvi

AUTHOR(S)	AFFILIATION	TITLE
<i>Muhammad Saeed Misbah Yasin Majid Muneer Muhammad Usman</i>	Government College University Faisalabad, Pakistan	DEVELOPMENT OF Bi ₂ O ₃ -ZnO HETEROSTRUCTURE FOR ENHANCED PHOTODEGRADATION OF RHODAMINE B AND REACTIVE YELLOW DYES
<i>Mohammed ElSaid SARHANI Mohamed Abdelilah FADLA Mohamed Lamine BELKHIR Bachir BENTRIA Tahar DAHAME</i>	Université Amar Telidji de Laghouat, Algeria.	AN EFFICIENT LEAD FREE PEROVSKITE BASED SOLAR CELL SIMULATED USING SCAPS-1D
<i>Mohamed Amine BELKHIR Mohamed Elsaid Sarhani Ahmed Gueddouh</i>	Université Amar Telidji de Laghouat, Algérie.	FIRST PRINCIPLES STUDY ON OPTO- ELECTRONIC UNDER PRESSURE EFFECT OF TiO ₂ AS ELECTRON TRANSPORT MATERIAL FOR PEROVSKITES SOLAR CELLS
<i>Mansoor Khan Luqman Ali Shah</i>	University Of Peshawar, KPK Pakistan	HIGHLY SUSTAINABLE HYDROPHOBICALLY ASSOCIATED DOUBLE NETWORK HYDROGELS AS ADVANCED FLEXIBLE STRAIN SENSORS
<i>Gideon Oluwaseun Olayioye Promise Goodness Adeleye Oludare O. Osiboye Aderemi Timothy Adeleye</i>	Nigeria Immigration Services (NIS), Lagos State, Nigeria	SYSTEMATIC REVIEWS ON GLOBAL CLIMATE CHANGE IMPACTS, ENVIRONMENTAL RISKS & 2030 SUSTAINABLE AGENDA
<i>Gideon Oluwaseun Olayioye Promise Goodness Adeleye Oludare O. Osiboye Aderemi Timothy Adeleye</i>	Nigeria Immigration Services (NIS), Lagos State, Nigeria	SYSTEMATIC REVIEWS ON GLOBAL CLIMATE CHANGE IMPACTS, ENVIRONMENTAL RISKS & 2030 SUSTAINABLE AGENDA
<i>Jitendra Kumar Arya Prof. Syed Ibrahim Rizvi</i>	University of Allahabad, Allahabad- 211002, Uttar Pradesh, India	ROLE OF 3-BROMOPYRUVATE AS A NEUROPROTECTOR THROUGH AUTOPHAGY ACTIVATION IN AGED RATS
<i>K. D. Ahire A. M. Datir</i>	Commerce and Dadasaheb Rupwate Science College, Akole, (MS), India	EXPLORATION OF PHYSICO- CHEMICAL PROPERTIES OF ORGANIC TRADITIONAL LEATHER WASTE

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SESSION-2, HALL-3/OTURUM-2, SALON-3

MODERATOR: A G Gerezgiher

AUTHOR(S)	AFFILIATION	TITLE
<i>Nour El Houda tahiri Najoua SOULO Hamza Saghrouchni Lyoussi badiaa Lrhorfi Lalla Aicha</i>	Ibn Tofail University, Kenetra, Morocco Çukurova University, Adana, Turkey Sidi Mohamad Ben Abdellah University, Fez 30000, Morocco	PHYTOCHEMICAL STUDY AND ANTIOXIDANT ACTIVITY OF LEAVES ESSENTIAL OIL OF LAURUS NOBILIS
<i>Rutuja Mandavkar Rakesh Kulkarni Shusen Lin Shalmali Burse Md. Ahasan Habib Sundar Kunwar Adel Najjar S.Assa Aravindh Jae-Hun Jeong</i>	Department of Electronic Engineering, College of Electronics and Information, Kwangwoon University, Nowon-gu Seoul 01897, South Korea.	Development of an ultrasensitive biosensor for electrochemical detection of H ₂ O ₂ based on the highly porous Pt/CuO/Pt hybrid electrode
<i>Rakesh Kulkarni Sundar Kunwar Rutuja Mandavkar Jae-Hun Jeong Jihoon Lee</i>	Department of Electronic Engineering, College of Electronics and Information, Kwangwoon University, Nowon-gu Seoul 01897, South Korea.	Non-enzymatic super porous hybrid CuO/Pt NPs platform for detection of hydrogen peroxide (H ₂ O ₂) and various other bio- molecules
<i>Shalmali Burse Rutuja Mandavkar Shusen Lin Rakesh Kulkarni Sanchaya Pandit Sundar Kunwar Jihoon Lee</i>	Department of Electronic Engineering, College of Electronics and Information, Kwangwoon University	Detection of R6G biomolecular dye by utilizing graphene quantum Dots on hybrid core-shell Pd@Ag NPs for the enhancement of SERS application
<i>Shusen Lin Sundar Kunwar Rutuja Mandavkar Rakesh Kulkarni Shalmali Burse Md Ahasan Habiba Sanchaya Pandita Jihoon Lee</i>	Department of Electronic Engineering, College of Electronics and Information, Kwangwoon University, Nowon-gu Seoul 01897, South Korea.	MoS ₂ nanoplatelets on hybrid core-shell AuPt nanoparticles for the surface-enhanced Raman spectroscopy (SERS) enhancement of methylene blue
<i>Md Ahasan Habib Rutuja Mandavkar Shusen Lin Rakesh Kulkarni</i>	Department of Electronic Engineering, College of Electronics and Information, Kwangwoon University, Nowon-gu Seoul 01897, South Korea	Development of functionalized MoS ₂ /AuPt core-shell NPs for SERS enhancement biomolecule detection via the incorporation of CV

<i>Sanchya pandit</i> <i>Shalmali Burse</i> <i>Puran Pandey</i> <i>Sundar Kunwar</i> <i>Jihoon Lee</i>		
<i>A G Gereziher</i> <i>T Szabó</i>	University of Miskolc, H-3515 Miskolc-Egyetemváros, Hungary	CROSSLINKING OF STARCH USING CITRIC ACID
<i>Nawal. SETTI</i> <i>Yassine.KADDOURI</i> <i>Rachid.TOUZANI</i> <i>Ali.DAFALI</i>	Mohammed First University, Oujda, Morocco	EVALUATION OF A SYNTHETIZED COMPOUND AS AN EFFICIENT CORROSION INHIBITOR FOR MILD STEEL IN HYDROCHLORIC ACID

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SESSION-2, HALL-4/OTURUM-2, SALON-4

MODERATOR: Assoc. Prof. Dr. Ayhan BAŞTÜRK

AUTHOR(S)	AFFILIATION	TITLE
<i>Assist. Prof. Dr. Hülya YAMAN</i>	Bolu Abant İzzet Baysal University, Bolu, Turkey	RESEARCH ON STRUCTURAL CHARACTERIZATION OF MILK PROTEIN FRACTIONS USING FTIR SPECTROSCOPY
<i>Özgül YAZAR Ahmet AÇIK Mehmet TOKATLI</i>	Tokat Gaziosmanpaşa University, İzmir, Türkiye	MICROBIAL NANOPARTICLES AND FOOD APPLICATIONS
<i>Öznur EYMİR Nermîn BİLGİÇLİ</i>	Necmettin Erbakan University, Konya, Türkiye	UTILIZATION OF TURMERIC AND GINGER PRODUCTS IN NOODLE FORMULATION
<i>Assist. Prof. Dr. Yusuf ÇAKIR Gökhan DERVİŞOĞLU</i>	Bingöl University, Bingöl, Turkey	ANTIMICROBIAL EFFECT OF HONEYS COLLECTED IN BİNGÖL REGION
<i>Zeynep GÜRBÜZ Mustafa ŞENGÜL Elif DADEMİR Tuba ERKAYA KOTAN Hüseyin Ender GÜRMERİÇ</i>	Atatürk University, Erzurum, Turkey Gümüşhane University, Erzurum, Turkey	PRODUCING BENZOIC ACID BY NATURAL WAY IN FERMENTED DAIRY PRODUCTS
<i>Hüseyin Ender GÜRMERİÇ Zeynep GÜRBÜZ Tuba ERKAYA KOTAN Mustafa ŞENGÜL</i>	Gümüşhane University, Erzurum, Turkey Atatürk University, Erzurum, Turkey	DETERMINATION OF ANTIOXIDANT ACTIVITIES OF YOGURT SAMPLES MARKETED IN ERZURUM, TURKEY
<i>Yeşim BEDİR M.Murat KARAOĞLU Ashhan HANOĞLU</i>	Atatürk University, Erzurum, Turkey	THE RIPENING OF KIWI FRUIT BY APPLE
<i>Tekmile CANKURTARAN KÖMÜRCÜ</i>	Necmettin Erbakan University, Konya, Türkiye	EFFECT OF DRIED JUJUBE FRUIT AT DIFFERENT TEMPERATURES ON VARIOUS PHYSICAL PROPERTIES OF COOKIES
<i>Ayhan BAŞTÜRK Berfin YAVAŞ</i>	Van Yüzüncü Yıl University, Van, TÜRKİYE	ANTIOXIDANT ACTIVITIES AND VOLATILE COMPONENT PROFILES OF TÜRKİYE PROPOLIS
<i>Murat Emre TERZİOĞLU İhsan BAKIRCI</i>	Atatürk University, Faculty of Agriculture, Department of Food Engineering, Erzurum, Turkey	NUTRITIONAL CONTENT AND BIOACTIVITY OF SHEEP MILK
<i>Murat Emre TERZİOĞLU İhsan BAKIRCI</i>	Atatürk University, Faculty of Agriculture, Department of Food Engineering, Erzurum, Turkey	FRUITY PROBIOTIC YOGURTS IN TERMS OF THEIR DIFFERENT ASPECTS

28.05.2022
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SESSION-2, HALL-5/OTURUM-2, SALON-5

MODERATOR: Assoc. Prof. Dr. Burcu TUNCER

AUTHOR(S)	AFFILIATION	TITLE
Assoc. Prof. Dr. Burcu TUNCER	Van Yüzüncü Yıl University, Van, TÜRKİYE	CURRENT STATUS OF SOLANACEAE FAMILY VEGETABLE SPECIES REGISTERED IN TURKEY
Assoc. Prof. Dr. Burcu TUNCER	Van Yüzüncü Yıl University, Van, TÜRKİYE	CURRENT STATUS OF CRUCIFERAE FAMILY VEGETABLE SPECIES REGISTERED IN TURKEY
Assist. Prof. Dr. Gül Yücel Lect. Merve Tanfer	Peyzaj ve Süs Bitkileri Programı, Yalova Meslek Yüksek Okulu, Yalova Üniversitesi	CONSERVING EX-SITU AND SUSTAINABILITY OF ENDEMIC PLANTS BY CREATING A COLLECTION GARDEN EXAMPLE OF YALOVA PROVINCIAL ENDEMIC PLANT COLLECTION GARDEN
Assist. Prof. Dr. Ömer BİNGÖL	Van Yüzüncü Yıl University, Van, TÜRKİYE	THE INVESTIGATION OF THE EFFECT OF STATIC MAGNETIC FIELD APPLICATION ON GERMINATION PARAMETERS OF TOMATO PLANT
Ayşegül EROĞLU Abdulahad DOĞAN Fatih DÖNMEZ Burak KAPTANER	Van Yüzüncü Yıl University, Van, TÜRKİYE	INVESTIGATION OF THE ANTIOXIDATIVE EFFECTS OF GRAPE HYACINTH (Muscari neglectum Guss. Ex Ten.) PLANT EXTRACT ON CCL4-INDUCED LIVER AND RENAL DAMAGE IN RATS
Assist. Prof. Dr. Alper SOYSAL	Ç.Ü. Ceyhan Meslek Yüksekokulu, Makina ve Metal Teknolojisi Bölümü Tarım Makinaları Programı	COMPARISON OF FLAT FAN NOZZLES USED IN HERBICIDE APPLICATIONS IN TERMS OF WEED CONTROL EFFICIENCY
Assist. Prof. Dr. Erçin OKSAL	Malatya Turgut Özal University, Malatya, Türkiye	EFFECTS OF BACILLUS AND PSEUDOMONAS SPP. AGAINST MELON FUSARIUM WILT
Filiz KAZAK Tülay ÇİMRİN Sema ALAŞAHAN Mehmet Ali KISAÇAM Tuncer KUTLU	Hatay Mustafa Kemal University, Hatay, Türkiye	THE EFFECTS OF BLACK CUMIN (NIGELLA SATIVA L.) SEED ON CARCASS CHARACTERISTICS, KIDNEY OXIDANT ANTIOXIDANT LEVELS AND ILEUM HISTOMORPHOLOGY IN JAPANESE QUAILS
Ayşe ÖZBEK Prof.Dr. İlhan Kaya TEKBUDAK Assoc. Prof. Dr. Mustafa USTA Assist. Prof. Dr. İbrahim DEMİR	Van Yüzüncü Yıl University, Van, TÜRKİYE	DETERMINATION OF GENETIC DIVERSITY OF Cuscuta campestris Yunck. IN TURKEY

28.05.2022
SATURDAY / 16:00-18:30

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SESSION-3, HALL-1/OTURUM-3, SALON-1

MODERATOR: Dr. Enyew Amare Zereffa

AUTHOR(S)	AFFILIATION	TITLE
Mohammed DALLI Abdelqader El Guerraf Salah-eddine AZIZI Nadia GSEYRA	University Mohammed the First, Morocco	LOADED n-Hydroxyapatite/SSG 3D SCAFFOLDS AS A DRUG DELIVERY SYSTEM OF NIGELLA SATIVA FRACTIONS FOR THE MANAGEMENT OF LOCAL ANTIBACTERIAL INFECTIONS
Said Dlimi Lhoussine Limouny Hayat Elkhatat	University Chouaib Doukkali, El jadida, Morocco	SIMULATION AND OPTIMIZATION OF A SOLAR PUMPING SYSTEM FOR AGRICULTURAL IRRIGATION
D. Jini	Malankara Catholic College, India	EFFECT OF SALICYLIC ACID ON THE IONIC ACCUMULATION AND DISTRIBUTION FOR SALT TOLERANCE IN Oryza sativa L.
Enyew Amare Zereffa	Adama Science and Technology University, Ethiopia	SYNTHESIS OF ZnO/PVA NANOCOMPOSITE USING AQUEOUS FOR FOOD PACKAGING
Halima Saliu Aliu Efosa B. Odigie Agbonluai Richard Ehumgbab	University of Benin, School of Basic Medical Sciences, Department of Medical Laboratory Science, Benin City, Nigeria	INVESTIGATING COLD, HOT AND ALCOHOLIC EXTRACTS OF LAWSONIA INERMIS LINN (HENNA) AS CYTOLOGICAL STAINS
Afifa Baig Radhey Mohan Yadav Kapil Pandey Saimah Khan	Department of Chemistry, Integral University, India	THE COMPARISON STUDY OF EXTRACTION PROCESSES OF ESSENTIAL OIL OBTAINED FROM BLACK PEPPER
Gergana DESHEVA Svilena TOSHEVA Evgenia VALCHINOVA Albena PENCHEVA	“Konstantin Malkov” Agricultural Academy, Bulgaria	STUDY OF THE EFFECT OF DIFFERENT LEVELS OF SALINITY WITH MgCl ₂ ON GERMINATION AND SEEDLING CHARACTERISTICS IN RICE VARIETIES
ONASANYA Abimbola Kofoworola OLALEKAN Olawale Jubril ELUMALERO Gabriel Olabode OGUNBELA Adegboyega Ayo APENAH Maria Olamide AGBOOLA John Olatunji AJAYI Olalekan Kehinde	Forestry Research Institute of Nigeria, Forest Based Rural Resource Centre, Ikija-Ijebu, Ogun State	ETHNOBOTANICAL UTILISATION OF BLIGHIA SAPIDA IN ABEOKUTA METROPOLIS, SOUTH WESTERN NIGERIA

<i>Widya Pintaka Bayu PUTRA</i>	Research Center for Applied Zoology - National Research and Innovation Agency, Bogor, Indonesia	HAPLOTYPE DIVERSITY IN THE MITOGENOME OF VAQUITA (<i>Phocoena sinus</i>)
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SESSION-3, HALL-2/OTURUM-3, SALON-2

MODERATOR: Ananda Majumdar

AUTHOR(S)	AFFILIATION	TITLE
Nora HAMDAOUI Yahya ROKNI Mohamed MOUNCIF Mustapha MEZIANE	University Mohammed I, Oujda, Morocco. Sultan Moulay Slimane University, BeniMellal, Morocco. Mohammed Premier University, Oujda, Morocco IAV-Hassan II, Morocco	ROLE OF LACTIC ACID BACTERIA IN FOOD AND HUMAN HEALTH
Assist. Prof. Dr. Nasim KIAN- POUR	Istanbul Aydın University, Istanbul, Türkiye	USAGE OF MEDIUM TO HIGH- POWER MICROWAVE-BLANCHING PRETREATMENT TO IMPROVE DRYING CHARACTERISTICS OF LEEK: DRYING KINETICS, TRANSPORT, AND THERMOPHYSICAL PROPERTIES
Melek ZOR Menekşe BULUT Merve SİLGAN	Ağrı İbrahim Çeçen University, Ağrı, Türkiye Iğdır University, Iğdır, Türkiye,	INTENDED USE OF DIET FIBER IN DAIRY INDUSTRY
Olena HUSAROVA	Institute of Engineering Thermophysics of the National Academy of Sciences of Ukraine	INFLUENCE OF THE SIZE AND SHAPE OF APPLES ON THE DRYING PROCESS
Sagyndykov Utemurat Nurysh Aida Amangosova Inabat	Eurasian National University. L. N. Gumilyova Nur-Sultan, Kazakhstan;	INVESTIGATION OF THE INTENSITY OF CARBOHYDRATE FERMENTATION OF LACTIC ACID BACTERIA FOR THE PREPARATION OF A PROBIOTIC DRINK
Huynh Thi Ai Van Margrét Geirsdóttir Cecile Dargentolle	Faculty of Food Technology, Nha Trang University, No. 2 Nguyen Dinh Chieu St., Nhatrang City, Vietnam	THE EFFECT OF CHITOSAN-BASED COATING ON THE QUALITY OF FRESH REDFISH (Sebastes marinus) FILLET DURING COLD STORAGE
H. EL BASET F. RAFAKI H. HAJJAJ	Moulay Ismail University, Morocco Laboratory « Les Conserves de Meknès » (LCM), Morocco	OLIVE OILS ENRICHED WITH LYCOPENE FROM TOMATO BY- PRODUCTS: THE RELATIONSHIP OF LYCOPENE CONTENT WITH COLOUR AND ANTIOXIDANT ACTIVITY
Ananda Majumdar	University of Alberta	VEGETABLE NUTRITION AND BENEFITS

<i>Konuri Ravi Kumar Swapn Kumar Kolay</i>	School of Anthropology & Tribal Studies, India	FOOD HABITS AND DENTAL HEALTH: EXAMPLE FROM TRIBAL AND NON- TRIBAL COMMUNITIES OF BASTAR DISTRICT IN CHHATTISGARH, INDIA
<i>Muniza Javed Dr. Asma Seemi Malik Sheeza Bashir</i>	Lahore College for Women University, Lahore, Pakistan	“PERCEPTION KNOWLEDGE AND ATTITUDES OF PEOPLE REGARDING FOOD ALLERGY IN PAKISTAN: MYTH, MISCONCEPTIONS AND REALITY”
<i>Baidiaa Hafidh Mohammed Ashraq Monir Mahmed Aliaa Mohsen Ghaban</i>	University of Baghdad	STUDY OF THE CHEMICAL COMPOSITION OF POMEGRANATE SEEDS AND ITS INTRODUCTION IN EXTENSION THE SHELF LIFE OF BURGERS

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SESSION-3, HALL-3/OTURUM-3, SALON-3

MODERATOR: Assoc. Prof. Dr. Sibgha Noreen

AUTHOR(S)	AFFILIATION	TITLE
Assoc. Prof. Dr. Sibgha Noreen Sehrish Saleem Salim Akhtar Ummar Seema Mahmood	Institute of Pure and Applied Biology, Bahauddin Zakariya University, Multan	MODULATION OF SALT STRESS EFFECTS ON GROWTH, PHYSIO- CHEMICAL ATTRIBUTES OF DIFFERENT VEGETABLES BY THE EXOGENOUS APPLICATION OF MORINGA OLIFERA LEAF (MLE)
Minodora Manu Marilena Onete	Romanian Academy, Bucharest, Romania	DIVERSITY OF PHORETIC MITES LIVING IN THE BODIES OF SPRUCE BARK BEETLES, IN ROMANIA
Muhammad ASIM Büşra YILDIRIM Seyid Amjad ALİ	Department of Plant Protection, Faculty of Agricultural Sciences, Sivas University of Science and Technology, Sivas, Turkey	MACHINE LEARNING ALGORITHMS FOR ESTIMATING THE IMPACT OF H ₂ O ₂ CONCENTRATION AND TIME ON IN VITRO GERMINATION OF INDUSTRIAL HEMP (Cannabis sativa L.)
Anisha Chauhan	Banasthali Vidyapith University	GENETICALLY MODIFIED CROPS: AN OVERVIEW
Stanislava Stateva	Agricultural Academy, Institute of Plant Genetic Resources, „ Konstantin Malkov” Sadovo, Plovdiv, Bulgaria	MICROPROPAGATION OF ATROPA BELLADONNA L
Subandi, M. Budy Frasetya T.Q Hazna Tania Sopyani	State Islamic University of Sunan Gunung Djati of Bandung	EFFECT OF VARIOUS MANURES AND CONCENTRATION OF RICE HUSK SILICA EXTRACT ON GROWTH AND YIELD OF SWEET CORN (Zea mays saccharata Sturt)
Ralf Benjo G. Morilla Cesar G. Demayo	Mindanao State University-Iligan Institute of Technology, Iligan City, Philippines	PHYTOCHEMICAL AND BIOCHEMICAL CHARACTERIZATION OF BIOACTIVE COMPOUNDS FROM FRESH AND AIR DRIED ETHANOLIC LEAF EXTRACT OF Tagetes erecta (L.) (AMARILLO)
Fatemeh Hashemnejad Mohsen Barin Mir Hassan Rasouli-Sadaghiani Maryam Khezri Youbert Ghoosta Farrokh Asadzadeh	Urmia University, Urmia, Iran	OPTIMIZATION OF CULTURE CONDITIONS FOR ZINC PHOSPHATE SOLUBILIZATION BY Aspergillus sp. USING RESPONSE SURFACE METHODOLOGY

<i>Neethu Sudarsan</i> <i>Dr. Hema T. A</i>	Malankara Catholic College, Affiliated to Manonmaniam Sundaranar University, Tirunelveli	GREEN SYNTHESIS OF SILVER NANO PARTICLES FROM TERMINALIA CHEBULA FRUIT AND ITS BACTERICIDAL ACTIVITY AGAINST DIABETES WOUND PATHOGENS
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SESSION-3, HALL-4/OTURUM-3, SALON-4

MODERATOR: Prof. Dr. Dr. Morakeng Edward Kenneth Lebaka

AUTHOR(S)	AFFILIATION	TITLE
<i>Prof. Dr. Dr. Morakeng Edward Kenneth Lebaka</i>	University of Zululand – KwaDlangezwa Campus; Faculty of Humanities and Social Sciences, Department of Creative Arts, South Africa	PRESERVATION AND CONSERVATION OF PLANTS FOR TRADITIONAL MEDICINAL USE: THE CASE OF TRADITIONAL HEALING PROFESSION IN THE BAPEDI SOCIETY
<i>Umeakunne, L.</i>	University of Nigeria, Nsukka	ASSESSMENT OF ANTIBIOTIC USE AMONG POULTRY FARMERS IN ANAMBRA STATE, NIGERIA
<i>Abhishek V. Yadav</i>	University of Mumbai kalina, Maharashtra	ZINC OXIDE NANOPARTICLES AS A FERTILIZERS TO ENHANCE THE GROWTH PARAMETERS OF PLANTS
<i>Nassima RIOUCHI Oussama RIOUCHI Mohamed ABOU-SALAMA Mohamed LOUTOU</i>	Mohamed 1st University, Morocco.	APPLICATION OF THE LANGMUIR AND FREUNDLICH MODELS TO THE ADSORPTION ISOTHERMS OF HEAVY METALS BY PURIFIED CLAY
<i>Yusra Khatoon Saimah Khan</i>	Department of Chemistry, Integral University, India	THE STUDY ON EXTRACTION PROCESS AND ANALYSIS OF COMPONENTS IN ESSENTIAL OILS OBTAINED FROM THE WASTAGE PEELS OF CITRUS FRUITS
<i>Fathiyatul Mudzkiroh Dita Juliana Pravita Shinta Marcelyna</i>	Universitas Islam Indonesia, Faculty of Medicine, Student, Sleman Regency, Indonesia	POTENTION OF STRIGOLACTONE ANALOG ENCAPSULATED WITH E _p CAM APTAMER-LIPOSOME NANOPARTICLE BASED AS TARGETED THERAPY FOR COLORECTAL CANCER
<i>Dr. Ihim Augustine Chinedu Prof Onyenekwe Charles Chinedum Prof Meludu Samuel Chukwuemeka</i>	Nnamdi Azikiwe University, Awka, Nigeria	LIPID PROFILE, FREE FATTY ACID, APOLIPOPROTEIN B, APOLIPOPROTEIN B 48, APOLIPOPROTEIN B 100 AND MALONDIALDEHYDE IN MYCOBACTERIUM TUBERCULOSIS INFECTED INDIVIDUALS BEFORE, DURING AND AFTER TREATMENT
<i>ONASANYA Abimbola Kofoworola OLALEKAN Olawale Jubril ELUMALERO Gabriel Olabode OGUNBELA Adegboyega Ayo APENAH Maria Olamide AGBOOLA John Olatunji</i>	Forestry Research Institute of Nigeria, Forest Based Rural Resource Centre, Ikija-Ijebu, Ogun State	ETHNOBOTANICAL UTILISATION OF BLIGHIA SAPIDA IN ABEOKUTA METROPOLIS, SOUTH WESTERN NIGERIA

<i>AJAYI Olalekan Kehinde L</i>		
<i>Bogdan-Vasile CIORUȚA</i> <i>Mirela COMAN</i>	University of Agricultural Sciences and Veterinary Medicine, Cluj- Napoca, ROMANIA Technical University of Cluj-Napoca - North University Center of Baia Mare, Baia Mare, Romania	POSSIBILITIES FOR SETTING UP AND DEVELOPING A SOIL SAMPLING APP FOR ANDROID MOBILE DEVICES
<i>OKANLAWON FUNMILAYO</i> <i>OLUBUKOLA AWOTOYE</i> <i>JULIUS ABIOLA</i> <i>EMMANUEL ADELUSI</i>	Federal College Of Forestry, Department Of Wood And Paper Technology, Ibadan, Nigeria	PRESERVATIVE POTENTIAL OF DATURA METEL SEED OIL ON TRIPLOCHITON SCLEROXYLON(SCHUMANN)
<i>JULIANA AMAKA UGWU</i>	Forestry Research Institute of Nigeria, Federal College of Forestry, Ibadan, Department of Forestry Technology, Ibadan Nigeria	BIOASSAY OF PLANT EXTRACTS AGAINST TRIBOLIUM CASTANEUM (COLEOPTERA; TENEBRIONIDAE)

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SESSION-3, HALL-5/OTURUM-3, SALON-5

MODERATOR: Prof. Dr. Fikret YAŞAR

AUTHOR(S)	AFFILIATION	TITLE
<i>Assist. Prof. Dr. Abdullah GÜLLER</i> <i>Assoc. Prof. Dr. Mustafa USTA</i>	Bingöl University, Bingöl, Türkiye Van Yüzüncü Yıl University, Van, Türkiye	MOLECULAR CHARACTERIZATION of 16S RDNA NUCLEOTIDE SEQUENCE of ' <i>Ca. P. trifolii</i> ' IN PHYTOPLASMA- SUSPICIOUS CUCUMBER PLANTS IN VAN PROVINCE
<i>Assoc. Prof. Dr. Tamer ERYİĞİT</i> <i>Mehmet Akif ÇELEBİ</i>	Van Yüzüncü Yıl University, Van, Türkiye	THE EFFECT DIFFERENT HUMIC ACID DOZES ON THE YIELD AND QUALITY FEATURES OF COTTON (<i>Gossypium</i> <i>hirsutum</i> L.) VARIETIES UNDER DİYARBAKIR ECOLOGICAL CONDITIONS
<i>Oktay TOMAR</i> <i>Bahar SANCAR</i>	Kocaeli University, Kocaeli, Turkey	<i>Artemisia annua</i> L. OF ESSENTIAL OIL ANTIOXIDANT, ANTIBACTERIAL AND ANTIFUNGAL PROPERTIES
<i>Bahar SANCAR</i> <i>Oktay TOMAR</i> <i>Abdullah ÇAĞLAR</i>	Kocaeli University, Kocaeli, Turkey	PLANT BASED PROTEINS
<i>Oktay TOMAR</i> <i>Bahar SANCAR</i>	Kocaeli University, Kocaeli, Turkey	MEDICINAL AROMATIC PLANTS AND ESSENTIAL OILS
<i>Prof. Dr. Ahmet KORKMAZ</i> <i>Güney AKINOĞLU</i> <i>İlkay ÇOKA</i>	Ondokuz Mayıs University, Samsun, Türkiye	COMMON PHYSIOLOGICAL DISORDERS IN FRESH TOMATO FRUIT
<i>Prof. Dr. Ahmet KORKMAZ</i> <i>Güney AKINOĞLU</i> <i>İlkay ÇOKA</i>	Ondokuz Mayıs University, Samsun, Türkiye	BIOTIC AND ABIOTIC STRESS FACTORS IN RICE PLANTS
<i>Prof. Dr. Fikret YAŞAR</i> <i>Assoc. Prof. Dr. Özlem ÜZAL</i>	Van Yüzüncü Yıl University, Van, Türkiye	MACRO ELEMENT ACCUMULATIONS IN PEPPER SEEDLINGS APPLIED WITH DIFFERENT NUTRITIONAL SOLUTIONS
<i>Assoc. Prof. Dr. Özlem ÜZAL</i> <i>Prof. Dr. Fikret YAŞAR</i>	Van Yüzüncü Yıl University, Van, Türkiye	INVESTIGATION OF THE EFFECT OF MAGNESIUM APPLICATIONS ON MICRO ELEMENT INTAKE IN PEPPER PLANT UNDER SALT STRESS
<i>Havva Eylem Polat</i> <i>Yalçın Gücer</i> <i>Elif Ayşe Anlı</i> <i>Alper Serdar Anlı</i>	Ankara University, Ankara, Türkiye	RELATIONS ON AGRICULTURE, ENVIRONMENT AND FOOD SAFETY THROUGH CLIMATE CHANGE PERSPECTIVE

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INDIVIDUALS BEFORE, DURING AND AFTER TREATMENT

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DETERMINATION OF TECHNICAL INFORMATION SOURCES RELATED TO DAIRY CATTLE BREEDING OF FARMS THAT ARE MEMBERS OF VAN PROVINCE CATTLE BREEDERS ASSOCIATION AND WHICH ARE NOT MEMBERS

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CORONAVIRUS INFECTIONS IN ANIMALS: EPIDEMIOLOGY, CLINICAL SYMPTOMS, TREATMENT AND PREVENTION

HAYVANLARDA CORONAVİRÜS ENFEKSİYONLARI: EPİDEMİYOLOJİ, KLİNİK SEMPTOMLAR, TEDAVİ VE KORUNMA

Nergis Ulaş

*Assistant professor, Atatürk University, Faculty of Veterinary Medicine, Department of Internal
Medicine, Yakutiye, Erzurum*

ORCID ID: 0000-0003-2340-6882

ABSTRACT

Coronaviruses, which were frequently seen in animals before, have become more current with severe acute respiratory syndrome (SARS) and COVID-19 disease, which can cause death in humans in recent years. Increasing ownership of cats and dogs in our country, cattle breeding and horse breeding, which are of economic importance, make it important to know the treatments and prevention methods of coronavirus infections in these animals. Coronaviruses are enveloped RNA viruses that can cause respiratory, enteric, or systemic diseases in a variety of mammalian hosts with clinical severity ranging from subclinical to fatal. Feline coronavirus infection, which causes FIP (Feline Infectious Peritonitis) disease in wild and domestic cats, is contagious and fatal, causing severe symptoms. FIP disease occurs in cats in two forms, dry and wet. Infected cats may have clinical symptoms with only one form or a combination of both. There are two types of coronavirus infections in dogs, canine enteric coronavirus (CCoV) and canine respiratory coronavirus (CRCoV). Canine enteric coronavirus infection is common in dogs worldwide and has also been recorded in wild dogs. Canine enteric coronavirus (CCoV) causes mild gastroenteritis in dogs. Coronavirus infections in calves cause calf diarrhea, which is very important for the economy of the country. It causes an acute yellow diarrheal disease that is difficult to treat. It also causes pneumonia findings, also called winter flu, in 5-13 month old cattle. In horses, the most common clinical manifestations of coronavirus infections include decreased appetite, fever, and lethargy. Other symptoms include mild colic or changes such as soft or watery stools. In this paper, information will be given about the etiology, clinical symptoms, treatments and prevention methods of coronavirus diseases that have existed in cats, dogs, cattle and horses for years.

Key words: coronavirus in animal, infection, treatment.

ÖZET

Daha öncesinde hayvanlarda sıklıkla görülen koronavirüsler son yıllarda insanlarda ölümlere neden olabilen şiddetli akut solunum sendromu (SARS) ve COVID-19 hastalığı ile daha güncel hale gelmiştir. Ülkemizde giderek artan kedi ve köpek sahipliği, ekonomik öneme sahip olan sığır besiciliği ve atçılık, bu hayvanlarda koronavirüs enfeksiyonlarının tedavilerinin ve korunma yöntemlerinin bilinmesini önemli hale getirmektedir. Koronavirüsler, klinik şiddeti subklinik ile ölümcül arasında değişen çeşitli memeli konakçılarda solunum, enterik veya sistemik hastalıklara neden olabilen zarflı RNA virüslerdir. Vahşi ve evcil kedilerde FİP (Kedilerin enfeksiyöz peritonitisi) hastalığına yol açan kedi koronavirüs enfeksiyonu bulaşıcı ve ölümcül olup ciddi semptomlara yol açmaktadır. FIP hastalığı kedilerde kuru ve ıslak olmak üzere iki formda görülür. Enfekte kedilerde yalnızca bir form veya her ikisinin kombinasyonuna sahip klinik semptomlar bulunabilir. Köpeklerde koronavirüs enfeksiyonlarının köpek enterik koronavirüsü (CCoV) ve köpek solunum koronavirüsü (CRCoV) olmak üzere iki türü vardır. Enterik köpek koronavirüs enfeksiyonu dünya çapında köpeklerde yaygındır ve vahşi köpeklerde de kaydedilmiştir. Köpek enterik koronavirüsü (CCoV) köpeklerde hafif bir gastroenterite neden olur. Buzağılarda koronavirüs enfeksiyonları ülke ekonomisi için çok önemli olan buzağı ishallerine neden olur. Tedavisi güç olan akut sarı renkte ishalle seyreden hastalık oluşturur. Ayrıca 5-13 aylık sığırlarda



kış gribi de denilen pnömoni bulgularına sebep olur. Atlarda ise koronavirüs enfeksiyonlarının en yaygın klinik belirtileri arasında iştah azalması, ateş ve letarji yer alır. Diğer belirtiler arasında hafif kolik ya da yumuşak veya sulu dışkı gibi değişiklikler bulunur. Bu bildiri ile kedi, köpek, sığır ve atlarda yıllardır var olan koronavirüs hastalıklarının etiyoloji, klinik semptomları, tedavileri ve korunma yöntemleri hakkında bilgi verilecektir.

Anahtar Kelimeler: Hayvanlarda koronavirüs, enfeksiyon, tedavi.

OLEOJELLER: DERİN YAĞDA KIZARTMA ORTAMI OLARAK ALTERNATİF YAPILAR OLEOJELS: ALTERNATIVE STRUCTURES AS A DEEP FRYING MEDIUM

Pınar ANKARALIGİL

Yüksek Lisans Öğrencisi, Uşak İl Tarım ve Orman Müdürlüğü, Gıda ve Yem Şubesi, Uşak,

Buket AYDENİZ-GÜNEŞER

Dr. Öğr. Üyesi, Uşak Üniversitesi, Mühendislik Fakültesi, Gıda Mühendisliği Bölümü,

ÖZET

Sağlıklı bir bireyin günlük yeme davranışının kontrol edilmesinde, tüm besin gruplarının uygun ve doğru porsiyonlarını içeren sağlıklı bir beslenme programını benimsemesi öncelikli hedefdir. Bu açıdan bakıldığında, yemek hazırlama ve pişirme tekniklerinde gerçekleştirilecek olası tüm değişiklikler bireyin yeme alışkanlıklarını doğrudan etkilemektedir.

Lezzetli ve kızarmış ürünlerin hazırlanmasında kullanılan, pişirme süresi ve uygulama açısından pratik çözümler sunan derin yağda kızartma tekniği, yüksek yağ ve kalori alımını desteklediği için her yaşta tüketici için sağlıksız olarak değerlendirilmektedir. Ne yazık ki, obezite, yüksek tansiyon ve kardiyovasküler rahatsızlıklar gibi ölümcül hastalık oranlardaki artışlar nedeniyle de, kızarmış yiyeceklerin ve atıştırmalıkların tüketimi önemli bir sağlık sorunu olarak kabul edilmektedir. Ayrıca, derin yağda kızartılmış eşsiz tekstürel özellikleri, altın sarısı renkleri, karakteristik kızartma tatları ve kokuları, tüm tüketiciler için en çok arzu edilen ve tercih edilen duyuşal nitelikler olarak kabul edilmektedir.

Kızartmanın olası avantaj ve dezavantajları birlikte değerlendirilerek, hem kızartılmış ürünlerin hem de kızartma ortamlarının iyileştirilmesinde farklı koşullar ve parametreler birlikte dikkate alınmalıdır.

Oleojelasyon, sıvı yağları yapılandırmak için yeni ve etkili bir strateji olarak ortaya çıkmıştır. Bitkisel sıvı yağların oleojelasyon tekniğiyle üç boyutlu jel benzeri, termo tersinir, katı-görünümlü, susuz bir yapıya dönüştürülmesiyle elde edilen oleojellerin kızartma ortamı olarak değerlendirilmesi son iki yılda dikkat çekmeyi başarmıştır.

Yaygın kullanılan ticari kızartma yağları ile karşılaştırıldığında, oleojeller kızartılan ürün tarafından absorbe edilen yağ miktarının azaltılmasında, kızartma yağında ve dolayısıyla da ürünlerdeki akrilamid ve trans yağ asitleri içeriğinin minimize edilmesinde dikkat çeken sonuçlar sergilemiştir. Bu derlemede, güncel araştırma verilerine sahip olan ve derin yağda kızartma ortamı olarak kullanılan oleojeller üzerinde durulacaktır.

Anahtar Kelimeler: Oleojel, Derin Yağda Kızartma, Absorbe Yağ, Kalori Değeri

ABSTRACT

The main focus of the healthy individual's daily eating behavior is to adopt a healthy nutrition program that includes appropriate and right portions of all food groups. From this point of view, all possible changes in food preparation and cooking techniques directly affect the individual's eating behaviour.

Deep frying technique, which is used in the preparation of delicious fried products and offers practical solutions in terms of cooking time and application, is considered a non-healthy for consumers of all ages because it supports high fat and calorie intake. Unfortunately, consumption of fried foods or snacks is considered an major health problem due to the increasing rate of fatal diseases (mainly obesity, hypertension, cardiovascular diseases etc.) In addition, the unique textural properties, golden yellow colors, characteristic frying flavors and odors of deep-fried products are accepted as the most desirable and preferred sensory attributes for all consumers.

Possible advantages and disadvantages of frying must be evaluated with together, and then different conditions and parameters should be taken into account together in the improvement of both fried products and frying mediums.

Oleogelation has appeared as a new and effective strategy to structure liquid oils. Oleogels obtained by transforming vegetable oils into a three-dimensional gel-like, thermo-reversible, solid-like and anhydrous structure with the oleogelation technique has attracted attention in the last two years.

Compared to commonly used commercial frying oils, oleogels have shown remarkable results in reducing the amount of oil absorbed by the fried product, minimizing the content of acrylamide and trans fatty acids in the frying oil and also fried product. In this review, oleogels which one of recent researchs in literature and used as deep fat frying medium will be discussed.

Keywords: Oleogel, Deep Frying, Absorbed Oil, Calorie Value

DEVECİ ARMUT ÇEŞİDİNDE SEMPERFRESH, SALİSİLİK ASİT VE METİL SALİSİLAT UYGULAMALARININ DEPOLAMA SÜRESİNCE MEYVE KALİTESİNE ETKİLERİ

EFFECTS OF SEMPERFRESH, SALICYLIC ACID AND METHYL SALICYLATE APPLICATIONS ON FRUIT QUALITY OF DURING STORAGE OF DEVECİ PEAR VARIETY

Bahtiyar Aydın ÜRÜN

Yüksek Lisans Öğrencisi, Tekirdağ Namık Kemal Üniversitesi, Fen Bilimleri Enstitüsü, Bahçe Bitkileri Anabilim Dalı, Tekirdağ

ORCID ID: 0000-0002-2243-0947

Doç. Dr. Erdiç BAL

Tekirdağ Namık Kemal Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Tekirdağ

ORCID ID: 0000-0001-9817-5842

ÖZET

Bu çalışmada, Deveci armut çeşidinde depolama süresi üzerine hasat sonrası yenilebilir yüzey kaplayıcı olarak Semperfresh (SMF) ile Salisilik asit (SA) ve Metil Salisilat (MeSA) uygulamalarının etkisi araştırılmıştır. Uygulamalardan sonra armutlar kasalara yerleştirilmiş ve 0-1°C sıcaklık ve %85-90 oransal nemli soğuk hava deposunda 6 ay süreyle depolanmıştır. Uygulamalar sonrasında meyve kalite özelliklerini belirlemek amacıyla, ağırlık kaybı, suda çözünür kuru madde miktarı, titre edilebilir asit miktarı, meyve eti sertliği, askorbik asit miktarı, toplam fenolik madde miktarı, solunum hızı ve çürüme oranı analizleri yapılmıştır. Tüm analiz dönemleri ve yapılan ölçümler dikkate alındığında SA ve MeSA uygulamalarının SMF ile birlikte kullanımının depo süresince Deveci armut çeşidinde olgunlaşmanın geciktirilmesi, biyokimyasal bileşiklerin ve kalite özelliklerinin korunumu bakımından daha olumlu sonuçlar verdiği söylenebilir.

Anahtar Kelimeler: Depolama, Armut, Semperfresh, Salisilik Asit, Metil Salisilat, Kalite

ABSTRACT

In this study, the effect of Semperfresh (SMF) as edible surface coating, Salicylic acid (SA) and Methyl salicylate (MeSA) applications on storage time of Deveci pear variety was investigated. After the applications, pears were placed in crates and stored for 6 months in a cold storage with 0-1°C temperature and 85-90% relative humidity. After application weight loss, soluble solids content, titratable acid content, fruit firmness, ascorbic acid content, total phenolic content, respiratory rate and decay rate analyses were performed to determine fruit quality characteristics. Considering all measurements and evaluations, it can be said that SA and MeSA applications together with SMF gives more positive results in terms of delaying ripening, preservation of biochemical compounds and quality characteristics in Deveci pear variety during the storage.

Keywords: Storage, Pear, Semperfresh, Salicylic Acid, Methyl Salicylate, Quality

ÇOK YILLIK MEYVELERDE PERİYODİSİTE OLAYININ FİZYOLOJİK VE MOLEKÜLER TEMELİ

PHYSIOLOGICAL AND MOLECULAR BASIS OF ALTERNATE BEARING IN PERENNIAL FRUIT CROPS

Mehmet Emre EREZ

Van Yüzüncü Yıl Üniversitesi, Moleküler Biyoloji ve Genetik Bölümü, Van, Türkiye,

ORCID ID: <https://orcid.org/0000-0002-4944-365X>

ÖZET

Alternate Bearing veya periyodisite; bir ağacın ortalama olarak bir yılda daha fazla ürün üretme ve ertesi sene ortalama olarak daha az ürün yetiştirme eğilimi anlamına gelir. Periyodisite olayı, üreticiler tarafından “Var” ve “Yok” yılları olarak tanımlanır, toprak veya ağacın dinlenmesi şeklinde tarif edilir ancak kesin nedenleri tam olarak bilinmemektedir. Periyodisite her ağaç türünde görülmediği gibi bazı çeşitlerde dahi şiddeti farklı olmaktadır. Elma, zeytin, fıstık ve portakal gibi ağaçlarda görülen periyodisite olgusunun mekanizmasının anlaşılması verim açısından oldukça önemlidir çünkü ürünlerde eşzamanlı olarak meydana gelebilecek olan periyodisite “Yok” yılında büyük ekonomik kayıplara neden olan istenmeyen bir durumdur. Yapılan çalışmalar, periyodisite gösteren türlerde yıllar arasındaki faktörlerin farklı olduğu ve bu durumun bitkinin ekolojik, fizyolojik, edafik ve özellikle moleküler yapıları ile ilişkili olduğunu ifade etmişlerdir.

Periyodisite çalışmaları ve veri toplama süreçleri uzun süreçlidir çünkü meyve ağaçlarının en az dört yıl boyunca gözlemlenmesi gerekmektedir. Periyodisitenin nedenleri; yıllar arasındaki karbonhidrat metabolizmasındaki değişiklikler, hormonal dengesizlik ve çiçeklenme genlerinde meydana gelen değişimler ile açıklanmaya çalışılmıştır. Bu çalışmada özellikle elma ve fıstık ağaçlarında meydana gelen periyodisite nedenleri ve yapılabilecek uygulamalar hakkında bilgiler verilecektir.

Anahtar Kelimeler: Periyodisite, Var-yok Yılları, Ürün verimi, Gen ekspresyonları

ABSTRACT

Alternate Bearing or periodicity; means the tendency of a tree to produce, on average, more crops in one year and, on average, less crops the following year. The periodicity phenomena is defined by the producers as “On” and “Off” years, it is described as the rest of the soil or the tree, but the exact reasons are not known exactly. Periodicity is not seen in every tree species, and its severity is different even in some varieties. Understanding the mechanism of the periodicity phenomenon seen in trees such as apple, olive, pistachio and orange is very important in terms of yield because the periodicity that may occur simultaneously in the products is an undesirable situation that causes great economic losses in the "OFF" year. Studies have stated that the factors between years are different in species that show periodicity and this situation is related to the ecological, physiological, edaphic and especially molecular structures of the plant species.

Periodicity studies and data collection processes are long-term because fruit trees must be observed for at least four years. Causes of periodicity; have been tried to be explained by changes in carbohydrate metabolism between years, hormonal imbalance and changes in flowering genes. In this study, information will be given about the causes of periodicity and the applications that can be made, especially in apple and pistachio trees.

Keywords: Periodicity, On-Off Years, Product yield, Gene expressions

HERITABILITY AND GENETIC VARIABILITY OF OIL YIELD AND AGRONOMIC TRAITS IN SPRING CANOLA GENOTYPES

Hossein ZEINALZADEH-TABRIZI^{1*}

¹ Assistant Professor, Ardabil Agricultural and Natural Resources Research and Education Center, Agricultural Research, Education and Extension Organization (AREEO), Ardabil, Iran

*Hassan AMIRI OGHAN*²

² Associate Professor, Department of Oilseed Crops, Seed and Plant Improvement Institute (SPII), Agricultural Research, Education and Extension Organization (AREEO), Karaj, Iran

ABSTRACT

Estimation of heritability and genetic variability of plant materials is important in implementing a successful breeding program. This study was conducted in terms of a randomized complete block design with three replications at the experimental field of Moghan Agricultural Research Station, Parsabad, Iran (N39°39' E 47°68' N, altitude=78 m) during the two cropping seasons 2018-2019 and 2019-2020. The plant material in this study consisted of 26 genotypes, including 18 open-pollinated advanced lines and eight commercial cultivars. During the experiment, traits including days to flower initiation, days to flower completion, flowering period, days to maturity, plant height, first pod height, main stem length, number of lateral branches per plant, number of pods per plant, number of seeds per pod, stem diameter, pod diameter, 1000-seed weight, leaf chlorophyll content, seed and oil yield were recorded. The restricted maximum likelihood (REML)/Best Unbiased Linear Prediction (BLUP) approach was used to estimate heritability and genetic variability in canola genotypes. The results showed that the lowest and highest broad-sense heritability belonged to the leaf chlorophyll content (8.81%) and 1000-seed weight (79.09%). The minimum and maximum genotypic coefficient of variation belonged to days to maturity and oil yield, while the minimum and maximum phenotypic coefficient of variation belonged to days to maturity and number of pods per plant. The highest genetic advance as a percentage of the mean (GAM) was observed in oil yield. It can be concluded that the selection approach in this canola breeding genotypes has the maximum efficiency in achieving the desired high-yielding genotypes in its breeding program.

Keywords: BLUP, Genetic advance, REML, Selection, Yield

PUMPKIN SEED OIL: CHEMICAL COMPOSITION AND BIOLOGICAL ACTIVITY
KABAK ÇEKİRDEĞİ YAĞI: KİMYASAL BİLEŞİMİ VE BİYOLOJİK AKTİVİTESİ

Emine NAKİLCİOĞLU

Assoc. Prof. Dr., Ege University, Faculty of Engineering, Food Engineering Department, Izmir

ORCID ID: <https://orcid.org/0000-0003-4334-2900>

ABSTRACT

Pumpkin seed oil is a special product obtained from pumpkin seeds. In the production of pumpkin seed oil, traditional mechanical pressing method or modern extraction systems are used to obtain the oil containing the maximum level of bioactive components and to obtain maximum efficiency. Before the pressing or extraction procedure, pumpkin seeds are roasted at temperatures up to 130 °C, and the typical roasty and nutty aroma forms. Because pumpkin seeds are usually roasted before extracting, changes occur in the composition of fatty acids and micronutrients of pumpkin seed oil. On the other hand, pumpkin seed oil is of particular interest due to its typical taste and rich micronutrient contents such as fatty acids, vitamin E, phytosterols, carotenoids, antioxidants, phenolic compounds, and lignans. Also, it also stands out with its possible pharmacological properties. The unique biochemical composition of the pumpkin seed oil is responsible for some biological activities beneficial to human health such as the prevention of stomach, colorectal, breast, and lung cancers, impediment the occurrence and progression of hypertension, prevention of prostate disease, reduction of diabetes mellitus risk by increasing hypoglycemic activity, alleviation of hypercholesterolemia and arthritis, and curing urinary tract diseases by reducing bladder and urethral pressure. On the other hand, in the market of the fats and oils industry, the price of pumpkin seed oil is higher compared to other vegetable oils such as palm and corn oils. But, it may have a lower price value than olive oil. The aim of this review was to highlight the natural bioactive components of pumpkin seed oil and its effects on health promotion and disease prevention.

Keywords: cancer, fatty acids, pumpkin seeds, pumpkin seeds oil, vitamin E

NUTRITIVE AND HEALTH PROPERTIES OF HUMAN MILK
İNSAN SÜTÜNÜN BESLEYİCİ VE SAĞLIK ÖZELLİKLERİ

Emine NAKİLCİOĞLU

Assoc. Prof. Dr., Ege University, Faculty of Engineering, Food Engineering Department, Izmir

ORCID ID: <https://orcid.org/0000-0003-4334-2900>

ABSTRACT

Human milk is considered to be the most suitable food source for feeding newborns and infants. The World Health Organization suggests breastfeeding for the first six months. Human milk meets almost all the nutritional requirements that support healthy growth and development. It contains the essential nutrients and other components like immunoglobulins, cytokines, immune cells, lactoferrin, growth factors, oligosaccharides, long-chain fatty acids, and metabolic hormones. These immune and biologically active components not only contribute to the maturation of the infant immune system but also act as a protective barrier against pathogens. It protects against many diseases such as diarrhea, respiratory tract infections, and necrotizing enterocolitis. Also, it enhances neurodevelopment and gastrointestinal function. For this reason, human milk and breastfeeding should be the first choice for infant feeding. Remarkably, human milk offers numerous short- and long-term benefits not only on the infant but also on the mother through breastfeeding. However, breastfeeding and/or ingestion of human milk is not always possible and/or sufficient. In this case, it may be necessary to rely on donor human milk obtained from Human Milk Banks or infant formula that is not equivalent in terms of composition to human milk. The aim of this study is to provide descriptive and important information to reveal the nutritional and health properties of human milk.

Keywords: breast milk, casein, human milk, necrotizing enterocolitis.

A BIOCHEMICAL STUDY ON KIDNEY STONE CASES IN CATTLE

SİĞİRLARDA RASTLANAN BÖBREK TAŞI OLGULARINDA BİYOKİMYASAL BİR ÇALIŞMA

Aysel GÜVEN

Doç.Dr. Başkent Üniversitesi, SHMYO Fakültesi, Patoloji Laboratuvar Teknikleri Bölümü, Ankara

Olca ÖZTÜRKLER

Dr Kafkas Üniversitesi, Veteriner Fakültesi, Mikrobiyoloji Bölümü, Kars

Ulviye BUNYATOVA

Doç.Dr. Başkent Üniversitesi Mühendislik Fakültesi Biyomedikal Bölümü, Ankara

ABSTRACT

In this study, 426 cattle, 256 male and 200 female, slaughtered in slaughterhouses in Kars region between November and February 2021 were examined for kidney stones. A total of 37 stones were detected in all examined kidneys (male:27, female:10). The stones obtained were chemically analyzed in terms of phosphate, calcium, urate, carbonate, calcium oxalate, cystine, xanthine, magnesium, ammonium and silicate compositions. There were achieved 6.64% phosphate, 1.56% carbonate, 10.55% calcium oxalate, 7.03% urate, 0.78% cystine, 1.56% ammonium, 1.56% magnesium and 0.39 xanthine compound in male cattle. Female kidney stone examination showed that their structure consist 1.50% phosphate, 4.00% calcium, 3.00% calcium oxalate, 0.50% urate, 1.50% ammonium and 0.50% magnesium. Interestingly that such compounds like silicate, xanthine, cystine and carbonate were not observed in female kidney stone.

Keywords: Kidney Stones, cattle, biochemical examination.

ÖZET

Kars' ta Kasım- Şubat2021 ayları arasında mezbahanelerde kesimi yapılan 256 erkek ve 200 dişi sığır olmak üzere 426 sığır taş yönünden incelendi. Tüm böbreklerin 37'sinde (erkek:27, dişi:10) taş olgularına rastlandıTaşlar, kimyasal yöntemlerle fosfat, kalsiyum, ürat, karbonat, kalsiyum okzalat, sistin, ksantin, magnezyum, amonyum ve silikat yönünden analizleri yapıldı. Erkek sığırlarda taş kompozisyonları yönünde incelendiğinde %6,64 fosfat, %1,56 karbonat, %10,55 kalsiyum okzalat, %7,03 ürat, %0,78 sistin, %1,56 amonyum, %1,56 magnezyum, %0,39 ksantin bileşikleri saptanırken, dişilerde bu oranlar sırasıyla %1,50 fosfat, %4,00 kalsiyum, %3,00 kalsiyum okzalat, %0,50 ürat, %1,50 amonyum, %0,50 magnezyum bulundu. Ancak öte yandan silikat, ksantin, sistin ve karbonata görülmedi

Anahtar sözcükler: Böbrek taşı, sığır, biyokimyasal inceleme.

**DOĞU KARADENİZ'DE DENİZ SALYANGOZU AVCILIĞINDA KULLANILAN
ALGARNALARDA İSKARTANIN AZALTILMASINA YÖNELİK ARAŞTIRMALAR**
INVESTIGATIONS ON THE DISCARD REDUCTION IN THE BEAM TRAWLS USED IN THE
VEINED RAPA WHELK FISHERY IN THE EASTERN BLACK SEA

Ahmet Raif ERYAŞAR

*Doç. Dr., Recep Tayyip Erdoğan Üniversitesi, Teknik Bilimler Meslek Yüksek Okulu, Su Altı
Teknolojisi Programı*

ORCID ID: <https://orcid.org/0000-0001-7656-6113>

ÖZET

Algarna ile yapılan deniz salyangozu (*Rapana venosa*) avcılığında kullanılan torbalarda ağ göz açıklığının belli bir süre sonra kapanmasından dolayı bu av aracının seçiciliği oldukça düşük bulunmuştur. Bunun yanında özellikle midye stokları üzerindeki olumsuz etkisi nedeniyle bu av aracının kullanımı konusunda ciddi soru işaretleri bulunmaktadır. Bu soruna çözüm bulmak üzere ticari algarnalarda ıskarta avı azaltmaya yönelik iki ayrı çalışma yürütülmüştür. İlk çalışmada ıskarta avı azaltmak için ticari algarnada kullanılan 72 mm göz açıklığındaki baklava gözlü ticari torba ile aynı göz açıklığına sahip karegözlü torbanın karşılaştırılması amaçlanmıştır. İkinci çalışmada ise hem ıskarta av miktarını hem de ticari ürün kaybını minimuma indirmek amacıyla üç farklı bar aralığındaki (22, 25 ve 28 mm) ızgara-ağ tasarımlarının (IAT) av kompozisyonları ticari algarna ile karşılaştırılmıştır. Deniz seferleri Doğu Karadeniz Bölgesi'ndeki Rize ilinde gerçekleştirilmiştir. İlk çalışma 10-17 Ağustos 2017 tarihleri arasında, ikinci çalışma ise 13-24 Ekim 2021 tarihleri arasında yapılmıştır. Çalışmalar için ticari bir tekne kiralanmış olup tüm çekimler ticari operasyon koşulları altında gerçekleştirilmiştir. Çekimler zeminin kum ve çamur olduğu sahalarda, 9,5 – 17,3 metre arasındaki derinliklerde yapılmıştır. Çekim hızları 1,5 ile 2,1 deniz mili arasında değişim göstermiş olup çekim süreleri 15 – 23 dakika arasında sürmüştür. Bulgular ticari torbaya kıyasla karegözlü torbada ıskarta olarak yakalanan av miktarında ağırlık olarak %78'lik bir azalma göstermiştir. İkinci çalışmada ise test edilen her bir ızgara-ağ tasarımının ıskartayı istatistiki olarak önemli ölçüde azalttığı tespit edilmiştir ($p < 0,05$). Ticari torbaya kıyasla ağırlık olarak ıskarta av miktarında meydana gelen azalmalar 22, 25 ve 28 mm IAT'ler için sırasıyla %85, %90 ve %92 olarak bulunmuştur. Bununla birlikte, ticari tür için en az kayıp 22 mm IAT' de tespit edilmiştir. Sonuç olarak test edilen tasarımlar arasında hem ticari ürün kaybını en aza indirmede hem de ıskarta av miktarını azaltmada en başarılı tasarımın 22 mm IAT olduğu tespit edilmiştir. Son olarak bu modifikasyonun kullanımı ile birlikte oluşacak olası ekonomik kaybın telafisine yönelik çözüm önerileri sunulacaktır.

Anahtar Kelimeler: Deniz Salyangozu, Algarna, İskarta, Karegözlü Torba, Seçicilik Izgarası

ABSTRACT

Since the mesh openings of the codend used in beam trawl fishing for the veined rapa whelk (*Rapana venosa*) close after a short time during fishing, the selectivity of this fishing gear was found to be quite low. In addition, there are serious question marks about the use of this fishing gear due to its negative impact on mussel stocks. To find a solution to this problem, two different studies were carried out for reducing the discarded catch amount in the commercial beam trawl. The first study aims to compare 72 mm commercial diamond mesh codend with the square mesh codend with the same mesh size to reduce the discard. For the second study, the catch compositions of the grid-net designs (IAT) with three different bar spacings (22, 25, and 28 mm) were compared with the commercial beam trawl to minimize both the discarded catch amount and the loss of commercial product. Sea trials were performed in Rize province in the eastern part of the Black Sea Region. The first study was conducted between 10 and 17 August 2017, and the second study was conducted between 13 and 24 October 2021. A commercial boat was rented, and all hauls were carried out under commercial operation conditions. The hauls were

performed in areas where the ground was sand and mud, at depths between 9.5 and 17.3 meters. Towing speeds ranged between 1.5 and 2.1 knots, and the hauls lasted between 15 and 23 minutes. Results showed that there was a 78% reduction in the discarded catch amount in square mesh codend when compared with commercial codend. For the second study, the discarded catch amount was significantly reduced by each tested design ($p<0.05$). When compared with the commercial fishing gear, the reductions in the discarded catch amount (in terms of weight) were found to be 85%, 90%, and 92% for 22, 25, and 28 mm IATs, respectively. In addition, the least loss for the commercial species was seen at 22 mm IAT. In conclusion, 22 mm IAT was found to be the most successful design among the tested gears in both minimizing commercial product loss and reducing the discarded catch amount. and recommendations will be given for this design to be preferred by the commercial fleet. Finally, solutions will be presented to compensate for the possible economic loss that would occur with the use of this modification.

Keywords: The Veined Rapa Whelk, Beam Trawl, Discard, Square Mesh Codend, Selectivity Grid

**BİTKİLERDE SOĞUK STRESİNE KARŞI KORUYUCU VE SOĞUK KAYNAKLI
HASARLARI İYİLEŞTİRİCİ YENİ BİR GEN AİLESİ: BİTKİ MİTOKONDRİYAL
EŞLEŞME ÖNLEYİCİLER (PUMP)**

A NEW PROTECTIVE AND THERAPEUTIC GENE FAMILY AGAINST CHILLING STRESS
AND THE DAMAGE STEMMING FROM CHILLINESS FOR PLANTS: PLANT
MITOCHONDRIAL UNCOUPLERS (PUMP)

Zeynep KILIÇ

*Öğretim Görevlisi Dr., Bitlis Eren Üniversitesi, Bilim ve Teknoloji Uygulama ve Araştırma Merkezi,
Merkez, Bitlis*

ORCID NO: 0000-0002-8779-6923

ÖZET

Bitkiler optimum yaşam koşullarının dışında olan herhangi bir durumla karşılaştıklarında strese girmektedirler. Stresin süresi ve şiddetine bağlı olarak geri dönüşümlü veya dönüşümsüz birçok metabolik hasarlar meydana gelmektedir. Ani sıcaklık değişimlerinin olduğu günümüz şartlarında, özellikle de bir anda meydana gelen ani sıcaklık düşüşleri, bitkilerin verimliliklerini etkilemekle birlikte, hayati tehlikeler de oluşturmaktadır. Bitkileri ani sıcaklık düşüşlerine karşı koruyabilecek herhangi bir uygulama veya metabolizmada aktifleştirilecek herhangi bir yolun bulunması oldukça önem taşımaktadır. Bu bağlamda keşfi 1970'li yıllarda gerçekleşen ancak bütün canlılarda özellikle de bitkilerde halen keşfedilmemiş birçok özelliği bulunan çok özel bir proteinden bahsetmek gerekir; eşleşme önleyici proteinler (uncoupling proteins-UCP). UCP'ler mitokondri iç zarı üzerinde yerleşmiş, oksidatif fosforilasyon esnasında, zarlar arası boşluğa ATP sentezlenmesi için itici güç olarak pompalanan protonları, mitokondri matriksine geri pompalamaktadırlar. Böylece ATP sentezi için yeterli itici güç oluşmadığından, ATP sentezi ya çok az veya hiç olmamaktadır. Bu durumda ortamda bulunan serbest enerji ısı olarak açığa çıkmakta ve bitki içten ısınmaktadır. Açığa çıkan ısı, bitkilerin maruz kaldığı soğuk kaynaklı metabolik hasarları meydana gelmeden önlemektedir. Yani bitki dıştan soğuğa maruz kalsa da içsel olarak herhangi bir tepki oluşmamaktadır. Bu da, bitkileri soğuğa karşı dirençli hale getirmekte ve soğuğa karşı alternatif cevaplar oluşturmak için bitkilere zaman kazandırmaktadır. UCP'lerin elektron taşınımı ile ilgili bir sorumlulukları olmamakla birlikte, elektronlar kompleks I'den, kompleks IV'e kadar normal süreçte olduğu gibi taşınarak oksijene aktarılmaktadır. Ancak normal bir oksidatif fosforilasyon sürecinde elektronlar kompleks IV üzerinden oksijene aktarılırken aynı anda ATP sentezi de (eşleşme) gerçekleşmektedir. UCP'lerin aktifleşmesi ile bu ATP sentez süreci gerçekleşmediği için bu sürece eşleşmenin önlenmesi ismi verilmektedir. Hayvansal organizmalarda UCP olarak isimlendirilen bu proteinler bitkilerde PUMP (plant mitochondrial uncoupling proteins) olarak isimlendirilmektedir. Oldukça geniş bir araştırma yelpazesine sahip olan PUMP'lar hakkında bilgi veren bu derleme, bitkilerde bulunan UCP'ler hakkında bilgi vererek, bu literatür bilgilerinin tarım ve gıda alanında kullanılabilirliği hakkında oldukça faydalı bilgiler sunacaktır.

Anahtar Kelimeler: Bitkiler, Soğuk stresi, Mitokondri, PUMP, UCP

ABSTRACT

When plants encounter a situation out of optimum living conditions, they get stressed. A lot of recoverable and unrecoverable metabolic damages happen according to the intensity and duration of stress. Sudden temperature drops both affect fertility of plants and cause life-threatening situations in recent conditions that sudden temperature changes happen. It is very important to discover an application that protects plants against sudden temperature drops or a way that is activated in metabolism. In this context, it is essential to mention about a very particular protein that was discovered in 1970's but has a lot of underexplored characteristics in all living being, especially in plants; uncoupling proteins (UCP).

UCPs pump back protons which are located in mitochondrial inner membrane and pumped into the intermembrane space as a driving force for ATP synthesis during oxidative phosphorylation into the mitochondrial matrix. So ATP synthesis either happen too little or none because enough driving force doesn't occur. In this situation, available free energy comes out as heat and the plant warms up internally. Released heat prevents metabolic damages plants exposed stemming from cold before it happens. Namely, no internal reaction happen in plants though they exposed to cold externally. It makes plants resistant to cold and gives plants time to create alternative responses to cold. UCPs have no responsibility for electron transport and electrons are transferred from complex I to complex IV as in the normal process and transferred to oxygen. However, ATP synthesis (coupling) occurs as electrons are being transferred to oxygen via complex IV simultaneously in the process of oxidative phosphorylation. This process is called as uncoupling by activating UCPs. These proteins, which are called UCP in animal organisms, are called PUMP (plant mitochondrial uncoupling proteins) in plants. This review giving information about PUMPs, which have a very large research field, informs about UCPs and it will provide very useful information about the usability of this literature information in the field of agriculture and food.

Key Words: Chilling stress, Mitochondria, Plants, PUMP, UCP

PHARMACOLOGICAL AND BIOLOGICAL ACTIVITIES OF POMEGRANATE PEELS

Assoc. Prof. Dr. Sevgi Gezici

Gaziantep University, Faculty of Medicine, Department of Medical Biology

ORCID ID: <https://orcid.org/0000-0002-4856-0221>

Prof. Dr. Nazim Sekeroglu

Gaziantep University, Faculty of Science and Literature, Department of Biology

ORCID ID: <https://orcid.org/0000-0002-0630-0106>

ABSTRACT

Pomegranate (*Punica granatum* L.) peel is a by-product that accounts for approximately 30-40% of the whole pomegranate. Pomegranate peel extract (PPE) has gained much attention in food field thanks to its rich phytochemical content, especially polyphenols. Considering its wide range of bioactive components, potential biological activities and pharmacological properties of PPE were analyzed in the presented research. The peels were sequentially extracted with different solvents, and analyzed for their enzyme inhibition potentials against acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) enzymes using spectrophotometric microtiter assays. Total phenolic and flavonoid contents of PPE were also analyzed by the Folin-Ciocalteu method and aluminum chloride colorimetric assay, respectively. In vitro anticancer activities and cellular anti-proliferation were detected using the MTT method against human gastric cancer cells including AGS (gastric adenocarcinoma) and SNU-16 (gastric carcinoma). In terms of the anticancer and cellular proliferation results, the PPE showed remarkable cytotoxic and antiproliferative potentials. Accordingly, the treatment of the cells with the extracts could block the growth of the gastric cancer cells by inhibiting the growth of the cells, thereby inhibiting the survival rate of the cells. Similarly, higher total phenolic and flavonoid contents were determined with the ethanol extract (14.21±0.71 mg/kg extract as GAE and 8.05±0.36 mg/kg extract as QE, respectively), compared to the aqueous extract. As a results of neuroprotective capacities, the PPE prepared with ethanol possessed the highest inhibition towards AChE with the inhibition value of 74.10±0.46%, and the lowest inhibition on BChE enzyme (36.21±0.18%), at the 1mg/mL. concentration. Overall, this research contributes for recycling and reuse the pomegranate peels, which are produced as the main by-product of pomegranate juice production, for environmental and health benefits.

Keywords: Pomegranate peels; enzyme inhibitory; phytochemical content; neuroprotection; anticancer

BEYŞEHİR'İN (KONYA) KIRSAL TURİZM POTANSİYELİNİN DEĞERLENDİRİLMESİ EVALUATION OF BEYSEHIR (KONYA) RURAL TOURISM POTENTIAL

Nurhan KOÇAN*¹

^{1,2}Bartın Üniversitesi Mühendislik Mimarlık ve Tasarım Fak. Peyzaj Mimarlığı Böl./Bartın
ORCID ID: 0000-0001-9433-7007

Hilal BESKİSİZ²

^{1,2}Bartın Üniversitesi Mühendislik Mimarlık ve Tasarım Fak. Peyzaj Mimarlığı Böl./Bartın
ORCID ID: 0000-0002-1702-2519

Ömer Lütfü ÇORBACI³

³Recep Tayyip Erdoğan Üniv. Mühendislik ve Mimarlık Fak. Peyzaj Mimarlığı Böl./Rize
ORCID ID: 0000-0002-8763-3163

ÖZET

Kentlerin yorucu yaşantısı ve bozulan doğasından uzaklaşmak isteyen insanlar için bir fırsat sağlayan kırsal alanlar, doğal görünüşleri ve çeşitli kültürel potansiyelleri ile içinde yaşayan insanlara farklı deneyimler sağlamakta ve bireylere rahat bir dinlenme ortamı sunmaktadır. Özellikle son yıllarda tüm dünyada gelişen kırsal turizm anlayışı ile kırsal alanların önemi daha da artmış durumdadır. Bu tür alanların turizmden elde edecekleri katkıların artırılması, alanın korunması, geliştirilmesi ve yerel halka fayda sağlaması bakımından önem taşımaktadır. Bu bağlamda kırsal turizm ve kırsal kalkınma arasında doğru orantılı bir ilişki vardır. Kırsal alanların özelliklerinin bozulmadan devamlılığı için bu alanların turizm planlamasının yapılması gerekmektedir. Bu çalışma Konya ilinin Beyşehir ilçesinde “kırsal turizm” ana teması kapsamında yapılmıştır. Çalışma, kırsal kalkınma anlayışıyla, alanın kullanım, geliştirme ve korunmasına yönelik planlama stratejilerine dayanmaktadır. Bu çalışma sonucunda; bölgenin tanınırlığının sağlanması, turizm bilincinin ve turizmden elde edilecek gelirin artırılması ve böylece kırsal mirasın korunması hedeflenmiştir. Çalışma kapsamında yapılan analizler ve incelemeler doğrultusunda Beyşehir ilçesindeki kırsal turizm potansiyeli ortaya çıkarılmıştır. Çalışmada GZTF analizi yapılmıştır. Doğal veri analizleri ile tematik haritalar Arc GIS 10.2 ortamında yapılmıştır. Çalışmadan elde edilecek sonuçların kırsal turizm farkındalığını artıracığı düşünülmektedir.

Anahtar Kelimeler: Kırsal alanlar, kırsal turizm, kırsal kalkınma, Beyşehir (Konya)

ABSTRACT

Rural areas, which provide an opportunity for people who want to get away from the tiring life and deteriorating nature of the cities, provide different experiences to the people living there with their natural appearance. They offer a comfortable resting environment and different cultural potentials to the individuals. Especially in recent years, the importance of rural areas has increased developed all over the world with the development of rural tourism. Increasing the contribution of the areas from tourism is important in terms of protecting and developing the area and providing benefits to the local people. In this context, there is a directly proportional relationship between rural tourism and rural development. Tourism planning of the areas is necessary for the continuity of the characteristics of rural areas without deterioration. The study was carried out within the scope of the main theme of "rural tourism" in Beyşehir district of Konya province. The study is based on planning strategies for the use, development and protection of the area with the understanding of rural development. As a result of the study; it is aimed to ensure the recognition of the region, to increase tourism awareness and income from tourism, and so to protect the rural heritage. In line with the analyzes and examinations made within the scope of the study, the rural tourism potential in Beyşehir district was revealed. SWOT analysis was performed



in the study. Natural data analysis and thematic maps were made in Arc GIS 10.2 environment. It is thought that the results to be obtained from the study will increase the awareness of rural tourism.

Keywords: Rural areas, rural tourism, rural development, Beysehir (Konya)

TARIM ALANINDA İNSANGÜCÜ VERİMLİLİK GÖSTERGELERİNİN NİTEL BİR İNCELENMESİ

A QUALITATIVE ANALYSIS OF HUMAN POWER PRODUCTIVITY INDICATORS IN AGRICULTURE

Elnur ALLAHVERDIYEV

Bakü İşletme ve Kooperatif Koleji Müdürü, Bakü, Azerbaycan

ORCID ID: 0000-0002-1477-9217

ÖZET

İnsani güç, nüfusun üretimde en etkin olan bölümlerden birini oluşturmaktadır. Nüfustaki gelişmelere bağlı olarak oluşan toplam işgücü arzı ve ekonomik koşullara göre oluşan işgücü talebi; piyasa oluşumunun iki temel unsurudur. Dolayısıyla tarımsal faaliyetlerde insangücünün verimliliği konusu detaylı bir analize muhtaçtır. İşgücü piyasaları içerisinde; ekonominin temelini oluşturan ve diğer piyasalara çeşitli kaynaklardan katkı sağlayan tarımsal işgücü piyasasının analiz edilmesine ihtiyaç duyulmaktadır. Çünkü tarım sektöründeki doğal kaynakların ve sermaye unsurlarının kullanımında doğrudan işgücünün katkısının olması, diğer sektörlerle kıyasla tarımsal faaliyetlerde işgücünün birim alanda daha yoğun kullanılması, tarım sektöründen diğer sektörlere işgücü transferlerinin gerçekleştirilmesi, tarımsal işgücünün gizli işsizlik ve yapısal işsizliğin kaynağını oluşturması gibi nedenlerle tarımsal işgücünün incelenmesi ve sınıflandırılması gerekmektedir. Bu makalenin amacı, tarım alanında insan gücü verimlilik göstergelerini belirlemektir. Araştırma, meta-kombine yöntem ile nitel bir yaklaşımla yapılmıştır. Araştırmanın istatistik evrenini verimlilik konusu ile ilgili 8 kitap ve 35 makale oluşturmaktadır. Rastgele olmayan amaçlı yöntemle örneklem olarak 5 kitap ve 18 makale seçilmiştir. Bulgular, 50 değişkenin, beş ana eğitim, finans, refah, istihdam ve kişilik eksenleri etrafında tarım alanında insan kaynakları verimliliği için kavramsal bir çerçevenin geliştirilmesine yol açtığını göstermiştir. Bu eksenler, tarım alanında insan kaynaklarının verimliliğinde önemli bir rol oynamaktadır.

Anahtar Kavramlar: Verimlilik, eğitim endeksi, finansal endeks, refah endeksi, iş endeksi, bireysellik endeksi

ABSTRACT

Human power constitutes one of the most active parts of the population in production. The total labor supply resulting from the developments in the population and the demand for labor according to the economic conditions are the two essential elements of market formation. Therefore, the issue of productivity of human power in agricultural activities needs an elaborative analysis. Within the labor markets, there is a need to analyze the agricultural labor market, which forms the basis of the economy, and contributes to other markets from various sources. The ahead agricultural labor force requires to be analyzed and classified due to the reasons such as the direct contribution of the labor force in the use of natural resources and capital elements in the agricultural sector, intensive use of labor per unit area in agricultural activities compared to other sectors as well as labor transfers from the agricultural sector to other sectors, and the agricultural workforce is the source of disguised and structural unemployment. The purpose of this article is to determine the human power productivity indicators in agriculture. The research was conducted with a qualitative approach using the meta-combined method. The statistical universe of the research consists of 8 books and 35 articles on productivity. With the non-random purposeful method, 5 books and 18 articles were selected as samples. The findings showed that 50 variables led to the development of a conceptual framework for human resource productivity in agriculture around the five main axes of education, finance, welfare, employment and individual. These axes play a significant role in the productivity of human resources in the field of agriculture.



Key Words: Productivity, education index, financial index, welfare index, employment index, individuality index.

MAIZE-WHEAT SYSTEM: TILLAGE AND NITROGEN MANAGEMENT FOR HIGHER YIELD AND NUTRIENT USE EFFICIENCY

Kamlesh Kumar¹ C M Parihar¹

¹Division of Agronomy, ICAR-Indian Agricultural Research Institute, New Delhi 110012

ABSTRACT

The Rice-Wheat (RW) system of Indo-Gangetic Plane (IGP) provides food security to the major mass of Indian population, which is facing multiple challenges of sustainability like natural resource degradation, rapidly falling water table and deteriorating soil health. Globally, based on the past research evidences, conservation agriculture (CA) is considered as one of the most promising and more sustainable forms of agriculture. Diversification of rice with maize in the rice-wheat system coupled with the CA systems, which utilize soils for crop production without excessive mixing and turning and maintain the crop residues on the soil surface could help in enhancing crop productivity, profitability and may restore/improve the soil health. Presently, maize-wheat cropping system is followed in 1.85 m ha areas and is the 3rd most important cropping system of India.

As nutrient management strategy is considered the fourth principle for CA, the present study was carried out with three Tillage and crop establishment (TCE) practices, i.e. Zero-till permanent beds-PB, Zero-till flat beds-ZT and Conventional till flat beds-CT and five Nitrogen management practices consisting varying level in a split plot design. A significant impact of TCE practices was observed in the first year of the experimentation in both maize and wheat in terms of growth parameters and crop yield. Urea super granules-N @ 150 kg/ha (100% of RDN) when applied 50% basal through USG and further, Green Seeker based application of 50% urea in 2-splits in maize and wheat recorded highest crop yield, nitrogen uptake and stability in the form of higher soil $\text{NH}_4^+\text{-N}$ as compared to $\text{NO}_3^-\text{-N}$. Use of slow release nitrogen @ 150 kg/ha recorded highest agronomic and physiological use efficiency. Hence, these studies conclude that the CA-based Maize-wheat cropping system with green seeker based nitrogen management could sustain the crop yields, enhance farm profitability and nutrient use efficiency and improve soil health.

Keywords: Conservation Agriculture, Maize-wheat cropping system, nitrogen management, Green Seeker

GUT DYSBIOSIS IN DOGS WITH SPINAL CORD INJURY: IMPACT OF POLENOPLASMIN

Major Giurgiu Gheorghe

Deniplant-Aide Sante Medical Center, Biomedicine, Bucharest, Romania

ORCID ID: <https://orcid.org/0000-0002-5449-2712>

Prof. dr. Cojocaru Manole

Titu Maiorescu University, Faculty of Medicine, Bucharest, Romania

ORCID ID: <https://orcid.org/0000-0002-6871-577X>

ABSTRACT

Background Studies have demonstrated the presence of gut dysbiosis (alterations in gut bacterial homeostasis) secondary to spinal cord injury in dogs. The dysbiosis is thought to impair recovery by decreasing the production of short-chain fatty acids which play a role in suppressing inflammation within the central nervous system.

Objective Therefore, targeting gut dysbiosis could have significant therapeutic value in the management of spinal cord injury. The purpose of this study is to determine if gut dysbiosis occurs in dogs with spinal cord injury. Another area of potential intervention interest is in situations of spinal injury where there is an urgent need to generate new neurons. To arrive at these observations, the authors examined how Polenoplasmin and diet solve paralysis in dogs.

Materials and methods The most common cause of spinal problems in dogs is trauma. We are currently assessing whether indoles can also stimulate formation of neurons in dogs with paralysis.

Results We found that gut microbes that metabolize tryptophan-an essential amino acid-secrete small molecules called indoles, which stimulate the development of new brain cells in dogs, also demonstrated that the indole-mediated signals elicit key regulatory factors known to be important for the formation of new neurons.

Conclusion This study is another intriguing piece of the puzzle highlighting the importance of lifestyle factors and diet.

In conclusion, the link between the health of the microbiome and the health of the brain shows how microorganisms in the gut solve paralysis. Gut microbe secreted molecule linked to formation of new nerve cells in paralysed dogs.

Keywords: intestinal dysbiosis, indoles, paralysed dog, Polenoplasmin.



APPLICATIONS OF FOOD COLOUR AND PRESERVATIVES IN ARTIFICIAL FOOD AND ITS RESULT ON HUMAN HEALTH

Subhashish Dey

Department of Civil Engineering, Gudlavalleru Engineering College, Andhra Pradesh, India

ABSTRACT

Colour is a key component to increase the ultimate appetizing value and consumer acceptance towards foods and beverages. Synthetic food colours have been increasingly used than natural food colours by food manufacturers to attain certain properties such as low cost, improved appearance, high colour intensity, more colour stability and uniformity. Varied foods and beverages available in the market may contain some non-permitted synthetic colours and over use of permitted synthetic colours. This may lead to severe health problems such as mutations, cancers, reduced hemoglobin concentrations and allergic reactions. Moreover, 60% of the beverages violated the label requirement without including proper colour ingredients. The study concluded that there is a high tendency to use synthetic food colours in confectioneries and beverages and some confectioneries contain unidentified colours including a textile dye. Therefore, the implementation of regulations and awareness programs of food colours for consumers and food manufacturers are highly recommended.

Keywords: Food, Colour, Preservatives, Storage, Antimicrobial and Antioxidants

ET ÜRÜNLERİ ÜRETİMİNDE BİTKİSEL ANTİOKSİDAN KAYNAKLARININ KULLANIMI

USE OF HERBAL ANTIOXIDANT RESOURCES IN MEAT PRODUCT PROCESSING

Hanife BAYINDIR

*Yüksek Lisans Öğrencisi, Süleyman Demirel Üniversitesi Fen Bilimleri Enstitüsü Gıda Mühendisliği
Anabilim Dalı*

Biröl KILIÇ

Prof. Dr., Süleyman Demirel Üniversitesi Mühendislik Fakültesi Gıda Mühendisliği Bölümü

ÖZET

Et ve et ürünlerinin raf ömrü mikrobiyolojik, kimyasal ve enzimatik değişimlerden etkilenmektedir. Tüketime hazır et ürünlerinin raf ömrünü etkileyen en önemli kimyasal değişim lipit oksidasyonudur. Et ve et ürünlerinde lipit oksidasyon reaksiyonları sonucunda toksik bileşiklerin yanı sıra arzu edilmeyen renk, lezzet ve koku bileşenleri de oluşmaktadır. Lipit oksidasyon reaksiyonlarının kontrol edilmesi amacıyla sentetik veya doğal olmak üzere birçok antioksidan bileşik kullanılmaktadır. Son yıllarda yapılan araştırmalar sonucu sentetik antioksidan maddelerin toksik etkisi, yüksek maliyeti ve tüketicilerin katkı maddeleri hakkındaki sağlık endişeleri nedeniyle kullanımlarına şüphe ile bakılmaktadır. Bundan dolayı son yıllarda baharatlar, aromatik bitkiler, meyve kabuk ve posaları ile bunlardan elde edilen ekstraktların doğal antioksidan kaynağı olarak kullanımlarının araştırılmasına yönelik çalışmalar önem kazanmıştır.

Gıda güvenliğinin sağlanabilmesinde kullanılan kimyasal katkı maddeleri, özellikle kanserojenik ve teratojenik etkilerinden dolayı son zamanlarda tartışma konusu olmuştur. Bu nedenle, tüketiciler doğal katkı maddelerine yönelmektedir. Gıda güvenliğini sağlamak amacıyla çeşitli doğal antioksidan ve antimikrobiyal kaynaklar ön plana çıkmaktadır. Bu kapsamda, bitkiler ve baharatlar gıdalarda tat ve aroma vermenin yanı sıra aynı zamanda antimikrobiyal ve antioksidan etkileriyle de gıdaları korumakta ve raf ömrünü artırmaktadır. Et ve et ürünleri teknolojisinde çok uzun bir süredir tat ve aroma kazandırmak için gıda katkısı olarak kullanılan bitkisel kaynaklar ve bunlardan uygun yöntemlerle elde edilen ekstraktların antioksidan ve antimikrobiyal etkilerinden de faydalanmak mümkündür.

Baharatlar, aromatik bitkiler, meyve kabuk ve posalarından elde edilen ekstraktların antioksidan ve antimikrobiyal özellikleri içerdikleri fenolik bileşenlerden (flavonoidler, terpenoidler, karotenoidler, kumarinler vb. fitokimyasallar) kaynaklanmaktadır. Ayrıca, içerdikleri karnosol, karnosik asit, quercetin, timol, karvakrol, kaffeik asit ve rosmarinik asit gibi birçok uçucu olmayan bileşikler iyi birer serbest radikal bağlayıcı olarak bilinmektedir. Bu çalışma kapsamında, bitkisel kaynakların et ürünlerinde doğal antioksidan olarak kullanımı ile ilgili son yıllarda yapılan araştırma sonuçları hakkında bilgi verilmiştir.

Anahtar Kelimeler: Sucuk, antioksidan, baharat ve aromatik bitkiler

ABSTRACT

The shelf life of meat and meat products is affected by microbiological, chemical and enzymatic changes. The most important chemical change affecting the shelf life of ready-to-eat meat products is lipid oxidation. In addition to toxic compounds, undesirable color, flavor and odor components are also formed as a result of lipid oxidation reactions in meat and meat products. Many synthetic or natural antioxidant compounds are used to control lipid oxidation reactions. As a result of research conducted in recent years, the use of synthetic antioxidants has been questioned due to the toxic effect, high cost and health concerns of consumers about additives. Therefore, in recent years, reserach about the use of

spices, aromatic plants, fruit peel and pulp and the extracts obtained from them as natural antioxidant sources have gained importance.

Chemical additives used to ensure food safety have been the subject of discussions recently, especially due to their carcinogenic and teratogenic effects. Therefore, consumers are tending to focus on natural additives. In order to ensure food safety, various natural antioxidant and antimicrobial sources get to the forefront. In this context, herbs and spices not only add flavor and aroma to foods, but also protect foods with their antimicrobial and antioxidant effects and increase shelf life. In meat and meat products technology, it is possible to benefit from the antioxidant and antimicrobial effects of herbal sources, which have been used as food additives for a long time to add flavor and aroma, and the extracts obtained from them by appropriate methods. The antioxidant and antimicrobial properties of extracts obtained from spices, aromatic plants, fruit peel and pulp are due to their phenolic components (phytochemicals such as flavonoids, terpenoids, carotenoids and coumarins). In addition, many non-volatile compounds such as carnosol, carnosic acid, quercetin, thymol, carvacrol, caffeic acid and rosmarinic acid are known as good free radical scavengers. This study gives information about the results of recent studies on the use of herbal sources as natural antioxidants in processing of meat products.

Keywords: Sausage, antioxidant, spice and aromatic plants

YAĞ İKAME MADDELERİNİN FERMENTE ET ÜRÜNLERİ ÜRETİMİNDE KULLANIMININ KALİTE KRİTERLERİ ÜZERİNE ETKİLERİ

EFFECTS OF FAT REPLACERS USAGE ON QUALITY ATTRIBUTES OF FERMENTED MEAT
PRODUCTS

Şeyda ÖZTURUNÇ

*Yüksek Lisans Öğrencisi, Süleyman Demirel Üniversitesi Fen Bilimleri Enstitüsü Gıda Mühendisliği
Anabilim Dalı*

Biröl KILIÇ

Prof. Dr., Süleyman Demirel Üniversitesi Mühendislik Fakültesi Gıda Mühendisliği Bölümü

Azım ŞİMŞEK

*Dr. Öğr. Üyesi, Isparta Uygulamalı Bilimler Üniversitesi, Eğirdir Meslek Yüksekokulu, Gıda İşleme
Bölümü*

ÖZET

Fermente et ürünleri yüzyıllardır dünyanın farklı bölgelerinde yaygın olarak tüketilen geleneksel et ürünleridir ve et endüstrisi açısından büyük önem taşımaktadır. Ancak bu ürünler, yüksek yağ ve enerji içeriği ile hayvansal yağ kaynaklı yağ asidi profilleri nedeniyle koroner kalp hastalığı, obezite, kolon, meme ve prostat gibi çeşitli kanser türleri ve yüksek kan kolesterolü gibi bazı sağlık problemleri ile ilişkilendirilmektedir. Yüksek yağ içeren et ürünlerinin tüketimiyle ilişkili potansiyel sağlık risklerine ilişkin artan endişeler, et endüstrisini yeni formülasyonlar geliştirmeye veya geleneksel fermente et ürünlerini daha az yağ içerecek şekilde değiştirmeye yöneltmiştir. Bu nedenle, tüm dünyadaki sağlık kuruluşları, toplam diyet yağı, doymuş yağ asitleri ve kolesterol alımının azaltılmasını ve toplam yağ alımının toplam kalorinin %30'undan daha azıyla sınırlandırılmasını önermektedir. Ancak fermente et ürünlerindeki yağ, ürün kalitesini ve kabul edilebilirliğini belirleyen lezzet, tekstür, ağız hissi, sululuk, karakteristik et aroması ve su tutma kapasitesi gibi özelliklere katkıda bulunur. Ayrıca yağ, esansiyel yağ asitleri ve yağda çözünen vitaminlerin kaynağı olduğu için et ürünlerinin beslenme kalitesinde de önemli bir role sahiptir. Son olarak, granül formundaki yağ, fermantasyon işlemi sırasında nem salınımını kolaylaştırıcı etki göstermektedir. Bu nedenle, fermente et ürünleri yağ azaltmanın en zor olduğu ürünlerdir. Aşırı yağ azaltma, daha yüksek ağırlık kayıpları nedeniyle daha sert ve buruşuk yüzeyli ürün oluşumuna neden olur. Fermente et ürünlerinde yağ seviyesinin azaltılması ile ortaya çıkacak olumsuz etkileri ortadan kaldırmak için yağ ikame maddelerinin kullanımı önerilmektedir. Yapıyı önemli ölçüde etkilemeden yağ içeriğini azaltmak amacı ile farklı hayvansal olmayan yağların ve bir dizi protein (soya, mısır, peyniraltı suyu proteini ve yumurta akı vb.) ve karbonhidrat (nişasta, pektin, selüloz, inülin, tahıl veya meyve lifleri, zamklar ve maltodekstrinler vb.) kaynaklarının kullanımına yönelik çok çeşitli stratejiler geliştirilmiştir. Bu çalışma ile son yıllarda fermente et ürünlerinde yağ ikame maddesi kullanımına yönelik gerçekleştirilen araştırmaların sonuçları hakkında bilgi verilmesi amaçlanmıştır.

Anahtar Kelimeler: Fermente et ürünleri, yağ ikame maddesi, yağ, kalite özellikleri

ABSTRACT

Fermented meat products are popular traditional meat products that have been widely consumed in different regions of the world for centuries and have a great importance for the meat industry. However, these products are claimed to cause some health problems such as coronary heart disease, obesity, various types of cancer such as colon, breast and prostate, and high blood cholesterol due to their high fat, energy content and fatty acid profiles originating from animal fat. Increased concerns about the potential health risk related to the consumption of high-fat meat products have prompted the meat

industry to develop new formulations or modify traditional fermented meat products to contain less fat. Therefore, health organizations all over the world have suggested reducing the intake of total dietary fat, saturated fatty acids and cholesterol, and limiting the total fat intake to less than 30% of total calories. However, fat in fermented meat products contributes to the properties such as flavor, texture, mouthfeel, juiciness, characteristic meat flavor and water-holding capacity, which determine the quality and acceptability of products. It also plays an important role in the nutritional quality of meat products, as it is a source of fat, essential fatty acids and fat soluble vitamins. Finally, fat in the form of granules facilitates the release of moisture during the fermentation process. Therefore, reducing fat levels in fermented meat products is one of the most difficult challenge. Excessive fat reduction resulted in a product with a harder and wrinkled surface due to higher weight losses. The use of fat replacers is recommended in order to eliminate the negative effects of fat reduction in fermented meat products. Several strategies have been developed for this purpose such as using different fat (plant derived fats), protein (soy, maize, whey protein, egg white etc.) and carbohydrate (starch, pectin, cellulose, inulin, grain or fruit fibers, gums, maltodextrins etc.) sources in order to reduce the fat content without significantly affecting the structure. Therefore, this study is aimed to give information about the results of recent studies regarding fat replacer usage in fermented meat products.

Keywords: Fermented meat products, fat replacer, fat, quality attributes

**KOLEKSİYON BAHÇESİ OLUŞTURULARAK ENDEMİK BİTKİLERİNİN EX- SİTU
KORUNMASI VE SÜRDÜRÜLEBİLİRLİĞİN SAĞLANMASI: YALOVA İLİ ENDEMİK
BİTKİ KOLEKSİYON BAHÇESİ ÖRNEĞİ**

CONSERVING EX-SITU AND SUSTAINABILITY OF ENDEMIC PLANTS BY CREATING A
COLLECTION GARDEN EXAMPLE OF YALOVA PROVINCIAL ENDEMIC PLANT
COLLECTION GARDEN

Gül Yücel

*Dr. Öğretim Üyesi, Peyzaj ve Süs Bitkileri Programı, Yalova Meslek Yüksek Okulu, Yalova
Üniversitesi*

ORCID ID: 0000-0003-1235-4482

Merve Tanfer

*Öğretim Görevlisi, Peyzaj ve Süs Bitkileri Programı, Yalova Meslek Yüksek Okulu, Yalova
Üniversitesi*

ORCID ID: 0000-0003-0966-8368

ÖZET

Endemik türler, ülkeler için bitkisel genetik kaynaklar yönünden büyük öneme sahiptir. Bu kaynaklar doğru ve bilinçli şekilde korunup, değerlendirildiklerinde sürdürülebilirlik, ekonomik, ekolojik, kültürel ve toplumsal anlamda büyük kazanımlar sağlayacaklardır. Bu araştırmada Yalova iline ait 29 adet endemik taksonun koleksiyon bahçesi oluşturularak ex-situ koruma altına alınması amaçlanmıştır. Öte yandan yine bu çalışmayla, ilgili türlerle ilerleyen dönemlerde yapılacak bilimsel çalışmalarda kullanılacak bitkisel materyalin temini, endemik taksonların toplumsal düzeyde tanınması ve sürdürülebilirliği hedeflenmiştir. 2018 yılında başlatılan ve halen devam etmekte olan araştırma kapsamında Dünya Doğa ve Doğal Kaynakları Koruma Birliği (IUCN) tehdit kriterlerine göre tehlike kategorileri Tehlikeye Yakın (NT) olan 9 takson, Hassas, Tehlike Altına Girebilir (VU) 2 takson, Tehlike Altında (EN) bulunan 1 takson ve Kritik Derecede Tehlike Altında (CR) bulunan 1 takson çalışma konusu olarak ele alınmıştır. Arazi çalışmaları sırasında taksonlara ait tohumlar doğal popülasyonlardan toplanmış ve üretimleri yapılmıştır. Çimlenme zorluğu yaşanan taksonların tohumlarında, laboratuvar ortamında değişik dormansi kırma yöntemleri uygulanarak üretim çalışmaları yapılmıştır. Bu çalışmalar sonucunda tohum çimlenmesi için en uygun yöntemler belirlenerek fideler elde edilmiştir. 29 adet taksonun 13 tanesinde gelişimini tamamlayan fideler, Tarım ve Orman Bakanlığı 2. Bölge Müdürlüğü, Yalova Şube Müdürlüğü Doğa Koruma ve Milli Parklar Çınarcık Şefliğinde oluşturulan endemik bitkiler koleksiyon bahçesine dikilerek koruma altına alınmıştır. Geriye kalan 16 taksona ait koruma altına alma çalışmaları devam etmektedir. Aynı zamanda arazi çalışmaları sürecinde mevsimsel olarak gelişimleri gözlenmiş olan endemik bitki türlerinin, bitkisel, fonksiyonel ve estetik yönden kentsel peyzaj tasarımlarında kullanım olanakları değerlendirilmiştir.

Anahtar kelime: Endemik bitki, Ex-situ koruma, Tohumla üretim

ABSTRACT

Endemic species are of great importance for countries in terms of plant genetic resources. When these resources are properly and consciously protected and evaluated, they will provide great gains in terms of sustainability, economic, ecological, cultural and social aspects. In this research, it was aimed to create a collection garden of 29 endemic taxa belonging to Yalova province and to take them under ex-situ conservation. On the other hand, with this study, it was aimed to provide plant material to be used in future scientific studies with related species, to recognize endemic taxa at the social level and to ensure their sustainability. The research was started in 2018 and is still ongoing. According to the threat

criteria of the International Union for Conservation of Nature, the danger categories are 9 Near Threatened (NT), 2 Vulnerable (VU), 1 Endangered (EN), and 1 Critically (CR) taxon. During the field studies, the seeds of the taxa were collected from natural populations and produced. Production studies were carried out in the seeds of taxa with germination difficulties by applying different dormancy breaking methods in the laboratory environment. As a result of these studies, the most suitable methods for seed germination were determined and seedlings were obtained. The seedlings, which have completed their development in 13 of 29 taxa, have been taken under protection by planting endemic plants created in the Republic of Turkey Ministry of Agriculture and Forestry, the 2nd Regional Directorate of Nature, Yalova Branch Directorate Nature Conservation and National Parks Çınarcık Chiefdom. Conservation studies for the remaining 16 taxa continue. At the same time, the possibilities of using endemic plant species, whose seasonal development was observed during the field studies, in urban landscape designs in terms of herbal, functional and aesthetic were evaluated.

Key words: Endemic plant, Ex-situ conservation, Seed production

IMPACT OF WEATHER PARAMETERS ON ROOT ROT PEA INCITED BY *FUSARIUM SOLANI* F. SP. *PISI*

Yogita Nain

SKNAU, Jobner, Department- Plant Pathology, Jobner, India.

ORCID ID: <https://orcid.org/0000-0002-4488-1992>

Nitin Chawla

SKNAU, Jobner, Assistant Professor, Department- Plant Pathology, Jobner, India.

S.K. Goyal

SKNAU, Jobner, Assistant Professor, Department- Plant Pathology, Jobner, India.

ABSTRACT

Root rot of pea incited by *Fusarium solani* f. sp. *pisi* is one of the most yield- reducing factors in pea (*Sesamum indicum* L.). In the present studies which were carried out at the experimental farm of RARI, Durgapura, Jaipur during Rabi season 2022. The study focused on relationship of different meteorological variables with the development of root rot of pea disease under field conditions. A positive and non-significant correlation was observed between disease and temperature. *Fusarium solani* f. sp. *pisi* showed maximum growth and sporulation at 28°C followed by 25°C temperature. Assessment of yield losses in pea due to *Fusarium solani* f. sp. *pisi* was done at the seedling stage to maturity stage. The data also revealed that minimum relative humidity was more correlated with the disease intensity as compared to the maximum relative humidity in all varieties. A significant decrease disease was observed at 80, 90, 100 percent humidity level. It can be concluded that low humidity favored the growth of *Fusarium solani* f. sp. *pisi*.

Keywords: Weather parameters, *fusarium solani* f.sp. *pisi*, Temperature, Relative Humidity,

ASPECTS OF GROWING MICROGREENS AT HOME

Svetlana CHERNENKO¹

¹*Biology teacher of the highest category, Kherson specialized school of I-III degrees №30, Kherson, Ukraine*

Sofia LAVRENKO²

²*Student of the 6th form, Kherson specialized school of I-III degrees №30, Kherson, Ukraine*

Sergiy LAVRENKO³

³*Ph.D., Associate Professor, Kherson State Agrarian and Economic University, Kherson, Ukraine*

ORCID ID: <https://orcid.org/0000-0003-3491-1438>

ABSTRACT

Global demand for food has grown along with the world's growing population, which calls for a new sustainable method of agriculture. The shortage of fertile soil and agricultural land in the world has also caused serious concern. Groundless cultivation technologies can be a revolutionary solution and a productive alternative to traditional agriculture and agricultural production.

The current trend toward healthy living and health problems as a result of the coronavirus pandemic has drawn attention to aspects of healthy eating. In the context of increased attention to the nutritional value of products, the term "superfood" has appeared. Characteristics of "superfood" are attributed to products that contain large and concentrated amounts of minerals, vitamins and other nutrients. One of such products is microgreen, or microgreens, which has recently gained popularity in our country.

A microgreen is a young plant in the cotyledon phase before the first true leaf appears. Until the appearance of the first true leaf, the plant develops due to nutrients accumulated in the seeds, without additional fertilization without additional fertilizers and when grown in a soilless environment. This makes it possible to obtain products with the maximum concentration of vitamins, aromatic substances, and trace elements. Growing microgreens from winter wheat, peas, lentils and mustard are extremely effective and appropriate. Analysis of the weight of 10 harvested plants by the studied crops was as follows: the largest by weight were pea plants - 5.46 g, winter wheat - 0.82 g, mustard - 0.25 g, lentils - 2.14 g. marketing proposals had to calculate the cost and profit side. The least expensive is the cultivation of peas, which amounted to 2.86 UAH, and the most valuable - is mustard. Other crops occupied an intermediate place: wheat - UAH 3.04, lentils - UAH 3.06.

Key words: microgreen, plant, agriculture.

GREEN TOURISM IN RECREATIONAL AREAS OF THE KHERSON REGION

Svetlana CHERNENKO¹

¹*Biology teacher of the highest category, Kherson specialized school of I-III degrees №30, Kherson, Ukraine*

Anastasiia SUROVTSOVA²

²*Student of the 9th form, Kherson specialized school of I-III degrees №30, Kherson, Ukraine*

Sergiy LAVRENKO³

³*Ph.D., Associate Professor, Kherson State Agrarian and Economic University, Kherson, Ukraine*

ORCID ID: <https://orcid.org/0000-0003-3491-1438>

ABSTRACT

Kherson region is one of the most ecologically clean regions of the country, which has a large number of historical and cultural monuments, the only desert in Europe, the largest artificial forest, natural healing lakes and washed by two seas. Therefore, the development of green tourism in its recreational areas can bring sustainable monetary income and increase the socio-economic status of the region. In Ukraine, lakes have no analogs in terms of healing properties in the world. In Germany, the therapeutic mud of the western part of Lake Sivas has been clinically evaluated in accordance with the EU Directive and is sold as a medical product. The project "People's Resort-Lemurian Lake" was presented during the International Tourism Forum. But for all these reasons, no study has provided a general picture of the impact of the physicochemical characteristics of the water of these lakes on human health. Therefore, this was the first impetus for our study. We began our research with the least studied Genichesk Pink and Lemurian Lakes.

Given the unique composition of the lake water, we propose to include Genichesk Pink Lake and Lemurian Pink Lake in the recreational area of the Kherson region. Favorable climate and air, saturated with Sivas evaporation of salts, have a significant therapeutic effect, especially for diseases of the respiratory system, and water has balneological value and can be used for health activities. Thus, the recreational area of the Genichesk district, first of all, Pink Lake, by its natural properties, can be considered one of the best health resorts in the world. In order to preserve the unique natural complex in its natural state and create conditions for organized recreation of the population, Lake Lemuria should be granted the status of a regional landscape park.

Key words: pink lake, ecologically clean regions, Kherson region.

BIOLOGICAL PEST CONTROL MEASURES IN PARKS

*Olexander LAVRENKO*¹

¹Student of the 3rd form, Kherson specialized school of I-III degrees №30, Kherson, Ukraine

*Natalia KOSHEVA*²

²Teacher of the highest category, senior teacher, Kherson specialized school of I-III degrees №30, Kherson, Ukraine

*Sergiy LAVRENKO*³

³Ph.D., Associate Professor, Kherson State Agrarian and Economic University, Kherson, Ukraine

ORCID ID: <https://orcid.org/0000-0003-3491-1438>

ABSTRACT

Modern living conditions create a lot of stress for a person. To overcome them, one of the methods is walking in the fresh air in parks. These are usually small oases of wildlife in "concrete thickets". Municipal services take care of him. They usually prune trees and shrubs, collect fallen leaves, and water them, but they do not pay much attention to the number of pests on the trees. The use of chemicals in such conditions is not allowed, so it is necessary to use other methods, including biological. The most effective method is to attract various birds to live in this area. That is why every year students build and place various bird feeders and houses in the parks. Birdhouses are set by students for several purposes: for research purposes - attracting birds to observe birds, and their nesting; attracting birds to destroy agricultural pests; education of love for nature and work with children. According to scientists, one family of *Cyanistes caeruleus* provides reliable protection against pests during the year with an average of 40 mature trees. Therefore, for the International Bird Day, which is held annually on April 1 within the UNESCO program "Man and the Biosphere" in the dendrological park of Kherson State Agrarian and Economic University and Kherson Specialized School №30 have placed birdhouses. We hope that our feathered friends will be satisfied with the new housing and help fight pests of trees in our city.

Key words: pest control, birdhouses, parks.

METHODS OF USING NATURAL DYE FROM PAPRIKA IN THE FOOD INDUSTRY

Maria RIZAK

¹*Student of the Faculty of Agronomy, Kherson State Agrarian and Economic University, Ukraine*

Sergiy LAVRENKO²

²*Ph.D., Associate Professor, Kherson State Agrarian and Economic University, Kherson, Ukraine*

<https://orcid.org/0000-0003-3491-1438>

Nataliia LAVRENKO³

³*Ph.D., Associate Professor, Kherson State Agrarian and Economic University, Kherson, Ukraine*

ORCID ID: <https://orcid.org/0000-0002-6924-7437>

ABSTRACT

Due to the toxicity of synthetic dyes and the growing concern for people's own health, many manufacturers around the world are forced to look for a replacement from natural ingredients, which are natural dyes of plant origin. Among them should be noted paprika, which contains a large number of carotenoid pigments that give the fruit a rich red color. The high content of pigments of this group makes paprika an excellent object of study of its features for further production of organic dye.

The color saturation of the dye depends on the degree of ripeness of the pepper. Ripe fruits, which are plucked from the top of the paprika, are saturated with sunlight and have a rich bright red color, which indicates the high quality of raw materials. The color and quality of the dye also depend on the particle size, the presence in the fruit of seeds, petioles, and membranous partitions. If the dye is coarse and has seeds or peduncles, the color of this dye will be noticeably lighter and the quality will be worse.

The range of applications of natural dyes in the food industry is quite wide. By adding such dyes to pasta, bakery products and etc., you can get bright, attractive, safe products that will be very interesting to consumers because of their unusual bright color, especially for children.

On the basis of the Kherson State Agrarian and Economic University, noodles with a color palette from light orange to deep red were created with the help of red dye from a paprika hybrid of Chinese selection. This difference was obtained due to the difference in their dye content (the more dye, the darker the color). When you add dye to the flour, you will get orange or pink bread.

Keywords: paprika, natural dye, food industry.

TÜRKİYE’ DE KAYIT ALTINA ALINMIŞ SOLANACEAE FAMILİYASI SEBZE TÜRLERİNİN MEVCUT DURUMU

CURRENT STATUS OF SOLANACEAE FAMILY VEGETABLE SPECIES REGISTERED IN TURKEY

Burcu TUNCER

Doç. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü

ORCID ID: 0000-0002-4402-4536

ÖZET

Türkiye’de kayıt altına alınan sebze çeşit sayısı yıldan yıla hızlı bir artış göstermektedir. Solanaceae familyası sebzeleri ekonomik önemi yüksek olan sebze türleridir. Bu nedenle bu türlerde yetiştiricilikte hibrit çeşit kullanımı yaygındır. Türkiye’ de 2021 yılı verilerine göre Solanaceae familyası grubu sebzelerin toplam üretim miktarı 17 019 491 t’ dur. En fazla üretimi yapılan türler sırasıyla domates (13 095 258 t), kapyta biber (1 445 275 t), sivri biber (1 064 633 t), patlıcan (832 938 t), dolmalık biber (420 918 t) ve çarliston biber (160 469 t)’ dir.

Burada sunulan tebliğ, Türkiye’ de 2022 yılına kadar kayıt altına alınmış Solanaceae familyası sebze türlerine (domates, biber ve patlıcan) ait çeşitlerin mevcut durumunu ortaya koymak ve kayıt altına alınan çeşitlerin özelliklerini karşılaştırmak amacıyla hazırlanmıştır. Bu amaçla verilerin toplanmasında Tarım ve Orman Bakanlığı’ na bağlı bir kuruluş olan Tohumluk Tescil ve Sertifikasyon Merkez Müdürlüğü internet sitesinden ve Tohumluk Tescil ve Sertifikasyon Merkez Müdürlüğü tarafından yayınlanan kayıt listelerine ait bültenlerden yararlanılmıştır.

Araştırma sonucunda, 2022 yılına kadar Solanaceae familyası sebze türlerinde toplam 2 165 adet çeşidin kayıt altına alındığı saptanmıştır. Kayıtlı çeşitlerin 1 930 adetinin hibrit, 235 adetinin açıkta tozlanan çeşit olduğu belirlenmiştir. Solanaceae grubu sebzelerde, en çok kayıtlı çeşitlerin bulunduğu türler domates (1 246 adet) ve biber (782 adet) olmuştur. Domateste en çok kayıt altına alınmış olan tipler sırtık (545 çeşit) ve yer (146 çeşit) çeşitleri olurken, biberde sırasıyla sivri biber (183 adet), kapyta biber (128 adet), dolmalık biber (125 adet), çarliston biber (94 adet), kıl biber (45 adet) ve üç burun (41 adet), patlıcanda ise silindirik (27 adet) ve anaç (15 adet) tipler olmuştur.

Anahtar Kelimeler: Biber, Çeşit, Domates, Kayıt, Patlıcan

ABSTRACT

The number of registered vegetable varieties in Turkey is increasing rapidly from year to year. Vegetables of the Solanaceae family are vegetable species with high economic importance. For this reason, the use of hybrid cultivars in the production of these species is gradually increasing. According to the data of 2021 in Turkey, the total production amount of Solanaceae family group vegetables is 17 019 491 t. The most produced species are tomatoes (13 095 258 t), capia pepper (1 445 275 t), green pepper (1 064 633 t), eggplant (832 938 t), bell pepper (420 918 t) and charliston pepper (160 469 t), respectively.

This study was carried out in order to reveal the current status of the varieties of Solanaceae family vegetable species (tomato, pepper, and eggplant) registered until 2022 in Turkey and to compare the characteristics of the registered varieties. For this purpose, the website of the Central Directorate of Seed Registration and Certification, an institution affiliated to the Ministry of Agriculture and Forestry, and the bulletins of the registration lists published by the Central Directorate of Seed Registration and Certification were used to collect the data.

As a result of the research, it was determined that a total of 2 165 cultivars were recorded in the Solanaceae family vegetable species until 2022. It was determined that 1 930 of the registered cultivars

were hybrid and 235 of them were open pollinated cultivars. Among the vegetables of the Solanaceae group, the most registered cultivars were tomato (1 246 cultivars) and pepper (782 cultivars). The most registrated types in tomato were pole (545 cultivars) and ground (146 cultivars) cultivars. In pepper, green pepper (183 cultivars), capia pepper (128 cultivars), bell pepper (125 cultivars), charliston pepper (94 cultivars), bristle pepper (45 cultivars) and three-nosed (41 cultivars) types, in eggplant it is cylindrical (27 cultivars) and rootstock (15 cultivars) types.

Keywords: Pepper, Variety, Tomato, Registration, Eggplant

TÜRKİYE’ DE KAYIT ALTINA ALINMIŞ CRUCİFERAE FAMILİYASI SEBZE TÜRLERİNİN MEVCUT DURUMU

CURRENT STATUS OF CRUCIFERAE FAMILY VEGETABLE SPECIES REGISTERED IN TURKEY

Burcu TUNCER

Doç. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü,

ORCID ID: 0000-0002-4402-4536

ÖZET

Cruciferae familyası sebzeler, sağlık açısından öneme sahip sebze türlerini içine alan geniş bir familyadır. Sağlık açısından önemli türler olmaları nedeniyle, dünyada ve Türkiye’ de bu türlerin yetiştiriciliği giderek atmaktadır. Türkiye’ de 2021 yılı verilerine göre Cruciferae familyası grubu sebzelerin üretim miktarı toplam 1 466 714 t’ dur. En çok üretimi yapılan türler sırasıyla beyaz lahana (597 910 t), karnabahar (234 717 t), turp (228 766 t), kırmızı lahana (200 472 t) ve brokoli (104 614 t)’ dür.

Burada sunulan tebliğ, Türkiye’ de 2022 yılına kadar kayıt altına alınmış Cruciferae familyası sebze türlerine (beyaz lahana, karnabahar, turp, kırmızı lahana, brokoli, yaprak lahana, Brüksel lahanası, Çin lahanası, alabaş, şalgam, roka ve tere) ait çeşitlerin mevcut durumunu ve çeşit tiplerini belirlemek amacıyla hazırlanmıştır. Bu amaçla verilerin toplanmasında Tohumluk Tescil ve Sertifikasyon Merkez Müdürlüğü web sitesinden ve Tohumluk Tescil ve Sertifikasyon Merkez Müdürlüğü tarafından yayınlanan kayıt listelerine ait bültenlerden yararlanılmıştır.

Araştırma sonucunda, bugüne kadar Cruciferae familyası sebze türlerine ait toplam 430 adet kayıt altına alınmış çeşidin olduğu belirlenmiştir. En fazla kayıt altına alınan türler sırasıyla karnabahar (147 çeşit), beyaz lahana (84 çeşit), brokoli (68 çeşit), turp (48 çeşit), kırmızı lahana (43 çeşit), roka (15 çeşit), alabaş (8 çeşit), Brüksel lahanası (6 çeşit), şalgam (4 çeşit), Çin lahanası (3 çeşit) ve tere (2 çeşit) olmuştur. Şalgam, roka ve terede geliştirilen çeşitlerin tamamı açıkta tozlanan çeşitlerden oluşurken, diğer türlerde kayıtlı çeşitlerin büyük çoğunluğunu hibrit çeşitler oluşturmuştur. 2022 yılına kadar, karnabaharda toplam 138, beyaz lahanada 79, brokolide 65, kırmızı lahanada 35, turpta 14, alabaşta 7, Brüksel lahanasında 6, Çin lahanasında 3 adet hibrit çeşidin geliştirildiği saptanmıştır.

Anahtar Kelimeler: *Brassicaceae*, Cruciferae, Çeşit, Kayıt, Sebze

ABSTRACT

Cruciferae family vegetables are a family that includes many species of vegetables that are important for health. Since they are important species in terms of health, the production of these species is increasing in the world and in Turkey. According to the data of 2021 in Turkey, the production amount of Cruciferae family group vegetables is 1 466 714 t in total. The most produced species are white cabbage (597 910 t), cauliflower (234 717 t), radish (228 766 t), red cabbage (200 472 t) and broccoli (104 614 t), respectively.

The paper presented here is to determine the current status and cultivar types of Cruciferae family vegetable species (white cabbage, cauliflower, radish, red cabbage, broccoli, leaf cabbage, Brussels sprouts, Chinese cabbage, kohlrabi, turnip, rocket, and cress) registered in Turkey until 2022. For this purpose, the website of the Central Directorate of Seed Registration and Certification and the bulletins of the registration lists published by the Central Directorate of Seed Registration and Certification were used to collect data.

As a result of the research, it was determined that there are a total of 430 recorded cultivars belonging to Cruciferae family vegetable species so far. The most recorded species were cauliflower (147

cultivars), white cabbage (84 cultivars), broccoli (68 cultivars), radish (48 cultivars), red cabbage (43 cultivars), rocket (15 cultivars), kohlrabi (8 cultivars). , Brussels sprouts (6 cultivars), turnip (4 cultivars), Chinese cabbage (3 cultivars), and cress (2 cultivars), respectively. All of the cultivars developed in turnip, rocket and cress consisted of open pollinated cultivars, while hybrid cultivars constituted the majority of the cultivars registered in other species. Until 2022, it has been determined that a total of 138 hybrid varieties have been developed in cauliflower, 79 in white cabbage, 65 in broccoli, 35 in red cabbage, 14 in radish, 7 in kohlrabi, 6 in Brussels sprouts, and 3 hybrid varieties in Chinese cabbage.

Keywords: *Brassicaceae*, Cruciferae, Cultivar, Registration, Vegetable

EXPLOITING OF NEXT GENERATION SEQUENCING (NGS) PLATFORMS IN LIVESTOCK GENOMES

Hasan KOYUN¹

¹*Van-Yuzuncu Yil University, Agricultural Faculty, Animal Science, Department of Biometry and Genetics Unit, Van, Turkey*

ORCID ID: 0000-0001-9424-6850

Selahaddin KIRAZ²

²*Harran University, Agricultural Faculty, Animal Science, Department of Animal Biotechnology, Şanlıurfa, Turkey*

ORCID ID: 0000-0003-1298-4783

Seyrani KONCAGÜL³

³*Ankara University, Agricultural Faculty, Animal Science, Department of Animal Breeding, Ankara, Turkey*

ORCID ID: 0000-0001-7596-0485

ABSTRACT

Sequence-based approaches precisely determine the nucleic acid sequence of a particular DNA or cDNA (RNA) molecule. Next generation sequencing (NGS) or high-throughput sequencing not only saves time, but also enables orders of magnitude more data to be delivered at a much lower cost. Depending on their development and implementation time, NGS platforms can be divided into first, second and third generation sequencing technologies, also known as de novo genome assembly. In addition to 3rd NGS, 4th and even 5th NGS technologies and methods were also mentioned, as well as their use and application in all living organisms (bacteria, plants, humans) of genomic research in the near future.

In this study, the NGS-related platforms and their bioinformatics or computational analysis previously applied to farm animal genomes were used to provide a brief overview of advances, applications, and challenges of NGS platforms.

Keywords: Bioinformatics, livestock genomes, next generation sequencing (NGS) platforms

STATİK MANYETİK ALAN UYGULAMASININ DOMATES BİTKİSİNİN ÇİMLENME PARAMETRELERİNE ETKİSİNİN ARAŞTIRILMASI

THE INVESTIGATION OF THE EFFECT OF STATIC MAGNETIC FIELD APPLICATION ON GERMINATION PARAMETERS OF TOMATO PLANT

Ömer BİNGÖL

Van Yüzüncü Yıl University, Faculty of Education, Department of Biology Teaching

ÖZET

Bu çalışmada, manyetik alan uygulamasının domates tohumlarının çimlenme oranına, kök/gövde uzunluklarına, yaş/kuru ağırlıklarına ve vigor indeksine etkilerinin araştırılması amaçlanmıştır. Bu amaç için, H2274 domates çeşidine (*Solanum lycopersicum* L. cv.H2274) ait tohumlar kullanıldı. Manyetik alan uygulaması için farklı şiddetlerde statik manyetik alan (7.5 mT, 15 mT ve 22.5 mT) uygulandı. Manyetik alan oluşturmak için Helmutz bobinleri ve güç kaynakları (0-30 Volt) kullanıldı. Manyetik alan ölçümleri için Teslametre kullanıldı. Domates tohumları, % 3 sodyum hipoklorit ile 10 dakika çalkalandıktan sonra steril distile su ile bir çok defa yıkanarak ekime hazırlandı. Bitkilerin çimlendirilmesi için Hoagland su kültürü kullanıldı. Tohumlar, falkon tüplerine alınarak Hoagland su kültürü içinde 6 saat boyunca şişirildiler. Daha sonra, tohumlar 1 saat boyunca 7.5 mT, 15 mT ve 22.5 mT şiddetlerinde ki farklı manyetik alanlara maruz bırakılarak tohumlara manyetik alan uygulaması yapıldı.

Tohumların 5 gün boyunca çimlenmeleri takip edilerek her gün çimlenen tohum sayıları kaydedildi. 5. Gün sonunda, kök ve gövde uzunlukları ve yaş ağırlıkları ölçüldü. Kuru ağırlık ölçümü için ise örnekler 48 saat boyunca 72 °C de etüvde bekletildiler. Deneyler en az üç tekrarlı olarak yapıldı. İstatistiksel analizler GraphPad 8.0 Prism paket programı kullanılarak yapıldı. En yüksek çimlenme oranı kontrol (manyetik alan uygulanmamış) grubunda iken en düşük çimlenme oranı 15 mT uygulamasında hesaplandı. Fakat, çimlenme oranları arasında istatistiksel fark bulunmadı. 7.5 mT ve 22.5 mT uygulamalarında gövde uzunluğu anlamlı olarak azalmışken ($p<0.05$), 15 mT uygulamasında ise anlamlı bir değişim görülmedi. Kök uzunluğu sonuçlarına göre, 15 mT uygulamasında kontrole göre bir artış olmasına rağmen anlamlı bir fark ifade etmemektedir. Gövde ve kök kuru ağırlıklarında istatistiksel bir farklılık bulunmadı. Gövde ve kök yaş ağırlıklarında 15 mT uygulamalarında artış olmasına rağmen anlamlı bir fark gözlenmedi. Vigor indeks sonuçlarına göre manyetik alan uygulamaları bitkide olumsuz bir sonuca yol açmamıştır. Sonuç olarak, 15 mT manyetik alan uygulaması çimlenme parametrelerini olumlu yönde etkileyebilecek bir potansiyele sahip olduğu tespit edildi. Manyetik alan şiddetinin ve uygulama süresinin çeşitlendirilmesi ileri çalışmalar olarak düşünülmektedir.

Anahtar Kelimeler: Domates, Manyetik Alan, Çimlenme

ABSTRACT

In this study, it was aimed to investigate the effects of magnetic field application on germination rate of tomato seeds, root/stem length, fresh/dry weight and vigor index. For this purpose, seeds of H2274 tomato cultivar (*Solanum lycopersicum* L. cv.H2274) were used. Static magnetic field of different intensities (7.5 mT, 15 mT and 22.5 mT) was applied for the application of magnetic field. Helmutz coils and power supplies (0-30 Volts) were used to create the magnetic field. Teslameter was used for magnetic field measurements. Tomato seeds were prepared for sowing by washing several times with sterile distilled water after shaking with 3% sodium hypochlorite for 10 minutes. Hoagland aquaculture was used to germinate the plants. The seeds were taken into falcon tubes and imbibed in Hoagland hydroponic culture for 6 hours. Then, seeds were exposed to different static magnetic fields of 7.5 mT, 15 mT and 22.5 mT intensities for 1 hour.

The germination of the seeds was followed for 5 days and the number of germinated seeds was recorded every day. At the end of the 5th day, root and stem lengths and fresh weights were measured. In addition, the samples were kept in an oven at 72 °C for 48 hours for dry weight measurement. The experiments were repeated at least three times. Statistical analyses were performed using the GraphPad 8.0 Prism package program. The highest germination rate was in the control group (no magnetic field applied), while the lowest germination rate was calculated in the 15 mT application. However, no statistical difference was found between germination rates. While stem length decreased significantly in 7.5 mT and 22.5 mT applications ($p < 0.05$), no significant change was observed in 15 mT applications. According to the root length results, although there was an increase in the 15 mT application compared to the control, there was no significant difference. There was no statistical difference in stem and root dry weights. Although there was an increase in stem and root fresh weights in 15 mT applications, no significant difference was observed. According to the Vigor index results, magnetic field applications did not cause a negative result in the plant. As a result, it was determined that the application of 15 mT magnetic field has the potential to positively affect the germination parameters. The diversification of magnetic field intensity and application time is considered as further studies.

Keywords: Tomato, Magnetic Field, Germination

ÇEŞİTLİ SIĞIR IRKLARININ SÜTÜNDE BULUNAN BİYOAKTİF BİLEŞENLERİN BELİRLENMESİ

DETERMINATION OF BIOACTIVE MILK COMPONENTS IN VARIOUS CATTLE BREEDS'

Doç. Dr. Sercan KARAV

Çanakkale Onsekiz Mart Üniversitesi, Fen Edebiyat Fakültesi, Moleküler Biyoloji ve Genetik Bölümü

ORCID NO: 0000-0003-4056-1673

Eda NTELITZE

*Yüksek Lisans Öğrencisi, Çanakkale Onsekiz Mart Üniversitesi, Lisansüstü Eğitim Enstitüsü,
Moleküler Biyoloji ve Genetik Bölümü*

ORCID NO: 0000-0001-8098-3876

ÖZET

Süt canlıların yaşamının ilk anından itibaren besin ve enerji kaynağı görevini üstlenmiş en önemli hayvan bazlı gıdaların başında gelmektedir. Yüksek oranda protein ve glikan içerdiği bilinmekle beraber antimikrobiyal ve prebiyotik özellikte göstermektedir. Süt gelişme çağındaki tüketicilerin büyüme faktörlerini uyarması ve büyümeyi arttırması için gerekli tüm mikro elementleri sağlar. Ayrıca patojen enfeksiyonlarını azaltarak ve bağırsak epitelyumunun gelişmesini destekleyerek yeni doğanları koruma özelliği gösterdiği bilinmektedir. Süt, biyolojik aktiviteye sahip önemli bir peptid kaynağıdır. Canlılar için ana besin kaynağı olan sütün besin değerini oluşturan proteinin içeriği çok önemlidir. Sütteki proteinler iki gruba ayrılır: kazein ve whey proteindir. Sütteki antimikrobiyal aktivite başlıca whey proteinlerinden elde edilir ve bunun çoğu immünooglobulin G (IgG) ve laktoferrine atfedilir. IgG ve laktoferrin, sütteki N-glikanların ana kaynağını oluşturmaktadır. Bu çalışmada; çeşitli sığır ırklarının sütlerindeki protein miktarı saptanarak içerdiği laktoferrin ve İmmünooglobulin G (IgG) konsantrasyonu belirlenerek ırklar arası bu terapötik bileşenlerce farklılık ortaya sunulacaktır. Öncelikle, bu çalışmada incelenecek olan dört farklı ırka ait olan süt numuneleri Çanakkale bölgesindeki bir yerel süt çiftliğinden (Uluova Süt Ticaret A.Ş.'den temin edilmiştir). Farklı ırklara ait sütlerden protein izolasyonu gerçekleştirilmiş ve protein profilleri SDS-PAGE jel elektroforezi ile görüntülenmiştir. Elde edilen proteinlerin miktarı Qubit 3.0 fluometre cihazı kullanılarak kantifikasyonu sağlanmıştır. Sonrasında farklı sığır ırklarının sütlerinin içerdiği N-glikanların salınımı, PNGaz F olarak da bilinen bir peptidil-N-glikosidaz F enzimi kullanılarak gerçekleştirilmiş ve saflaştırılmıştır. Saflaştırılan serbest glikanların konsantrasyonları kalorimetrik bir yöntem olan Fenol Sülfürik Asit metodu ile glukoz standardına göre belirlenmiştir. Saflaştırılan serbest glikanların yapıları detaylı bir şekilde MALDI-TOF-MS ve HPLC-HILIC-FLD analizleri ile karakterize edilmiştir.

Anahtar Kelimeler: Süt, protein, laktoferrin, immünooglobulin G (IgG), N-glikan

* Bu çalışma; Çanakkale Onsekiz Mart Üniversitesi Lisansüstü Eğitim Enstitüsü Moleküler Biyoloji ve Genetik Anabilim Dalı öğrencisi Eda NTELITZE'nin "Çeşitli Sığır Irklarının Biyoaktif Süt N-glikanlarının Belirlenmesi" isimli Yüksek Lisans tez çalışmasından türetilmiştir. Bu araştırma Çanakkale Onsekiz Mart Üniversitesi Bilimsel Araştırma Projeleri Koordinasyon Birimi tarafından FYL-2022-3869 No'lu Proje Numarasıyla desteklenmiştir.

ABSTRACT

Milk is one of the most important animal-based foods serving as a source of nutrition and energy from the first moment of life. Besides being known that it contains high levels of protein and glycans, also shows antimicrobial and prebiotic properties. Milk provides all the necessary microelements to stimulate

growth factors and increase the growth of consumers at the age of development. It is also known to protect new-borns by reducing pathogen infections and supporting the development of intestinal epithelium. Milk is an important source of peptides having biological activity. The content of protein, forming the nutritional value of milk, which is the main nutrient source for living beings, is very significant. The proteins in milk are divided into two groups: casein and whey protein. The antimicrobial activity in milk is mainly derived from whey proteins, and most of this is attributed to immunoglobulin G (IgG) and lactoferrin. IgG and lactoferrin constitute the main source of *N*-glycans in milk. In this study, by determining the amount of protein in the milk of various cattle breeds, the concentration of lactoferrin and Immunoglobulin G (IgG) will be determined and the difference in these therapeutic components between breeds will be presented. Firstly, milk samples belonging to four different breeds were obtained from a local dairy farm (Uluova Milk Trading Co.) in Çanakkale region. Protein isolation from milk of different breeds was carried out and protein profiles were visualized by SDS-PAGE gel electrophoresis. The amount of obtained protein was quantified using a Qubit 3.0 fluorometer. Thereafter, the release of *N*-glycans from the milk of different cattle breeds was executed and purified using a peptidyl-*N*-glycosidase F enzyme, known as PNGase F. The concentrations of the purified glycans were determined by calorimetric method known as Phenol Sulfuric Acid, according to the glucose standard. The structures of the purified free glycans were characterized in detail by MALDI-TOF-MS and HPLC-HILIC-FLD analyses.

Keywords: Milk, protein, lactoferrin, immunoglobulin G (IgG), *N*-glycan

**This study was derived from the Graduate Thesis of Eda NTELITZE entitled as “Determination of bioactive milk N-glycans in different cattle breeds” supplied for partial fulfillment of the Master’s Degree at Molecular Biology and Genetics Department at School of Graduate Studies at Çanakkale Onsekiz Mart University. The study was financially supported by Çanakkale Onsekiz Mart University Scientific Research Projects Department with the project number of FYL-2022-3869.*

RESEARCH ON STRUCTURAL CHARACTERIZATION OF MILK PROTEIN FRACTIONS USING FTIR SPECTROSCOPY

Hülya YAMAN

Assist. Prof., Bolu Abant İzzet Baysal University

Bolu Technical Science Vocational High School, Food Processing Department

ABSTRACT

The identification and characterization of milk proteins have been limited due to protein fraction's structure and diversity. The diversity of proteins, including caseins, α -lactalbumin, β -lactoglobulin, and serum albumin, has hindered the intensive identification and characterization of a wide variety of low-protein proteins in milk due to limitations in separation techniques and labeling of protein bands. More extensive fractionation techniques such as precipitation techniques, immunoabsorption, gel electrophoresis, chromatography, and ultracentrifugation, have allowed for better isolation of proteins. Within the scope of this study, in addition to these methods, the characterization of milk proteins by FTIR spectroscopy can identify and characterize without using pretreatment to separate protein fractions in milk. For this purpose, the spectrum of the milk protein fractions, alpha-casein, beta-casein, alpha-Lacto albumin, and beta-lactoglobulin fractions in the amino acid profile in the FTIR spectra collected in the region of 4000 to 700 cm^{-1} were correlated with the relevant bonds. In the comparison of milk protein fractions by mother, goat, and cow milk spectra, mother milk showed a lower spectrum profile in the range where related fractions showed the maximum absorbance due to the low amount of beta-lactoglobulin in breast milk. Variations in the ratio of protein fractions by milk origin appear to be an advantage for the determination of proteins fractions. Also, the characterization of milk protein fractions in a short time with direct sampling methods will provide the identification of milk protein fractions without separation techniques. The use of high-throughput, accurate, reliable FTIR spectroscopic methods has allowed better interpretation and visualization of data.

This technique, which can be applied with portable FTIR devices, will provide a significant convenience for the dairy industry in terms of rapid, cheap, and simple analysis of milk as well as the development and identification of innovative products. Compared to classical identification methods, it will be a great advantage to obtain reliable results without the need for separation methods in this method.

Keywords: FTIR, milk protein fractions, protein characterization, casein, whey protein

AMASRA KENTİ BEDESTEN ÇEVRESİ PLANLAMA VE RESTORASYON ÖNERİLERİ PLANNING AND RESTORATION SUGGESTIONS FOR BEDESTEN SURROUNDINGS IN AMASRA CITY

Nurhan KOÇAN^{1*}

^{1*}*Sorumlu yazar, Doç. Dr., Bartın Üniv. Müh. Mimarlık ve Tasarım Fak. Peyzaj Mimarlığı Böl.,
Bartın*

ORCID ID: 0000-0001-9433-7007

Merve ÖZEREN ALKAN²

²*Dr., Ege Üniversitesi, Ziraat Fakültesi Peyzaj Mimarlığı Bölümü, İzmir*

ORCID ID: 0000-0003-3249-5637

Erden AKTAŞ³

³*Dr., Ege Üniversitesi, Ziraat Fakültesi Peyzaj Mimarlığı Bölümü, İzmir*

ORCID ID: 0000-0003-2089-4630

ÖZET

Son yıllarda insanların gezi ve dinlenme alışkanlıkları değişmiş bunun sonucu olarak doğal ve kültürel özellikleriyle dikkat çeken alanlara olan ziyaretlerin sayısı artmıştır. İnsanların birden çok etkinliği bir arada yapabildikleri, ruhen doyurucu tatil ve dinlenme ortamları bu kapsamda ön planda olmaktadır. Ancak bu tür alanların özelliklerinin bozulmadan optimum kullanılabilmesi için planlama ve restorasyonlara gereksinim duyulmaktadır. Çünkü planlama, alanların ve kaynakların sürdürülebilir kullanımı ile insan ve çevrenin birlikteliği arasındaki dengeyi sağlar. Bu çalışmada, UNESCO geçici miras listesinde yer alan Amasra (Bartın) kenti Bedesten çevresinin kullanımına odaklanılmıştır. Alan ve çevresi Karadeniz kıyısına olan konumu, 3000 yıllık tarihi geçmişi ile ender niteliklere sahip bir yerdir. Her yıl yerli ve yabancı binlerce turist çeken kentte Bedesten çevresi atıl durumda olup kullanılmamakta hatta bilinmemektedir. Bu durum tarihi yapı ve çevresinin kontrolsüz kullanımı ve bakımsızlığı ile kaybı, çevre açısından görsel ve fiziksel yetersizliği ve güvenlik sorununu beraberinde getirmektedir. Çalışmada alan içi ve çevre analizleri yapılmış, alan için kullanım, koruma ve bakım önlemlerini içeren planlama önerileri getirilmiştir. Bu kapsamda doğal ve kültürel değerlerinin sürdürülebilirlik bağlamında etkin bir şekilde planlanması ve geliştirilmesi için çözüm önerileri ortaya konulmuştur. Çalışmanın, alanın korunması ve geliştirilmesi için uygulayıcılara fikir vereceği öngörülmektedir.

Anahtar Kelimeler: Sürdürülebilir Kullanım, Peyzaj Planlama, Tarihi Kent, Bedesten, Amasra.

ABSTRACT

In recent years, people's travel and resting habits have changed. As a result, the number of visits to areas that attract attention with their natural and cultural characteristics has increased. In this context, spiritually satisfying holiday and relaxation environments where people can do more than one activity together are at the forefront. However, planning and restorations are needed in order to use the properties of such areas optimally without deterioration. Because planning provides the balance between the sustainable use of areas and resources and the unity of human and environment. In the study, the focus is on the use of the surroundings of the Bedesten in the city of Amasra (Bartın), which is on the UNESCO temporary heritage list. The area and its surroundings are a place with rare qualities with its location on the Black Sea coast and its 3000-year history. In the city, which attracts thousands of local and foreign tourists every year, the area around the Bedesten is idle and not used, even unknown. The situation brings with it the uncontrolled use, neglect and loss of the historical building and its surroundings, visual



and physical inadequacy in terms of the environment and security problems. In the study, interior and environmental analyzes were made, and planning suggestions were made for the area, including use, protection and maintenance measures. In the context, solution proposals have been put forward for the effective planning and development of natural and cultural values in the context of sustainability. It is anticipated that the study will give an idea to the practitioners for the protection and development of the area.

Keywords: Sustainable Use, Landscape Planning, Historical City, Bedesten, Amasra.

***In-vitro and In-vivo* MANAGEMENT OF ANTHRACNOSE CAUSED BY *Colletotrichum gloeosporioides* (Penz. & Sacc)**

Sushma Verma¹ and Yogita Nain¹

¹*M.Sc. Research Scholar, Department of Plant Pathology, College of Agriculture, JNKVV, Jabalpur (M.P.)*

ABSTRACT

Mango (*Mangifera indica* L.), the King of the fruits, is the eighth-most cultivated fruit globally, producing more than 43 million tons in India, Bangladesh, Nepal, and many other tropical nations. It is a crucial component of nutrition in many developing nations since it offers vitamins and minerals and the demand is rising day by day. India is the largest producer of mango in the world. Mango plants disease is a great barrier to produce enough fruits to meet the people demand. There are many diseases, such as Mango malformation, Anthracnose, Bacterial black spot, Red rust, Powdery mildew, Root rot, damping off, Ganoderma, root rot, Dieback, Sooty molds and Stem canker etc. which affect the mango trees. The experiment was carried out through poison food technique under *in vitro* and through foliar spray under field conditions. A total six fungicide were used to evaluate their efficiency against *Colletotrichum gloeosporioides*. The fungicides were screened under laboratory condition and showed significant reduction in mycelial growth of pathogen when compared to control. Spray of fungicide were conducted two time at the interval of ten days and observation were recorded after seven days of both spray. The per cent disease index (PDI) and per cent disease control (PDC) were calculated Under *In vitro* carbendazim was completely inhibited mycelial growth up to 100 per cent and carbendazim (12%) + mancozeb (63%) WP @ 0.1% was found most effective and maximum yield (122.61 kg/tree) under field conditions.

DETECTION AND DETOXIFICATION OF AFLATOXINS B1 FROM LAYER AND BROILER FEED SAMPLES

Roheela Yasmeen, Khadija Summia*

Department of Biology, Lahore Garrison University, Lahore, Pakistan

ABSTRACT

Introduction: Mycotoxins are secondary metabolites produced by fungi results in contamination of food, cause diseases so has major impact on animals and human health. While aflatoxins are type of poisonous mycotoxins produced by *Aspergillus* species.

Objectives: Present study was conducted to see levels of aflatoxins that are present in poultry feed and later on their detoxification by different physical and chemical method.

Materials and Methods: A total of 50 feed samples from layer and broiler farms were collected from five different cities of Punjab such as Lahore, Sialkot, Gujranwala, Sheikhupura and Kasur. Ten samples were collected from each city.

Results: Upon quantification by Thin Liquid Chromatography (TLC) method the contamination was detected in 24 samples out of which 11 (22 %) were contaminated beyond the permissible range and 13 (26 %) were contaminated within the permissible range. Positive samples were run for the assessment of all different types of aflatoxins such as B1, B2, G1 and G2. However, only aflatoxin B1 was detected in the positive samples. The highest percentage of contaminated samples were collected from Kasur city and broiler feed samples were found more contaminated ($p < 0.05$) as compared to layer feed samples when statistically analyzed by independent sample T test. Different detoxification methods such as physical and chemical methods were also compared. The most effective physical method of detoxification was noticed heating upto 250 °C for 10 minutes as it reduce aflatoxin concentration up to 58%. While, in the chemical methods the Hydrochloric acid was a highly effective chemical for detoxification as it reduced aflatoxin level up to 58.4% only with its 0.5 % concentration. Other chemicals were also effective but they were required in higher concentrations to show their efficacy which can affect the nutritive value of the feed samples.

Conclusion: It was concluded by the study that broiler feed samples collected from Kasur were more contaminated that may be due to poor storage conditions of feed. It is recommended that improvement in storage conditions and regular monitoring is required by feed authorities so that contamination of aflatoxins can be reduced.

Keywords: Aflatoxins, Detoxification, Laying Hen, Broiler, Contamination

INCIDENCE OF *HELICOVERPA ARMIGERA* (HUBNER) IN CHICKPEA, *CICER ARIETINUM* (L.)

*Sheetal kumawat*¹

¹SKNAU, Jobner, Department-Entomology, Jobner, India

*Yogita Nain*²

²SKNAU, Jobner, Department- Plant Pathology, Jobner, India

ABSTRACT

Gram caterpillar, *Helicoverpa armigera* Hubner is the most damaging pest in most of the areas where this pulse crop is grown. The present studies were carried out at the experimental farm of SKN COA, Jobner, Jaipur during the *Rabi* season 2021. The incidence of the pod borer, *Helicoverpa armigera* in chickpea commenced from the second week of February i.e. in the early part of 1st fortnight of February, with 0.05 mean larval population/ plant. The larval populations started increasing and reached its maximum of 12.97 mean larval population/plant during the 4th week of March (12th standard week). The population has a significantly positive correlation with both minimum and maximum temperature and the correlation coefficient being 0.71 and 0.82, respectively. The correlation coefficient of morning and afternoon relative humidity was -0.66. The rainfall and larval population showed a positive correlation coefficient (0.03) but it was non-significant. The wind velocity and the sunshine hours showed a positive non-significant correlation with the larval population. The larval population was observed in the field till the maturity of the crop. Correlation studies revealed that the *H. armigera* larval population was correlated as significantly positive with sunshine hours during 2021-2022.

Keywords: Chickpea, abiotic factors, *H. armigera*, correlation Pod borer, Pulses, and Seasonal incidence.

ANALİTİK METOTLAR VE KEMOMETRİK İLE SÜT ÜRÜNLERİNDE ÖZGÜNLÜK VE ORİJİN DEĞERLENDİRİLMESİ

ASSESSMENT OF AUTHENTICITY AND ORIGIN IN DAIRY PRODUCTS WITH ANALYTICAL METHODS AND CHEMOMETRICS

*Arzu KAVAZ YÜKSEL**¹

¹ Atatürk Üniversitesi, Teknik Bilimler Meslek Yüksekokulu, Gıda İşleme Bölümü, Erzurum, Türkiye

ORCID NO: 0000-0001-8292-9259

*Mehmet YÜKSEL*²

² Atatürk Üniversitesi, Ziraat Fakültesi, Gıda Mühendisliği Bölümü, Erzurum, Türkiye

ORCID NO: 0000-0001-6566-1385

ÖZET

Gıda özgünlüğü ve orijinin izlenebilirliği, son yıllarda büyük ilgi gören konular haline geldi. Yeni üretim teknolojileri ve düşük nakliye maliyetleri ile birleşen ekonomik baskılar, artan sayıda gıda skandallarına ve sahtekarlıklara yol açmıştır. Et, tahıllar, kahve, zeytinyağı, süt ürünleri, şarap, meyve suları ve bal dahil olmak üzere çeşitli ürünlerde tahrifat veya yanlış etiketleme söz konusudur.

Süt ürünlerinin orijini ve özgünlüğü, dünya genelinde tüketicilerin güveninin yanı sıra büyük miktarda ekonomik kayba neden olan tahrifat (yanıltma) ile üreticiler, araştırmacılar, düzenleyici makamlar ve tüketiciler için önemli bir sorun haline geldi. Süt ve süt ürünlerinde pek çok tahrifat ve izin verilmeyen uygulamalar arasında; yağın veya proteinlerin bir kısmının ikame edilmesi, farklı türlerdeki sütlerin karıştırılması, düşük maliyetli süt ürünlerinin eklenmesi (esas olarak peynir altı suyu türevleri) veya coğrafi işaretle orijini korunan ürünlerin yanlış etiketlenmesi sayılabilir. Süt ve süt ürünlerinin orijinalligi, tahrifi çeşitli analitik tekniklerle (fiziko-kimyasal, duyuusal, kromatografi vb.) belirlenmektedir. Bu yöntemler referans olarak kabul edilmekle birlikte, gelişmiş analitik ekipman ve uzman operatörler gerektirmektedir. Ayrıca; bu yöntemler zaman alıcıdır ve kimyasal reaktiflerin hem satın alınmasına hem de atılmasına ihtiyaç duyarlar. Bu nedenle bu ürünlerin özgünlüğün belirlenmesi ve tahrifatın tespiti için hızlı, etkili, güvenilir ve ucuz yöntemlere ihtiyaç duyulmaktadır. Spektroskopi (UV, NIR, MIR, Raman), izotopik analiz, kromatografi, elektronik burun, polimeraz zincir reaksiyonu, enzim bağlantılı immünosorbent analizi (ELISA), termal analiz, nükleer manyetik rezonans (NMR), kemometrik yöntemler ve çok değişkenli veri analizi yöntemleri bu alanda yardımcı araçlar olarak kabul edilebilir. Bu derlemede her bir tekniğin avantajları ve dezavantajlarından bahsedilecektir.

Anahtar Kelimeler: Süt ürünleri, Özgünlük, Tağşiş, Kemometrik, Analitik teknikler

ABSTRACT

Food traceability and authenticity of origin have emerge as topic of great interest over the last years. Financial pressures, combined with new production technologies and low delivery charges, have caused growing numbers of food scandals and frauds. Numerous products are challenge to adulteration or false denomination, such as olive oil, meat, cereals, coffee, milk and milk products, wine, fruit juices and honey.

The origin and authenticity of dairy products have become as an important problem for manufacturers, researchers, regulatory authorities, consumers because of the growth of falsification (adulteration) processes inducing lost huge of money as well as the confidence of consumers around the world. Amongst many falsifications and a number of the practices not allowed in milk and milk products are the substitution of part of the fats or proteins, admixtures of milk of various species, additions of low-fee dairy products (especially whey derivatives), or mislabeling of products protected geographical

indications of origin. The authenticity and adulteration of milk and dairy products had been determined through numerous analytical strategies (e.g., physico-chemical, sensory, chromatography, and so on). Even though these techniques are taken into consideration as the reference ones, they required sophisticated analytical device's and professional operators; they're also time consuming and need both the acquisition and disposal of chemical reagents. Consequently, there's a need to USE fast, effective, reliable and cheap techniques for the determination of the authenticity and the detection of adulteration of those products. Spectroscopy (UV, NIR, MIR, Raman), isotopic evaluation, chromatography, electronic nose, polymerase chain reaction, enzyme-linked immunosorbent assay and thermal analysis, nuclear magnetic resonance (NMR) amongst others, in combination with chemometric tools and multivariate statistics analysis methods may be considered helpful equipment on this area. The advantages and disadvantages of every approach will be mentioned in this review.

Keywords: Dairy products, Authenticity, Adulteration, Chemometric, Analytical techniques

TÜRKİYE'DE COĞRAFI İŞARET KAYITLI ZEYTİNYAĞLARI: COĞRAFİK ORJİN, KALİTE VE ÖZGÜNLÜK

OLIVE OILS WITH REGISTERED GEOGRAPHICAL INDICATION (GI) IN THE TURKEY:
GEOGRAPHICAL ORIGIN, QUALITY AND AUTHENTICITY

Mehmet YÜKSEL*¹

¹Atatürk Üniversitesi, Ziraat Fakültesi, Gıda Mühendisliği Bölümü, Erzurum, Türkiye

ORCID NO: 0000-0001-6566-1385

Arzu KAVAZ YÜKSEL²

²Atatürk Üniversitesi, Teknik Bilimler Meslek Yüksekokulu, Gıda İşleme Bölümü, Erzurum, Türkiye

ORCID NO: 0000-0001-8292-9259

ÖZET

Zeytinyağı tüketimi ve üretimi, temel olarak zeytinyağının kanıtlanmış sağlık yararları ve duyu özellikleri nedeniyle dünya çapında istikrarlı bir şekilde artmaktadır. Aynı zamanda artan talep, zeytinyağının orijinalliğini korumayı zorlaştırmaktadır. Bu nedenle, orijinal olmayan ürünler zeytinyağı endüstrisinde her zaman ciddi bir sorun olmuştur.

Tüketicilerin tarımsal ürünlerde özellikle zeytinyağlarında orijinallik, mükemmellik ve kalitenin garanti edilmesi talebi sertifikasyon etiketlerinin geliştirilmesine yol açmıştır. Bu geliştirmeler kapsamında, Avrupa Komisyonu iki tip sertifikasyon etiketi uygulamaktadır: protected designation of origin (PDO) ve protected geographical indication (PGI). Ülkemizde ise Coğrafi İşaret (Ci) adı altında mahreç ve menşe olmak üzere iki tip uygulama devam etmektedir.

Zeytinyağı, yüksek değerli bir tarımsal ürün olarak coğrafi işaret portalına dahil edilmiştir. Ülkemizde 4 coğrafi bölgeden 13 coğrafi işaret almış zeytinyağı, 7 başvuru değerlendirme aşamasında olan ürün vardır. Bu etiketlemenin yüksek kaliteli zeytinyağı ile ilgili ilişkili olduğu düşünüldüğünde; tüketici için büyük bir motivasyon ve yönlendirici olması beklenmektedir. Ci, tarımsal hammaddeden nihai ürüne kadar tüm üretim döngüsünün değerlendirilmesiyle gerçekleştirilir. Bu durum, geleneksel üretim yöntemi kullanılarak belirli bir bölgede üretilen zeytinyağına; çevresel özellikler, konum ve geçmişten gelen uzmanlık gibi doğal faktörlerin kombinasyonu özgünlük katmaktadır. Bu özgünlüğün analitik metotlarla ortaya konması; zeytinyağı Ci sertifikasyonu, kalitenin garanti edilmesi ve izlenebilirliğinde, coğrafi kökenlerinin ve özgünlüklerinin doğrulanmasında hayati bir rol oynamaktadır. Bu derlemede, ülkemizde coğrafi işaret almış zeytinyağlarının özgünlükleri hakkında genel bilgiler verilecektir. Ayrıca; dünya genelinde zeytinyağı özgünlüğünün ortaya konmasında kullanılan analitik metotlara değinilecektir.

Anahtar Kelimeler: Zeytinyağı, Coğrafi İşaret, Türkiye, Özgünlük, Kalite

ABSTRACT

Mainly due to olive oil's proven health benefits and sensory features, olive oil consumption and production are increasing steadily around the world. At the same time, increasing demand makes it difficult to protect the originality of olive oil; therefore, non-original products have always been a serious problem in the olive oil industry.

The consumers' demand to guarantee originality, perfection, and quality in agriculture products, especially in olive oil, has led to development of certification labels. Also, consumers choose food based on its perceived value, which includes health and quality features, particularly in the traditional foods. As part of these improvements, the European Commission enforces two types of certification labels:

protected designation of origin (PDO) and protected geographical indication (PGI). In our country, there are two types of applications under the name of Geographical Indication (GI) source and origin.

Olive oil has been included in the geographical indication portal as a high-value agricultural product. As of April 2022, there are 13 GI marked olive oil products from 4 geographical regions and seven applications are under the evaluation phase, in Turkey. Considering that this geographical indication registration is associated with high-quality olive oil, it is expected to be a great motivation and guide for the consumer. GI is carried out by evaluating the whole production cycle, from agricultural raw materials to the final product. This gives originality to the olive oil produced in a certain region using the traditional production method, due to the combination of natural factors such as environmental characteristics, location, and expertise from the past. Setting forth that originality by analytical methods plays a vitally important role in olive oil GI certification, quality assurance and traceability, and verification of their geographical origin and authenticity. In this compilation, general information about the authenticity of olive oils that have received geographical marks in our country is given. In addition, to reveal the originality of olive oil around the world, used analytical methods have been mentioned.

Keywords: Olive Oil, Geographical Indication, Turkey, Authenticity, Quality

**SERO-EPIDEMIOLOGICAL SURVEY OF PESTE DES PETITS RUMINANTS IN
UNVACCINATED FLOCKS IN MEDITERRANEAN REGION OF TURKEY**

**TÜRKİYE’NİN AKDENİZ BÖLGESİNDE AŞILANMAMIŞ SÜRÜLERDE KOYUN VE KEÇİ
VEBASININ SERO-EPİDEMİYOLOJİK SÖRVEYİ**

Assoc. Prof. Murat ŞEVİK

Department of Virology, Veterinary Faculty, Necmettin Erbakan University, Konya, Turkey

ORCID NO: 0000-0002-9604-3341

ABSTRACT

Peste des petits ruminants (PPR) is a highly contagious viral disease of sheep and goats characterized by fever, muco-purulent nasal discharge, diarrhoea and abortion. Peste des petits ruminants virus (PPRV), causative agent of the disease, is closely related to the rinderpest virus of cattle which was eradicated in 2011. The disease has a significant economic impact due to the high mortality rates in small ruminant populations, restrictions on trade and animal movements. The aim of the study was to estimate the seroprevalence of PPR in sheep and goats. Blood samples were collected by random sampling method from sheep (n = 77) and goats (n = 61) from unvaccinated flocks (n = 40) in the Antalya Province in the Mediterranean region of Turkey. Sera samples were tested for PPRV nucleoprotein antibodies using a commercial competitive enzyme linked immunosorbent assay (c-ELISA) kit. Eighteen sera samples (13%, 95% CI: 7.4 - 18.7) were PPRV seropositive, of which 18.2% (95% CI: 9.6 - 26.8; 14/77) were from sheep, whereas 6.6% (95% CI: 0.3 - 12.8; 4/61) were from goats. Although PPRV seropositivity was higher in sheep than goats, it was not statistically significant (P = 0.07). PPRV seropositivity was higher in small ruminants > 24 months of age (19.4%) compared with ≤ 24 months of ages (7%) (P = 0.04). Furthermore, PPRV seropositivity was high in females (14.5%), but it was not statistically significant (P = 0.61). The flock-level seroprevalence was 30% (12/40). The results of this study indicate that PPRV infection is prevalent in small ruminant population in the Antalya Province. However, results of the study are not enough to determine the regional and country-based profile of the PPRV infection in small ruminants in Turkey. Further epidemiological studies are needed to provide more insights on the epidemiology of PPR in Turkey.

Keywords: Sheep, Goats, Peste des petits ruminants virus, Seroprevalence, Turkey

ÖZET

Peste des petits ruminants (PPR, koyun ve keçi vebası), ateş, muko-pürülan burun akıntısı, diyare ve abort ile karakterize koyun ve keçilerin oldukça bulaşıcı viral bir hastalığıdır. Peste des petits ruminant virusu (PPRV), hastalığına neden olan ajan, 2011 yılında eradike edilen sığır vebası virusu ile yakın ilişkilidir. Hastalık, küçükbaş hayvan popülasyonlarında yüksek mortalite oranları, ticaret ve hayvan hareketlerindeki kısıtlamalar nedeniyle önemli bir ekonomik etkiye sahiptir. Çalışmanın amacı koyun ve keçilerde PPR seroprevalansını belirlemektir. Türkiye'nin Akdeniz bölgesindeki Antalya İlinde aşılanmamış sürülerden (n = 40) koyun (n = 77) ve keçiden (n = 61) rastgele örnekleme yöntemi ile kan örnekleri toplandı. Serum örnekleri, PPRV'ü nükleoprotein antikorları yönünden ticari bir rekabetçi ELISA kiti (c-ELISA) kiti kullanılarak test edildi. On sekiz serum örneği (%13, %95 CI: 7,4 - 18,7) PPRV seropozitif, bunun %18,2'si (%95 CI: 9,6 - 26,8; 14/77) koyundan, %6,6'sı (%95 CI: 0,3 - 12,8; 4/61) keçilerden elde edilmişti. PPRV seropozitifliği koyunlarda keçilere göre daha yüksek olmasına rağmen istatistiksel olarak anlamlı değildi (P = 0.07). PPRV seropozitifliği, 24 aylıktan büyük küçük ruminantlarda (%19,4) ≤ 24 aylık olanlara (%7) göre daha yüksekti (P = 0.04). Ayrıca, PPRV seropozitifliği dişilerde yüksekti (%14,5), ancak istatistiksel olarak anlamlı değildi (P = 0,61). Sürü düzeyinde seroprevalans %30 (12/40) idi. Bu çalışmanın sonuçları, Antalya ilindeki küçük ruminant popülasyonunda PPRV enfeksiyonunun yaygın olduğunu göstermektedir. Ancak, çalışmanın sonuçları Türkiye'deki küçük ruminantlarda PPRV enfeksiyonunun bölgesel ve ülke bazlı profilini belirlemek için



yeterli değildir. Türkiye'de PPR epidemiyolojisi hakkında daha fazla bilgi elde etmek için daha fazla epidemiyolojik çalışmaya ihtiyaç vardır.

Anahtar Kelimeler: Koyun, Keçi, Koyun ve keçi vebası virusu, Seroprevalans, Türkiye

ANALYSIS OF TOXICITY OF SUGAR-INDUCED MODIFICATION OF PROTEINS DURING GLYCATION AND ITS SUPPRESSION BY THYMOQUINONE

Dr. Ahmad Ali

*Full postal address - Department of Life Sciences, University of Mumbai, Vidyanagari, Mumbai,
INDIA*

Prairna Balyan, Ahmad Ali

Department of Life Sciences, University of Mumbai, Vidyanagari, Mumbai, INDIA

ABSTRACT

Objectives: The consequences of diabetes are manifested in the form of toxicity induced by glycation products generated as a result of interaction between sugars and proteins. There is a need for screening of novel antiglycating agent to prevent the Diabetic complications. We have analysed the role of Thymoquinone (TQ) in the prevention of formation of advanced glycation end products (AGEs).

Methods: In this study we have analysed the generation of glycation products using an *in vitro* system of Fructose + BSA incubated for 28 days at 37 °C. Glycation products were measured using colorimetric methods viz., NBT and DNPH assays. Spectrofluorometer was used for estimation of fluorescent AGEs. Glycation induced aggregation was quantified using Thioflavin T. Structural alterations of proteins and DNA were analysed by gel electrophoresis.

Results: Analysis of results indicate a potential inhibitory role of TQ in suppressing the formation of both early and late stage glycation products. There was a significant decrease in the formation of fluorescent AGEs in the presence of TQ. The extent of aggregation of glycated protein was severely reduced when TQ was added in the glycation system. Glycation-induced structural alteration of biomolecules was also reversed by TQ. Also, there was a significant correlation between the antioxidant and antiglycation potential of TQ.

Conclusion: These results indicate the combinatorial property of Thymoquinone in suppressing the glycation and downstream processes. The molecular mechanism of action of Thymoquinone can be further characterised for its antiglycating potential and developing it as a drug for the prevention of Diabetes.

CONFLICT OF INTEREST & ETHICAL APPROVAL

We declare there is no conflict of interest and Ethical approval is not applicable for this study.

EXPRESSION LEVEL OF *Src* (HIGH) AND *MDM2* (DOWN) GENES IN FEMALE BREAST CANCER

*Ayesha Javed, Usman Haider, Bilal Aslam and Muhammad Naeem Faisal**

Institute of Physiology and pharmacology, University of Agriculture Faisalabad, Pakistan

ABSTRACT

Background: Carcinogenesis is a phenomenon in which mutation in genome enable the machinery of cells to make cell capable of growing unchecked without any stimulation of growth signals. Thus, cells become insensitive to anti-growth signals, and it trounces the immune system of host. Breast cancer is the most diagnosed cancer and leading cause of death among women worldwide.

Methodology: Current study was designed to analyze the expression level of genome integrity genes which leads to development of cancer. *DIS3L2* level was also observed which plays role in let-7 family of microRNAs. These genes are selected on the basis of mutations in protein coding regions. Clinical samples were collected from Punjab Medical College with the permission of Ethical Review committee of PMC. Gene expression analysis was performed through qRT-PCR analysis. One way (ANOVA) analysis of variance and DMR test was used to observe significance of data.

Results: Relative gene expression level was analyzed and results revealed that the expression level of *MDM2* gene was significantly ($P= 0.05$) down expressed from the tissue samples from breast cancer patient as compared to control group. Results showed that the *Src* gene expression level is significantly higher expression level in patient's samples. Histopathological examination showed ductal carcinoma with stromal hyperplasia, neoplastic cellular proliferation in dermal areas, along with vessels having large lumen and very thin vascular wall.

Conclusion: qRT-PCR and histopathological results concluded that *MDM2* (protoonco gene) is highly expressed while *PALB2*, *DIS3L2* and *TLR4* (oncosuppressor genes) were down expressed which showed disease progression.

Keywords: Cancer, MicroRNA's, Malignancy, *MDM2* Gene

ВЛИЯНИЕ КОМПЛЕКСА АГРОТЕХНИЧЕСКИХ ПРИЕМОМ НА РОСТ И РАЗВИТИЕ ХЛОПЧАТНИКА

THE INFLUENCE OF A COMPLEX OF AGRICULTURAL PRACTICES ON THE GROWTH AND DEVELOPMENT OF COTTON

Низами Сейидалиев

*доктор аграрных наук, профессор, Азербайджанский Государственный Аграрный
Университет*

Мина Мамедова

старший преподаватель, Азербайджанский Государственный Аграрный Университет

РЕЗЮМЕ

Одним из основных факторов повышения урожайности хлопчатника, наряду с внедрением высокоурожайных, более устойчивых к болезням сортов с хорошими качествами волокна, является установление рациональных приемов агротехники, к которым можно отнести, в первую очередь, применение оптимальных норм удобрений, режимов орошения и густоты стояния растений.

Повышение урожайности кроется в освоении научно-обоснованных систем земледелия, внедрении интенсивных технологий возделывания сельскохозяйственных культур, в том числе и хлопчатника, постоянном совершенствовании техники и технологии производства.

Хлопчатник при благоприятных условиях может продолжать вегетационный период до поздней осени и образовать огромное количество плодоземетов. Однако не все плодоземеты могут остаться на кусте до конца вегетации и дать урожай. В зависимости от биологической особенности самого растения и неблагоприятных воздействий внешних факторов, и в первую очередь влажности почв, питательных элементов и густоты стояния растений, определенная часть их опадают. Иногда из-за плохой агротехники опадение составляет 60 и более процентов.

В нашем опыте почти половина образовавшихся плодоземетов остались до конца вегетации. Самое большое количество опавших плодоземетов обнаружено в вариантах, где полив был проведен обычной водой, и самое меньшее количество опавших плодоземетов обнаружено в вариантах, где поливы проведены омагниченной водой.

В результате проведенных исследований, мы пришли к выводу, что для получения высоких и стабильных урожаев хлопка-сырца с хорошими технологическими свойствами волокна необходимо внести удобрения в дозе $N_{250}P_{200}K_{75}$, проводить 5 поливов омагниченной водой, с густотой -100 тысяч растений на гектар.

Ключевые слова: волокно, хлопчатник, калий, азот, фосфор, число поливов, густота стояния растений, норма удобрений, агротехнические приёмы

ABSTRACT

One of the main factors in increasing the yield of cotton, along with the introduction of high-yielding, more disease-resistant varieties with good fiber quality, is the establishment of rational agricultural practices, which include, first of all, the use of optimal fertilizer rates, irrigation regimes and plant density.

The increase in productivity lies in the development of science-based farming systems, the introduction of intensive technologies for the cultivation of crops, including cotton, the constant improvement of equipment and production technology.

Cotton, under favorable conditions, can continue the growing season until late autumn and form a huge number of fruit elements. However, not all fruit organs can remain on the bush until the end of the growing season and produce a crop. Depending on the biological characteristics of the plant itself and the adverse effects of external factors, and primarily soil moisture, nutrients and plant density, a certain part of them fall off. Sometimes, due to poor agricultural practices, shedding is 60 percent or more.

In our experience, almost half of the formed fruit organs remained until the end of the growing season. The largest number of fallen fruit organs was found in the variants where irrigation was carried out with ordinary water, and the smallest number of fallen fruit elements was found in the variants where irrigation was carried out with magnetic water.

As a result of the research, we came to the conclusion that in order to obtain high and stable yields of raw cotton with good technological properties of the fiber, it is necessary to apply fertilizers at a dose of $N_{250}P_{200}K_{75}$, carry out 5 irrigations with magnetic water, with a density of -100 thousand plants per hectare.

Keywords: fibre, cotton, potassium, nitrogen, phosphor, number of irrigations, plant density, fertilizer rates, agricultural practices

CUSTOMER PREFERENCE ON ORGANIC RED MEAT

PhD. Candidate Gazmend Meço

Prof. Asoc. Ilir Kapaj

Faculty of Economy and Agribusiness, Agricultural University of Tirana

ABSTRACT

Albania is facing serious problems with the national food safety control system in terms of legislation, food processing, transportation, (Lashi & Kapaj, 2016) trade and control as well as law enforcement, which pose real and perceived safety risks for consumers (Vercuni, et al., 2016). Among other daily challenges against organized crime, corruption, unemployment also European accession is an important milestone of Albanian government and a great challenge for Albanian citizens as well. Albania has recognized a notable customer behavior change after 1990 (Civici, 2003). These changes are still present in many aspects of customer preference, decision and continue to change dynamically. In this study we answered questions like do customers have some preference for meat originating from their localities? Is for our customers that have a relevant position for taking decisions in the family nucleus (i. e. father or mother), are most likely willing to pay price premium for organic meat? Finally, the price sensitivity also in this study persist as in important factor in deciding to purchase and pay more for organic meat. Other aspects are the need to extend the exploration in EU markets where Albania has concrete plans to become part of it, and how can undertake reforms toward becoming a full member of European Union (EU), and adopt rules and regulation to certify the organic meat. Pre-accession and later on EU accession require strict measures and a set of rules and regulations to be introduced, adopted and implemented in the agriculture sector. Food security and access in information through trusted labels are playing also a relevant role in this study.

Keywords: Organic food, meat preferences, Traceability Management Information Systems, Food Safety, Customer preference, Albania, willingness to pay.

DÜNYA VE TÜRKİYE'DE YÜN ÜRETİMİNDEKİ DEĞİŞİMLER CHANGES IN WOOL PRODUCTION IN THE WORLD AND TURKEY

Selçuk Seçkin TUNCER

Doç. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Zootekni Bölümü

ORCID NO: 0000-0001-8252-8009

ÖZET

Yünün endüstrideki payındaki azalma insan sağlığını ve konforunu olumsuz etkilemektedir. Bu çalışma, sentetik elyaf üretiminin sınırlı kaynakları ve çevresel olumsuz etkileri de dikkate alınarak yünün öneminin vurgulanması amacıyla hazırlanmıştır.

2000-2020 yılları arasında koyun mevcudu oransal olarak Afrika (%65.2) ve Asya'da (%32.1) artış gösterirken diğer kıtalarda azalmalar olmuştur. Aynı dönemlerde yapağı üretimi bakımından Asya hariç diğer kıtalarda oransal düşüşler saptanmıştır. Asya kıtası 2000 yılında 720 584 ton üretim kapasitesiyle ikinci büyük yapağı üreticisi kıta durumundayken, 2020 yılında %16.99'lük bir üretim artışı sonucu Dünya yapağı üretiminde en büyük paya (%47.2) sahip olmuştur. 2000 yılında 928 200 ton yapağı üretimiyle ilk sırada yer alan Okyanusya kıtası ise 2020 yılında oransal olarak en büyük azalmayla (%53.14) 434 986 tona düşmüştür. Dünya yapağı üretiminde sırasıyla; Çin (333 624 ton), Avusturalya (283 794 ton) ve Yeni Zelanda (151 192 ton) ilk üç ülke konumundayken, Türkiye 79 754 ton üretimle dördüncü ülke olmuştur. Türkiye toplam koyun varlığında 2000-2021 yılları arasında önemli oranda (%58.6) artmıştır. Özellikle Merinos koyun sayısı önemli oranda (%416.8) artmıştır. Türkiye'de 2005-2021 yılları arasında, artan koyun sayısına paralel olarak, yapağı üretiminde de Merinos koyunlarında (%417) ve yerli koyunlarda (%68) pozitif yönde artışlar saptanmıştır.

Dünyanın endüstriyel olarak gelişmiş ülkelerinde ve kıtalarında koyun varlığı ve yapağı üretiminde saptanan azalmalar önemlidir. Bu durum endüstriye uygun kaliteli yün üretiminde azalmaya sebep olmaktadır. Türkiye'de ise tekstil endüstrisine daha uygun olan Merinos koyun ırkı sayısında ve yapağı veriminde önemli yükselmeler saptanmıştır.

Anahtar Kelimeler: Koyun, Yün, Dünya, Türkiye, İstatistik

ABSTRACT

The decrease in the share of wool in the industry negatively affects human health and comfort. This study has been prepared to emphasize the importance of wool, taking into account the limited resources and environmental negative effects of synthetic fiber production.

While there was an increase in the number of sheep in Africa (65.2%) and Asia (32.1%) between 2000 and 2020, there was a decrease in other continents. In the same period, proportional decreases were observed in wool production in other continents except Asia. While the Asian continent was the second largest fleece producer continent with a production capacity of 720 584 tons in 2000, it had the largest share (47.2%) in world wool production as a result of a 16.99% increase in production in 2020. Oceania continent, which was in the first place with a production of 928 200 tons in 2000, decreased to 434 986 tons in 2020 with the largest proportional decrease (53.14%). Oceania continent, which was in the first place with 928 200 tons of wool production in 2000, decreased to 434 986 tons in 2020 with the biggest proportional decrease (53.14%). In world wool production, respectively; While China (333 624 tons), Australia (283 794 tons) and New Zealand (151 192 tons) were the top three countries, Turkey was the fourth country with 79 754 tons of fleece production. In world wool production, respectively; While China (333 624 tons), Australia (283 794 tons) and New Zealand (151 192 tons) were in the top three countries, Turkey was the fourth country with a production of 79 754 tons. Turkey has experienced a proportionally significant increase (58.6%) in total sheep stock between the years 2000-2021. Turkey's total sheep stock increased significantly (58.6%) between 2000-2021. Especially the number of Merino

sheep increased significantly (416.8%). In parallel with the increasing number of sheep in Turkey between 2005-2021, positive increases were observed in wool production in Merino sheep (417%) and domestic sheep (68%).

Decreases in sheep presence and fleece production in industrially developed countries and continents of the world are important. This situation causes a decrease in the production of quality wool suitable for the textile industry. In Turkey, significant increases were detected in Merino sheep breed and wool yield, which is more suitable for the textile industry.

Keywords: Sheep, Yün, World, Turkey, Statistics

RUMİNANLARDA HOMOSİSTEİN METABOLİZMASI, FOLİK ASİT VE B12 VİTAMİNİ İLE İLİŞKİLERİ

HOMOCYSTEINE METABOLISM, ITS RELATIONS WITH FOLIC ACID AND VİTAMİN B12 IN RUMINANTS

Selçuk Seçkin TUNCER

Doç. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Zootekni Bölümü,

ORCID NO: 0000-0001-8252-8009

ÖZET

Hayvanlar; gelişim, üreme ve verimleri için, karbonhidrat, protein, yağ ve vitaminler gibi organik bileşiklere ihtiyaç duyar. Vitaminler az miktarda ihtiyaç duyulmasına rağmen yaşamsal pek çok faaliyetin gerçekleştirilmesinde önemli esansiyel besin maddeleridir. Bu çalışmanın amacı, hayvan sağlığı ve veriminde önemli olan homosistein (Hcy) mekanizması ve folik asit ve B₁₂ vitaminiyle ilişkileri hakkında bilgi vermektir.

Sülfür içeren bir aminoasit olan Hcy, diyetle alınan esansiyel bir aminoasit olan metiyoninin metabolizması sonucu oluşur. Serum Hcy düzeyi ile birçok hastalık arasında pozitif ilişkiler bulunmuştur. Hcy düzeyine; metabolizmadaki genetik bozukluklar, kronik hastalıklar, vitamin ve beslenme eksiklikleri, yaş, cinsiyet ve bazı ilaçlar etkili olabilmektedir. Hcy seviyesini besinlerle normalleştirmek için besinle alınan alınan folat ve B₁₂ aracılığıyla tekrar metilasyona (remetilasyon) uğrayarak metionin oluşturması etkili olmaktadır. Hcy metabolizması, besin yoluyla alınan bu temel mikro besinlere ve enzimlerin etkinliğine bağlıdır.

Folik asit ve B₁₂ vitamini; Hcy'nin metioninine dönüştürülmesi, protein sentezi, metilasyon reaksiyonları ve nükleoproteinlerin sentezinde kullanılan kofaktörlerdir. B₁₂ Vitamini yokluğunda yüksek folat seviyesinin plasental DNA hipometilasyonu ile ilişkili olduğu tespit edilmiştir. Maternal folat ve Vitamin B₁₂ kısıtlı diyetle sahip koyunlarda anormal metilasyon oranları gözlenmiştir. Ayrıca, yetişkin erkek yavruda hipometilasyonun yanı sıra; artan yağlanma, bağışıklık fonksiyonunda bozulma, yüksek tansiyon ve insülin direnci saptanmıştır. B₁₂ vitamini folik asitle birlikte hücre bölünmesi ve çoğalması için gerekli deoksiribonükleik asit (DNA) sentezi ve santral ve periferik sinir sistemindeki bazı nöronların normal yapısı ve işlevlerin sürdürülmesinin sağlanmasında etkilidir.

Homosistein metabolizmasının düzenlenmesinde birçok faktörün yanı sıra besin içeriği de önemlidir. Serum folik asit ve B₁₂ vitamininin oranları, birinin veya her ikisinin kısıtlı olması hiperhomosisteine yol açmaktadır. Bu durumda bu vitaminler için rasyon içeriğinde yapılacak düzenlemelerle hayvan sağlığı ve verimi korunarak sürdürülebilir bir hayvancılık faaliyeti sağlanmış olacaktır.

Anahtar Kelimeler: Ruminant, Homosistein, Folik asit, B₁₂ vitamini

ABSTRACT

Animals need organic compounds such as carbohydrates, proteins, fats and vitamins for their development, reproduction and productivity. Although vitamins are needed in low amounts, they are important essential nutrients for the realization of many vital activities. The aim of this study is to give information about the mechanism of homocysteine, which is important in animal health and productivity, and its relations with folic acid and vitamin B₁₂.

Hcy, an amino acid containing sulfur, is formed as a result of the metabolism of methionine, an essential amino acid taken in the diet. Positive relationships were found between serum Hcy level and many diseases. Genetic disorders in metabolism, chronic diseases, vitamin and nutritional deficiencies, age, gender and some drugs can affect Hcy level. In order to normalize the Hcy level with foods, it is effective

to form methionine by undergoing remethylation through dietary folate and B₁₂. Hcy metabolism depends on these essential micronutrients and the efficiency of enzymes.

Folic acid and vitamin B12 are cofactors used in the conversion of Hcy to methionine, protein synthesis, methylation reactions, and the synthesis of nucleoproteins. It has been determined that high folate level in the absence of vitamin B12 is associated with placental DNA hypomethylation. Abnormal methylation rates have been observed in sheep with maternal folate and Vitamin B12 restricted diets. In addition to hypomethylation in adult male offspring; increased adiposity, impaired immune function, high blood pressure and insulin resistance were detected. Vitamin B12, together with folic acid, is effective in the synthesis of deoxyribonucleic acid (DNA) necessary for cell division and proliferation, and in maintaining the normal structure and functions of some neurons in the central and peripheral nervous system.

In addition to many factors, nutrient content is also important in the regulation of homocysteine metabolism. The ratios of serum folic acid and vitamin B12, deficiency of one or both leads to hyperhomocysteine. In this case, with the arrangements to be made in the ration content for these vitamins, a sustainable livestock activity will be ensured by protecting animal health and productivity

Keywords: Ruminant, Homocysteine, Folic acid, Vitamin B₁₂

TÜRKİYE'DE ORGANİK KANATLI ÜRETİMİ ve EKONOMİSİ ORGANIC POULTRY PRODUCTION AND ECONOMY IN TURKEY

Şule TURHAN

Prof. Dr., Bursa Uludağ Üniversitesi Ziraat Fakültesi Tarım Ekonomisi Bölümü,

Ersin Göktuğ TABAK

*Yüksek Lisans Öğrencisi, Bursa Uludağ Üniversitesi Fen Bilimleri Enstitüsü Tarım Ekonomisi
Anabilim Dalı*

ÖZET

Son yıllarda kanatlı üretimi ve özellikle etlik piliç ve yumurta üretiminde, organik üretim teknikleri kullanımı yaygınlaşmıştır. Organik etlik piliç üretimi, konvansiyonel tavukçuluğa göre pahalı olmasına rağmen tüketiciler tarafından tercih edilmektedir. Bunun başlıca sebepleri de; sağlıklı gıdaya ulaşım ve üretim tekniğinin doğal yollarla yapılıyor olmasıdır. Türkiye'de 2010 yılında 342.129 adet ve 550 ton olan organik kanatlı üretimi 2020 yılında 903.740 adet ve 4978 tona yükselmiştir. Türkiye'de önemi gittikçe artmasına rağmen organik etlik piliç üretimi ile ilgili akademik çalışmalar sınırlıdır. Çalışmada yapılacak literatür taraması sonucunda organik üretim sistemlerinde kanatlı yetiştiriciliğinin ekonomik açıdan değerlendirilmesi amaçlanmıştır.

Anahtar Kelimeler: Kanatlı, Organik Etlik Piliç, Ekonomi

ABSTRACT

In recent years, the use of organic production techniques has become widespread in poultry production and especially in broiler and egg production. Preferred by consumers Although organic broiler production is expensive compared to conventional poultry production. The main reasons for this are; access to healthy food and the production technique is done in natural ways. Organic poultry production in Turkey, which was 342.129 and 550 tons in 2010, increased to 903.740 and 4978 tons in 2020. Despite its increasing importance in Turkey, academic studies on organic broiler production are limited. As a result of the literature review to be made in the study, it is aimed to evaluate the economic aspects of poultry breeding in organic production systems.

Keywords: Poultry, Organic Broiler, Economy

TÜRKİYE'DE ORGANİK BİTKİSEL ÜRETİM ORGANIC VEGETABLE PRODUCTION IN TURKEY

Ersin Göktuğ TABAK

*Yüksek Lisans Öğrencisi, Bursa Uludağ Üniversitesi Fen Bilimleri Enstitüsü Tarım Ekonomisi
Anabilim Dalı*

Şule TURHAN

Prof. Dr., Bursa Uludağ Üniversitesi Ziraat Fakültesi Tarım Ekonomisi Bölümü

ÖZET

Dünya nüfusunun hızla artması ile insanlığın temel ihtiyacı olan gıda maddelerine yönelik talep artmıştır. Talep artışı ile üreticiler, artan gıda ihtiyacını karşılayabilmek ve üretimin finansal performansını maksimize edebilmek için doğal döngülere zarar veren ve sürdürülebilir olmayan tarımsal yöntemlere yönelmişlerdir. Bu uygulamaların kullanılmaya başlanması ile tarımda ilk yıllarda büyük üretim artışları görülmüştür. Dönüm/ürün bazında çok yüksek verimlere ulaşan ve aynı doğrultuda maddi gelirleri artan üreticiler günden güne bu yöntemlere bağımlı hale gelmişlerdir. Bu gelişme, bir yandan insanların gıda ihtiyacını giderirken diğer yandan çeşitli sağlık sorunlarına yol açmıştır. Tüm bu olumsuz etkiler sonucu alternatif üretim modelleri aranmıştır. Son yıllarda organik tarım yönteminin bu gelişmeler sonucu ortaya çıktığı düşünülmektedir.

Günümüzde organik tarımın potansiyeli yüksek olan Türkiye gibi ülkelerde yaygınlaştırılabilmesi için konunun önemini ülke gerçekleri göz önüne alınarak bilimsel ve pratik anlamda kavranması, sonuçların üretici ve tüketicilere aktarılması talep yaratılması gerekmektedir. Organik tarım, doğal kaynakların aşırı tüketimi, girdilerin yoğun kullanımı sonucu oluşan tehditleri ortadan kaldırmak için uygulamaya başlanan sürdürülebilir bir tarımsal üretim şeklidir. Türkiye, 2020 yılı verilerine göre toplam 1.631.943 ton üretim ve 235 ürün sayısı ile organik tarımda son 10 yılda önemli gelişmeler kaydetmiştir.

Bu çalışmada Türkiye'deki organik bitkisel üretimin yıllara göre ürün sayısı, üretim miktarı ve dış ticareti incelenmiştir. Çalışmanın amacı; Türkiye'nin organik tarıma geçiş sürecini incelemek, organik bitkisel üretimin mevcut durumunu ortaya çıkarmak ve gelecekte daha sürdürülebilir bir tarım için öneriler sunmaktır.

Anahtar Kelimeler: Organik Tarım, Bitkisel Üretim, Dış Ticaret, Sürdürülebilirlik

ABSTRACT

The demand for foodstuffs, which is the basic need of humanity, has increased with the rapid increase in the world population. As a result of the increase in demand, producers have turned to unsustainable agricultural methods that harm natural cycles in order to meet the increasing food needs and maximize the financial performance of production. With the use of these practices, great production increases were seen in agriculture in the first years. Product yields have increased. In this way, the producers, whose financial income increased, became dependent on these methods. While this development met people's food needs, it also led to various health problems. As a result of all these negative effects, alternative production models were sought. It is thought that the organic farming method emerged as a result of these developments. This production system should be expanded in countries such as Turkey, which has a high potential for organic agriculture. Scientific methods should be used. Demand should be created by transferring the results to producers and consumers. Organic agriculture was started to eliminate the threats caused by excessive consumption of natural resources and intensive use of inputs. It is a sustainable form of agricultural production. Turkey has made significant progress in organic agriculture in the last 10 years, with a total production of 1,631,943 tons and 235 products, according to 2020 data. In this study, the number of products, production amount and foreign trade of organic plant production



in Turkey by years were examined. Purpose of the study; To examine the transition process of Turkey to organic agriculture, to reveal the current situation of organic plant production and to offer suggestions for a more sustainable agriculture in the future.

Keywords: Organic Farming, Plant Production, Foreign Trade, Sustainability

ХАРАКТЕРИСТИКА РЕЛИКТОВ III ПЕРИОДА ДЕНДРОФЛОРЫ АЗЕРБАЙДЖАНА ПО ИСТОРИЧЕСКИМ ГРУППАМ

CHARACTERISTICS OF RELICTS OF TERTIARY PERIOD OF DENDROFLORA OF AZERBAIJAN ACCORDING TO HISTORICAL GROUPS

Assist. Prof. Dr. Garayev Sadiq

Leading Researcher, Central Botanical Garden of Azerbaijan National Academy of Sciences

Azerbaijan, AZ 1004, Baku, Badamdar shosse 40

В статье приводится история и современный систематический анализ реликтовых деревьев и кустарников третичного периода флоры Азербайджана. Одновременно, дана классификация по историческим группам, определены территории их распространения, выявлены редкие или находящиеся под угрозой исчезновения виды. В настоящее время из субтропической полтавской флоры третичного периода (мезотермические реликты доарктической флоры третичного периода) в естественной флоре Азербайджана распространены 8 видов из 7 семейств, 8 родов, а из арктотретичной флоры тургая – 38 древесно-кустарниковых реликтовых видов из 16 семейств, 28 родов. В дендрофлоре Азербайджана осталось два вида ксеротермических реликтов ледникового периода. Большинство ксеротермических реликтов третичного периода травянистые растения. Во флоре Азербайджана имеются 10 видов ксеротермических реликтов травянистых растений из 6 семейств, 9 родов. Таким образом, на территории Азербайджана из богатого видового состава растительных групп, распространенных на больших ареалах в третичном периоде в современной флоре остались 48 древесно-кустарниковых и 10 травянистых реликтовых видов. Редкие и исчезающие растения Азербайджанской республике сохраняются в 10 национальных парках, 13 государственных заповедниках, 24 государственных природных заказниках. Особо охраняемые природные территории в стране занимают 594939,1 га, что составляет 7% от общей площади.

Ключевые слова: география растений, заповедники, Кавказ, ксеротерм, мезотерм, полтавская флора, субэндемики, третичные реликты, тургайская флора, эндемики

ABSTRACT

In the article was investigated the history of the third epoch relict trees and bushes in the flora of Azerbaijan and has given a modern systematic analysis. At the same time, was classified based on historical groups, identified distribution areas, rare or endangered species. At present in the flora of Azerbaijan spread out 8 species from 7 families, 8 genera of the subtropical Poltava flora of the III period (mesothermic relics of pre-Arctic flora of the III period), from 16 families, 28 genera of 38 tree and shrub plants from Turgai relics - mesothermic relics of Arctic flora III period. In the dendroflora of Azerbaijan remained two species of xerothermic relics of the glacial period.

Most xerothermic relicts of the III period are herbaceous plants. There are 7 families, 9 genera and 10 species of xerothermic relicts of herbaceous forms in the flora of Azerbaijan. Thus, on the territory of Azerbaijan in the III period from the rich species composition of plant groups prevalent in large areas in the modern flora, remain 46 tree-shrub and 10 herbaceous forms of relic species remained

Key words: Relict, areal, III epoch, Poltava flora, Turgay flora, mesothermic, xerothermic, Arctic, oligocene, ecological factors.

COMPETENCY PROBLEMS OF HALAL SLAPPERS IN INDONESIA: A LITERATURE STUDY

Much. Mabror HADI

IAIN Pekalongan

ORCID ID: 0000-0002-5707-1251

Rizky ANDREAN

IAIN Pekalongan

ORCID ID: 0000-0001-8288-2630

Hendri Hermawan ADINUGRAHA

IAIN Pekalongan

ORCID ID: 0000-0002-8394-5776

ABSTRACT

The majority of the Indonesian population is Muslim, so there is an obligation to consume halal food, including slaughtered products. This study aims to examine and identify the competency problems of halal slaughterers in Indonesia. The method in this research is an empirical study of phenomenology and also descriptive analysis in the form of library research using a qualitative research approach. This study uses secondary data derived from articles, books, the internet, previous studies, and other reference sources that are relevant to the thing being studied. The results of the study indicate that The competence of halal slaughterers can be classified into competence-based on sharia, competencies based on slaughtering techniques, and competencies based on slaughter management. The main problem in the competence of halal butchers in Indonesia is the lack of access and opportunities for slaughterers to attend training and competency tests (certification) of halal slaughterers. There are some recommendations to improve the competence of halal slaughterers in Indonesia such as coordinate all of the stakeholders in this aspect, compile regulatory materials about the halal slaughterers, and cooperate with various parties to encourage the implementation of policies on the use of competency certificates for slaughterers.

Keywords: Competence, Halal, Halal Slaughterers.

**FARKLI PROTEİNLERLE ELDE EDİLEN YENİLEBİLİR FİLMLERDE BAZI FİZİKSEL
VE MEKANİK ÖZELLİKLERİN DEPOLAMAYA BAĞLI DEĞİŞİMİ**
CHANGES IN SOME PHYSICAL AND MECHANICAL FEATURES DURING STORAGE OF
EDIBLE FILMS MADE BY DIFFERENT PROTEINS

Gülistan OKUTAN

Lisansüstü Öğrenci, Van Yüzüncü Yıl Üniversitesi, Gıda Mühendisliği Ana Bilim Dalı, Van
ORCID ID: 0000-0002-1936-7633

Güneş KOÇ

Lisansüstü Öğrenci, Van Yüzüncü Yıl Üniversitesi, Gıda Mühendisliği Ana Bilim Dalı, Van
ORCID ID: 0000-0002-3090-7602

Ümran CANSU

Öğretim Üyesi, Harran Üniversitesi, OSB Meslek Yüksek Okulu, Şanlıurfa
ORCID ID: 0000-0002-0504-8308

Gökhan BORAN

Öğretim Üyesi, Van Yüzüncü Yıl Üniversitesi, Gıda Mühendisliği Bölümü, Van
ORCID ID: 0000-0002-8871-8433

ÖZET

Yenilebilir film ve kaplamalar (YFK) üzerine son yıllarda pek çok çalışma yapılmıştır. Bu çalışmalar arasında, farklı organik polimerlerle YKF formülasyonlarının geliştirilmesi, mekanik ve fiziksel özelliklerin iyileştirilmesi, gıda uygulamaları ve raf ömrü çalışmaları en önemli başlıklar olarak sıralanabilir. YFK, gıda muhafaza amacıyla kullanılabilen, biyolojik olarak parçalanabilen, çevre dostu bir koruyucu malzemedir. Bu amaçla kullanılacak YFK ürünlerinde; depolama, taşıma ve pazarlama süresince gıdanın bütünlüğünü ve güvenliğini temin edecek en uygun içeriğin belirlenmesi gerekmektedir. Bu çalışmada, gıda endüstrisinde önemli bir potansiyele sahip sığır derisi jelatini, inek sütü kazeini ve buğday gluteni taşıyıcı polimer olarak kullanılarak yenilebilir filmler üretilmiş ve söz konusu yenilebilir film örnekleri 2 ay boyunca +4 ve +25°C'de depolanmıştır. Film örneklerinde, depolama süresince su aktivitesi, saydamlık ve opaklık, renk ve renk değişimi ile bazı mekanik dayanım özellikleri izlenmiştir. Örneklerin su aktivitesi depolama boyunca genel olarak azalarak 0.25-0.40 aralığında değişmiştir. Jelatin örneklerinde beyazlık indeksi her iki depolama sıcaklığında da daha yüksektir. Jelatin filmlerin kazein ve gluten filmlere göre daha saydam olduğu tespit edilmiştir. Depolama ile birlikte jelatin ve gluten örneklerinde uzama direncinin düştüğü, kazein örneklerinde ise arttığı tespit edilmiştir. Diğer taraftan, jelatin filmlerin kazein ve gluten filmlere göre daha yüksek uzama değerlerine sahip olduğu görülmüştür. Bunun yanı sıra, +4°C'de depolanan jelatin örneklerinin uzama değerlerinin +25°C'de depolanan örneklerden daha yüksek olduğu tespit edilmiştir. +4°C'de depolanan gluten filmlerin +25°C'de depolanan örneklere göre daha yüksek Young modülü değerlerine sahip olduğu ve jelatin örneklerinin Young modülü değerlerinin diğer örneklerden daha düşük olduğu gözlenmiştir. Elde edilen sonuçlar, film formülasyonunun film özelliklerini önemli ölçüde etkilediğini, amaca ve gıdaya özgü film örnekleri üretmenin mümkün olduğunu göstermektedir.

Anahtar kelimeler: Yenilebilir Film, Kazein, Gluten, Jelatin, Mekanik Özellikler, Depolama.

ABSTRACT

Many studies have been recently carried out on edible films and coatings (EFC). Among those, formulation studies on EFC with different organic polymers, efforts for development of mechanical and

physical features of EFC, evaluation of EFC in shelf life and food application studies might be listed as the most significant titles. EFC is a biodegradable, environment friendly, protective material that can be used for food preservation. In EFC products used for this purpose; it is fundamental to determine a suitable formulation that will ensure the integrity and safety of food products during storage, transportation and marketing. In this study, edible films were produced by cow hide gelatin, cow milk casein and wheat gluten as carrier polymers, all of which have many applications in the food industry, and these film samples were stored at +4 and +25°C for 2 months. During storage; water activity, transparency and opacity, color and total color difference along with some mechanical features were observed. Water activity values of film samples decreased in general during storage and changed within a rather narrow gap between 0.25 and 0.40. Whiteness index was found to be higher in gelatin films at both storage temperatures. Gelatin films were found to be more transparent compared to casein and gluten films. It was determined that tensile strength decreased in gelatin and gluten samples during storage while increasing in casein films. On the other hand, gelatin films showed higher elongation at break values compared to casein and gluten films. Besides, elongation values of gelatin films stored at +4°C were higher than their counterparts stored at +25°C. It was also observed that gluten films stored at +4°C showed higher Young's modulus values compared to the samples stored at +25°C and the lowest Young's modulus values were found in gelatin samples. Results obtained led to a conclusion that film formulations significantly affect the features of edible films and it is possible to design edible films according to any specific use in food industry.

Keywords: Edible Film, Casein, Gluten, Gelatin, Mechanic Features, Storage.

KEÇİBOYNUZU GAMI İLAVESİNİN JELATİN ÇÖZELTİLERİ VE JELLERİNDE BAZI FİZİKSEL VE FONKSİYONEL ÖZELLİKLER ÜZERİNE ETKİSİ

EFFECT OF LOCUST BEAN GUM ADDITION ON SOME PHYSICAL AND FUNCTIONAL FEATURES IN GELATIN SOLUTIONS AND GELS

Ümran CANSU

Öğretim Üyesi, Harran Üniversitesi, OSB Meslek Yüksek Okulu, Şanlıurfa

ORCID ID: 0000-0002-0504-8308

Gülistan OKUTAN

Lisansüstü Öğrenci, Van Yüzüncü Yıl Üniversitesi, Gıda Mühendisliği Ana Bilim Dalı, Van

ORCID ID: 0000-0002-1936-7633

Gökhan BORAN

Öğretim Üyesi, Van Yüzüncü Yıl Üniversitesi, Gıda Mühendisliği Bölümü, Van

ORCID ID: 0000-0002-8871-8433

ÖZET

Kolajenin kısmi hidrolizi ile üretilen jelatin; jelleştirici, kıvam verici, stabilize edici, emülsifiye edici vb. eşsiz özelliklerinden dolayı gıda endüstrisinde yaygın olarak kullanılmaktadır. Jelatinin çeşitli organik polimerlerle etkileşimi üzerine son yıllarda yapılan çalışmalar ilgi odağı olmaktadır. Jelatin ve diğer organik polimerlerle hazırlanan karışımlar; yağ ikame etme, et analoglarının üretimi, jel ve emülsiyon hazırlama, yenilebilir film ve kaplamalar gibi gıda endüstrisinde pek çok amaçla kullanılabilir. Bu çalışmada, keçiyoynuzu gamı ilavesinin sığır jelatini ile hazırlanan çözelti ve jellerde bazı fiziksel ve fonksiyonel özellikler üzerine etkisi araştırılmıştır. Jelatin çözeltilerine (%5, g/mL) %1, 2, 4, 8, 12 ve 16 (g/g jelatin) olmak üzere 6 farklı konsantrasyonda keçiyoynuzu gamı ilave edilmiş ve elde edilen çözelti ve jel örnekleri keçiyoynuzu gamı içermeyen kontrol örneği ile karşılaştırılmıştır. Elde edilen sonuçlara göre, %1 ve 12 arasında keçiyoynuzu gamı ilave edilen örneklerin jel gücünde genel olarak bir azalma, %16 keçiyoynuzu gamı ilave edilen örneklerin ise jelleşmediği gözlenmiştir. Diğer taraftan, keçiyoynuzu gamı ilavesinin jelatin çözeltilerinin viskozitesini 3.88 cP düzeyinden 7.68 cP düzeyine kadar artırdığı ve artan keçiyoynuzu gamı konsantrasyonu ile viskozitenin doğru orantılı olarak arttığı görülmüştür. %4 oranına kadar keçiyoynuzu gamı ilavesinin emülsiyon aktivitesi indeksini 55.0 m²/g'dan 87.4 m²/g'a kadar artırdığı görülmüştür. Daha yüksek oranlardaki keçiyoynuzu gamı ilavesinin ise emülsiyon aktivitesi indeksi değerlerinde azalmaya neden olduğu tespit edilmiştir. Su tutma ve yağ bağlama kapasitesi değerleri göz önüne alındığında, artan keçiyoynuzu gamı ilavesinin su tutma ve yağ bağlama kapasitesini artırdığı, ancak su tutma kapasitesindeki artışın ancak %4 ve üzerindeki konsantrasyonlarda gerçekleştiği gözlenmiştir. Elde edilen sonuçlar, jelatin ve keçiyoynuzu gamı ile istenen fiziksel ve fonksiyonel özelliklere sahip karışımların elde edilebileceğini göstermektedir.

Anahtar kelimeler: Jelatin, Keçiyoynuzu Gamı, Emülsiyon Aktivitesi, Su Tutma Kapasitesi.

ABSTRACT

Gelatin, produced by moderate hydrolysis of collagen, has been widely used in food industry due to its unique features such as gelling, thickening, stabilizing, emulsifying, etc. Recent studies on interaction of gelatin and other organic polymers have been on focus. Mixes of gelatin and other organic polymers might be used in food industry in many ways such as fat reduction or substitution, production of meat analogs, preparation of gels and emulsions, edible films and coatings, etc. In this study, incorporation of locust bean gum with cow hide gelatin was investigated in terms of its effects on some physical and

functional features of gelatin solutions and gels. Gelatin solutions (5%, g/mL) were prepared by addition of locust bean gum at different concentrations of 1, 2, 4, 8, 12 and 16% (g/g gelatin) and resultant solution and gel samples were analyzed in comparison with control with no locust bean gum added. According to the results obtained, addition of locust bean gum at levels from 1 to 12% decreased the strength of gel samples in general, while samples with 16% addition of locust bean gum were not gelled. On the other hand, locust bean gum addition increased the viscosity of gelatin solutions from 3.88 to 7.68 cP and increasing levels of locust bean gum increased the viscosity in direct proportion. Up to 4% of locust bean gum addition increased emulsion activity index from 55.0 to 87.4 m²/g. Higher levels of locust bean gum addition led to lower values of emulsion activity index. When water holding capacity and fat binding ability of the samples were considered, elevated levels of locust bean gum addition led to higher water holding capacity and fat binding ability but increase in water holding capacity was only after 4% and higher levels of locust bean gum addition. The results obtained showed that desired physical and functional features might be obtained by co-formulation of gelatin and locust bean gum.

Keywords: Gelatin, Locust Bean Gum, Emulsion Activity, Water Holding Capacity.

IN-SILICO ANALYSIS UNCOVER ANTIBACTERIAL PROPERTIES OF *ALLIUM SATIVUM* AGAINST *AEROMONAS HYDROPHILA*

*Mahendra Kumar Savita*¹, *Vinay Dwivedi*², *Prachi Srivastava*¹

¹ Amity Institute of Biotechnology, Amity University, Uttar Pradesh, Lucknow Campus. 227105

² Naraina Vidyapeeth Engineering and Management Institute, Kanpur-208020, Uttar Pradesh

ABSTRACT

The establishment of antimicrobial resistance in fish farming as a result of the widespread use of antibiotics in the last three decades has resulted in the persistence of multidrug-resistant bacteria. *Aeromonas hydrophila* is a Gram-negative bacterium that causes bacterial septicemia in fish. We recognized DNA gyrase as the target protein in *A. hydrophila*, a tetrameric enzyme required for DNA replication that catalyzes the ATP-dependent negative super-coiling of dsDNA and one of the most promising intracellular drug targets. For generating a 3-D model using homology modeling, we used the DNA gyrase sequence from UniProtKB. The Ramachandran plot was used to validate the 3-D model, and it was discovered that 94.88 percent of amino acids were present in favorable regions. Quercetin, a product of *Allium sativum*, was discovered to be a more potent therapeutic molecule than other investigated molecules by molecular docking using the DNA gyrase 3D structure, based on ligand binding energy, binding affinity, and significant weighting of the force field components (electrostatic and van-der Waals energies) as docking score -7.812, glide score -7.844, glide emodel -66.175. This study makes it easier to find prospective therapeutic targets by allowing researchers to look for the phytochemical composition and pharmacological activity of quercetin, a key active ingredient in *A. sativum*. This research also lays the groundwork for medication development against other harmful bacteria that pose a threat to the ecosystem. Since their crucial relevance was recognized ages ago, switching to herbal medications is the best method to tackle a variety of problems.

Keywords: *Aeromonas hydrophila*, Bacterial Septicemia, Quercetin, *Allium sativum*, Molecular Docking.

BOLU EKOLOJİK KOŞULLARINDA SEÇİLMİŞ KIŞLIK ÇEMEN GENOTİPLERİNİN BAZI FENOLOJİK ÖZELLİKLERİN BELİRLENMESİ

DETERMINATION OF SOME PHENOLOGICAL CHARACTERISTICS OF WINTER-SOWN OF
SELECTED FENUGREEK GENOTYPES UNDER BOLU ECOLOGICAL CONDITIONS

Mahmut ÇAMLICA

Araştırma Görevlisi, Bolu Abant İzzet Baysal Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: 0000-0003-2461-7534

Gülsüm YALDIZ

Doçent Doktor, Bolu Abant İzzet Baysal Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: 0000-0002-6889-1562

ÖZET

Çemen (*Trigonella foenum-graecum* L.) baklagiller familyasına ait tek yıllık bir bitkidir. Bu çalışma, Bolu ekolojik koşullarında farklı orijinli 5 çemen genotipi ile 1 kışlık çemen çeşidinin (Gürarlan) bazı fenolojik özelliklerini belirlemek amacıyla 2020-2021 vejetasyon döneminde (Ekim-Ağustos) kışlık olarak Tarla Bitkileri araştırma ve uygulama alanında yetiştirilmiştir.

Çalışma, tesadüf blokları denem desenine göre 3 tekerrürlü kurulmuştur. Araştırma sonuçlarına göre ilk çıkış süreleri 10.00-10.67 gün, %100 çıkış süreleri 13.33-14.67 gün, ilk tomurcuklanma süreleri 174.00-183.67 gün, %100 tomurcuklanma süreleri 178.00-188.00 gün, ilk çiçeklenme süreleri 183.67-186.33 gün, %100 çiçeklenme süreleri 187.67-190.33 gün, ilk bakla bağlama süreleri 192.67-198.33 gün, %100 bakla bağlama süreleri 197.00-202.33 gün ve hasat süreleri 261.00-266.00 gün arasında belirlenmiştir. Tomurcuklanma süreleri bakımından istatistiki farklılıklar bulunmazken, diğer özellikler arasında önemli farklılıklar bulunmuştur. Ayrıca incelenen özellikler arasındaki ilişkileri belirlemek amacıyla korelasyon, PCA ve dendrogram analizleri yapılmıştır. Korelasyon analiz sonucunda toplamda 4 ilişki belirlenirken, en yüksek pozitif korelasyon ilk çiçeklenme süreleri ile %100 çiçeklenme süreleri arasında ($r=1^{**}$) bulunmuştur. PCA analizi incelenen özellikler ile genotipler arasındaki ilişkileri PCA1'de %48.01, PCA2'de %28.35 oranında ve toplamda ise %76.35 oranında açıklamıştır. Dendrogram analizi sonucunda çemen genotipleri ile çeşidi 2 ana gruba (A ve B) ve her ana grupta 2 alt gruba (A1, A2, B1 ve B2) ayrılmıştır. Genotiplerin %50'si A2 alt grubunda yer alırken, diğer alt gruplar 1'er genotip içermiştir. Çiçeklenme süreleri genotipler ile çeşidin ana gruplara ayrılmasında önemli faktörler olarak bulunurken, çiçeklenme süreleri dışındaki diğer özellikler B grubunun 2 alt gruba ayrılmasına katkı sağlamıştır. İncelenen özellikler değerlendirildiğinde çemen çeşidinin mevcut genotiplerle birlikte Bolu ekolojik koşullarında kışlık ekim olarak yetiştirilebileceği öne sürülmüştür.

Anahtar Kelimeler: *Trigonella foenum-graecum* L., Çıkış Süreleri, Hasat Zamanı, Dendrogram

ABSTRACT

Fenugreek (*Trigonella foenum-graecum* L.) is an annual herb belonging to the fabaceae family. This study was carried out at the Field Crops research and application area in the vegetation period of 2020-2021 (October-August) in order to determine some phenological characteristics of 5 fenugreek genotypes and 1 winter fenugreek cultivar (Gürarlan) under Bolu ecological conditions.

The study was set up in a randomized block design with three replications. According to the results of the study, it was found between 10.00-10.67 days for first seedling days, between 13.33-14.67 days for 100% of seedling days, between 174.00-183.67 days for first budding days, between 178.00-188.00 days for 100% of budding, between 183.67-186.33 days for first flowering days, between 187.67 -190.33 days for 100% flowering days, between 192.67-198.33 days for first pod setting, between 197.00-202.33 days for 100% pod setting and between 261.00-266.00 days for harvest time. While there were no

statistical differences in terms of budding days, significant differences were found among other characteristics. In addition, correlation, PCA and dendrogram analyses were performed to determine the relationships between the examined properties. As a result of the correlation analysis, a total of 4 relationships were determined, while the highest positive correlation was found between the first flowering days and 100% flowering days ($r=1^{**}$). PCA analysis explained the relationships between the examined properties and genotypes at the rate of 48.01% for PCA1, 28.35% for PCA2 and 76.35% in total. As a result of dendrogram analysis, fenugreek genotypes and cultivar were divided into 2 main groups (A and B) and 2 subgroups (A1, A2, B1 and B2) in each main group. 50% of the genotypes were found in the A2 subgroup, while the other subgroups contained only 1 genotype. Flowering days were found to be important factors in dividing the dendrogram analysis into main groups by genotypes, other properties contributed to the division of B group into 2 subgroups. When the examined characteristics were evaluated, it was suggested that the fenugreek cultivar could be grown as winter sowing under Bolu ecological conditions with the present genotypes.

Keywords: *Trigonella foenum-graecum* L., Seedling Days, Harvest Time, Dendrogram

SEÇİLMİŞ REZENE GENOTİPLERİNİN GENETİK FARKLILIKLARININ BAZI FENOLOJİK ÖZELLİKLERE GÖRE BELİRLENMESİ

DETERMINATION OF THE GENETIC DIFFERENCES OF THE SELECTED FENNEL
GENOTYPES BASED ON SOME PHENOLOGICAL CHARACTERISTICS

Gülsüm YALDIZ

Doçent Doktor, Bolu Abant İzzet Baysal Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: 0000-0002-6889-1562

Mahmut ÇAMLICA

Araştırma Görevlisi, Bolu Abant İzzet Baysal Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID:0000-0003-2461-7534

ÖZET

Rezene (*Foeniculum vulgare* L.) maydanozgiller (Apiaceae) familyasına ait tıbbi ve aromatik bitkidir. Bu çalışmada 46 rezene genotipi arasından seçilen 6 yerel genotip (Burdur, Erzurum, Antalya ve Denizli) ile Amerika Tarım Bakanlığı'ndan temin edilen farklı orijinli 14 rezene genotipinin çıkış, çiçeklenme ve meyve bağlama süreleri ile hasat zamanları belirlenmiştir.

Çalışma, tesadüf blokları deneme desenine göre üç tekerrürlü olarak yürütülmüştür. İncelenen bu özellikler arasında genetik parametrelerin ve çeşitliliğin belirlenmesinin yanında korelasyon, PCA ve dendrogram analizleri yapılmıştır. Çalışmada ilk çıkış süreleri 23-42 gün, %100 çıkış süreleri 35-64 gün, ilk çiçeklenme süreleri 80-109 gün, %100 çiçeklenme süreleri 91-129 gün, ilk meyve bağlama süreleri 107-139 gün, %100 meyve bağlama süreleri 129-169 gün ve hasat zamanları 145-202 gün arasında değişmiştir. En erken çıkış Ames30289 nolu genotipte, çiçeklenme Ames30290, %100 meyve bağlama ve hasat PI414189 nolu genotipte belirlenmiştir. İncelenen özellikler arasında 14 korelasyon belirlenirken, en yüksek pozitif korelasyon %100 çiçeklenme ve hasat zamanı ($r=0.967^{**}$) ile ilk çiçeklenme ve ilk meyve bağlama süreleri ($r=0.94^{**}$) arasında bulunmuştur. Ancak %100 çıkış süreleri ile diğer özellikler arasında korelasyon bulunmamıştır. PCA analizleri incelenen özellikler ile genotipler arasındaki ilişkileri PCA1'de %72.62, PCA2'de %20.48 olmak üzere toplamda %93.10 oranında açıklamıştır. İncelenen özellikler, ilk çıkış süresinde %53.24'ten ilk çiçeklenmede %85.18'e kadar değişen yüksek kalıtsallık sergilemiştir. Ayrıca genotipik ve fenotipik varyasyon katsayıları sırasıyla %4.56-20.38 ve %5.63-27.93 arasında belirlenmiştir. Dendrogram analizi sonucunda genotipler incelenen özellikler bakımından iki ana gruba ayrılmış, 15 genotip ile yerel genotiplerin tamamı aynı grupta yer almıştır.

Çalışma sonucunda incelenen özellikler bakımından rezene genotiplerinin genetik farklılıklar gösterdiği ve çiçeklenme, meyve bağlama süreleri ile hasat zamanlarının birbirini etkilediği sonucuna varılmıştır.

Anahtar Kelimeler: *Foeniculum vulgare*, Dendrogram, Korelasyon, Genetik Farklılık

ABSTRACT

Fennel (*Foeniculum vulgare* L.) is a medicinal and aromatic plant belonging to the Apiaceae family. In this study seedling, flowering and fruit setting days and harvest times of 6 local genotypes (Burdur, Erzurum, Antalya and Denizli) and 14 different origin fennel genotypes obtained from the US Department of Agriculture selected from 46 fennel genotypes were determined.

The study was carried out in a randomized complete block design with three replications. Among these examined properties, besides determining genetic parameters and diversity, correlation, PCA and dendrogram analyses were performed. In the study, first seedling days were found between 23-42 days, 100% emergence times were found between 35-64 days, first flowering days were found between 80-109 days, 100% of flowering days were found between 91-129 days, first fruit setting days were found

between 107-139 days, 100% fruit setting times were found between 129 -169 days and harvest times varied between 145-202 days. The earliest seedling were determined from the Ames30289 genotype, flowering were determined in Ames30290, 100% fruit setting and harvest were determined in PI414189 genotype. While 14 correlations were determined among the examined traits, the highest positive correlation was found between 100% flowering and harvest time ($r=0.967^{**}$) and first flowering and first fruit setting days ($r=0.94^{**}$). However, no correlation was found between 100% seedling days and other properties. PCA analysis explained the relationships between the examined traits and genotypes at a rate of 72.62% PCA1, 20.48% in PCA2 and 93.10% in total. The properties studied exhibited high heritability ranging from 53.24% at first seedling to 85.18% at first flowering. In addition, the genotypic and phenotypic coefficients of variation were determined between 4.56-20.38% and 5.63-27.93%, respectively. As a result of the dendrogram analysis, genotypes were divided into two main groups in terms of the characteristics examined, and all 15 genotypes and local genotypes were in the same group.

As a result of the study, it was concluded that fennel genotypes showed genetic differences in terms of examined properties, and flowering, fruit setting days and harvest times affect each other.

Keywords: *Foeniculum vulgare*, Dendrogram, Corelation, Genetic diversity

CCL₄ İLE KARACİĞER VE BÖBREK HASARI OLUŞTURULAN RATLARDA ÜZÜM SÜMBÜLÜ (*Muscari neglectum* Guss. Ex Ten.) BİTKİ EKSTRESİNİN ANTIOKSİDATİF ETKİLERİNİN ARAŞTIRILMASI

INVESTIGATION OF THE ANTIOXIDATIVE EFFECTS OF GRAPE HYACINTH (*Muscari neglectum* Guss. Ex Ten.) PLANT EXTRACT ON CCL₄-INDUCED LIVER AND RENAL DAMAGE IN RATS

Ayşegül EROĞLU

Yüksek Lisans Öğrencisi, Van Yüzüncü Yıl Üniversitesi Sağlık Bilimleri Enstitüsü Temel Eczacılık Bilimleri Anabilim Dalı

Abdulahad DOĞAN

Doç. Dr. Van Yüzüncü Yıl Üniversitesi Eczacılık Fakültesi Biyokimya Anabilim Dalı,

Fatih DÖNMEZ

Arş. Gör. Van Yüzüncü Yıl Üniversitesi Eczacılık Fakültesi Biyokimya Anabilim Dalı,

Burak KAPTANER

Doç. Dr. Van Yüzüncü Yıl Üniversitesi Genel Biyoloji Anabilim Dalı

ÖZET

Üzüm sümbülü (*Muscari neglectum* Guss. Ex Ten.) bitkisi homoizoflavan, alkaloid, flavonoit, steroid, metil ester, terpenoit, kinik asit, fumarik asit, kemferol, apigenin ve kafeik asit içeriği bakımından zengindir. *Muscari neglectum* (*M. neglectum*) bitkisinin antiülser, antialerjik, antiromatizmal, antimikrobiyal, antienflamatuvar ve antioksidan özelliklere sahip olduğu bilinmektedir.

Bu çalışmada karbon tetraklorür (CCl₄) ile karaciğer ve böbrek hasarı oluşturulan ratlarda *M. neglectum* bitkisinin toprak üstü (MTÜ) ve toprak altı (soğan=MS) kısımlarından elde edilen etanolik liyofilize ekstrelerinin dokulardaki lipid peroksidasyonu ve antioksidan parametreler üzerindeki etkisi araştırıldı. Kırk iki adet *Wistar albino* dişi rat rastgele yedi gruba ayrıldı: Kontrol grubu, MTÜ (400 mg/kg ekstre) grubu, MS (400 mg/kg ekstre) grubu, CCl₄ (0.5 ml zeytin yağı+0.5 ml CCl₄ dilisyonu 1 ml/kg, intraperitoneal) grubu, CCl₄+MTÜ (400 mg/kg ekstre) grubu, CCl₄+MS (400 mg/kg ekstre) grubu, CCl₄+SLY (CCl₄+ Sliymarin 10 mg/kg oral) grubu. Beş haftalık uygulama/tedavinin sonunda, *M. neglectum* ekstrelerinin lipid peroksidasyonu ve antioksidan rolü için karaciğer ve böbrek doku süpernatantlarında malondialdehit (MDA) içeriği, redükte glutatyon (GSH), glutatyon-S-transferaz (GST), süperoksit dismutaz (SOD) ve glutatyon peroksidaz (GPx) düzeylerine bakıldı.

Elde edilen bulgulara göre, karaciğer ve böbrek dokusu MDA içeriğinin grup karşılaştırmalarında istatistiksel olarak fark bulunmadı (P>0.05). Karaciğer GSH düzeyi CCl₄ grubunda Kontrol ve CCl₄+MS gruplarına göre anlamlı düşüş gösterirken (P<0.05) böbrek dokusunda ise anlamlı fark bulunmadı. Karaciğer ve böbrek MTÜ grubu GST aktiviteleri CCl₄ grubuna göre artışı istatistiksel olarak anlamlı bulundu (P<0.05). Karaciğer ve böbrek dokuların SOD ve GPx enzim aktivitelerin grup karşılaştırmalarında istatistiksel fark bulunmadı (P>0.05).

Sonuç olarak, CCl₄ hasarına karşı MTÜ ve MS etanolik liyofilize ekstrelerinin kayda değer iyileştirici etkilerinin olmadığı ancak GST ve GSH parametreleri üzerinde olumlu etkileri olabileceği bulundu. Ülkemiz ve dünyada yaygın yayılışı olan *M. neglectum*'un çeşitli alanlarda kullanım potansiyelinin belirlenmesi için daha fazla *in vivo* çalışmaların yapılmasına ihtiyaç vardır.

Anahtar Kelimeler: *Muscari neglectum*, Karbon tetraklorür, Antioksidatif parametreler, Rat

ABSTRACT

The grape hyacinth (*Muscari neglectum* Guss. Ex Ten.) plant contains a high concentration of homoisoflavan, alkaloid, flavonoid, steroid, methyl ester, terpenoid, quinic acid, fumaric acid, chemferol, apigenin, and caffeic acid. *Muscari neglectum* (*M. neglectum*) has antiulcer, antiallergic, antirheumatic, antimicrobial, anti-inflammatory, and antioxidant properties.

The effects of ethanolic lyophilized extracts obtained from above-ground (MTU) and below-ground (onion = MS) parts of the *M. neglectum* plant on lipid peroxidation and antioxidant parameters in tissues were investigated by carbon tetrachloride (CCl₄)-induced liver and kidney damage in rats. Forty-two *Wistar albino* female rats were randomly divided into seven groups: Control group, MTU (400 mg/kg extract) group, MS (400 mg/kg extract) group, CCl₄ (0.5 ml olive oil+0.5 ml CCl₄ dilution 1 ml/kg), intraperitoneal) group, CCl₄+MTU (400 mg/kg extract) group, CCl₄+MS (400 mg/kg extract) group, CCl₄+SLY (CCl₄+ Sliymarlin 10 mg/kg oral) group. At the end of five weeks of application/treatment, lipid peroxidation and antioxidant roles of *M. neglectum* extracts were checked for malondialdehyde (MDA) content, reduced glutathione (GSH), glutathione-S-transferase (GST), superoxide dismutase (SOD), and glutathione peroxidase (GPx) levels in liver and kidney tissue supernatants.

According to the findings, there was no statistical difference in group comparisons of liver and kidney tissue MDA content ($P > 0.05$). While liver GSH levels decreased significantly in the CCl₄ group compared to the control and CCl₄+MS groups ($P < 0.05$), no significant difference was found in the kidney tissue. The increase in liver and kidney GST activities in the MTU group was statistically significant compared to the CCl₄ group ($P < 0.05$). There was no statistical difference in group comparisons in SOD and GPx activities of liver and kidney tissues ($P > 0.05$).

As a consequence, MTU and MS ethanolic lyophilized extracts were found to have no significant therapeutic benefits against CCl₄ damage, but could have beneficial impacts on GST and GSH parameters. More *in vivo* study is needed to determine its potential for use in various areas, because *M. neglectum* is widely distributed in our country and around the world.

Keywords: *Muscari neglectum*, Carbon tetrachloride, Antioxidative parameters, Rat

VAN İLİNDE FİTOPLAZMA ŞÜPHESİ GÖSTEREN HIYARLARDA ‘*Ca. P. trifolii*’ ETMENİNİN 16S RDNA NÜKLEOTİT DİZİSİNİN MOLEKÜLER KARAKTERİZASYONU

MOLECULAR CHARACTERIZATION of 16S RDNA NUCLEOTIDE SEQUENCE of ‘*Ca. P. trifolii*’ IN PHYTOPLASMA-SUSPICIOUS CUCUMBER PLANTS IN VAN PROVINCE

Abdullah GÜLLER

Bingöl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Bingöl, Türkiye

ORCID NO: <https://orcid.org/0000-0003-3887-4208>

Mustafa USTA

Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye

ORCID NO: <https://orcid.org/0000-0002-3940-2774>

ÖZET

2020 yılında Van ilinin İpekyolu ve Gürpınar bölgelerinde açık alanda yetiştirilen hıyar bitkilerinde fitoplazma şüphesi belirtiler gözlemledik. Başlıca hastalık belirtileri anormal ve küçük yapraklar, çiçek anormallikleri, cadı süpürgesi, meyveden akıntı ve rozetleşmedir. Genomik DNA izolasyonu için iki simptomsuz ve iki simptomsuz bitki yaprağı olmak üzere dört bitki örnekledik ve evrensel primer çiftleri (R16mF2/R16mR1 ve R16F2n/R16R2) kullanılarak fitopatogen fitoplazmaya karşı test ettik. Testler sonucunda, doğal olarak enfekte olmuş salatalık bitkilerinden ikisinde fitoplazma etmeni (OM513906 ve OM616883) tespit edilmiş, ancak sağlıklı bitkilerde tespit edilememiştir. Her iki izolatın 16SrDNA dizilerinin BLASTn araştırması, dünya çapında fitoplazma üyeleri olan 16SrIV ‘*Candidatus Phytoplasma trifolii*’: Clover Proliferation Group ile %99.52 ile %99.76 arasında değişen nükleotit benzerliğini ortaya çıkarmıştır. *iPhyClassifier* kullanılarak yapılan bilgisayar destekli kesim analizleri, Gürpınar ve İpekyolu izolatlarının 16S rDNA F2nR2 fragmanının referans izolata göre benzerlik katsayısının sırasıyla 1.00 ve 0.93 olduğunu göstermiştir. Aynı program, her iki izolatın da 16Sr grup VI, alt grup A’da (GenBank erişim: AY390261) olduğunu ortaya çıkarmıştır. Filogenetik analiz sonuçları, her iki izolatın da 16SrVI-A alt grubuna bağlı fitoplazma olarak sınıflandırıldığı benzerlik katsayıları ile uyumludur. Bu çalışma, Türkiye’deki doğal infekteli hıyar (*Cucumis sativus*) bitkileri ve fitoplazma bakterilerinin grup ve altgrupları arasındaki ilişkiyi gösteren önemli bir rapordur.

Anahtar Kelimeler: Hıyar, *Candidatus Phytoplasma trifolii*, 16S rRNA, moleküler analiz

ABSTRACT

In 2020, we observed phytoplasma-suspicious symptoms in cucumber plants grown in open fields from the İpekyolu and Gürpınar regions of Van province (Turkey). Major disease symptoms were abnormal and small leaves, flower abnormalities, witches’ broom, discharge from the fruit, and rosetting. We sampled four plants, two symptomatic and two non-symptomatic plant leaves, for genomic DNA isolation, and test by using universal primer pairs (R16mF2/R16mR1 and R16F2n/R16R2) against phytopathogen phytoplasma. As a result of the tests, the phytoplasma agent was identified in two of the naturally infected cucumber plants (OM513906 and OM616883), but not in the healthy plants. BLASTn search of 16SrDNA sequences of both isolates revealed nucleotide similarity ranging from 99.52% to 99.76%, with the phytoplasma members 16SrVI ‘*Candidatus Phytoplasma trifolii*’: Clover Proliferation Group worldwide. Computer-aided restriction analyses using *iPhyClassifier* suggested that the similarity coefficient of the 16S rDNA F2nR2 fragment of Gürpınar and İpekyolu isolates are 1.00 and 0.93, respectively, compared to the reference isolate. The same program revealed that both isolates were in 16Sr group VI, subgroup A (GenBank accession: AY390261). The phylogenetic analysis results were in harmony with similarity coefficients that both isolates were classified as phytoplasma related to the 16SrVI-A subgroup. This study is an important report showing the relationship between groups and subgroups of phytoplasma bacteria and naturally infected cucumber plants (*Cucumis sativus*) in Turkey.

Keywords: *Cucumis sativus*, phloem restricted bacteria, 16S rRNA, molecular analysis

**HERBİSİT UYGULAMALARINDA KULLANILAN YELPAZE HÜZMELİ MEMELERİN
YABANCI OT KONTROL ETKİNLİĞİ AÇISINDAN KARŞILAŞTIRILMASI**
COMPARISON OF FLAT FAN NOZZLES USED IN HERBICIDE APPLICATIONS IN TERMS
OF WEED CONTROL EFFICIENCY

Alper SOYSAL

*Dr. Öğr. Üyesi, Ç.Ü. Ceyhan Meslek Yüksekokulu, Makina ve Metal Teknolojisi Bölümü Tarım
Makinaları Programı*

ORCID ID: 0000-0002-7987-8945

ÖZET

Tarımsal üretimde kullanılan pestisitlerin önemli bir bölümünü herbisitler oluşturmaktadır. Son yıllarda kullanılan herbisit miktarını, dolayısıyla sürüklenme nedeniyle çevreye verdiği zararı azaltmak için meme imalatçıları, düşük sürüklenme potansiyelli memeler üretmiştir. Bu çalışmanın amacı; tarımsal üretimde kimyasal yabancı ot mücadelesinde kullanılması önerilen düşük sürüklenme potansiyelli DG (Drift Guard), TT (Turbo Teejet), AI (Air Induction) ve çift akışkanlı AJ (Air-jet) memeler ve standart yelpaze hüzmeli (XR) memeler damla çapı, damla sıklığı, kaplama oranı ve yabancı ot kontrol etkinliği açısından karşılaştırmaktır. Memelere ait damla çapı, damla sıklığı ve kaplama oranlarının belirlenmesinde suya duyarlı kartlar kullanılmıştır. Suya duyarlı kartlar üzerindeki damla lekeleri, bir görüntü işleme programı (Image Tool 3.0) vasıtasıyla işlenerek damla çapları, kaplama oranları ve damla sıklıkları belirlenmiştir. Ayrıca her bir meme ile sağlanan yabancı ot kontrol düzeyini saptamak amacıyla uygulamada en yaygın kullanılan ilaç normunda (200 l ha⁻¹) herbisit kullanılarak tarla denemeleri yapılmıştır.

Tüm püskürtme memeler aynı işletme koşullarında farklı kaplama oranı ve farklı damla sıklığı sağlamışlardır. En yüksek kaplama oranı değerini % 20.50 ile AJ (TK-5) püskürtme memesinin, en düşük kaplama oranı değerinin ise % 6.20 ile AI04 püskürtme memesinin sağladığı tespit edilmiştir. Damla sıklığı değerleri açısından karşılaştırma yapıldığında en yüksek damla sıklığını 182 adet/cm² değeri ile XR015 püskürtme memesi, en düşük damla sıklığını ise 10 adet/cm² değeri ile AI04 püskürtme memesi sağlamıştır. İkinci ürün mısırdaki yapılan tarla denemelerinde, yabancı ot kontrolü açısından en yüksek etkinlik DG püskürtme memesi ile % 85.42 sağlanmış olup, TT püskürtme memesi ile % 82.95, AJ püskürtme memesi ile % 81.91, XR püskürtme memesi ile % 79.07 ve AI püskürtme memesi ile % 77.54 yabancı ot kontrol etkinliği sağlanmıştır.

Anahtar Kelimeler: Herbisit Uygulamaları, Yabancı Ot Kontrol Etkinliği, Yelpaze Hüzmeli Memeler, Kaplama Oranları, Damla Sıklığı.

ABSTRACT

A considerable proportion of the pesticides used in agricultural production are herbicides. In order to reduce the amount of herbicide used in recent years, thereby reducing the environmental impact, nozzle manufacturers have produced low-drift nozzles. The objective of this study was to compare droplet diameter, droplet density, coverage rate, and weed control efficiency of DG (Drift Guard), TT (Turbo Teejet) AI (Air Induction) and twin fluid AJ (Air-jet) and standard flat fan (XR) low drift nozzles recommended in chemical weed control in agricultural production. Water sensitive paper was used for determining the drop diameter, droplet density and coverage rates of the nozzles. Droplet spots on water sensitive papers were processed via an image processing program (Image Tool 3.0) to determine droplet diameters, coverage ratios and droplet density. In addition, field trials were also carried out by using a herbicides in an application volume rate (200 l ha⁻¹) in order to determine the level of weed control provided by each nozzle used in a second crop maize field.

According to the results, all nozzles achieved different coverage rates and different droplet density under the same operating parameters. It was determined that the highest coverage rate was achieved by the AJ (TK-5) spray nozzle with 20.50 % and the size AI04 spray nozzle with the lowest coverage rate of 6.20%. When comparing the droplet density values, the highest droplet density was 182 spots/cm² with XR015 spray nozzle, and the lowest droplet density was 10 spots / cm² with AI04 spray nozzle. In the second crop maize field experiments, the highest efficiency in terms of weed control was 85.42 % with DG spraying nozzle, 82.95 % with TT spraying nozzle, 81.91 % with AJ spraying nozzle, 79.07 % with XR spraying nozzle and 77.54 % with AI spraying nozzle weed control level.

Key words: Herbicide Applications, Weed Control Efficiency, Drift Reduction Nozzles, Coverage Rate, Droplet Density.

ANALYSIS OF FACTORS INFLUENCING YIELD OF YAM IN OSUN STATE, NIGERIA

Aminu, F.O.

*Department of Agricultural Technology, School of Technology, Yaba College of Technology, Epe
Campus, P. M. B. 2011, Yaba, Lagos State, Nigeria*

ABSTRACT

The study was carried out to analyse the factors influencing yield of yam in Osun State, Nigeria. Multistage sampling technique was used to select 120 respondents for the study. Data were collected with the aid of pre-tested questionnaire and analysed using descriptive statistics and multiple regression model. Results revealed that majority (96.7%) of the yam farmers were male, educated (93.3%) with a mean age of 51 years, household size of 6 persons and cultivated an average of 1.2 hectares of farm land. Result of the multiple regression analysis revealed that, education, household size, farm size and access to loan were the factors influencing yam output in the study area. Therefore, loan facilities should be made available and accessible to the farmers at no or low interest rates to expand their business and increase their output in the study area

Keywords: Factors, yam production, Osun State, Regression

AUTOMATIC RAINROOF PROTECTION FOR AGRICULTURE PURPOSES

K Chandana, P B Harshitha, Afreen, T Gayatri, M Nissi Rebca.

BRECW, JNTUH, Telangana.

ABSTRACT

This project deals about the protection of unseasonal rain fall on the harvested crops, which are kept to dried up, they rot up and get destroyed due to which farmers have to face enigma. Some crops must be dried before it is sold to the agriculture market yard, so the farmer needs some space for the crops to dry which most of the farmers don't have and it take loads of time to dry up. So as farmer's face loss, this device is built up to protect them from severe loss. This device is used in agriculture purpose in a way when the rain drops falls on the rain sensor, the roof automatically gets over the crops kept for drying. This device consists of rain sensor, Arduino-Uno, motors and bio degradable plastic materials for shade. When the rain is detected by the sensor It gives signal to Arduino-Uno. Further Arduino gives signal to the motor due to which the roof gets over the crops and protect crops from being destroyed. And when the rainfall stops the roof automatically opens. This device is simple but very useful for farmers to save their money which they have invested and their time. And above all it runs on the solar energy making it more cost effective and ecofriendly.

Keywords: Arduino, L293D, LCD, Buzzer

ASSESSMENT OF TOTAL PHENOLIC AND FLAVONOID CONTENT, ANTIOXYDANT AND ANTIMICROBIAL ACTIVITIES OF SOME MEDICINAL PLANTS IN MOROCCO

Abdelghani Aboukhalaf¹, Sara Moujabbir¹, Belkassem El Amraoui^{1, 2} and Rekia Belahsen¹

¹ *Laboratory of Biotechnology, Biochemistry and Nutrition, Training and Research Unit on Nutrition and Food Sciences, Department of Biology, Faculty of Sciences, Chouaib Doukkali University, El Jadida, 24000, Morocco*

² *Department of Biology, Biotechnology, Materials and Environment Laboratory, Faculty Polydisciplinary of Taroudant, Ibn Zohr University, Agadir, Morocco*

ABSTRACT

Objectives: Plants offer unlimited source of bioactive compounds that have tremendous applications in pharmaceutical industry. To find new sources of antioxidants and antimicrobial agents against pathogens microorganism's, the phenolic, flavonoid contents, antioxidant and antimicrobial activities of ethanolic extracts of four moroccan medicinal plants (*Salvia verbenaca* (L) Briq, *Punica granatum* L., *Chenopodium ambrosoides* L., and *Corrigiola telephiifolia* Pour) were evaluated.

Methods and results: The total Phenolic content of the extracts was determined according to the Folin-Ciocalteu method and ranged from 16.22 to 589.7 mg/100 g gallic acid equivalents. The total flavonoid content of extracts determined by Aluminium chloride colorimetric assay and ranged from 0.22 to 35.94 mg/100 g catechin equivalents. Antioxidant activity was determined by the method of 2,2-diphenyl-1-picrylhydrazyl radical (DPPH) scavenging activity. The highest antioxidant activity was demonstrated by *P. granatum* (IC₅₀=2.52 µg/ml), followed by *C. ambrosoides* (IC₅₀=49.53 µg/ml), and *S. verbenaca* (IC₅₀=63.75 µg/ml). Furthermore, the extracts of these medicinal herbs were screened for antimicrobial activity by disc diffusion method against selected bacterial strains, *Staphylococcus aureus*, *Enterococcus faecalis*, *Escherichia coli*, and *Pseudomonas* Sp, and fungal strains, *Cryptococcus neoformans* and *Candida albicans*. The extracts from all the plants studied showed more or less important antimicrobial activities on one or other of the pathogenic microorganisms tested with diameter of the inhibition zone ranged from 10 to 32 mm. The highest antimicrobial activity was observed for *P. granatum* extract against *Pseudomonas* sp and *E. faecalis* (Ø= 32mm Ø= 30mm respectively).

Conclusion: these results permit propose these herbs as new sources of safe natural antioxidants antimicrobial agents that are potentially valued for food industry and biomedical applications.

Keywords: *Punica granatum*. L, DPPH scavenging activity, antimicrobial activity, Morocco.

SMART AGRI-FARM MONITORING USING AN IOT SYSTEM

Iyswariya A¹, Subhashini E², Swathi M³, Thanga Dhiwan V⁴, Vijayalakshmi V⁵

^{1,2,3,4,5} Department of ECE, R.M.K. Engineering College, Chennai, Tamilnadu

ABSTRACT

There are so many emerging concepts in agricultural farming. We plan smart farming because of the rapid growth of the population and human needs. Nowadays, there is an Internet of Things (IoT) of demand for agricultural resources and a scarcity of water that plays a vital role in the threat to farmers. Also, the major problem is animal trapping on agricultural farms, such as rats, snakes, etc. We plan to monitor the agricultural farms and update all the movements like temperature, watering time, soil condition, etc. We monitor the data such as the amount of water, fertilizers, and pesticides needed for the field and that data is transferred to the field owner. We use IOT sensors, which give perfect information about agricultural farms. The ESP32 helps to collect the data and send it to the owner's mobile phone through the use of a wi-fi connection. The message provides information about the field's soil fertility, planned humidity and temperature levels (DHT11), water conditions, and field movements. With the help of the water quality checking sensor, the water condition in the well and also in the soil is calculated and, based on the data received from the humidity and moisture sensors placed in the field, can be automatically irrigated and can detect the overflow of water. All the works take the power from the solar. This system helps us improve the crop yield and reduce water demand. We also check for any animal movement and the plant's health. If any miscellaneous activities take place, it means alerting the farmer. And we give data about when we harvest and give pests to plants, etc. Based on the given data, the farmer will do the seasonal work without fail.

Key words: Internet of Things (IoT), ESP32, Soil Moisture Sensor, DHT11, motion camera

CAPABILITY OF BIOFILM DEVELOPMENT THE DIFFERENT STRAINS OF SALMONELLA ENTERITIDIS AND INHIBITORY EFFECT OF ESSENTIAL OILS ON THE INITIAL ADHESION

*Sonila COCOLI*¹

¹*Agricultural University of Tirana, Faculty of Veterinary Medicine, Tirana, Albania.*

¹ORCID ID: <https://orcid.org/0000-0003-1107-5967>

*Nikola PUVAČA*²

²*University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Department of Engineering Management in Biotechnology, Novi Sad, Serbia.*

²ORCID ID: <https://orcid.org/0000-0002-5500-7010>

ABSTRACT

The aim of this research was an investigation of the chemical composition and antimicrobial properties of different essential oils derived from oregano and thyme and their components carvacrol and thymol, against broth cultures of *Salmonella Enteritidis*. Also, selected concentrations of essential oils were tested against initial adhesion and performed biofilm of selected *Salmonella Enteritidis* isolates. Essential oils were characterized by the high amount of phenol compounds carvacrol and thymol: *O. heracleoticum* (71.6%), *O. vulgare* (63.6%), *T. vulgaris* (59.77%) and *T. serpyllum* (40.04%). Essential oils showed antimicrobial potential as follows: *O. heracleoticum* > *O. vulgare* = *T. vulgaris* > *T. serpyllum*. The antimicrobial effect was directly proportional to the total content of carvacrol and thymol in essential oil. Between responses of different *S. Enteritidis* isolates to essential oil treatment, there was no significant difference. Essential oils, carvacrol, and thymol demonstrated an inhibitory effect on initial adhesion and consequently, on biofilm formation of *S. Enteritidis* isolates, in a dose-dependent manner. Comparing the influence of essential oil on the inhibition of initial cell adhesion and metabolic activity of cells RDAR and BDAR morphotype, no statistically significant differences were established ($p > 0.05$). Examination of the influence of essential oils, carvacrol, and thymol on the total biomass of preformed biofilms and metabolic activity of cells, it was revealed that essential oils in applied concentrations cause a reduction of the total biomass of preformed biofilm and metabolic activity of bacterial cells in a time and dose-dependent manner. Applied treatments demonstrated significantly higher efficiency on BDAR morphotype biofilms ($p < 0.05$).

Keywords: *Salmonella Enteritidis*, biofilm, essential oil, biofilm.

POTENTIAL USE OF *CARIUM CARVI* AND *CURCUMA LONGA* FOR THE REMEDY OF SKIN AND SOFT TISSUES PATHOGENS

H. Khan¹, J. Khan^{1,2}, S. Gul³, M. I. Khan³, H. Khan⁴ and M. A. Khan

^{*3,1}Department of Microbiology, Kohat University of Science Technology, Kohat, Pakistan.

²University of Swat, Pakistan;

³Department of Chemistry, Kohat University of Science & Technology, Kohat, Pakistan;

⁴Department of Pharmacy, Abdul Wali Khan University Mardan, Pakistan

ABSTRACT

The Pathogens responsible for the skin and soft tissue infections are often prone to develop resistance to antibiotics. A good alternative to this resistance is the use of folk medicine. For this purpose two plants *Carium carvi* and *Curcuma longa*, used in folk medicine were tested against the selected pathogens, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Pseudomonas aeruginosa* and *Streptococcus pyogenes*. The pathogens were collected from the patients having skin and soft tissues infections. The isolated pathogens were identified through microscopic studies followed by biological tests using Sigma Aldrich KGaA Merck kit protocol. These plant materials were extracted with MeOH and then portioned among different solvents, based on their polarity. These extracts were then applied against the selected pathogens, using well diffusion assay method and the minimum inhibitory concentration (MIC). The results showed marked antibacterial activity in the chloroform and ethyl acetate extract (18 mm zone of inhibition each) of *Carium carvi* seeds while the chloroform extract of *Curcuma longa* showed (21 mm zone of inhibition) promising results. Sensitivity of various extracts of the plant in a concentration dependent manner with significant MIC values was determined. Our findings showed that the extracts of *C. longa* and *C. carvi* seeds possess strong antibacterial effects against clinically isolated skin and soft tissue pathogens.

Keywords: *Carium carvi*, *Curcuma longa*, Skin diseases, Pathogens, Antibacterial activity.

WOOD WASTE REUSE FOR ACOUSTIC INSULATION PANELS IN RESIDENTIAL BUILDINGS

Narimane Mahani, Oumaima Bourzik, Khadija Baba, Mohammed Lamrani, Abderrahman Nounah

*Civil Engineering and Environment Laboratory (LGCE), Mohammadia Engineering School,
Mohammed V University, Rabat, Morocco*

ABSTRACT

Eco-sustainable reused materials have known a great success when it comes to their use in buildings as it helps in the development of the green building movement. Wood waste being part of those materials, has a promising acoustic performance in preventing noise pollution. Noise pollution can affect people's lives as it can cause blood pressure, fatigue, and stress. To try to decrease the side effects of noise pollution, various techniques could be used such as sound absorption, sound insulation, and vibration isolation. As the Moroccan land is known for its tremendous and biodiverse forests; the research in this specific study would consider different kinds of woods; namely Juniper wood, Walnut wood, Beech wood, and Cedar, as these are the most common wood types in Morocco. The purpose of this paper is to discuss wood waste performance on different types of wood used the most in Morocco, and how it could be a potential solution to be applied in the design of sound insulation materials (100mm to 300mm thickness) within residential buildings and homes (at least 30 to 40 Db for interior partitions, and at least 52 Db between homes or apartments). Many properties are studied to define how effective a material could be. Density is one factor that could impact the acoustic insulation in an element, as well as the reflection factor, absorption, transmission loss related to the transmission coefficients.

Keywords: Wood Waste, Sound Insulation, Eco-sustainable, Green Building, Noise Pollution

**4-BROMO-1,8-NAPHTHALIMIDE DERIVATIVES AS AN ANTIFUNGAL AGENT:
SYNTHESIS, CHARACTERIZATION, DNA BINDING, MOLECULAR DOCKING,
ANTIOXIDANT AND ADMET STUDIES**

Nouman^a, Rahisuddin^{a,}*

^a*Department of Chemistry, Jamia Millia Islamia, New Delhi 110025, India*

ABSTRACT

A series of heterocyclic derivatives (**2a-2e**) was designed and successfully synthesized via condensation reaction through the substituted aldehydes with *N*-amino-4-bromo-1,8-naphthalimide in presence of catalytic amount of conc. HCl. These heterocyclic derivatives were characterized by melting point, FT-IR ¹H, ¹³C NMR, and UV-visible spectroscopy and mass spectrometry. *In vitro* antifungal activity of the heterocyclic derivatives (**2a-2e**) was evaluated against the fungal strains *C. albicans*, *C. glabrata* and *C. tropicalis*. Results revealed that heterocyclic analogue **2a** exhibits significant activity against fungal strains *C. albicans*, *C. glabrata* and *C. tropicalis* with MIC value **200 µgmL⁻¹** as compare to standard drug fluconazole. The interaction study of promising heterocyclic derivatives **2a**, with CT-DNA was carried out by using UV-visible, fluorescence, cyclic voltammetry, circular dichroism and viscosity measurements. Molecular docking study of all the heterocyclic derivatives (**2a-2e**) was carried with PDB ID: 1BNA with best binding affinity of heterocyclic derivative **2a** (**-10.2 kcal/mol**). Pharmacokinetics properties of the heterocyclic derivatives (**2a-2e**) showed that none of the analogues violate Lipinski rule and all the properties are in considerable range for good oral bioavailability. The antioxidant potential of heterocyclic derivatives (**2a-2e**) was further approximated through DPPH and H₂O₂ free radical and showed that all the derivatives exhibited remarkable antioxidant activity.

Keywords: Heterocyclic derivatives, Antifungal, CT-DNA binding, Molecular Docking, Antioxidant

EVALUATION OF SKIN CREAM PREPARED USING *SPIRULINA PLATENSIS* AQUEOUS EXTRACT

Additiya Paramanya, Ahmad Ali

Department of Life Sciences, University of Mumbai, Vidyanagari, Santacruz (East), Mumbai, INDIA

Corresponding and presenting author: Additiya Paramanya

ABSTRACT

Objectives: Preparation of skin cream using a powerful antioxidant, *S. platensis* PCC 7345 and determining its skin lightening and anti-inflammatory effect.

Methods: Cyanobacteria was cultivated in a sterile environment. Aqueous extract was prepared using cells in log phase. It was then used to make skin cream and its antioxidant, antityrosinase and anti-inflammatory activities were measured according to established methods.

Results: Antioxidant property of the skin cream was compared with gallic acid and ascorbic acid. The skin cream could efficiently reduce the activity of tyrosinase enzyme implying its potential in skin-lightening. Anti-inflammatory activity was also checked and found that it could reduce the activity of proteinase enzyme almost similar to that of the standard Diclofenac. Physical properties of the cream was determined and its stability was checked after 6months.

Conclusion: The cream shows promising results *in vitro* with potential health effects like anti-inflammatory, antioxidant and skin-lightening.

Keywords: antioxidant, anti-inflammatory, *Spirulina platensis*, tyrosinase

PHYTOCHEMICAL ANALYSIS AND BIOLOGICAL ACTIVITIES OF DIFFERENT EXTRACTS OF *NIGELLA SATIVA* SEEDS

Prairna Balyan, Ahmad Ali

Department of Life Sciences, University of Mumbai, Mumbai, India

ABSTRACT

Objectives: Researchers are currently focussing on natural antioxidants due to their safe medicinal properties. *Nigella sativa* is a medicinal herb, well known for its many health advantages in the traditional medicinal system. The goal of this study was to investigate the antioxidant and antidiabetic activity of different seed extracts (Methanol, aqueous, ethanol, and hexane) of *N. sativa*.

Methods: The scavenging activities of seeds in different polar extracts were measured individually using DPPH and ABTS. The antidiabetic potential was assessed by the inhibition of α -amylase, and α -glucosidase enzymes.

Results: It has been found that the aqueous extract had the lowest IC₅₀ values of 0.64 ± 0.01 mg/mL for DPPH followed by the methanolic (0.81 ± 0.10 mg/mL), ethanolic (1.251 ± 0.01 mg/mL), and hexane extract (1.633 ± 0.01 mg/mL). The antidiabetic assays also showed that the aqueous extract had the highest % inhibition (74.62%) as compared to methanolic (59.40%), ethanolic (40.81%), and hexane extract (37.52%), which reveals the hypoglycaemic nature of *N. sativa*. Seed extracts were also tested for total phenolics and flavonoids. The aqueous extract also had the highest ABTS radical scavenging activity, with an IC₅₀ of 1.03 ± 0.056 mg/ml, followed by methanolic, hexane, and ethanolic extracts, each with an IC₅₀ of 1.15 ± 0.089 mg/ml, 1.56 ± 0.376 and 1.23 ± 0.0789 ml, respectively.

Conclusion: The antioxidant, as well as antidiabetic activities of all four seed extracts, were dose-dependent, and the effects were highly influenced by the extraction solvent. The findings revealed that the seed extracts had antioxidant as well as anti-diabetic properties, implying that *Nigella sativa* is a promising plant.

Keywords: Antioxidant, Antidiabetic, Flavonoids, *Nigella sativa*, Phenolics.

ALBANIAN FARMING SYSTEM, FACTS AND NUMBERS

PhD candidate Gazmend MEÇO

Agriculture University of Tirana

ABSTRACT

In Albania, the diversity of farm types is increasing in terms of both their production structure and production organization. Even though the farms are still small in terms of the average size, there is an increasing tendency of fallow land, due to emigration and migration of the rural population. This is mainly due to traditions, because households composed of several families use greater parts of farm land for subsistence. Farm size and fragmentation - Albania has a very large number of farms per unit surface area compared to other countries in the EU. The size variation differs according to regions. The crop pattern and crop rotation schemes significantly affect farm efficiency; it is dominated by wheat, corn, hay, vegetables, beans, potatoes, and orchards; the latter has a significant trend in favor of nut plants; while the cultivation of cotton, sugar beet, tobacco, rice, rape-seed, etc. is almost at a standstill in Albania. The specific contribution of agriculture to the GDP went down from 54.6 % in 1995 to 28.1 % in 2000 and now in 2022 is around 19-20%, while the sector growth is estimated by about 3.6% per annum. Nearly 48.7% of the population in 2021 lives in rural areas where agriculture is the main source for both subsistence and income. In general, the cropping area for annual cultures decreased, except for wheat, vegetables and potatoes, while the area for forage as well as fruit trees increased. Actually, half of the cultivated cropping areas consist of fodder crops, which constitute also the high share of subsistence farming. The Albanian export -import balance for agro-food commodities is negative; 1/9.5. In general, the sector's competitiveness is low due to the lack of sufficient knowledge; e.g. as how to use up-to date inputs or establish input supply and marketing co-operatives. Within the production structure on arable land, the dominating crop is winter wheat followed by corn. Among the higher value cash crops, water melons, beans and potatoes have the largest shares. Disadvantageous as to several aspects, is the almost complete disappearance of technical cultures of crop rotation over the last 20 years; e.g. sunflower or tobacco. Unfortunately, the statistical database is weak and partly inconsistent for getting realistic information about yields in dt/ ha or profitability estimates. The decline in the acreage of cash crops is the result of the expansion of food crops.

Key words: Albania, farming system, agriculture, farm size and fragmentation.

EVALUATION OF PLASMA GLUCOSE, INSULIN AND GLYCATED HAEMOGLOBIN LEVELS AMONG MALE DAILY BREAD CONSUMERS

***Dr. Ihim Augustine Chinedu¹**

Nnamdi Azikiwe University, Awka, Nigeria

ORCID ID: 0000-0001-9991-0714

Ifekandu Odumodu¹

Nnamdi Azikiwe University, Awka, Nigeria

ORCID ID: 0000-0002-0952-7664

Prof Meludu Samuel Chukwuemeka¹

Nnamdi Azikiwe University, Awka, Nigeria

ORCID ID: 0000-0001-5547-4156

Mr Chukwudi Victor Nkwachukwu²

Imo State University Owerri, Nigeria

Dr Okwara John Ekenedirichukwu¹

Nnamdi Azikiwe University, Awka, Nigeria

ORCID ID: 0000-0001-6010-0650

ABSTRACT

Bread is highly nutritious and consumed in one form or another by almost every person in Nigeria. This study was carried out to determine the effect of daily bread consumption on serum insulin, glycated hemoglobin, and plasma glucose level among male daily bread consumers. Thirty male students were randomly selected and fed with bread for 21 days. Their pre and post-blood samples were analyzed using the Enzyme-Linked Immunosorbent Assay (ELISA) method for insulin and glycated hemoglobin whereas glucose estimation was done using the glucose oxidase method. Pre and post Body Mass Index (BMI) were also determined. Results showed that there was a significant decrease in the BMI of the participants in daily post bread eaters (21.80 ± 2.21) compared to baseline (20.04 ± 2.36) ($p < 0.05$) while there were no significant differences in the mean levels of fasting plasma glucose, glycated hemoglobin, and insulin in daily post bread eaters (4.94 ± 0.24 , 5.88 ± 0.63 , and 6.43 ± 3.22 respectively) ($p > 0.05$). Likewise, no significant association existed between the parameters studied. Therefore no significant alteration was observed in the parameters studied except for the decreased BMI observed after bread consumption among the participants which could be attributed to the increase in academic stress activities experienced by participants as the studied participants were students at examination during the post sample collection.

Keywords: Bread, plasma glucose, glycated hemoglobin, insulin, diabetes mellitus.

**LIPID PROFILE, FREE FATTY ACID, APOLIPOPROTEIN B, APOLIPOPROTEIN B 48,
APOLIPOPROTEIN B 100 AND MALONDIALDEHYDE IN *MYCOBACTERIUM
TUBERCULOSIS* INFECTED INDIVIDUALS BEFORE, DURING AND AFTER
TREATMENT**

***Dr. Ihim Augustine Chinedu¹**

Nnamdi Azikiwe University, Awka, Nigeria

ORCID ID: 0000-0001-9991-0714

Prof Onyenekwe Charles Chinedum¹

Nnamdi Azikiwe University, Awka, Nigeria

ORCID ID: 0000-0001-6181-9835

Prof Meludu Samuel Chukwuemeka¹

Nnamdi Azikiwe University, Awka, Nigeria

ORCID ID: 0000-0001-5547-4156

ABSTRACT

Cardiovascular risk prediction is of high importance for clinicians and patients to assess the risk of developing cardiovascular disease (CVD), thereby allowing for preventive interventions to be instituted in those patients. Lipids and malondialdehyde (MDA) status of individuals with active *Mycobacterium tuberculosis* (MTB) infection were determined before, after two, and six month's treatment. This prospective follow-up study recruited 159 tuberculosis (TB) treatment-naïve individuals. They were followed up on a six-month course of anti-tuberculosis therapy (ATT). 120 individuals completed the study. Lipids and malondialdehyde were measured before ATT, at two and six months post-treatment. MTB was detected by microscopy and Genexpert methods. Lipids and malondialdehyde levels were determined spectrophotometrically. A one-way ANOVA test and LSD's post hoc multiple comparisons were used for statistical analyses. The mean levels of FFA, MDA, Apolipoprotein B, and B 48 were significantly lower in individuals with active TB at 2months and 6months on ATT compared with the baseline ($p < 0.05$). The mean levels of Apolipoprotein B100 were significantly higher in individuals with active TB at 2months and 6months following ATT compared with the baseline ($p < 0.05$). These findings suggest reduced levels of MDA, Apo B, and B 48 with increased levels of Apo B100 in individuals with active MTB infection following treatment. The observed significantly raised level of Apo B100, even with treatment, indicates a higher risk of cardiovascular disease. Lipid profile and apo B100 levels significantly increased while malondialdehyde, apolipoproteins B, and B 48 significantly decreased after treatment indicating a good therapeutic response.

Keywords: Cardiovascular Disease, *Mycobacterium tuberculosis*, Lipid Profile, Free Fatty Acid, Apolipoprotein B, Apolipoprotein B 48, Apolipoprotein B 100, Malondialdehyde.

KAVUN FUSARIUM SOLGUNLUĞUNA KARŞI *BACILLUS* VE *PSEUDOMONAS* SPP.'NİN ETKİLERİ

EFFECTS OF *BACILLUS* AND *PSEUDOMONAS* SPP. AGAINST MELON FUSARIUM WILT

Erçin OKSAL¹

¹ Malatya Turgut Özal Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Malatya, Türkiye

¹ORCID ID: <https://orcid.org/0000-0002-7049-4419>

ÖZET

Kavun (*Cucumis melo* L.) ülkemizde ve dünyada özellikle Akdeniz ülkeleri ve Amerika başta olmak üzere ekolojik şartları uygun olan çok sayıda ülkede zengin çeşitleriyle yetiştirilen bir kültür bitkisidir. Ülkemizde kavun üretimi Ege, Marmara, İç Anadolu, Doğu ve Güneydoğu Anadolu ve Akdeniz bölgelerinde geniş ekim alanlarında yapılmaktadır. Malatya ilinde 2021 verilerine göre 19.507 da'lık alanda kavun üretimi yapılmaktadır. Fusarium solgunluk hastalığı [*Fusarium oxysporum* f. sp. *melonis* (Leach and Curr.) W. C. Snyder & H.N. Hans. FOM] dünyada kavun yetiştiriciliğini sınırlayan en önemli fungal hastalıklardan biridir. Bu çalışmada sağlıklı kavun bitkilerinin rizosferinden elde edilen *Pseudomonas* ve *Bacillus* türlerinin kontrollü koşullarda tohuma uygulamalarının, kavunda Fusarium'un neden olduğu solgunluk hastalığına etkilerinin belirlenmesi amaçlanmıştır. Bu amaçla Malatya ilinde kavun üretimi yapılan Akçadağ, Arapgir, Arguvan, Battalgazi, Yazıhan ve Yeşilyurt ilçelerinde sürveyler gerçekleştirilmiştir. Solgunluk belirtilerinin olduğu tarlalarda sağlıklı kavun bitkilerinin rizosfer bölgelerinden örnekler alınmıştır. Laboratuvara getirilen örnekler uygun besi ortamlarına alınarak bakterilerin cins düzeyinde teşhisleri için saflaştırılmışlardır. Denemelerde FOM ırk 1,2'ye ait virülensi yüksek (A-1)₄ no.'lu izolat kullanılmıştır. Saksı denemelerinde bölgede yaygın olarak ekimi yapılan Narmikan kavunu kullanılmıştır. FOM'in toprak inokulasyonu için mısır unu kum kültürü yapılarak %5 oranında toprağa karıştırılmış ve ekim derinliğinde 1,2 x10⁸/konidi inokulum yoğunluğu elde edilmiştir. Kavun tohumları 10⁷ cfu/ml'lik bakteri süspansiyonlarında 4 saat süreyle bekletilmiştir. Bakterilerin tohuma tutunmasını kolaylaştırmak için Tween 20 (0,25ml/lit su) eklenmiştir. Bu süre sonunda tohumlar bekletilmeden ekilmiştir. Her bir bakteri izolatı ve kontrol uygulamaları (hastalıklı kontrol, sağlıklı kontrol, bakterili kontrol) için her saksının 5 bitki içerdiği 4 tekerrür uygulanmıştır. Ekimden 4 hafta sonra hastalık yüzdesi Tawsend-Heuberger formülüne göre tespit edilmiş, % etki ise Abbott formülüne göre hesaplanmıştır. Araştırma bulgularının değerlendirilmesinde Duncan testi kullanılmıştır. Elde edilen 76 *Pseudomonas* ve 83 *Bacillus* izolatlarından tesadüfi olarak seçilen 25 adet *Bacillus* ve 21 adet *Pseudomonas* izolatının FOM'e etkileri kontrollü koşullarda araştırılmıştır. Bu izolatlardan 4 *Bacillus* ve 12 *Pseudomonas* izolatı etkili bulunmuştur (p>0.05). Deneme sonucunda hastalığı engellemede en yüksek etkiye (% 77,92) sahip olan izolat Arguvan ilçesinden elde edilen *Bacillus* cinsine ait Arg27 no.'lu izolat olmuştur.

Anahtar kelimeler: Kavun, Biyolojik mücadele, Fusarium

ABSTRACT

Melon (*Cucumis melo* L.) is a cultural plant grown with its rich varieties in many countries with suitable ecological conditions, especially in Mediterranean countries and America. Melon production in our country is carried out in large cultivation areas in the Aegean, Marmara, Central Anatolia, Eastern and Southeastern Anatolia and Mediterranean regions. According to 2021 data in Malatya province, melon production is carried out on an area of 19,507 decares. Fusarium wilt disease [*Fusarium oxysporum* f. sp. *melonis* (Leach and Curr.) W. C. Snyder & H.N. Hans. FOM] is one of the most important fungal diseases limiting melon cultivation in the world. In this study, it was aimed to determine the effects of seed application of *Pseudomonas* and *Bacillus* species obtained from the rhizosphere of healthy melon plants under controlled conditions on the wilt disease caused by *Fusarium* in melon. For this purpose,

surveys were carried out in the districts of Akçadağ, Arapgir, Arguvan, Battalgazi, Yazıhan and Yeşilyurt, where melon production is made in Malatya. Samples were taken from the rhizosphere regions of healthy melon plants in fields with wilt symptoms. The samples brought to the laboratory were taken into suitable nutrient media and purified for the identification of bacteria at the genus level. The highly virulence (A-1)₄ isolate of FOM strain 1,2 was used in the trials. Narmikan melon cv, which is widely cultivated in the region, was used in pot trials. For soil inoculation of FOM, corn flour was mixed with 5% soil by making sand culture and 1.2×10^8 /conidia inoculum density was obtained at planting depth. Melon seeds were soaked in bacterial suspensions of 10^7 cfu/ml for 4 hours. Tween 20 (0.25 ml/l water) was added to facilitate the attachment of bacteria to the seed. At the end of this period, the seeds were sown without waiting. For each bacterial isolate and control applications (diseased control, healthy control, bacterial control), 4 replications were applied, each pot containing 5 plants. 4 weeks after planting, the percentage of disease was determined according to the Tawsend-Heuberger formula, and the % effect was calculated according to the Abbott formula. Duncan test was used to evaluate the research findings. The effects of 25 *Bacillus* and 21 *Pseudomonas* isolates randomly selected from 76 *Pseudomonas* and 83 *Bacillus* isolates on FOM were investigated under controlled conditions. Of these isolates, 4 *Bacillus* and 12 *Pseudomonas* isolates were found to be effective ($p > 0.05$). As a result of the experiment, the isolate with the highest effect (77.92%) in preventing the disease was the isolate no. Arg27 belonging to the *Bacillus* genus obtained from Arguvan district.

Keywords: Melon, Biological control, Fusarium

FARKLI LOKASYONLARDA BAZI ÇELTİK (*Oryza sativa* L.) ÇEŞİTLERİNİN VERİM VE VERİM KOMPONENTLERİNİN BELİRLENMESİ

DETERMINATION OF YIELD AND YIELD COMPONENTS OF SOME PADDY CULTIVARS IN DIFFERENT LOCATIONS

İsmail NANELİ

Sakarya Uygulamalı Bilimler Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölümü Arifiye/Sakarya

ORCID ID: 0000-0002-6377-5263

ÖZET

Çalışma, bazı çeltik çeşitlerinin Erbaa, Niksar, Pazar koşullarında verim ve kalite parametrelerinin belirlenmesi amacıyla 2016 ve 2017 yılları yetiştirme döneminde yürütülmüştür. Farklı lokasyonlarda yapılan araştırmada 15 çeltik (*Oryza sativa* L.) çeşidi kullanılmıştır. Denemeler, tesadüf blokları deneme desenine göre dört tekerrürlü olarak kurulmuştur. Çalışmada salkım çıkarma süresi, olgunlaşma süresi, bitki boyu, salkım uzunluğu, salkımda tane sayısı, bin tane ağırlığı, metrekarede salkım sayısı, hasat indeksi, tek salkım verimi, sterilite, yatma ve çeltik tane verimi incelenmiştir. İncelenen parametrelerde önemli farklılıklar saptanmıştır. Metrekarede salkım sayısı ve salkımda tane sayısı gibi önemli verim parametreleri bakımından yüksek değerler gösteren Osmancık-97, Hamzadere, Şumnu, Efe ve Vasco çeşitlerinin çeltik tane verimlerinin de yüksek olduğu saptanmıştır. Ayrıca, çeltik tane verimi bakımından tüm çevrelerde Osmancık-97, Şumnu, Efe, Cammeo çeşitleri stabil özellik göstermiştir.

Anahtar Kelimeler: Çeltik, Çeşit, Lokasyon, Stabilite, Verim.

ABSTRACT

The study was carried out in the growing seasons of 2016 and 2017 in order to determine the yield and quality parameters of some rice varieties in Erbaa, Niksar, Pazar conditions. 15 rice (*Oryza sativa* L.) cultivars were used in the research conducted at different locations. Trials were set up in a randomized block design with four replications. Panicle heading time, maturation time, plant height, cluster length, the number of grains per panicle, the number of clusters per square meter, sterility, harvest index, single cluster yield, laying and paddy grain yield were investigated. Significant differences were found in the investigated parameters. It was determined that the rice grain yield of Osmancık-97, Hamzadere, Şumnu, Efe and Vasco cultivars, which showed high values in terms of important yield parameters such as the number of clusters per square meter and the number of grains per cluster, were also high. In addition, Osmancık-97, Şumnu, Efe, Cammeo varieties showed stable characteristics in all environments in terms of paddy grain yield.

Keywords: Paddy, Variety, Location, Stability, Yield.

**JAPON BILDİRCİNLERİNDE ÇÖREK OTU (*NIGELLA SATİVA L.*) TOHUMUNUN
KARKAS ÖZELLİKLERİ, BÖBREK OKSİDAN ANTİOKSİDAN DÜZEYLERİ VE İLEUM
HİSTOMORFOLOJİSİ ÜZERİNE ETKİLERİ**

THE EFFECTS OF BLACK CUMIN (*NIGELLA SATİVA L.*) SEED ON CARCASS
CHARACTERISTICS, KIDNEY OXIDANT ANTIOXIDANT LEVELS AND İLEUM
HISTOMORPHOLOGY IN JAPANESE QUAILS

Filiz KAZAK¹

¹Hatay Mustafa Kemal Üniversitesi, Veteriner Fakültesi, Biyokimya Anabilim Dalı, Hatay, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0002-9065-394X>

Tülay ÇİMRİN²

²Hatay Mustafa Kemal Üniversitesi, Ziraat Fakültesi, Hayvan Yetiştirme Anabilim Dalı, Hatay, Türkiye.

²ORCID ID: <https://orcid.org/0000-0002-5868-4148>

Sema ALAŞAHAN³

³Hatay Mustafa Kemal Üniversitesi, Veteriner Fakültesi, Zootekni Anabilim Dalı, Hatay, Türkiye.

³ORCID ID: <https://orcid.org/0000-0000-0000-0000>

Mehmet Ali KISAÇAM¹

¹Hatay Mustafa Kemal Üniversitesi, Veteriner Fakültesi, Biyokimya Anabilim Dalı, Hatay, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0003-0521-9434>

Tuncer KUTLU⁴

⁴Hatay Mustafa Kemal Üniversitesi, Veteriner Fakültesi, Patoloji Anabilim Dalı, Hatay, Türkiye.

⁴ORCID ID: <https://orcid.org/0000-0002-8771-1256>

ÖZET

Bu çalışma, bıldırcın yemlerine farklı dozlarda çörek otu tohumu (NS) ilavesinin karkas özellikleri, böbrek oksidan antioksidan düzeyleri ve ileum histomorfolojisi üzerine etkilerini belirlemeyi amaçlamaktadır. Toplam 432 adet karışık cinsiyetli üç günlük Japon bıldırcını rastgele dört gruba ayrıldı. Gruplar ya tek başına bazal diyet (Kontrol Grubu) ya da %0.5 (NS-0.5 Grubu), %1 (NS-1 Grubu) ve %2 (NS-2 Grubu) oranlarında NS ile eklenmiş bazal bir diyetle beslendi. NS-2 grubunda sırt+boyun ağırlığının, NS-1 ve NS-2 gruplarında baş ağırlığı ve oranının azaldığı belirlendi. But oranı, NS-0.5 grubunda kontrol ve diğer NS gruplarına kıyasla arttı. Böbrek glutatyon, glutatyon peroksidaz ve erkek bıldırcınların katalaz değerleri NS gruplarında kontrol grubuna göre arttı. Böbrek vitamin C, kontrole kıyasla sadece NS-2 grubunda arttı. NS-2 grubunda hem grup bazında hem de dişi bıldırcınlarda villus yüksekliği azalırken, sadece dişi bıldırcınlarda villus genişliği azaldı. Sonuç olarak, %0.5 oranında NS takviyesinin but oranını arttırdığı, 3 farklı dozda NS takviyesinin böbrek oksidan-antioksidan dengesinin korunmasında etkili olduğu ve %2 oranı hariç diğer oranlarda NS diyet takviyesinde ileum histomorfolojisinin değişmediği belirlendi. Bu nedenle çörek otu tohumlarının bıldırcın diyetinde doğal bir antioksidan kaynağı olarak kullanılabilceği ifade edilebilir.

Anahtar Kelimeler: Antioksidan, Glutatyon, Hayvan besleme, Histomorfoloji, Cinsiyet, Vitamin C.

ABSTRACT

This study aims to determine the effects of supplementation of different doses of black cumin seeds (NS) to quail feeds on carcass characteristics, kidney oxidant antioxidant levels, and ileum histomorphology. A total of 432 mixed-sex three days old Japanese quails were randomly divided into four groups. The groups were fed on either a basal diet alone (Control Group) or a basal diet supplemented with NS at rates of 0.5% (NS-0.5 Group), 1% (NS-1 Group), and 2% (NS-2 Group). It was determined that the back+neck weight in the NS-2 group and head weight and ratio in the NS-1 and NS-2 groups decreased. The thigh rate increased in the NS-0.5 group compared to the control and other NS groups. Kidney glutathione, glutathione peroxidase, and male quails' catalase values were increased in NS groups compared to the control group. The kidney vitamin C increased only in the NS-2 group compared to the control. In the NS-2 group, the villus height decreased both on a group basis and in female quails, while the villus width decreased only in female quails. Consequently, it was determined that dietary supplementation of NS at rates of 0.5% increased the thigh rate, dietary supplementation at three different doses of NS were effective in maintaining the kidney oxidant-antioxidant balance, and the ileum histomorphology did not change except for dietary supplementation of NS at rates of 2%. Therefore, it can be stated that black cumin seeds can be used as a natural antioxidant source in the quail diet.

Keywords: Animal nutrition, Antioxidant, Glutathione, Histomorphology, Sex, Vitamin C.

SALEP ORKİDELERİNDE YUMRU İRİLİĞİNİN VERİM VE KALİTEYE ETKİSİ THE EFFECT OF TUBER SIZE ON YIELD AND QUALITY IN SALEP ORCHIDS

Ünal KARİK*

*Doç. Dr. Ege Tarımsal Araştırma Enstitüsü-Menemen/İZMİR

ORCID ID: 0000-0001-6707-191X

ÖZET

Salep orkidelerine ait yumrular ülkemizde uzun yıllardır doğadan toplanarak dondurma ve salep yapımında kıvam verici olarak kullanılmaktadır. Bu toplamalar sonucunda doğada meydana gelen baskı sonucunda bazı türlerin oldukça azaldığı görülmektedir. Bu duruma alternatif olarak salep orkidelerini tarla şartlarında yetiştirmek üzere çalışmalar yapılmış ve başarılı sonuçlar elde edilmiştir. Farklı türlerde çalışmalar yürütülmüş, Muğla salebi (*Orchis sancta* L.) ve Aydın salebi (*Serapias vomeracea* (Burm. Fil.) Briq.)'nin fazla sayıda yumru vermeleri nedeniyle bu türlerde çalışmalara devam edilmiştir.

Menemen-İzmir ekolojik koşullarında yürütülen bu çalışmada materyal olarak Muğla salebi (*Orchis sancta* L.) ve Aydın salebi (*Serapias vomeracea* (Burm. Fil.) Briq.) kullanılmıştır. Yumru iriliklerinin verim ve kaliteye etkisinin incelendiği çalışmada; he iki türde 2, 4 ve 6 g ağırlığındaki yumrular denemeye alınmıştır. Tesadüf blokları deneme desenine göre düzenlenen çalışmada, her tür için ayrı deneme kurulmuş ve aynı deneme alanında 2 yıl boyunca gözlem ve ölçümler yapılmıştır.

Yapılan çalışma sonucunda birim alandan en yüksek taze yumru verimi büyük yumruların alınmış, *Orchis sancta* L. türünde ilk yıl 205.44 kg/da, 2. yıl 219.85 kg/da taze yumru verimi elde edilirken, *Serapias vomeracea* (Burm. Fil.) Briq. türünden ilk yıl 184,40 kg/da, 2. yıl 212,18 kg/da taze yumru verimi alınmıştır. Yumru büyüklüğünün kaliteye etkisi önemsiz bulunmuştur. Yumrulardaki kıvam verici özelliği sağlayan nişasta oranı *Orchis sancta* L. türünde ortalama % 25.64, *Serapias vomeracea* (Burm. Fil.) Briq. türünde % 40.72, glikomannan oranı ise *Orchis sancta* L. türünde % 22.38, *Serapias vomeracea* (Burm. Fil.) Briq. türünde % 38.65 olarak belirlenmiştir. Bu sonuçlara göre salep tarımında büyük yumru kullanımının birim alandan alınan taze yumru verimini artırdığı ancak yumruların kalite özelliklerine etkisinin bulunmadığı ortaya çıkmıştır.

Anahtar Kelimeler: Salep, Tarla, Yumru, Verim, Kalite

ABSTRACT

Tubers of salep orchids have been collected from nature for many years in our country and used as a thickener in ice cream and salep production. As a result of these collections, it is seen that some species have decreased considerably as a result of the pressure in nature. As an alternative to this situation, studies have been carried out to cultivate salep orchids under field conditions and successful results have been obtained. Studies were carried out in different species, and studies were continued in these species due to the large number of tubers of Muğla salep (*Orchis sancta* L.) and Aydın salep (*Serapias vomeracea* (Burm. Fil.) Briq.).

This study conducted in Menemen-İzmir ecological conditions, Muğla salep (*Orchis sancta* L.) and Aydın salep (*Serapias vomeracea* (Burm. Fil.) Briq.) were used as materials. In the study examining the effect of tuber size on yield and quality; tubers of both species weighing 2, 4 and 6 g were included in the experiment. In the study, which was organized according to the randomized blocks trial design, a separate trial was set up for each species and observations and measurements were made in the same trial area for 2 years.

As a result of the study, the highest fresh tuber yield per unit area was obtained from large tubers, while the fresh tuber yield of *Orchis sancta* L. was founded 205.44 kg/da in the first year and 219.85 kg/da in the second year, *Serapias vomeracea* (Burm. Fil.) Briq. fresh tuber yield of 184.40 kg/da in the first year

and 212.18 kg/da in the second year was obtained from the species. The effect of tuber size on quality was found to be insignificant. The starch ratio, which provides the thickening feature in the tubers was founded 25.64% in *Orchis sancta* L. and 40.72% in *Serapias vomeracea* (Burm. Fil.) Briq. Glucomannan rate was determined 22.38% in *Orchis sancta* L. and 38.65% in *Serapias vomeracea* (Burm. Fil.) Briq. According to these results, it has been revealed that the use of large tubers in salep farming increases the fresh tuber yield per unit area, but has no effect on the quality characteristics of tubers.

Keywords: Salep, Field, Tuber, Yield, Quality

EVALUATION OF SEED GERMINATION IN FIROOZKOOH POPULATION OF *GLAUCIUM FLAVUM* (PAPAVERACEAE) IN TEHRAN PROVINCE IN IRAN

Maram Norouzi^{1}, Zahra sarkheil¹*

¹Faculty Member And Msc Student Of Department Of Horticulture, Collage Of Aburaihan, University Of Tehran, Tehran, Iran

ABSTRACT

The genus *Glaucium* (horned poppy) belonging to the family Papaveraceae, consists of nearly 25 species worldwide, and especially distributed throughout Western, Northern and Eastern Asia, Europe, Northern Africa, and Australia. This genus is mainly related to the Mediterranean region and is native to Europe, Northern Africa, Macaronesia and temperate zones in Western Asia. The *Glaucium flavum* Crantz or the yellow horned-poppy, is a perennial or biennial herb as a medicinal and ornamental plants. *Glaucium flavum* occurs all along the Mediterranean shores, but also on the coasts of W. Europe and south west Asia. In sharp contrast to its wide distribution, there is a marked scarcity of information on the physiology of seed germination in the yellow horned-poppy. The species produces large number of seeds every year but because of linear immature embryo, the seed has morphophysiological dormancy and difficult germination and it is in danger of extinction. In this research, our destination is to find the optimal procedure to germinate the seed. In the experiment. Stratification treatments from 5 weeks to 5 months were performed, and also three doses of gibberellic acid 0, 500 and 1000 mg/Lit in 10° C, 15° C and 20 ° C in dark and light conditions were investigated. The best treatment to achieve the highest germination rate is 6 weeks cold stratification (4° C) with 1000 mg/Lit gibberellic acid at 15° C in dark condition. In this kind of circumstances the highest seed germination was performed (70%) in two weeks.

THE COMPARISON STUDY OF EXTRACTION PROCESSES OF ESSENTIAL OIL OBTAINED FROM BLACK PEPPER

*Afifa Baig, Radhey Mohan Yadav, Kapil Pandey and Saimah Khan**

ORCID ID* : 0000-0002-6483-4325

Department of Chemistry, Integral University, India

ABSTRACT

Black Pepper (*Piper nigrum*) also called pepper perennial climbing vine of the family Piperaceae. Black pepper is a native to the Malabar coast of India and is one of the earliest species known. Pepper also has a limited usage in medicine as a carminative and as a stimulant of gastric secretions. Black pepper essential oil has been used by Chinese herbalist for thousands of years to treat cholera, malaria and even dysentery. It is also used as analgesic (Pain Relieving) medicinal use. Used internally to help soothe and support nervous system and also used in soothing of muscular pain due to its warming and energizing property, apart from this it is also used as anticancer, antimicrobial and antioxidant. Due to its various applications, extraction of black pepper essential oil become an important topic. In this study the black pepper seeds were collected from local market of Lucknow, India. The extraction was done by using two extraction process - Steam distillation process and Soxhlet extraction process by optimizing conditions that affect the extraction process. Result demonstrated that in steam distillation process 50 gram of black pepper dissolved in 300 ml distilled water undergo double distillation process for 3 hours the obtained essential oil yield is 9.2% whereas from soxhlet process the extracted oil yield for 3 hours is 12.03%. From the result it was conducted that the % yield of essential oil (EO) obtained using both the extraction follows the order:

% yield EO using soxhlet extraction (12.03%) > % yield of EO using steam distillation (9.2%).

From the result it was also conducted that by increasing the temperature (70°C and 90°C for steam distillation and 50°C and 70°C for soxhlet extraction) and keeping time constant (3 hours), the yield of essential oil increases. In steam distillation at 70°C, the % yield of EO was found to be 4.4% and at 90°C, the % yield of EO was found to be 9.2%, whereas in soxhlet extraction at 70°C, the % yield of EO was found to be 6.23% and at 90°C %, the yield of EO was found to be 12.03%.

Similar results were also obtained by increasing the time (2 hours and 3 hours for both the extraction) and keeping temperature constant (90°C for steam distillation and 70°C for soxhlet extraction), the yield of essential oil also increases. In steam distillation process at 90°C for 2 hour, the % yield of EO was found to be 5.32% and for 3 hour, the % yield of EO was found to be 9.2%, whereas in soxhlet extraction at 70°C for 2 hour, the % yield of EO was found to be 6.65% and for 3 hours, the % yield of EO was found to be 12.03%. In comparison to steam distillation extraction, soxhlet extraction provide more % yield of essential oil

Keywords: Black pepper, Essential oil, Steam distillation, Soxhlet extraction, Ethanol, Hexane.

SYNTHESIS, CHARACTERIZATION AND EVALUATION OF SOME BIOLOGICAL ACTIVITY OF NEW [1,2,3]-TRIAZOLE-CHALCONE DERIVATIVES

Nehakumari N. Gohil

M. K. Amin Arts and Science College & College of Commerce, Padra, The M. S. University of Baroda, Vadodara-391440, Gujarat, India

ABSTRACT

In drug discovery process, Heterocycles are common structural units in marketed drugs and in medicinal chemistry targets. Nitrogen-containing rings especially play an important role in drug development because of their wide variety of therapeutic and pharmacological properties [1]. Triazoles in particular, [1,2,3]-triazoles and their derivatives have attracted great interest due to their wide range of biological activities, such as antimicrobials, analgesics, anti-inflammatories, local anesthetics, anticonvulsants, antineoplastic, antimalarial, antileishmania [2], antivirals, and anticancer among others [3]. In addition to above biological activities certain [1,2,3]-triazoles are also known for their fungicidal and plant growth regulator properties and are used as agrochemicals. Certain triazole derivatives are also reported to be used in industry as dyes, corrosion inhibitors and photo stabilizers [4].

Chalcone derivatives containing α,β -unsaturated carbonyl have a wide range of biological activities in medical and pharmaceutical drugs such as, antibacterial, antifungal, anti-inflammatory, anticancer, antidepressant, antiprotozoal (trypanocidal and leishmanicidal), antiviral, antimalaria, antioxidant, among others [5].

Considering the importance of [1,2,3]-triazoles and chalcone derivatives, in the present article we report the synthesis, characterization and biological evaluation of some new [1,2,3]-triazole containing various chalcone derivatives. [1,2,3]-triazole chalcones, 1-(5-methyl-1-phenyl-1H-1,2,3-triazol-4-yl)-3-arylprop-2-en-1-ones were synthesized by reaction of various 1-(5-methyl-1-phenyl-1H-1,2,3-triazol-4-yl)ethan-1-ones and substituted aryl aldehydes in the presence of solution of sodium hydroxide in ethanol at 0-10°C to room temperature for 5-8 hrs.

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**ISLAMIC LEGAL TRADITION AND ANIMAL WELFARE: A SURVEY OF THE
ATTITUDE OF LIVESTOCK HOLDERS VIS-A-VIS ANIMAL WELFARE IN KATSINA
STATE, NIGERIA**

Dr. Abubakar Abdulkadir

Department of Islamic Studies

Umaru Musa Yar'adua University, Katsina, Nigeria

ABSTRACT

Philosophically, animal welfare implies the adoption of measures to ensure that all livestock (animals used by humans) have their basic needs met; food, shelter, and health. And that they are not subjected to unpalatable experiences in providing for human needs. This philosophical foundation was instrumental toward legislative promulgations around the world among civil and common law climes. As the only surviving religious legal system in the contemporary world, Islamic law has a rich tradition which aims to provide for animal welfare. Even though, this tradition subsists within a civilization that had existed over a thousand years ago, it is by no means less advanced than the 21st century standard. Thus, Muslim majority societies, particularly, those that adopt Islamic code (at personal status level or beyond) may leverage this rich tradition to strengthen their legislative and judicial efforts to promote animal welfare. Via the survey method, this study measures the attitude of livestock holders in Katsina State, Nigeria vis-à-vis animal welfare. In spite of the prospects for better treatment of animals which is intrinsic to this age long legal tradition, the study established that there exists a negative attitude among livestock holders toward animal welfare owing to lack of awareness, legal vacuums, as well as policy disposition. Hence, the study rounds up with a policy recommendation that calls for a systematic approach toward harnessing the huge opportunities within Islamic law to promote animal welfare in the State.

Keywords: Islamic, legal, tradition, animal, welfare.

CORROSION INHIBITION EFFECT OF BIXA ORELLANA LEAVES EXTRACT AS AN ECO-FRIENDLY INHIBITOR FOR MILD STEEL IN ACIDIC MEDIA

Mr. Manohar Rathod

Department of Chemistry, Karnatak Science College, Dharwad-580001, India

ABSTRACT

The inhibition effect of environmentally friendly inhibitor *Bixa orellana* leaves extract (*BOLE*) for corrosion inhibition of mild steel in HCl solution was assessed by mass loss, potentiodynamic polarization, and electrochemical impedance spectroscopic techniques. The *Bixa orellana* plant has a wide range of bioactive compounds. Phytochemicals were tested for *BOLE* using the FeCl₃ test, Salkowaski's test, and others. Corrosion inhibition studies were conducted at different inhibitor concentrations and temperatures. The inhibitory effect of *BOLE* on corrosion of mild steel was reported to improve with increasing concentration. Polarization experiments revealed that *BOLE* is a mixed kind of inhibitor and the inhibition efficacy ($\% \eta_w$) for mild steel is 97.98% for 0.014 g/L *BOLE*. For Electrochemical impedance spectroscopy, the maximum inhibition efficiency ($\% \eta_w$) was 95.58% due to *BOLE* adsorption. The obtained results using each methodology are highly consistent and closely resemble each other. The adsorption of *BOLE* molecules on a mild steel surface from the bulk of the solution causes the inhibitor's inhibition action, and the adsorption mechanism follows the Langmuir adsorption isotherm. The computed ΔG_{ads}^o values ranged between -32.919 and -33.520 kJ mol⁻¹, implying a spontaneous and exothermic inhibition action. The thermodynamic and activation parameters are often used to understand corrosion inhibition mechanisms. The comparison of the immersed metal's FT-IR spectra and pure extract FT-IR spectrum indicates the nature of *BOLE* adsorption on the mild steel surface. The surface morphology of mild steel samples was assessed using atomic force microscopy (AFM), scanning electron microscope (SEM), and contact angle techniques.

Keywords: *Bixa orellana*, Inhibitor, Contact angle, Adsorption, FT-IR, SEM

BUZAĞILARDA KONJENİTAL FLEKSURAL DEFORMİTE TEDAVİSİ: 34 OLGU TREATMENT OF CONGENITAL FLEXURAL DEFORMITY IN CALVES

Sıtkıcan OKUR

Atatürk Üniversitesi Veteriner Fakültesi Cerrahi Anabilim Dalı

ORCID ID: <https://orcid.org/0000-0003-2620-897X>

ÖZET

Konjenital malformasyonlar intrauterin dönemde gelişen ve doğumdan sonra gözlemlenen bir morfogenez defekti olarak tanımlanmaktadır. Bu malformasyonlar küçük anatomik defektlerden ölümcül hastalıklara kadar uzanabilir. Bu anomaliler genetik (kromozom veya gen mutasyonları), çevresel (teratojenik kimyasallar, fiziksel ajanlar, enfeksiyon vs.) faktörler veya her ikisinin kombinasyonuna bağlı olarak oluşabilmektedir. Buzağılarda tendon hastalıkları konjenital veya edinsel olarak gözlemlenen, hayvanlarda topallık ve yürüyüş bozukları gibi lokomotor disfonksiyonlarının yanı sıra hayvanların gelişimlerinin yavaşlamasına ve sonucunda ekonomik kayıplara neden olabilen anomalilerdir. Buzağılarda konjenital olarak karşımıza çıkan tendon anomalileri; hiperekstansiyon deformiteleri, fleksural deformiteler, artrogripozis ve spastik paralizler olarak sıralanabilir. Buzağılarda fleksural deformiteler eklem ekstenziyon pozisyonunda tutulamaması veya getirilememesi olarak tanımlanmaktadır ve çoğunlukla metakarpofalangeal veya karpal eklemlerde gözlemlenmektedir. Etiyolojik olarak çoğunlukla kalıtsal faktörler ve hayvanların intrauterin pozisyona bağlı olarak şekillenmektedir ve genellikle doğumu takiben ilk birkaç gün içerisinde gözlemlenmeye başlar. Fleksural deformiteler hafif (buzağı ayaklarının üzerinde durarak yürüyebiliyor ancak ayak tabanları zemin ile tam olarak temas etmiyor), orta (Tırnak ucunun dorsal kısmı ile zemine basarak yürüyüş), şiddetli (hayvanlar yürüyüş sırasındayken bile topuk eklemi üzerine basarak yürümektedir) olmak üzere sınıflandırılabilir. Hayvanların yürüyüşünde zorluklar olduğu için kolostrum alımı ve beslenme yeterli değildir. Bunlara ilaveten topuk eklemi üzerine basmasından kaynaklı oluşan ağrıya bağlı olarak sekonder olarak iştahsızlık ve gelişme geriliği gözlenmektedir. Tedavi edilmeyen olgularda tekrarlayan travmalara bağlı olarak deri lezyonları ve ilerleyen olgularda ise septik artritis olgularıyla karşılaşılabilir. Bu retrospektif çalışmada Atatürk Üniversitesi Veteriner Fakültesi Hayvan Hastanesine 2019-2021 yılları arasında fleksural deformite olgusuna sahip hayvanların görülme sıklığı ve tedavisi incelenmiştir. Hastanemize getirilen 880 buzağı hastasından 94 tanesi (%10.7) konjenital malformasyon (atresia ani, atresia coli, damak yarığı, fleksural deformiteler vs.) şikayetiyle getirilmiştir. Bu konjenital malformasyonların arasında 34 (%36.2) buzağıda fleksural deformite gözlemlendi. Hastanemize getirilen buzağılardan 20 tanesine hastalığın hafif seyretmesi nedeniyle bandaj uygulaması yapıldı. Bandaj uygulamasını takiben bir hafta sonra hayvanlar kontrole çağırılarak bandaj çıkartılıp ayağın durumu gözlemlendi. Eğer düzelme tam anlamıyla şekillenmezse 1 hafta süreyle tekrar bandaj uygulaması yapılarak takip edildi. Son bandaj uygulamasını da takiben sonuç alınamayan olgularda cerrahi operasyon uygulandı. Bandaj uygulamasını takiben 14 hayvan tamamen iyileşirken 4 hayvan cerrahi operasyona alındı, 2 hayvanın ise bilgisine ulaşılamadı. Orta ve şiddetli seyreden fleksural deformitelerde (14 buzağı) cerrahi girişim uygulandı. Operasyonlarda hayvanların kontrakte tendolarına 'Z-tenetomisi' uygulanmıştır. Operasyonu takiben etkilenen ayaklar bir haftalık süreyle destekli bandaja alınmıştır. Yapılan operasyonları takiben 10 hayvan tamamen iyileşirken 2 hayvanda yara bölgesinde enfeksiyon şekillendiği belirlendi. Operasyondan sonra 2 buzağı sahibiyle ise bağlantı kurulamadı.

Anahtar Kelime: Konjenital, Buzağılar, Fleksural Deformite

ABSTRACT

Congenital malformations are described as a morphogenesis, which developed during intrauterine life, and is observed following birth. These malformations may range from small anatomical defects to lethal disorders. This abnormality can be resulted in genetic (chromosome or gene mutations) or

environmental (teratogenic chemical or physical agents, infections, etc.) factors, also by their combination. Tendon diseases in calves are congenital or acquired diseases that can cause locomotor dysfunctions such as lameness and gait disorders in animals, as well as loss of a production animal or a decreased level of production and result in significant economic losses. Congenital tendon abnormalities include hyperextension deformities, flexural deformities, arthrogryposis and spastic paralysis. Flexural deformities are defined as the inability to hold or bring the joint in the extension position, which mostly observed in the metacarpophalangeal or carpal joints in calves. The etiology of these congenital abnormalities in calves may resulted in heritable condition or intrauterine position, and majority of the case are observed within the first few days after birth. Flexural deformities can be classified as mild (the calf can walk standing on its feet, but the heels of the feet do not fully contact the ground), moderate (walking by pressing the ground with the dorsal part of the hoof breaks), and severe (animals walk by pressing on fetlock even when walking). Colostrum intake and nutrition are not sufficient as animals have difficulty in walking. Additionally, secondary loss of appetite and growth retardation are observed due to the pain caused by pressing on the heel joint. In untreated cases, skin lesions due to repetitive traumas and septic arthritis may be encountered in progressive cases. In this retrospective study, the incidence and treatment of animals with flexural deformities at Atatürk University Veterinary Faculty Animal Hospital between 2019-2021 year were investigated. Of 880 calf patients brought to our hospital, 94 (10.7%) were presented with the complaint of congenital malformations (atresia ani, atresia coli, cleft palate, flexural deformities, etc.). Flexural deformity was observed in 34 (36.2%) calves. Bandage was applied to 20 of the calves brought to our hospital due to the mild course of the disease. One week after the bandage application, the animals were called for control and the bandage was removed and the condition of the foot was evaluated. If the improvement was not fully formed, bandage was applied again for 1 week and followed up. Surgical operation was performed in cases with no results after the last bandage application. Following the bandage application, 14 animals recovered completely, 4 animals were operated due to the bandage fails and information on 2 animals could not be reached. Surgical intervention was performed in moderate and severe flexural deformities (14 calves). In the operations, 'Z-tenotomy' was applied to the contracted tendons of the animals. After the operation, the affected feet were put in a bandage for one week. Following the operations, 10 animals recovered completely, while infection occurred in the wound area in 2 animals. After the operation, contact could not be established with the owners of 2 calves.

Keywords: Congenital, Calves, Flexural Deformity

HURMA VE YAN ÜRÜNLERİNİN RUMİNANT BESLEMEDE KULLANIMI
THE CHEMICAL COMPOSITION AND USAGE OF DATE AND IT'S BY-PRODUCTS IN
RUMINANT NUTRITION

Oğuzhan KAHRAMAN¹

¹Department of Animal Nutrition and Nutritional Disorders, Faculty of Veterinary Medicine, Selcuk University, Turkey

ORCID ID: <https://orcid.org/0000-0002-9315-5276>

Zekeriya Safa İNANÇ¹

¹Department of Animal Nutrition and Nutritional Disorders, Faculty of Veterinary Medicine, Selcuk University, Turkey

ORCID ID: <https://orcid.org/0000-0003-0832-9209>

Fatma İNAL¹

¹Department of Animal Nutrition and Nutritional Disorders, Faculty of Veterinary Medicine, Selcuk University, Turkey

ORCID ID: <https://orcid.org/0000-0002-5022-1579>

Huzur Derya ARIK¹

¹Department of Animal Nutrition and Nutritional Disorders, Faculty of Veterinary Medicine, Selcuk University, Turkey

ORCID ID: <https://orcid.org/0000-0002-9315-5276>

ÖZET

Hurma, Orta Doğu ülkeleri arasında popülerdir ve bu ülkelerde insanlar için en önemli gıdalardan biri olarak kabul edilir. Mısır, Suudi Arabistan, İran, Cezayir ve Pakistan dünyadaki hurmaların çoğunu üretmektedir. Her yıl çok miktarda kalitesiz hurma atılmakta ve hayvan beslemede kullanılmaktadır. Hayvan besleme, özellikle bu kurak bölgelerde, hayvancılıkta en yüksek üretim maliyetlerinden birini temsil oluşturmaktadır. Bu bölgelerdeki çiftçiler, geviş getiren hayvanların beslenme ihtiyaçlarını sadece doğal bitki örtüsü ile karşılamak zorunda olduğundan, bu alanlarda hurma ve hurma yan ürünleri çiftlik hayvanlarının beslenmesinde kullanılmaktadır. Hurma yaprakları, saplar, hurma çekirdekleri ve atık hurma hurma yan ürünleridir. Bu yan ürünler tarihsel olarak çiftçiler tarafından geleneksel bir şekilde hayvan beslenmesinde kullanılmıştır. Hurma yan ürünleri kimyasal bileşimleri ile birbirinden farklıdır. Hurmanın kimyasal bileşimi, önemli bir bölümü şeker kaynağı (%81-88, başlıca fruktoz, glikoz ve sakaroz), diyet lifi (%5-8.5) ve az miktarda protein, yağ, kül ve polifenolden oluşmaktadır. Hurma çekirdeklerinin kuru madde, protein, yağ ve karbonhidrat içerikleri sırasıyla 3.1-12.5, 2.3-6.9, 5.0-12.5 ve 70.9-86.9 g/100 g arasında değişmektedir. Hurma yapraklarının NDF, ADF, lignin ve ham protein içerikleri (sırasıyla 609, 435, 84, 64 g/kg DM). Hurma atıkları, şeker içeriği nedeniyle yüksek oranda sindirilebilir ve iyi bir enerji kaynağıdır. Hurma çekirdekleri ve hurma yaprakları lif karbonhidratları bakımından yüksektir ve geviş getiren hayvanların rumen sağlığının korunmasına yardımcı olur. Bu derlemede ruminant beslemede hurma ve yan ürünlerinin uygunluğunun ve kullanımının tam olarak açıklanabilmesi için yapılan çalışmalar ve kimyasal bileşimleri incelenerek anlatılacaktır.

Anahtar Kelimeler: Hurma, yan ürün, besin değeri, kimyasal kompozisyon, ruminant.

ABSTRACT

Dates are popular among the population of the Middle Eastern countries and they are considered as one of the most important food for humans in these countries. Egypt, Saudi Arabia, Iran, Algeria and Pakistan produce most of the dates in the world. Large amount of poor quality dates are discarded and used in animal nutrition every year. Animal feeding represents one of the highest production costs in livestock farming, especially in these arid regions. Farmers in these regions has to cover their nutritional requirements of ruminants with only natural vegetation so dates and date by-products are used livestock nutrition in these areas. Date-palm leaves, pedicels, date-pits and waste dates are date-palm by-products. These by-products have been used historically in animal nutrition by local farmers in a traditional way. Date by-products are different from each other with their chemical compositions. The chemical composition of the date shows that the flesh is an important source of sugar (81-88%, mainly fructose, glucose and sucrose), dietary fibre (5-8.5%) and small amounts of protein, fat, ash and polyphenol. Moisture, protein, oil and carbohydrate contents of date-pits varied from 3.1-12.5, 2.3-6.9, 5.0-12.5 and 70.9-86.9 g/100 g date-pits, respectively. NDF, ADF, lignin and crude protein contents of date palm leaves (609, 435, 84, 64 g/kg DM, respectively). Date wastes are highly digestible because of their content of sugar and they are good source of energy. Date pits and date palm leaves are high in fiber carbohydrates and they help to maintain rumen health in ruminants. In this review, studies conducted to fully explain the suitability and use of dates and their by-products in ruminant feeding and their chemical compositions will be explained.

Keywords: Dates, by-products, nutritive value, chemical compositions, ruminants.

PİYETEN SAĞALTIMINDA TİLMİKOSİN VE SEFKUİNOM'UN KULLANIMI THE USE OF TILMICOSIN AND CEFQUINOMA IN THE TREATMENT OF FOOT ROT

Ferit YILDIZ¹

¹*Tarım Ve Orman Bakanlığı, Muş İl Müdürlüğü, Muş, Türkiye*

¹ORCID ID: <https://orcid.org/0000-0002-5494-6657>

Musa GENCCLEP²

²*Van Yüzüncü Yıl Üniversitesi, Veteriner Fakültesi, Cerrahi Anabilim Dalı, Van, Türkiye*

²ORCID ID: <https://orcid.org/0000-0001-6661-7079>

ÖZET

Sunulan çalışma; Muş ve yöresinde yetiştirilen koyunlardan piyetenli olduğu belirlenen 80 baş koyun üzerinde gerçekleştirilmiştir. Piyetenli koyunlar sahada yapılan gözlem, alınan anamnez ve klinik muayeneler sonucunda belirlenmiş olup, hastalar eşit sayıda olacak şekilde iki gruba (T-S) ayrılarak, S-Grubuna süte geçmeyen ve ette de kısa süreli (5 gün) kalıntı bırakan sefalosporin grubu bir antibiyotik (sefkuinom), T-Grubuna ise süte geçen, süt ve ette uzun süre kalıntı bırakan makrolit grubu bir antibiyotik (tilmikosin) uygulanmıştır. Hastalar 10 gün boyunca takip edilmiş ve farklı iki antibiyotiğin saha şartlarındaki sağaltım başarıları karşılaştırılmıştır.

Parenteral antibiyotik uygulamasından sonra 1. günde iki grupta da hiçbir iyileşme belirtisi olmazken, 2. günde T-Grubunda %12,5, S-Grubunda ise belirgin farkla %50 iyileşme görülmüştür. 3. gün ve sıralı diğer günlerde ise her iki grubun iyileşme değerleri birbirine yakın seyrettiği görülmektedir. 4. günün sonunda, sırasıyla %85-90 oranında bir iyileşme görülmüş olup, 6. günün sonunda %90-95'e çıkmıştır. Gruplarının istatistiki açıdan değerlendirilmesinde sadece tedavinin 2. gününde iki grup arasında istatistiki açıdan önemli bir fark saptanmıştır ($p<0.05$). Diğer günlerde her iki grup arasındaki fark istatistiki açıdan anlamlı bulunmamıştır.

Dolayısıyla parenteral antibiyotikle yapılan sağaltımda, süte geçmeyen sefkuinom etken maddeli ilaç kullanıldığında başarı yüzdesinin 2. günden itibaren hızlıca atması, 4. günden sonra %90'ın üzerine çıkması, üç uygulama ile piyetenli kısa sürede tedavi etme yetkinliği, ek maliyet gerektirmemesi, yetiştiriciler tarafından rahatlıkla temini, arazi şartlarında, otlakta ve merada rahatlıkla uygulanabilir olmasının yanısıra süte geçmemesi ve kalıntı riski oluşturmaması nedeniyle süt heba edilmediğinden yetiştiriciler tarafından tercih sebebi olabileceği değerlendirilmiştir. Böylece hem hayvan sağlığı ve refahı, hem gıda güvenilirliği, hem de halk sağlığı açısından tavsiye edilmesi gerektiği sonucuna varılmıştır.

Anahtar kelimeler: Piyeten, Koyun, Antibiyotik, Kalıntı.

ABSTRACT

This study was carried out on 80 sheep, which were determined to be with foot rot, among the sheep raised in Muş and its region. The sheep with foot rot were determined as a result of observations in the field, anamnesis and clinical examinations, and they were divided into two groups (T-S) in equal numbers. A cephalosporin group antibiotic (cefquinoma) was applied to the S-Group, which does not pass into milk and leaves a short-term (5 days) residue in meat, while T-Group was treated with a macrolide antibiotic (tilmicosin) that passes into milk and leaves residue in milk and meat for a long time. The sheep in the experiment were observed for ten days and the therapeutic successes of two different antibiotics under field conditions were compared.

After parenteral antibiotic administration, there was no sign of improvement in either group on the 1st day, while 12.5% improvement was observed in the T-Group and 50% a marked difference in the S-

Group on the 2nd day. On the 3rd day and on the other consecutive days, it was seen that the recovery values of both groups were close to each other. At the end of the 4th day, an improvement of 85-90% was observed respectively, and increased to 90-95% at the end of the 6th day. In the statistical evaluation of the groups, a statistically significant difference was found between the two groups only on the 2nd day of treatment ($p<0.05$). On the other days, the difference between the two groups was not statistically significant.

Consequently, the study has indicated that in the treatment with parenteral antibiotics, when cefquinoma active ingredient drugs that does not pass into milk is used, the success rate rises rapidly from the 2nd day and above 90% after the 4th day. Therefore, it has been evaluated that this kind of drugs can be preferred by the breeders since it can treat the foot rot in a short time with three applications, does not require additional costs, can be easily supplied and used by the breeders in field conditions, grassland and pasture, as well as milk is not wasted because it does not pass into milk and does not pose a risk of residue. Thus, it was concluded that the use of an antibiotic with cefquinoma active ingredient should be recommended to cure foot rot in terms of animal health and welfare, food safety and public health.

Key words: Foot rot, Sheep, Antibiotic, Residue.

ETANOL ÖN İŞLEMİNİN KURUTULMUŞ MEYVE VE SEBZELERİN KALİTESİNE ETKİSİ

EFFECT OF ETHANOL PRE-TREATMENT ON THE QUALITY OF DRIED FRUIT AND
VEGETABLES

Serdar UĞURLU

*Doktora Öğrencisi, Van Yüzüncü Yıl Üniversitesi Fen Bilimleri Enstitüsü Gıda Mühendisliği Ana
Bilim Dalı, Van, Türkiye*

ORCID ID: <https://orcid.org/0000-0002-5785-9647>

Emre BAKKALBAŞI

*Doç. Dr., Van Yüzüncü Yıl Üniversitesi Mühendislik Fakültesi Gıda Mühendisliği Bölümü, Van,
Türkiye*

ORCID ID: <https://orcid.org/0000-0001-9913-1091>

ÖZET

Kurutma teknolojisi, gıda endüstrisinde önemli bir yere sahip olup gıdalarda bozulmayı engelleyerek raf ömrünün uzamasını sağlar. Bilinen en eski gıda muhafaza yöntemi olan kurutma, meyve ve sebzelerin ağırlığını ve hacmini önemli ölçüde azaltarak, paketleme, depolama ve nakliye maliyetlerini de en aza indirmeye yardımcı olur. Ancak kurutma, fiziksel, kimyasal, duysal, beslenme ve mikrobiyolojik kalite açısından istenmeyen değişikliklere de neden olabilir. Kurutmada kuru ürünün kalitesi kadar kurutma işleminde enerji verimliliği de çok önemli bir faktördür. Kurutma işleminden önce meyve ve sebzeye bazı ön işlemler uygulanarak kurutma sürecinde oluşan istenmeyen bazı değişimlerin azaltılmasına ve daha hızlı kurutma sağlayarak enerji verimliliğinin artırılmasına çalışılır. Son yıllarda kurutma teknikleri ile yenilikçi ve çevre dostu bazı ön işlemlerin birlikte kullanılmasına dair çalışmalar yapılmaktadır. Özellikle ön işlem olarak etanol uygulaması, kurutmadaki olumsuzlukları azaltan alternatif tekniklerden biri olarak, meyve ve sebze kurutmada ortaya çıkmaktadır. Ön işlem olarak uygulanan etanol, hücre duvarı bileşenlerini çözerek duvar geçirgenliğini ve böylece kurutma hızını arttırmaktadır. Ancak bu uygulama kurutulmuş meyve sebzelerin kalite özellikleri üzerine farklı etkilere sahiptir. Yapılan çalışmalarda etanolün ön işlem olarak meyve ve sebzelerde kullanımının kurutma süresini önemli ölçüde azalttığı ve kuru ürünün rehidrasyon kabiliyetini koruduğu bildirilmiştir. Ayrıca kurutulmuş ürünlerde büzüşmeyi arttırmaktadır. Etanolün renk üzerine etkisinin meyve ve sebzelerin yapısına bağlı olarak değişebileceği tespit edilmiştir. Etanolün meyve ve sebzelerdeki fenolik madde ve antioksidan aktivite üzerine etkisinin değişkenlik gösterebileceği, özellikle askorbik asit ve bazı fenolik bileşikler korumada önemli bir etkisinin olabileceği tespit edilmiştir. Ayrıca ön işlem olarak etanolün kullanımının bakteri popülasyonunun azalmasına neden olduğu da bildirilmiştir. Yapılan çalışmalarda, özellikle su gibi ön işlemler yerine etanol kullanımının daha etkili bir ön işlem olabileceği ayrıca etanolün ultrason, vakum ve ultrason-vakum gibi bazı diğer ön işlemlerle kombinasyonunun etanolün tek başına kullanımından daha iyi sonuçlar doğurduğu da ortaya konulmuştur. Bu çalışmada, etanol ön işleminin meyve ve sebzelerin kurutma sürecine ve kurutulmuş ürünün kalitesine etkisinin incelendiği literatür verileri derlenmiştir.

Anahtar Kelimeler: Etanol, Fiziksel, Kimyasal, Kurutma, Mikrobiyal, Ön işlem.

ABSTRACT

Drying technology has an important place in the food industry and prevents spoilage in foods, thus extending their shelf life. Drying is the oldest food preservation method and significantly reduces the weight and volume of fruits and vegetables, helping to minimize packaging, storage and shipping costs. However, drying can cause undesirable changes in terms of physical, chemical, sensory, nutritional and

microbiological quality. As well as the quality of the dry product, energy efficiency is a very important factor in drying process. Before the drying process, some pre-treatments are applied to the fruit and vegetables to reduce some undesirable changes that occur during the drying process. They increase drying rate and energy efficiency. Recently, studies have been carried out on the combination of drying techniques and some innovative and environmentally friendly pre-treatments. Especially the use of ethanol application as a pre-treatment has emerged in fruit and vegetable drying as one of the alternative techniques that reduce the negative effects of drying. Ethanol as a pretreatment dissolved the cell wall components. Therefore, the wall permeability and drying rate increase. However, this application has different effects on the quality characteristics of dried fruits and vegetables. Studies shown that the use of ethanol as a pre-treatment in fruits and vegetables significantly reduces the drying time and preserves the rehydration capacity of the dry product. Shrinkage of dried products also increase. The effect of ethanol on product color may vary depending on the structure of the fruit and vegetable. It has been found that ethanol has varying effects on the phenolic substance and antioxidant activity. It has protective effect on the ascorbic acid and some phenolic compounds in fruits and vegetables. In addition, it has been reported that the use of ethanol as a pretreatment causes a decrease in the bacterial population. Studies have shown that the use of ethanol as a pretreatment can be more effective than use of water and the combinations of ethanol with some pretreatments such as ultrasound, vacuum and ultrasound-vacuum give better results than the use of ethanol alone. In this study, the researches about the effects of ethanol pretreatment on the drying speed and the quality parameters of dried fruits and vegetables were reviewed.

Keywords: Ethanol, Physical, Chemical, Drying, Microbial, Pretreatment.

BUZAĞILARDA GÖBEK KORDONU BAKIMI VE BAŞLICA GÖBEK LEZYONLARI UMBILICAL CORD CARE AND MAJOR UMBILICAL LESIONS IN CALVES

Uğur ERSÖZ¹

¹Atatürk Üniversitesi, Veteriner Fakültesi, Cerrahi Anabilim Dalı, Erzurum, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0002-1687-2327>

ÖZET

Göbek kordonu (Umbilikal kord) fetüs ile anne arasındaki yaşam hattıdır. Fötüs ile anne arasındaki bu bağlantı yavrunun anne karnındaki dönemde ihtiyacı olan tüm besin ve oksijen ihtiyacını sağlamasının yanısıra yavruya oluşan atıkların da uzaklaştırılmasını sağlar. Fetal oksijen, besinler ve atıklar göbek kordonu yoluyla değiştirilir. Göbek kordonu ineğin plasentasına bağlıdır ve göbek deliğinden buzağının karnına doğru seyredir. Göbek kordonu bir çift göbek arteri, bir umbilical vena ve urakus içerir. Doğumda kordon plasentadan kopar fakat fötüsün karaciğer ve dolaşım sistemine bağlı olarak kalır. Kordon kurumadan önce, yavrunun kan dolaşımına giden geçit hala açıktır ve bağışıklık sistemi henüz gelişmediği için göbek kontaminasyonu yoluyla enfeksiyona ve hastalığa duyarlı hale gelir. Doğumdan kısa süre sonra göbek kordonunda bulunan arterler ve vena körelir. Doğumdan sonraki ilk 5 ila 10 gün içerisinde kordon da tamamen kuruyarak kendiliğinden düşer. Bu süre zarfında göbek bölgesinde bulunan kordon vücudun iç kısmı ile ilişkilidir. Özellikle doğumdan sonraki ilk günler çok önemlidir. Geçirgenlik fazla olduğu için kontaminasyon ve enfeksiyon riski üst düzeydedir. Kordon tamamen kurumadan ortamdan alınabilecek patojen mikroorganizmalar buzağının abdomenine girerek hastalık oluşturabilirler. Bu patojenler lokalize göbek lezyonlarına veya vena aracılığı ile karaciğere ayrıca eklemelere solunum sistemine yayılarak ölüme sonuçlanabilir. Doğumu takiben ilk bir hafta göbek bakımı hem hayvan sağlığı hem de ekonomik açıdan çok önemlidir. Raporlara göre Türkiye'deki buzağı ölümleri yaklaşık her yıl %15 civarındadır. Bu ölümlerin büyük bir kısmı göbek bakımı yetersizliğine bağlı şekillenen septik artrit, pnomoni ve sepsisemiden kaynaklanmaktadır. Bunlara ek olarak lokal seyreden göbek kordonu lezyonları da ciddi sağlık problemleri oluşturarak verim ve ekonomik kayıplara yol açmaktadır. Göbek bölgesinde görülen başlıca lezyonlar ise; omphalitis, urachus fistülleri, göbek apseleri ve hernia umbilikalislerdir. Bu lezyonlar özellikle göbek kordonundaki yapıların enfeksiyöz etkenlerle yangılanması sonucu oluşurlar. Eğer erken dönemde tanı ve sağaltımları yapılmaz ise lokal başlayan bu lezyonlar kan yolu ile sistemik hale gelirler. Büyük çapta buzağı ölümleri kaçınılmaz hale gelir. Yenidoğan buzağının bakımı çok önemli olsa da gereken önem gösterilmemektedir. Doğum sonrası yapılacak göbek kordonu ile bir çok göbek lezyonunun önüne geçilmesinin yanısıra yenidoğanların ölüm oranını düşürerek ülke ekonomisine büyük bir katkı sunulabilir.

Anahtar Kelimeler: Buzağı, Göbek Kordonu, Omphalitis

ABSTRACT

The umbilical cord (umbilical cord) is the lifeline between the fetus and the cow. This connection between the fetus and the cow provides all the nutritional and oxygen needs of the offspring during the period in the cow's womb, as well as the removal of wastes formed in the fetus. Fetal oxygen, nutrients and waste are exchanged through the umbilical cord. The umbilical cord is attached to the cow's placenta and runs from the navel to the calf's abdomen. The umbilical cord contains a pair of umbilical arteries, an umbilical vein and the uracus. At birth, the cord ruptures from the placenta, but it remains connected to the liver and circulatory system of the fetus. Before the cord dries, the passageway to the calf's bloodstream is still open, leaving the naïve immune system of the calf susceptible to infection and disease via navel contamination. Before the cord dries, the passage to the calf's bloodstream is still open and he becomes susceptible to infection and disease through umbilical contamination, as his immune system has not yet developed. Shortly after birth, the arteries and veins located in the umbilical cord become atrophied. In the first 5 to 10 days after birth, the cord also dries completely and falls off by

itself. During this period, the cord located in the navel area is associated with the inner part of the body. Especially the first days after birth are very important. Since the permeability is high, the risk of contamination and infection is high during this period. Pathogenic microorganisms that can be taken from the environment before the cord is completely dry it can enter the calf's abdomen and cause disease. These pathogens can spread to localized umbilical lesions or to the liver via the vena, as well as to the joints and respiratory system, resulting in death. The first week after birth, umbilical cord care is very important both from an animal health and economic point of view. According to reports, calf deaths in Turkey are about 15% every year. Most of these deaths are due to septic arthritis, pneumonia and septicemia, which are formed due to lack of umbilical care. In addition to these, local umbilical cord lesions also cause serious health problems, leading to yield and economic losses. The main lesions seen in the umbilical region are omphalitis, urachus fistulas, umbilical abscesses and hernia umbilicalis. These lesions are especially formed as a result of the fact that the structures of the umbilical cord are inflamed with infectious factors. If the diagnosis and treatment are not performed at an early stage, these lesions that start locally become systemic through the blood. Calf deaths on a large scale become inevitable. Although the care of newborn calves is very important, the necessary importance is not given. In addition to preventing many umbilical cord lesions that will be done after birth, a large contribution to the national economy can be made by reducing the mortality rate of newborns.

Keywords: Calf, Umbilical Cord, Omphalitis

**ŞEYTAN ELMASI (*Datura stramonium* L.) ÖZÜTÜNÜN DOMATESTE KÖK ÇÜRÜKLÜĞÜ
ETMENİ (*Rhizoctonia solani* AG-4) ÜZERİNE ETKİSİ**

**EFFECT OF JIMSONWEED (*Datura stramonium* L.) EXTRACTS ON ROOT ROT DISEASE
(*Rhizoctonia solani* AG-4) IN TOMATO**

Yekbun ÖZMEN

*Yüksek Lisans Öğrencisi, Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Fitopatoloji Anabilim
Dalı*

ORCID ID: 0000-0002-8217-7752

Işık TEPE

Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van

ORCID ID: 0000-0002-9156-9467

Emre DEMİNER DURAK

Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van

ORCID ID: 0000-0001-5757-6332

Bu çalışma Yüzüncü Yıl Üniversitesi Bilimsel Araştırma Projeleri Başkanlığı tarafından FYL-2021-9431 numaralı proje kapsamında desteklenmiştir.

ÖZET

Bu çalışmada, canlılar üzerinde zehirli etkisi olan bazı alkaloidler içeren şeytan elması (*Datura stramonium* L.)'nin domateste kök çürüklüğü (çökerten) etmeni *Rhizoctonia solani* AG-4 üzerindeki etkisi araştırılmıştır. Böylece söz konusu patojenlerin oluşturdukları bitki hastalıklarıyla mücadelede pestisitlere alternatif olabilecek biyokimyasal preparatların kullanılmasına, insan sağlığına ve çevreye duyarlı yöntemlerin geliştirilmesine katkı sağlanması amaçlanmıştır. Şeytan elmasının toz haline getirilen yeşil aksamlarından elde edilen su özütünün %5, %10, %20 ve %40'lık konsantrasyonları içirme, daldırma ve tohum kaplama olmak üzere üç farklı yöntem ile *Rhizoctonia solani* AG-4 fungal etmenine uygulanmıştır. Hastalık bulaştırılmış domateslerde özüt uygulama yöntemleri arasında en etkili olarak tohum kaplama yöntemi bulunmuş, buna kıyasla içirme ve daldırma yöntemlerinin daha az etkili olduğu görülmüştür. Özütlerin antifungal etkilerinin kontrol (%0) uygulamasına göre tüm dozlarda farklılık gösterdiği, tohum kaplama yönteminde en etkili dozun %10 ve %20'lik doz aralığı olduğu anlaşılmıştır. Bu durum içirme ve daldırma yöntemleri için ise anlamlı bulunmamıştır. Sonuç olarak bitkilerden elde edilen özütlerin doğal kimyasallar olmaları, insan sağlığını ve doğayı tehdit etme olasılıklarının düşük olması pestisitlere alternatif olabilecekleri açısından ümit vermektedir.

Anahtar kelimeler: Şeytan elması, *Datura stramonium*, bitki özütü, *Rhizoctonia solani*

ABSTRACT

In this study, the effect of jimsonweed (*Datura stramonium* L.), which contains some alkaloids that have toxic effects on living things, on *Rhizoctonia solani* AG-4, which is a root rot disease in plants, was investigated. Thus, it is aimed to contribute to the use of biochemical preparations that can be an alternative to pesticides and to the development of methods that are sensitive to human health and the environment in the control of plant diseases caused by the pathogens in question. 5%, 10%, 20% and 40% concentrations of the water extract obtained from the green parts of the jimsonweed were applied against the *Rhizoctonia solani* AG-4 by three different methods: watering, dipping and seed coating. The seed coating method was found to be the most effective in infected tomatoes, whereas the watering



and dipping methods were found to be less effective. It was understood that the antifungal effects of the extracts differed in all doses compared to the control (0%) application, and the most effective dose in the seed coating method was the 10% and 20% dose range. This situation was not significant for watering and dipping methods. As a result, the fact that the extracts obtained from plants are natural and they are less likely to threaten human health and nature give hope in terms of being an alternative to pesticides.

Keywords: Jimsonweed, *Datura stramonium*, plant extract, *Rhizoctonia solani*

IN SITU SOIL CHEMICAL AND PHYSICAL ANALYSIS OF THE SWEETEST CARABAO MANGOES OF ZAMBALES

Galapago, Ma. Christel M.¹

¹Student - College of Agriculture and Veterinary Medicine, President Ramon Magsaysay State University, Zambales, Philippines

Pilien, David P.²

²Faculty - College of Agriculture and Veterinary Medicine, President Ramon Magsaysay State University, Zambales, Philippines

De Guzman, Ronel S.³

³Faculty - College of Agriculture and Veterinary Medicine, President Ramon Magsaysay State University, Zambales, Philippines

³ORCID ID: <https://orcid.org/0000-0002-2770-6519>

ABSTRACT

The study was conducted to analyze some of the soil's physical and chemical properties in situ, where the sweetest carabao mangoes of Zambales were found.

Soil samples in three different soil depths were taken within the canopy coverage of the sweetest carabao mangoes from San Marcelino, Masinloc, and Sta. Cruz before the analysis. The test was focused on the soil's potassium content being linked and assumed to be responsible for the sweetness of the mango fruits.

As a result of the soil analysis from the three study areas, high potassium concentrations in three sampling depths from all the areas were found, particularly in Sta. Cruz. Also, a favorable pH range in all the sites and soil depths was observed and so the potassium present in the soil was presumed to be at its optimum level of availability and hence, acted in enhancing the sweetness of the fruits. Considerable amounts of nitrogen, phosphorus, calcium, and magnesium were also found in the soil, a manifestation that suggests that potassium's role in the sucrose formation was favored.

Undoubtedly, the result of this study in correlation to another study on leaf tissue analysis of the same mango trees from the same sites further confirmed that potassium was the nutrient element responsible for the sweetness of the mango fruits of Zambales. The mango leaves were found to contain a high concentration of potassium absorbed from the soil leading simultaneously to the formation of fruit sugar, the prime function of potassium through metabolic processes in the mango tree.

Keywords: In situ, carabao mango, soil analysis, potassium

KANATLI BESLENMESİNDE ALTERNATİF BİR PROTEİN KAYNAĞI: KARA ASKER SİNEĞİ LARVASI

AN ALTERNATIVE SOURCE OF PROTEIN IN ITS WING FEEDING: BLACK SOLDIER FLY LARVA

Suphhi DENİZ

Prof. Dr. Van Yüzüncü Yıl Üniversitesi /Veteriner Fakültesi/ Zootekni Ve Hayvan Besleme Bölümü/Hayvan Besleme Ve Beslenme Hastalıkları Anabilim Dalı/Van/Türkiye

ORCID ID: <https://orcid.org/0000-0002-6005-0056>

Gökhan ŞENGÖNÜL

Doktora öğrencisi Van Yüzüncü Yıl Üniversitesi /Veteriner Fakültesi/ Zootekni Ve Hayvan Besleme Bölümü/Hayvan Besleme Ve Beslenme Hastalıkları Anabilim Dalı/Van/ Türkiye

ORCID ID: <https://orcid.org/0000-0001-9944-432X>

ÖZET

Dünya nüfusunun artan gıda ihtiyacını karşılamak, günümüzün en önemli sorunlarından biridir. İnsanın gıda ihtiyacını karşılamada kanatlı eti önemli bir yer tutmaktadır. Günümüzde, kanatlı hayvan yemlerinde temel protein kaynağı olarak soya küspesi, balık unu ve işlenmiş hayvansal kaynaklı proteinler kullanılmaktadır. Ancak, küresel ölçekte soya ekilen arazi miktarı ve balık stokları giderek azalmaktadır. Ayrıca, son 10 yıllık veriler dikkate alındığında, soya küspesi ve balık unu fiyatları giderek artmaktadır. Kanatlı yem maliyetlerinin yüksek olması ve geleneksel yem hammaddelerinin üretiminde ve ithalatında yaşanan sorunlar nedeniyle, alternatif yem hammaddeleri aranmaktadır. Böcekler, kanatlı hayvanlar için doğal bir yem kaynağı olup, bu canlılar doğada kanatlı besin zincirinde önemli bir yer tutmaktadır. Böceklerin balık ununa yakın ham protein ve amino asit içeriğine sahip olması, kanatlı hayvanların beslenmesinde ideal bir protein kaynağı olabileceğini göstermektedir. Bu amaçla, kara asker sineği (*Hermetica illucens*), karasinek (*Musca domestica*), çayır cırcır böceği (*Gryllus testaceus*), ipek böceği (*Bombyx mori*), çekirge (*Acrididae*) ve un kurdu (*Tenebrio molitor*) larvaları kullanıma potansiyeli taşımaktadır. Özellikle kara asker sineği larvası, üretim potansiyelinin yüksek olması, larvaların atıklarla beslenebilmesi, beslenme artıklarının organik gübre olarak kullanılma potansiyeli taşıması, herhangi patojen bir etken taşınamaması, çevre dostu olması ve larvalarının besin madde içeriğinin yüksek olması gibi avantajları nedeniyle, son yıllarda dünyanın birçok bölgesinde yaygın olarak üretilmeye başlamıştır. Bu bilgiler doğrultusunda, kara asker sineği larvası, hem kanatlı hayvanlar için alternatif bir yem maddesi özelliğini taşıması, hem de, atık maddeleri değerlendirerek çevre kirliliğini azaltmada etkili olması nedeniyle, önem arz etmektedir.

Anahtar Kelimeler: Kara asker sineği larvası, protein kaynağı, kanatlı besleme

ABSTRACT

Meeting the growing food needs of the world's population is one of the most important problems today. The winged meat is a key place to meet the human food needs. Today, the canned animal food uses soy bark, fish flour and processed animal-based proteins as a basic protein source. However, the amount of land and fish stocks planted in soy on a global scale are gradually decreasing. In addition, the price of soy barf and fish flour is increasing, given the data over the last 10 years. Alternative forage raw materials are sought due to high cost of winged bait and problems in the production and import of traditional forage raw materials. Insects are a natural source of feed for poultry animals, and these creatures are an important part of the winged food chain in nature. The fact that insects have raw protein and amino acid content close to fish flour suggests that it could be an ideal source of protein for the feeding of poultry animals. For this purpose, the black soldier flies (*Hermetica illucens*), the land (*Musca*

domestica), the meadow cricket (*Gryllus testaceus*), the silk beetle (*Bombyx mori*), the grasshopper (*Acrididae*) and the flour worm (*Tenebrio molitor*) are potential to be used. In recent years, it has been widely produced in many parts of the World in recent years, especially due to the high production potential, the ability of larvae to feed on waste, the potential of food waste, the ability to use nutrients as organic fertilizer, not carrying any pathogens, being environmentally friendly, and the high nutrient content of larvae. In line with this information, the larva of the black soldier is important, both because it is an alternative forage agent for poultry animals, and because it is effective in reducing pollution by evaluating waste materials.

Keywords: Black soldier fly larva, protein source, wing feed

KABA YEM İLE İNAKTİF MAYA ARASINDAKİ İLİŞKİLER RELATIONS BETWEEN ROUGHAGE AND INACTIVE YEAST

Duygu BUDAK¹

*¹Dr. Öğr. Üyesi, Aksaray Üniversitesi Veteriner Fakültesi Zootekni ve Hayvan Besleme Bölümü,
Hayvan Besleme ve Beslenme Hastalıkları Anabilim Dalı, Aksaray, Türkiye.*

¹ORCID ID: <https://orcid.org/0000-0001-9327-3830>

Aydan YILMAZ²

*²Prof. Dr., Ankara Üniversitesi Ziraat Fakültesi Zootekni Bölümü, Yemler ve Hayvan Besleme
Anabilim Dalı, Ankara, Türkiye.*

²ORCID ID: <https://orcid.org/0000-0002-3091-2954>

ÖZET

Ruminantlarda, sindirim faaliyetlerinin sağlıklı bir şekilde gerçekleşebilmesi ve verim düzeyinde istenen artışın sağlanabilmesi, rasyonda yeterli kaba yemin bulunmasına bağlıdır. Ayrıca yem giderlerinin toplam maliyet içerisinde yüksek paya sahip olması, kaba yemlerin kaliteli olmasının önemini de ortaya çıkarmaktadır. Bunun yanı sıra, düşük kalitedeki kaba yemlerle birlikte kullanıldığında yemlerin değerliliğini arttıran, hayvan sağlığını ve hayvansal ürünlerde kalıntı bırakmayarak insan sağlığını olumlu yönde etkileyen doğal katkı maddelerinin kullanılması, ekonomik üretimle verimliliği artırıcı unsurlar arasında yer almaktadır. Bu katkı maddelerinden bazıları, probiyotik etkili canlı mikroorganizma, mantar ve mayaları veya bunların metabolitlerini içeren prebiyotik etkili biyoteknolojik ürünler olan inaktif mayalardır. Ruminantlarda hayvan sağlığına uygun bir şekilde gelişimi hızlandırmak, verimi artırmak amacıyla sindirim sisteminde mikrobiyel sindirimi destekleyici önemli katkı maddeleri arasında yer alırlar. Kaba yemin yetersiz kaldığı durumlarda rumen fermantasyon etkinliğini geliştirmek ve iyileştirmek için inaktif mayalarla rumen manipüle edilebilmektedir. Bu bağlamda inaktif mayaların mikrobiyel gelişimin sağlanması, patojenik mikroorganizmaların kontrol altına alınması, rumen fermentasyonunda meydana gelebilecek olumsuzlukların önlenmesi, hayvanın kötü koşullara adaptasyonunun iyileştirilmesi, hastalıklara karşı dirençlerinin ve genetik potansiyellerinin artırılması amacıyla rumen sindirimini, verim ve performansı olumlu yönde değiştirerek hayvansal ürünlerin miktar ve kalitesini yükseltmek için hayvanın cinsine, yaşına ve amaca uygun olarak kaba yemlerle kullanımları yaygınlaşmıştır. Yapılmış araştırmalar genel olarak değerlendirildiğinde, yüksek selüloz içeriğine sahip düşük kaliteli kaba yemlerin inaktif maya ile sindirilme derecelerinin, dolayısıyla metabolik enerji değerlerinin arttığı, hayvanların yemden yararlanma oranlarında ve performanslarında iyileşme sağlandığı bildirilmektedir. İnaktif mayanın bu etkileri, ruminal bakteri popülasyonunda artış sağlaması ve rumen fermantasyonunu manipüle etmesi ile ilişkilendirilmektedir. Bu çalışmada, ruminantların beslenmesinde kaba yemlerin, mayaların ve inaktif mayaların tanımı ve ruminant beslemedeki önemi, inaktif mayaların kullanımıyla ruminantlarda yapılmış çalışmalar ve inaktif mayaların kaba yemlerle ilişkisi incelenmiştir.

Anahtar Kelimeler: İnaktif maya, kaba yem, ruminant, sindirilebilirlik, performans

ABSTRACT

The ability to perform digestive activities in a healthy way and to achieve the desired increase in productivity in ruminants depends on the availability of sufficient roughage in the ration. In addition, the fact that feed expenses have a high share in the total cost also reveals the importance of quality roughage. In addition, the use of natural additives, which increase the value of feed when used with low quality roughage, affect animal health and human health positively by not leaving residues in animal products, is among the factors that increase efficiency with economic production. Some of these

additives are inactive yeasts, which are prebiotic effective biotechnological products containing live microorganisms, fungi and yeasts with probiotic effect or their metabolites. They are among the important additives that support microbial digestion in the digestive system in order to accelerate development and increase productivity in accordance with animal health in ruminants. In cases where roughage is insufficient, rumen can be manipulated with inactive yeasts to improve rumen fermentation efficiency. In this context, to increase the quantity and quality of animal products by positively changing rumen digestion, yield and performance in order to ensure microbial development of inactive yeasts, to control pathogenic microorganisms, to prevent negative effects that may occur in rumen fermentation, to improve the adaptation of animals to adverse conditions, to increase their resistance to diseases and their genetic potential. For this purpose, their use with roughage in accordance with the type, age and purpose of the animal has become widespread. When the researches are evaluated in general, it is reported that the digestion degree of low-quality roughage with high cellulose content with inactive yeast, thus the metabolic energy values increase, and the feed efficiency and performance of the animals are improved. These effects of inactive yeast are associated with an increase in the ruminal bacterial population and manipulation of rumen fermentation. In this study, the definition of roughage, yeasts and inactive yeasts in ruminant nutrition and their importance in ruminant nutrition, studies conducted in ruminants with the use of inactive yeasts and the relationship of inactive yeasts with roughage were investigated.

Keywords: Inactive yeast, roughage, ruminant, digestibility, performance

PARAFİNE GÖMÜLÜ DOKU BLOKLARINDAN DNA VE RNA VİRUSLARININ MOLEKÜLER YÖNTEMLERLE TESPİT EDİLMESİ

INVESTIGATION OF DNA AND RNA VIRUSES FROM PARAFFIN EMBEDDED TISSUE BLOCKS USING MOLECULAR METHODS

Nüvit COŞKUN¹

¹*Kafkas Üniversitesi Veteriner Fakültesi Viroloji Anabilim Dalı, Kars, Türkiye.*

¹*ORCID ID: <https://orcid.org/0000-0001-7642-6460>*

ÖZET

Moleküler yöntemler virusların teşhisinde gerek hızlı olmaları gerekse güvenilir sonuç vermeleri açısından oldukça yaygın olarak kullanılmaktadırlar. Yapılan moleküler yöntemlerin doğruluğu teşhis için seçilen numunelerin uygunluğu ile paralel şekilde seyretmektedir. Bu bağlamda nekropsi yapılan hayvanlardan soğuk zincir koşullarında yollanan organ materyalleri viral hastalık teşhisi için sıklıkla kullanılmaktadır. Fakat özellikle patolojik teşhisler için hazırlanan parafin dokulardan yapılan çalışmalar az sayıdadır. Bu çalışmada parafin doku bloklarından virus nükleik asidi tespiti açısından değerlendirilmesi amaçlanmıştır. Hem DNA hem de RNA virusu örnekleme yapabilmek için temsili olarak DNA viruslarından sığır papillom virusu (BPV), RNA viruslarından ise canine distemper virusu (CDV) seçilmiştir.

Çalışma materyali olarak parafin gömülme öncesi moleküler yöntemle pozitif olarak bulunmuş dokulara ait 5 adet BPV doku bloğu, 5 adet ise CDV doku bloğu kullanılmıştır. Bu bloklardan hem DNA hem RNA elde edecek şekilde nükleik asit ekstraksiyonu yapılmıştır. Ekstraksiyon metodu olarak ticari kit kullanımı tercih edilmemiş, dokuların tamamının proteinaz K ile lize edildiği organik ekstraksiyon metodu kullanılmıştır. Teşhis metodu olarak polimeraz zincir reaksiyonu (PCR) seçilmiş, BPV için ekstraktlardan direkt PCR uygulanmış, RNA virusu olan CDV örnekleri ise komplementer DNA sentezi için öncelikle reverse transkripsiyon (RT) yapılarak sonrasında PCR reaksiyonu gerçekleştirilmiştir.

Yapılan örneklerden BPV'ye ait 5 bloktan 4'ü (4/5), CDV'ye ait 5 bloktan ise 2'si (2/5) pozitif olarak tespit edilmiştir. Bu durum RNA'nın DNA'ya göre daha fragil bir yapıya sahip olduğu düşünüldüğünde normal olarak değerlendirilmektedir. Çalışma sonucunda parafin doku bloklarının hem DNA virusları hem de RNA viruslarında teşhis değeri olduğu görülmüştür. Parafin blokların teşhis materyali olarak kullanımı, özellikle organ numuneleri bulunmayan retrospektif vakalarda etken araştırması yapılırken önem kazanmaktadır.

Anahtar Kelimeler: Virus, Polimeraz Zincir Reaksiyonu, Parafin Doku

ABSTRACT

Molecular methods are widely preferred because they provide high sensitivity and rapid results. Sample material choice is quite important for these methods as it directly affects the results. In this context organ samples transported in cold chain are frequently used for diagnosing viral diseases. However studies with paraffin embedded tissue blocks, which are mostly used for histopathological investigations are few. In this study we aimed to investigate the use of paraffin embedded tissue blocks in diagnosing viral nucleic acids. Considering to evaluate both DNA and RNA viruses, bovine papillomavirus (BPV) was chosen as representative of DNA viruses and canine distemper virus (CDV) was chosen as representative of RNA viruses.

Material of the study consisted of 5 BPV paraffin tissue blocks and 5 CDV paraffin tissue blocks, all tissues were previously shown to be positive prior to paraffin embedding. Total nucleic acid extraction of DNA and RNA was performed from all paraffin embedded blocks. Commercially available extraction kits were not preferred, an organic method based on lysing whole tissue with proteinase K was used.

Polymerase chain reaction (PCR) was chosen as the diagnostic method. Since BPV includes DNA as genetic material, extracts of BPV were subjected to PCR directly. But an additional step of reverse transcription (RT) was performed prior to PCR for CDV extracts since virus has RNA genome.

For BPV, 4 of the 5 (4/5) blocks and for CDV, 2 of the 5 (2/5) blocks were deemed positive after PCR investigation. Since RNA is more fragile than DNA this result can be expected. With these results, paraffin embedded tissue blocks are considered to have diagnostic value and can be used to investigate both DNA and RNA viruses. They can be most useful in retrospective cases of which organ samples are not available when investigating viral diseases.

Keywords: Virus, Polymerase Chain Reaction, Paraffin Embedded Tissue Block

BİTLİS İLİ AHLAT İÇESİNDE PATATES TARIMI YAPILAN TOPRAKLARIN VERİMLİLİK VE BESLENME DURUMLARI

FERTILITY AND NUTRITION STATUS OF POTATO CULTIVATED SOILS IN AHLAT
DISTRICT OF BITLIS PROVINCE

Cemal ERTAŞ

Erciş İlçe Tarım Müdürlüğü, Erciş, Van, Türkiye

ORCID ID: <https://orcid.org/0000-0002-1576-3217>

Mehmet Ali BOZKURT

Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Toprak Bilimi ve Bitki Besleme Bölümü, Van, Türkiye

ORCID ID: <https://orcid.org/0000-0003-3923-857X>

ÖZET

Ahlat Doğu Anadolu Bölgesinde patates tarımının en fazla yapıldığı yerlerin başında gelmektedir. Bu çalışmanın amacı, Ahlat'ta üretimi en fazla yapılan Granola patates çeşidinde toprak ve yaprak analizleri ile toprak verimliliği ve beslenme durumunun belirlenmesidir. Bu amaçla, Ahlat ilçesine bağlı patates üretimin en fazla yapıldığı 10 farklı köy/mahalleden (Güzelsu, Kırklar, İkekubbe, Harabeşehir, Taşharman, Saray, Yıldızlar, Orta, Kurtuluş ve Kültür) ve her köy/mahalleden 4 çiftçi tarlası olmak üzere toplam 40 patates tarlasından toprak ve bitki örnekleri alınmıştır. Yapılan toprak analiz sonuçlarına göre deneme toprakları genel olarak, tınlı bünyede, organik madde miktarı düşük (% 0.39-1.90), tuzluluk problemi olmayan, nötr-hafif asidik reaksiyonda (5.46-7.34) ve kireçli (%1.18-2.36) gruba dahildir. Denemeye alınan toprak örneklerinin %88'inde yarıyşlı P yeterli-fazla, %98'inde değişebilir K yeterli, değişebilir Ca miktarı örneklerin %60'ında yeterli ve Mg miktarı %85 örnekte yeterli bulunmuştur. DTPA ile ekstrakte edilebilir Fe, Zn ve Cu miktarlarının genel olarak yeterli ve yüksek olduğu, DTPA Mn miktarının toprakların %58'inde yeterli olduğu belirlenmiştir. Yaprak analiz sonuçlarına göre, N, P,Ca, Fe, Mn ve Cu miktarları çoğunlukla yeterli bulunurken, K, Mg ve Zn miktarları düşük bulunmuştur. Sonuç olarak, toprak verimliliği ve beslenme durumu açısından ciddi bir problem bulunmadığı ancak, toprağa organik gübre ilavesinin toprak verimliliği ile patates verim ve kalitesi için faydalı olacağı kanaatine varılmıştır.

Anahtar Kelimeler: Beslenme durumu, Patates, Toprak ve yaprak analizi

ABSTRACT

Ahlat, Turkey's Eastern Anatolia Region, is one of the places where most of the potato farming. The aim of the study is to determine status of the fertility and plant nutrition through soil and leaf analysis of the most produced Granola potato variety in Ahlat. For this purpose, soil and plant samples were taken 40 potato fields in total; 10 different village or neighbors (Güzelsu, Kırklar, İkekubbe, Harabeşehir, Taşharman, Saray, Yıldızlar, Orta, Kurtuluş and Kültür) and farmer fields from each village. According to results of the soil samples are generally determined in the group of loamy texture, low of organic matter (0.39-1.90 %), no salinity, neutral-slightly acidic reaction (5.46-7.34) and limy (1.18-2.36 %). In the 88 % of the soil samples in the experiment was found sufficient-excess for available P, 98 % of the soils was found sufficient for exchangeable K, 60 of the soils was found sufficient for exchangeable Ca and 85 % of the soils was found sufficient for Mg. It was determined that DTPA Fe, Zn and Cu contents were generally sufficient and DTPA Mn was sufficient in 58 % of the soils. According to the result of the leaf analysis; N, P, Ca, Fe, Mn and Cu contents of the leaf were found sufficient ; K, Mg and Zn contents of the leaf were found low. As a result, it was concluded that there was no serious problem in terms of soil fertility and nutritional status, but adding organic fertilizer to the soil would be beneficial for soil fertility, potato yield and quality.

Keywords: Nutrition status, Potato, Soil and leaf analysis

FARE SPERMASININ DONDURULMASINDA SULANDIRICIYA İLAVE EDİLEN KOENZİM Q₁₀'UN ENDOPLAZMİK RETİKULUM STRES YOLAĞI ÜZERİNE ETKİSİ#

THE EFFECT OF COENZYME Q₁₀ ADDED TO EXTENDER ON THE ENDOPLASMIC
RETICULUM STRESS PATHWAY IN FREEZING MOUSE SPERM#

Aysel ERASLAN ŞAKAR

Hatay Mustafa Kemal Üniversitesi Veteriner Fakültesi Genetik Anabilim Dalı

ORCID ID: 0000-0002-9230-1622

Oğuz Kaan YALÇIN

Hatay Mustafa Kemal Üniversitesi Veteriner Fakültesi Dölerme ve Suni Tohumlama Anabilim Dalı

ORCID ID: 0000-0002-5508-9861

Ali MAZI

Hatay Mustafa Kemal Üniversitesi Veteriner Fakültesi Lisans Öğrencisi

ORCID ID: 0000-0001-8122-4882

Cengiz YILDIZ

Hatay Mustafa Kemal Üniversitesi Veteriner Fakültesi Dölerme ve Suni Tohumlama Anabilim Dalı

ORCID ID: 0000-0002-9166-8836

ÖZET

Endoplazmik retikulum (ER), hücrede proteinlerin katlanmasından sorumlu organeldir. Spermın dondurulma işlemi sırasında oluşabilecek hasar, ER'de protein yükleme kapasitesinin aşılmasına neden olmaktadır. Spermaları korumak için dondurma solüsyonuna antioksidan maddeler eklenmektedir. Koenzim Q₁₀ (KoQ₁₀)'un dondurulmuş-çözdürülmüş sperma örneğinde sperm kalite özelliklerini iyileştirme potansiyeline sahip olabileceği düşünülmektedir. Bu amaçla bu çalışmada, kriyoprotektan ajana KoQ₁₀ eklenerek dondurulmuş-çözdürülmüş fare sperma örneklerinde sperm kalite parametreleri (canlılık, motilite, akrozom durumu, plazma membran bütünlüğü) ve ER stresi ile ilişkili genlerin ekspresyonu araştırılmıştır. Erkek BALB/c fare spermleri, 50 µM KoQ₁₀ içeren kriyoprotektan ortamda dondurularak saklanmıştır. Sonuçlar, progresif sperm motilitesinin, KoQ₁₀ içeren grupta (48.9 ± 5.25), kontrol (KoQ₁₀ eklenmemiş) grubuna (24.4 ± 4.24) göre önemli ölçüde daha yüksek olduğunu ($p < 0.05$) göstermiştir. Sperm canlılığı KoQ₁₀ grubunda (71.8 ± 3.64) kontrol grubuna (53.3 ± 5.19) göre anlamlı olarak daha yüksek bulunmuştur ($p < 0.05$). Plazma membran bütünlüğü KoQ₁₀ grubunda (66.6 ± 4.05) kontrol grubuna (43.8 ± 3.84) göre anlamlı derecede yüksek bulunmuştur ($p < 0.001$). Sulandırıcıya KoQ₁₀ eklenmesinin anormal akrozom yüzdesini (8.7 ± 0.73) kontrol grubuna (12.8 ± 0.90) kıyasla azalttığı görülmüştür ($p < 0.05$). Daha sonra KoQ₁₀'un dondurulmuş-çözdürülmüş sperma örneğinde ER stresini azaltıp azaltmadığını araştırmak için ER stres yolağındaki genlerin ekspresyon düzeyi analiz edilmiştir. Sonuçlar, sulandırıcıya 50 µM KoQ₁₀ eklenmesinin kontrol grubuna kıyasla PERK, ATF4 ve CHOP mRNA seviyelerini düşürdüğünü ortaya koymuştur ($p < 0.001$). Daha sonra, KoQ₁₀'un çözürme sonrası sperma örneğindeki antioksidan mekanizmayı etkileyip etkilemediğini araştırmak için NRF2 gen ekspresyon seviyesi analiz edilmiştir. NRF2 gen ekspresyonunun KoQ₁₀ grubunda kontrol grubuna göre anlamlı olarak arttığı gözlenmiştir ($p < 0.001$). Sonuç olarak, dondurma-çözdürmenin fare spermasında ER stresini indüklediğini ve KoQ₁₀'un kriyoprotektan ajana eklenmesinin ER stresi ile ilişkili genlerin ekspresyon seviyesini azalttığını, antioksidan savunma sistemi ile ilgili geni aktive ettiğini ve çözürme sonrası sperm kalite parametrelerini iyileştirdiğini göstermektedir.

Anahtar Kelimeler: Koenzim Q₁₀, Endoplazmik retikulum stresi, Sperm kalitesi, Kriyoprezervasyon

ABSTRACT

The endoplasmic reticulum (ER) is the organelle responsible for protein folding in the cell. The damage that may occur during freezing process of the sperm causes the protein loading capacity to be exceeded in the ER. Antioxidants are added to freezing medium in order to protect spermatozoa. Coenzyme Q₁₀ (CoQ₁₀) may have the potential to improve sperm quality on frozen-thawed sperm. In this study, we aimed to investigate the effects of CoQ₁₀ supplementation in cryoprotectant agent of mouse spermatozoa on frozen-thawed sperm quality parameters (viability, motility, acrosome status, plasma membrane integrity) and expression of ER stress-related genes. Male BALB/c mice sperm were cryopreserved in a cryoprotectant medium containing 50 µM CoQ₁₀. The results showed that progressive sperm motility were significantly higher ($p<0.05$) in the CoQ₁₀ supplemented group (48.9 ± 5.25) than the control (untreated) group (24.4 ± 4.24). Sperm viability were significantly higher ($p<0.05$) in the CoQ₁₀ group (71.8 ± 3.64) compared to the control group (53.3 ± 5.19). Plasma membrane integrity were significantly higher ($p<0.001$) in the CoQ₁₀ group (66.6 ± 4.05) compared to the control group (43.8 ± 3.84). Adding CoQ₁₀ to the extender reduced ($p<0.05$) the percentage of abnormal acrosomes (8.7 ± 0.73) compared to the control group (12.8 ± 0.90). Expression of ER stress pathway genes were then analyzed to investigate whether CoQ₁₀ attenuates ER stress on frozen-thawed sperm. The results revealed that the addition of 50 µM CoQ₁₀ to the extender decreased PERK, ATF4 and CHOP mRNA levels compared to the control group ($p<0.001$). Next, NRF2 gene expression was analyzed to investigate whether CoQ₁₀ affects the antioxidant mechanism on post-thaw sperm. It was revealed that NRF2 gene expression increased significantly in the CoQ₁₀ group compared to the control group ($p<0.001$). Collectively, these results suggest that freeze-thaw induces ER stress in mouse sperm and the supplementation of CoQ₁₀ to the cryoprotectant agent reduces ER stress-related genes, activates the gene related to the antioxidant defense system, and improve sperm quality parameters on post-thaw.

Keywords: Coenzyme Q₁₀, Endoplasmic reticulum stress, Sperm quality, Cryopreservation

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ÜZÜM PEKMEZİNİN KALİTE PARAMETRELERİNİN İNCELENMESİ INVESTIGATION OF QUALITY PARAMETERS IN GRAPE MOLASSES

Binnur KAYA

Gıda Mühendisliği Böl. Y.L. Öğrencisi, Lisansüstü Eğitim Enstitüsü, İstanbul Aydın Üniversitesi

ORCID ID: 0000-0001-6763-7530

Prof. Dr. Zeynep Dilek HEPERKAN

Gıda Mühendisliği Böl. Lisansüstü Eğitim Enstitüsü, İstanbul Aydın Üniversitesi

ORCID ID: 0000-0001-7801-9607

ÖZET

Üzüm besleyici değeri oldukça yüksek olan ve üretim açısından da ekonomik bir meyvedir. Su içeriğinin fazla olmasından dolayı çabuk bozulabilen yapıda olan üzümün meyve olarak tüketilmesinin yanında, alternatif olarak geleneksel gıda olarak kabul edilen üzüm pekmezi formunda üretimi hem gıda muhafazası açısından, hem de üretim fazlası üzümlerin değerlendirilmesi açısından oldukça kabul gören bir uygulamadır. Bu çalışmada önemli bir gıda maddesi olan üzüm pekmezi fiziksel ve kimyasal kalite parametreleri açısından incelenmiştir. Çalışmada ayrıca yapay tatlandırıcıların üretimde kullanılıp kullanılmadığı da araştırılmıştır. Pekmez örneklerinin incelenmesinde aşağıdaki analiz ve yöntemler uygulanmıştır; Suda Çözünür Katı Madde (°Briks) Tayini TS ISO 2173 - Meyve ve Sebze Mamülleri- Çözünür Katı Madde Miktarı tayini- Refraktometrik Metoda göre, Toplam Kül tayini TS 3792'e göre, HMF (5-hidroksimetilfurfural) tayini HPLC ile IHC (Harmonised Methods of the International Honey Commission)'a göre, Şeker Bileşenleri HPLC ile TS 13359'a göre, mineral analizi ICP-MS ile NMKL 186'ya göre yapılmıştır. Piyasadan ambalajlı olarak temin edilen pekmez örneklerinin %7-21 oranında Türk Gıda Kodeksi Üzüm Pekmezi Tebliği ve Türk Gıda Kodeksi Gıda Katkı Maddeleri Yönetmeliği'ne uygun olmadığı belirlenmiştir.

Anahtar Kelimeler: Üzüm pekmezi, tağşiş, taklit, yapay tatlandırıcı, şeker bileşenleri

ABSTRACT

Grape is a fruit with a very high nutritional value and is an economical fruit in terms of production. In addition to the consumption of grapes, which are perishable due to their high water content, as fruit, the production of grape molasses, which is accepted as an alternative traditional food, is a very accepted practice both in terms of food preservation and in terms of evaluating the surplus grapes. In this study, grape molasses, which is an important food item, was examined in terms of physical and chemical quality parameters. Besides, artificial sweeteners in molasses were also investigated. In the examination of molasses samples, the following analyzes and methods were used; Determination of water-soluble dry matter (°Brix) according to TS ISO 2173 - Fruit and Vegetable Products. soluble solids amount - total ash according to the Refractometric method in TS 3792, HMF (5-hydroxymethylfurfural) according to IHC (Harmonised Solids) Methods of the International Honey Commission) by HPLC. Mineral analysis and sugar components was carried out by ICP-MS and HPLC according to TS 13359 and NMKL 186, respectively. It has been determined that 7-21% of the molasses samples obtained from the market as packaged are not in compliance with the Turkish Food Codex Grape Molasses Communiqué and the Turkish Food Codex Food Additives Regulation.

Keywords: Grape molasses, adulteration, imitation, artificial sweetener, sugar ingredients

PİYASADA SATIŞA SUNULAN TEREYAĞLARIN NİTELİKLERİ QUALITY PROPERTIES OF BUTTERS SOLD IN MARKET

Şebnem İPEK

Gıda Mühendisliği Böl. Y.L. Öğrencisi, Lisansüstü Eğitim Enstitüsü, İstanbul Aydın Üniversitesi

ORCID ID: 0000-0002-0219-6751

Prof. Dr. Zeynep Dilek HEPERKAN

Gıda Mühendisliği Böl. Lisansüstü Eğitim Enstitüsü, İstanbul Aydın Üniversitesi

ORCID ID: 0000-0001-7801-9607

ÖZET

Tereyağı temel hammaddesi süt yağı olan hayvansal bir yağdır. Süt kurumaddesini oluşturan maddelerin tümünün farklı hallerde tereyağda bulunmasıyla beslenmemizde büyük bir öneme sahip olan tereyağı son yıllarda besleyici değeri ile de ön plan çıkmakta ve git gide popülerliğini artırmaktadır. Bu nedenle de büyük ve profesyonel gıda firmalarının yanı sıra yerel üreticiler de tereyağı pazarında azımsanmayacak derecede yer almaktadır. Bu çalışmada piyasada tüketiciye arz edilen tereyağların kimyasal ve mikrobiyolojik kalitesini belirlemek amacıyla zincir marketler, yerel şarküteriler ve internet sitelerinden elde edilen orijinal ambalajlı veya açık halde tartularak satılan toplam 37 adet tereyağı numunesi incelenmiştir. Mikrobiyolojik analizler için yayma plak yöntemi uygulanmış olup koagülaz pozitif stafilokok için Egg Yolk Tellurite Emulsion eklenmiş Baird Parker Agar, koliform bakteri ve *Escherichia coli* sayımı için Chromogenic Coliforms Agar, maya ve küf için Yeast Extract Glucose Chloramphenicol Agar besiyerleri kullanılmıştır. Salmonella spp aranması ise TS EN ISO 6579-1 numaralı standarda göre yapılmıştır. Kimyasal analizlerden rutubet ve yağsız kuru madde tayini TS 1331'e göre, tuz tayini TS 1333'e göre, refraktif indeks ölçümü TS 1334'e göre yapılmış olup yağ miktarı tayininde Gerber metodu, süt asitliği tayininde ise titrimetrik yöntem kullanılmıştır. Ayrıca örnek etiketleri yatay ve dikey mevzuata göre de değerlendirilmiştir. Elde edilen bulgular, tereyağı numunelerinin %7-66 adedinin kimyasal ve mikrobiyolojik kalite parametreleri bakımından Türk Gıda Kodeksine uygun olmadığını göstermiştir. Bu çalışma neticesinde son tüketiciye sunulan ürünlerin hammadde temininden son ürünün sevkine kadar olan süreçte hijyen şartlarına daha fazla önem verilmesi gerektiği, ilgili tebliğ ve yönetmeliklerin daha da detaylandırılarak kontrol ve denetimin sıklaştırılması gerektiği görülmüştür.

Anahtar Kelimeler: Tereyağı, kimyasal özellikler, mikrobiyolojik kalite,

ABSTRACT

Butter is an animal fat whose main raw material is milk fat. Butter, which has a great importance in our diet due to the presence of all the substances that make up the milk solid in butter, in different states, has come to the fore with its nutritive value in recent years and is gradually increasing its popularity. For this reason, local producers, as well as large and professional food companies, have a substantial place in the butter market. In this study, in order to determine the chemical and microbiological quality of the butter supplied to the consumer in the market, a

total of 37 butter samples obtained from chain markets, local delicatessens and internet sites and sold in original packaging or in open form, were examined. Spreading plate method was used for microbiological analysis. Baird Parker Agar with added Egg Yolk Tellurite Emulsion for coagulase positive staphylococci, Chromogenic Coliforms Agar for coliform bacteria and *Escherichia coli* count, Yeast Extract Glucose Chloramphenicol Agar media for yeast and mold were used. The search for *Salmonella* spp was made according to the standard numbered TS EN ISO 6579-1. Moisture and non-fat dry matter determination from chemical analyzes was made according to TS 1331, salt determination

was made according to TS 1333, refractive index measurement was made according to TS 1334, Gerber method was used for fat content determination and titrimetric method was used for milk acidity determination. In addition, sample labels have been evaluated according to legal regulations. The findings showed that 7-66% of the butter samples did not comply with the Turkish Food Codex in terms of chemical and microbiological quality parameters. As a result of this study, it has been seen that more importance should be given to hygiene conditions in the process from the raw material supply of the products offered to the end consumer to the shipment of the final product, and the control and inspection should be tightened by further detailing the relevant communiqués and regulations.

Keywords: Butter, chemical properties, microbiological quality

PEYNİR MİKROBİYOTASININ TESPİTİNDE METAGENOMİK ANALİZLER METAGENOMIC ANALYSIS IN THE DETERMINATION OF CHEESE MICROBIOTA

Mahmut İNAL

*Doktora Öğrencisi, Van Yüzüncü Yıl Üniversitesi Fen Bilimleri Ens. Gıda Müh. Anabilim Dalı,
Van/Türkiye*

ORCID ID: <https://orcid.org/0000-0002-7057-7724>

Yusuf TUNÇTÜRK

*Prof. Dr., Van Yüzüncü Yıl Üniversitesi, Mühendislik Fakültesi, Gıda Mühendisliği Bölümü,
Van/Türkiye*

ORCID ID: <https://orcid.org/0000-0001-5240-200X>

ÖZET

Fermente gıdalar, majör ve minör gıda bileşenlerinin kontrollü mikrobiyal çoğalma ve enzimatik faaliyetleri yoluyla üretilen gıdalar veya içecekler olarak tanımlanır. Dünya çapında en çok tüketilen fermente süt ürünlerinden birisi peynirdir. Peynirin tüketici tarafından kabul edilebilirliği, büyük ölçüde tat ve aroma olmak üzere spesifik organoleptik özelliklerine bağlıdır. Genelde bu özellikler, bu ürünü oluşturan yağ asitleri, uçucu organik bileşikler, aminler, ketonlar, serbest amino asitler, fenoller, alkoller, aldehytler, laktonlar, kükürt bileşikleri vb. sayısız bileşik ve moleküllere bağlı olarak şekillenmektedir. Peynir, hem üretim hem de olgunlaşma sürecinde önemli bir rol oynayan ve son ürünün güvenlik, kalite ve duyu özelliklerine önemli ölçüde katkıda bulunan zengin ve karmaşık bir mikrobiyota ile karakterize edilir. Bu bağlamda, peynir üretimi ve olgunlaşma sürecinde mikroorganizmaların fermentasyondaki önemli rolü göz önüne alındığında, peynir mikrobiyota bileşiminin ve dinamiklerinin ayrıntılı bir şekilde anlaşılması, fermente süt ürünlerinin lezzetini, duyu kalitesini ve gıda güvenliğini geliştirmek açısından hayati öneme sahiptir.

Bugüne kadar fermente gıdaların karmaşık mikrobiyotası kültüre dayalı yöntemlerle aydınlatılmış, ancak son zamanlarda fermente gıdaların mikrobiyal çeşitliliğini ortaya çıkarmak için yeni nesil gen dizileme teknikleri kullanılmaya başlanmıştır. Ayrıca, yeni nesil gen dizilimi teknikleri üründe baskın mikroorganizmaların yüzdelerinin belirlenmesi, süt ve fermente gıda endüstrisi için potansiyel starter kültürlerin belirlenmesine katkıda bulunabilir. Metagenomik analiz, yalnızca baskın cinslerin değil, aynı zamanda nadir veya düşük sayılara sahip olanların da saptanması ve tanımlanması için güçlü bir yöntemdir. Bu yöntemin bir diğer önemli özelliği, sadece mikroorganizmaların taksonomisini değil, bir mikrobiyal topluluktan gen koleksiyonunun karakterizasyonuna da izin vermesidir.

Fermentatif gıdaların metagenomik analizi, bu karmaşık floranın mikrobiyal dinamiklerinin anlaşılması ve aydınlatılması ile bu konuda literatürdeki boşluğu doldurabilir. Bu çalışmada da, daha önce bu konuda yapılmış araştırma sonuçlarına değinilmiş ve bu yöntemin getirdiği farklılıklara yer verilmiştir.

Anahtar Kelimeler: *Fermente gıda, peynir, yeni nesil dizilim, metagenom*

ABSTRACT

Fermented foods are defined as foods or beverages produced through the controlled microbial growth and enzymatic activities of major and minor food ingredients. Cheese is one of the most consumed fermented dairy products worldwide. The acceptability of cheese to the consumer largely depends on its specific organoleptic properties, namely taste and aroma. In general, these properties are shaped depending on numerous compounds and molecules; such as the fatty acids, volatile organic compounds, amines, ketones, free amino acids, phenols, alcohols, aldehydes, lactones, sulfur compounds, etc. Cheese

is characterized by a rich and complex microbiota, which plays an important role in both the production and ripening process and contributes significantly to the safety, quality and sensory properties of the final product. In this context, considering the important role of microorganisms in fermentation in cheese production and ripening process, a detailed understanding of cheese microbiota composition and dynamics is vital to improve the palatability, sensory quality and food safety of fermented dairy products.

So far, the complex microbiota of fermented foods has been elucidated by culture-based methods, but recently, next-generation gene sequencing techniques have been used to reveal the microbial diversity of fermented foods. In addition, next generation gene sequencing techniques may contribute to the determination of the percentages of dominant microorganisms in the product and to identify potential starter cultures for the dairy and fermented food industry. Metagenomic analysis is a powerful method for detecting and identifying not only dominant genera but also those with rare or low counts. Another important feature of this method is that it allows not only the taxonomy of microorganisms but also the characterization of gene collection from a microbial community.

Metagenomic analysis of fermentative foods can fill the gap in the literature on this subject by understanding and elucidating the microbial dynamics of this complex flora. In this study, the results of previous research on this subject are mentioned and the innovations brought by this method are discussed.

Keywords: Fermented food, cheese, next generation sequencing, metagenome



HEALTH AND DNA COMPUTING: IMPLICATION ON HUMAN AND ANIMALS

Moses Adeolu AGOI

Lagos State University of Education, Lagos Nigeria.

ORCID ID: <https://orcid.org/0000-0002-8910-2876>

Oluwadamilola Peace AGOI

Federal University of Agriculture Abeokuta, Ogun Nigeria.

ABSTRACT

Modern technological advancements have stem from macroscopic applications into the world of implanted computers into the human body and that of animal. DNA Computing shed new light into the very nature of computation and opens vista for computability models entirely different from that of the classical. DNA computers can be tiny enough to work in human and animal body where they may be used to identify diseased cells. This paper is a descriptive review of health and DNA Computing. It discussed the concept of health and further explain the meaning of DNA Computing. It highlighted the methods and application of DNA computers. The paper also discussed the practical incentives and the fascination of being able to perform computations with biological means. Finally, it was concluded that DNA Computing can be applied to solve large, complex combinatorial problems of human and animal health.

Keywords: Health, DNA, Computing, Human. Animals

POINT OF CARE DIAGNOSTICS BY USING BENDABLE ENGINEERED NANO BIOSENSORS FOR CANCER AND VIRAL DETECTION

SZJ Zaidi

Institute of Chemical Engineering and Technology, University of the Punjab, Lahore, Pakistan

ABSTRACT

In designing new diagnostic therapy methods lab on chip devices are helpful for the estimation of lethal viral and cancerous infections. Exosomes from the infected cells may provide provision for trustworthy biomarkers for the estimation of cancer. In this study, proteins named as Human interferon $\alpha 2$ (IFN $\alpha 2$) and thymosin $\alpha 1$ (T $\alpha 1$) are employed for the therapy of viral diseases and cancers. Both IFN $\alpha 2$ and T $\alpha 1$ exhibited a definitive effects in their activities when employed in combination. Moreover, the healing fusion proteins made through the genetic fusion of two genes exhibit several healing functions in single molecule. In this study, we established the effects of human Interferon $\alpha 2$ -Thymosin $\alpha 1$ fusion protein (IFN $\alpha 2$ -T $\alpha 1$) produced in our laboratory for the first time on cancers cells. We discuss the prospects of exosomal bioassays for the detection of cancers, which can be employed for indicative diagnostic and treatment responses by incorporating IFN $\alpha 2$ and T $\alpha 1$ with the cancerous exosomals. Further viral detection was performed via electrochemical techniques by well known chronamperometric method which help in integration of scientific development of bioelectrochemical engineering and figure of merits related with electrochemical techniques.

Keywords: electrochemical,protein, Human interferon, exosomes,cancer,antiviral

IMPORTANCE OF IRRIGATION FOR THE GROWTH OF ECONOMICAL CONDITIONS OF THE COUNTRY

Subhashish Dey

Department of Civil Engineering, Gudlavalleru Engineering College, Andhra Pradesh, India

ABSTRACT

Increase in agricultural production and productivity depends, to large extent, on the availability of water. Hence, the importance of irrigation is however, the availability of irrigation facilities which is highly inadequate in India. Control of drought and famines insufficient, uncertain and irregular rain causes uncertainty in the agriculture. Even during monsoon, the rainfall is scanty and undependable in many parts of the country. Sometimes the monsoon delayed considerably while sometimes they cease prematurely. Since India has a tropical and sub-tropical climate, it has potentialities to grow crops for a year round basis. However, since 80% of annual rainfall is received in less than four months, multiple cropping is generally not possible. Provision of irrigation facilities can make possible the growing of two or three crops is year in most areas of country. This will considerably improve agriculture production and productivity. Irrigation helps in stabilizing the output and yield levels. It also plays a protective role during drought years. Since, both income and employment are positively and closely related to output, prevention of fall in output during drought is an important instrument for achieving stability of income and employment in the countryside. Irrigation confers indirect benefits through increased agricultural production. Employment potential of irrigated lands, increase production, helps in developing allied activities means of water transport etc. are improve income of government from agriculture. Availability of regular water supply will increase the income of farmers imparting a sense of security and stability in agriculture.

Keywords: Irrigation, Water, Cropping, Economic, Employment, Drought and Climate

BIODEGRADATION EFFECTS OF CRUDE OIL-POLLUTED WATER USING BACTERIA ISOLATES FROM SUNFLOWER HUSK ON FISH GROWTH: PARAMETRIC OPTIMIZATION USING TAGUCHI APPROACH

Lekan Taofeek Popoola^{1} and Adeyinka Sikiru Yusuff¹*

^{1}Unit Operation and Material Science Laboratory, Chemical and Petroleum Engineering Department, Afe Babalola University, Ado-Ekiti, Ekiti State, Nigeria*

ABSTRACT

Bacteria isolates from sunflower husk were applied for bioremediation of crude oil-contaminated water. Fish weight was monitored in bioremediated water by gravimetric method. Taguchi design matrix was employed for process parameters optimization, which include reaction temperature (20-60 °C), inoculums concentration (20-100 CFU/mL), crude oil concentration (50-250 mL/L), reaction time (1-5 hrs), NH₄Cl concentration (20-100 mg/L) and K₃PO₄ concentration (10-50 mg/L) for crude oil degradation and fish growth. Bacteria isolates were characterized by biochemical tests. Water samples were characterized using gas chromatograph-mass spectroscopy (GC-MS), scanning electron microscopy (SEM), Fourier transform infrared (FTIR) spectroscopy and carbon-hydrogen-nitrogen (CHN) analysis. Results revealed optimum crude oil degradation of 96.59 ± 0.03 % for 50 mL/L of crude oil in water supplemented with 100 CFU/mL inoculums, 10 mg/L K₃PO₄ and 10 mg/L NH₄Cl at 60 °C reaction temperature and 4 hrs reaction time. Also, optimum fish growth of 93.14 ± 0.04 % was achieved in 50 mL/L of crude oil in solution supplemented with 80 CFU/mL inoculums, 10 mg/L K₃PO₄ and 20 mg/L NH₄Cl at 60 °C reaction temperature and 5 hrs reaction time. Conclusively, characterization revealed degradation of hydrocarbons in crude oil-contaminated water from heavy into light fractions by the bacteria isolates.

EVALUATION OF ANTIOXIDANT PROFILE IN CATTLE INFECTED WITH *Theileria annulata*

Ahmad Nematollahi^{1*}, Razi-allah Jafari Joozani², Parisa shahbazi¹, Babak Saeed Abadi¹, Amir Mollazadeh Yamchi¹

¹Department of Pathobiology, Faculty of Veterinary Medicine, University of Tabriz, Iran.

²Department of Clinical Sciences, Faculty of Veterinary Medicine, University of Tabriz, Iran.

ABSTRACT

Objective: Bovine tropical theileriosis is an important disease is characterized by anemia and death. There is some evidence that anemia and its pathogenesis are correlated to the level of oxidative stress and peroxidation of erythrocyte membrane lipids in tropical theileriosis. The object of the present study was to study some oxidative indices in cattle infected naturally by theileriosis. **Methods:** Fifty crossbreed cattle between the ages of 1-5 years suffering from theileriosis were selected, and the infection was proved by observation of pyroplasmic and schizont form of the parasite in blood and lymph node smears respectively. Fifteen clinically healthy cattle in the same region of the study were also sampled and assigned as a control group. Blood samples were taken from both groups, and after serum isolation the oxidative stress indices including Glutathione peroxidase, Superoxide dismutase, total antioxidant capacity, and Catalase was measured in both affected, and control groups. **Results:** The results showed that the mean levels of total antioxidant capacity, glutathione peroxidase, superoxide dismutase and catalase in the infected group showed a significant decrease compared to the healthy group ($P < 0.001$). Oxidative stresses and lipid peroxidation indices were shown to be appropriately changed with the degree of anemia in cattle suffering from tropical theileriosis and the levels of hematocrit and glutathione peroxidase were positively correlated. **Conclusion:** In theileriosis, the antioxidant defense system is damaged, and the affected cattle may experience prolonged oxidative stress with increased sensitivity to osmotic fragility. In addition, supplementing infected animals with antioxidants supplements during diseases may help in the rapid amelioration of theileriosis.

ANALYSIS OF THE LENGTH OF DRY PERIODS FOR AGRICULTURAL PRODUCTION USING THE MARKOV CHAIN MODEL: CASE OF SYNOPTIC STATIONS IN BENIN

B. A. Darius Gnihatın¹

¹Laboratoire de Physique du Rayonnement, Faculté des Sciences et Techniques, Université'Abomey-Calavi, Bénin, 01 BP 526 Cotonou, Bénin

Aristide B. Akpo²

¹Laboratoire de Physique du Rayonnement, Faculté des Sciences et Techniques, Université'Abomey-Calavi, Bénin, 01 BP 526 Cotonou, Bénin

ABSTRACT

The deficit of last decade rain in West Africa and particularly in Benin pushes us to make the analysis of tendencies of the dry sequences of the tabular stations from daily raining data. The general objective of this survey is the research of probability of the dry sequence sets in the period from 1970 to 2018 from daily raining data of the tabular stations of Benin. We have extract of data daily raining of six stations synoptique of Benin, in the period from 1970 to 2018 from daily raining data of the tabular stations of and we analyzed the variation of the probability of length of dry sequences with markov chain model on the period from 1970 to 2018 to raining data of the tabular stations. We determined the critical duration of the dry period analysed his impact of lower yields of maize especially during the heading phase. From the results, we can retain the probability of dry spell length of 5 days was about 75%. The probability of dry spell length of two weeks was also more than 20%. On the other hand, the probability of dry spell length of 20 days was below 20% maxima of dry sequence length to the station of Bohicon, Savè, Cotonou and Kandi. It has been also clarified that in parakou's and natitingou's station, the probability of dry spell lengths of 15 days or the two weeks has been reached about 30% in July. A dry sequence of more than 4 days constitutes a risk of lower yields of maize especially during the heading phase where it could reach the wilting point.

Keywords: The deficit of rain, the probability, the heading phase, the wilting point, Benin

HPLC QUANTIFICATION OF THE CHEMICAL CONSTITUENTS FROM INDIGENOUS FRUITS AND VEGETABLES OF INDIAN HIMALAYAN REGION

Tanveer Alam¹, Murtaza Gani¹

¹*Department of Chemistry, KLDVA PG College Roorkee Uttarakhand, Affiliated to Department of Chemistry, HNB Garhwal University Srinagar (Garhwal) Uttarakhand India.*

²*Division of Food Science and Technology, Shere Kashmir University of Agricultural Sciences & Technology, Jammu, India.*

³*High End Instrumentation Lab, Public Health Laboratory Dalgate Srinagar J & K India.*

ABSTRACT

The purpose of the present work was to determine the phytochemical profiles by HPLC of the indigenous fruits and vegetables. The phenolic contents showed diverse variation in the selected fruits and vegetables. Development of genuine and dependable analytical methods with profile marker phytoconstituents in an extract containing a mixture of several components is a challenging task. A simple, rapid, precise and reliable HPLC method was developed for the quantification of phytochemicals from the extracts of selected minor fruits and vegetables. The *Taraxacum officinale* genus comprised a mixture of different bioactive compounds belonging to different chemical types, such as flavonoids, sesquiterpenes, triterpenes, phenolic acids, sterols. *Malva neglecta* contains different compounds including several phenolic acids, flavonoids and some non-phenolic compounds. Caffeoylquinic acids (3-, 4-, and 5-O-caffeoylquinic acids and 3,5-dicaffeoylquinic acid) are mainly present in *Cydonia oblonga* pulps. Three different hydroxycinnamic acid derivatives (neochlorogenic acid, p-coumaroylquinic acid and chlorogenic acid) were detected and quantified in *Prunus avium*.

Key words: Analysis; Crops; Gradient; HPLC; Minor; Phytochemicals.

MOLECULAR CHARACTERIZATION AND ANTIBIOTICS RESISTANCE PATTERN OF *CLOSTRIDIUM PERFRINGENS* TYPE A ISOLATED FROM NECROTIC ENTERITIS

Tehreem Ali^{1*}, Arslan Sarwar¹, Mian Muhammad Khubaib Sattar², Rabia Manzoor³, Muhammad Asad Ali³, Aftab Ahmad Anjum³

¹Department of Microbiology, Faculty of Life Sciences, University of Central Punjab, Lahore, Pakistan

²Department of Microbiology, Faculty of Veterinary and Animal Sciences, The Islamia University of Bahawalpur, Bahawalpur, Punjab, Pakistan

³Institute of Microbiology, Faculty of Veterinary Science, University of Veterinary and Animal Sciences, Lahore, Pakistan

ABSTRACT

Clostridium perfringens type A cause nephrotic enteritis in layer poultry birds because of the intestinal damage caused by coccidiosis allows for the overgrowth of *C. perfringens*. To overcome this issue, isolation and confirmation of *C. perfringens* from layers poultry has its own significance. Method: From different areas of Punjab, Pakistan samples were collected from layer poultry. On perfringens agar base medium black, translucent and round pure colonies with foul smell were produced. Isolates were observed positive for double zone hemolysis on 5% sheep blood agar and lecithinase enzyme on 5% egg yolk agar. Findings: Antibiotics resistance pattern was studied against *C. perfringens* and enrofloxacin exhibited higher zone of inhibition (mean ZOI±S.D.) as 36.67±0.57mm followed by colistin (19.67±8.38), tetracycline (18.67±16.28), tylosin (12.33±10.69) and ciprofloxacin (11.00±9.53). Polymerase chain reaction (PCR) toxinotyping was performed by using alpha toxin gene specific primers and revealed that 7 isolates were confirmed as toxinotype A. Toxins were produced in reinforced clostridial broth with different supplements under anaerobic conditions. CPG160, CPG6 and CPS52 produced higher alpha toxin percentages detected by multiscreen Ag detection ELISA (Bio X 270, Belgium). For toxin characterization, 12.5% polyacrylamide resolving gel was used in sodium dodecyl sulphate-polyacrylamide gel electrophoresis (SDS-PAGE) and molecular weights 48kDa were found for alpha toxin. Toxin specific PCR, Ag specific ELSIA and SDS-PAGE are the emerging diagnostic techniques for the confirmation of *C. perfringens* toxinotype A causing nephrotic enteritis in poultry. **Keywords:** *Clostridium perfringens*, Necrotic enteritis, Alpha, ELISA, SDS-PAGE.

MODELING THE HYDRAULIC BEHAVIOR OF RIVERS TO DESIGN A SURFACE RUNOFF DRAINAGE NETWORK (CASE STUDY: RASHT CITY)

Mohammad Reza Khaleghi¹, Vahid Gholami^{2},*

*⁽¹⁾ Department of Range and Watershed Management, Torbat-e-Jam Branch, Islamic Azad University,
Torbat-e-Jam, Iran*

*⁽²⁾ Department of Range and Watershed Management, Faculty of Natural Resources, University of
Guilan, Sowmeh Sara, 1144, Guilan, Iran.*

ABSTRACT

Runoff accumulation and flooding of roads are some of the problems of poetic communities, especially in humid climates. Surface runoff drainage is one of the management problems in Rasht City. Also, one of the urban flood factors is drainage channel clogging through water level rising. The purpose of the present study is to investigate the probability of drainage channels clogging and to select optimum sites for new outlets along the Goharood and Siahrood rivers. So, the rivers bed of Goharood and Siahrood and their bank's terrains were simulated by using HEC-GeoRAS (GIS) extension and digital map (scale: 1000). Pick discharges with different return periods were estimated by using stochastic analysis. Then, the hydraulic behavior of the river was simulated by using the HEC-RAS model and the probability of drainage channel clogging was investigated during flood events along Goharood and Siahrood rivers length. Finally, unsuitable and suitable sites for runoff drainage were identified.

Keywords: hydraulic behavior of river, surface water, drainage, Rasht City.

FLOOD HAZARD ZONING USING HEC-RAS MODEL AND GEOGRAPHIC INFORMATION SYSTEM (GIS) IN THE BABOL CITY

Vahid Gholami¹, Mohammad Reza Khaleghi^{2}*

⁽¹⁾Department of Range and Watershed Management, Faculty of Natural Resources, University of Guilan, Sowmeh Sara, 1144, Guilan, Iran.

⁽²⁾ Department of Range and Watershed Management, Torbat-e-Jam Branch, Islamic Azad University, Torbat-e-Jam, Iran.

ABSTRACT

Flood hazard zoning is very important for urban management. Further, the flood plains are fertile terrains that are endangered floods. Flood hazard mapping is one of the basic methods of flood fighting. To decline flood damages, the simulation of rivers' hydraulic behavior during flood occurrence is very important. In this study flooding areas were zoned along Siahrood and Goharrood rivers (northern of Iran, Babol City). The rivers bed of Goharrood and Siahrood and their bank's terrains were simulated by using HEC-GeoRAS (GIS) extension and digital map (scale:1000). Peak discharges with different return periods were estimated by using stochastic analysis. HEC-RAS software and Geographical Information System (GIS) have been applied for simulating rivers' hydraulic behavior and providing flood zoning maps. The GIS was an efficient tool for data-processing and mapping stages. Finally, the flood zones and associated with 2, 10, 25, 50,100, and 200 years return periods were mapped and necessary analysis was conducted during the present research. The results showed that some parts of Babol City (Rivers bank terrains) are endangered flood hazards.

Keywords: Flood hazard, Time return, HEC-GeoRAS, Babol city

MODULATION OF SALT STRESS EFFECTS ON GROWTH, PHYSIO-CHEMICAL ATTRIBUTES OF DIFFERENT VEGETABLES BY THE EXOGENOUS APPLICATION OF MORINGA OLIFERA LEAF (MLE)

*Sibgha Noreen**, *Sehrish Saleem*, *Salim Akhtar*, *Ummar* and *Seema Mahmood*

Institute of Pure and Applied Biology, Bahauddin Zakariya University, Multan

ABSTRACT

The *Moringa Oleifera* is a miracle tree. Moringa leaf extract (MLE) is generally considered to have enhancing the plant growth and development. Therefore, the current study was planned to evaluate the effects of MLE on the growth of *Pisum sativum*, *Raphanus sativus*, *Brassica rapa*). This study explores the potential of *Moringa oleifera* leaf extract (MLE) in seed germination and growth of seedlings of *Pisum sativum*, *Raphanus sativus*, *Brassica rapa*). Thus to understand its role in ameliorating salt stress, The experimental set up was laid-out in a completely randomized design having three factors (a) three different crops (*Pea*, *Radish* and *Turnip*) (b) two salt levels (0 mM and 100 mM), (c) two different exogenous applications of *Moringa* leaf extract (3% Seed priming and 3% Foliar application). Seed priming was done by soaking the seeds in MLE extracts in distilled water (MLE 1:30) for 24 hours. The effects of the integrated application of *Moringa oleifera* leaf extract (MLE; 1 extract: 30 tap water) on the growth, yield and antioxidant defense system of *Pisum sativum*, *Raphanus sativus*, *Brassica rapa*) plants grown on a saline soil (EC = 20 dS m⁻¹) were investigated. Pot experiment were conducted to study the effect of seed soaking and/or foliar application with *Moringa oleifera* leaf extract (MLE; 1 extract paste: 30 tap water) on growth, physio-chemical attributes, anatomy and yield of (*Pisum sativum*, *Raphanus sativus*, *Brassica rapa*) plants grown on saline soil (EC = 20 dS m⁻¹). The MLE application used as seed soaking or foliar spray significantly increased growth characteristics (*i.e.*, shoot, root fresh and dry weight plant height, number of lateral branches, shoot length, root length, tap root weight and diameter of *Raphanus sativus*, *Brassica rapa*, no. and wt. of pods, no. and wt. of seeds, plant height, of *Pisum sativum*), physio-chemical attributes (*i.e.*, Relative water content (RWC%) and concentrations of total chlorophylls, total carotenoids, free proline, contents of Na, K and ratios of K/Na), enzymatic and non-enzymatic antioxidants (ascorbate peroxidase, catalase, peroxidase), total soluble protein and total free amino acids contents of (*Pisum sativum*, *Raphanus sativus*, *Brassica rapa*) when compared with the controls. Further, the MLE application used as seed soaking or foliar spray significantly decreased the production of ROS (H₂O₂, MDA contents) of (*Pisum sativum*, *Raphanus sativus*, *Brassica rapa*) compared to the control. The integrated application of MLE used as seed soaking and foliar spray, was found to be highly effective at improving the growth and yields of *Pisum sativum*, *Raphanus sativus*, *Brassica rapa*) plants by alleviating the inhibitory effects of soil salinity stress. Priming with MLE were more effective methods to improve final germination percentage (FGP) to synchronize early germination. Seed priming treatments (MLE 1:30) were more effective compared with control.

FASULYENİN (*Phaseolus vulgaris* L.) TANE VERİMİ VE BAZI AGRONOMİK KARAKTERLERİ ÜZERİNE İNORGANİK VE MİKROBİYAL GÜBRE UYGULAMALARININ ETKİSİ

THE EFFECT OF INORGANIC AND MICROBIAL FERTILIZER APPLICATIONS ON THE
GRAIN YIELD AND SOME AGRONOMIC CHARACTERS OF THE BEAN (*Phaseolus vulgaris*
L.)

Fatih ERDİN

Öğr. Gör. Van Yüzüncü Yıl Üniversitesi, Özalp Meslek Yüksek Okulu, Bitkisel ve Hayvansal Üretim
Bölümü

ORCID ID: 0000-0002-1338-5582

Haluk KULAZ

Doç. Dr. Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: 0000-0003-3044-5046

ÖZET

Bu çalışma 2020 yılında Van ekolojik koşullarında Akman 98 fasulye çeşidinin bazı agronomik ve verim özellikleri üzerine inorganik ve mikrobiyal gübre uygulamalarının etkisini belirlemek amacıyla yapılmıştır. Deneme Yüzüncü Yıl Üniversitesi Ziraat fakültesi deneme arazisinde, tesadüf bloklarında bölünmüş parseller deneme desenine göre 3 tekrarlamalı olarak yürütülmüştür. Bu çalışmada bitki gelişimini teşvik eden farklı mikrobiyal gübre izolatları (*Bacillus atrophaeus* (TV126C), *Bacillus-GC* group (TV119E), *Bacillus atrophaeus* (TV126C9 + *Bacillus-GC* group (TV119E) ve *Rhizobium gallicum* (NCPI MZ156852)) ile inorganik gübreleme kombinasyonları (Kontrol, %100 NP tam doz ve % 50 NP azaltılmış doz) kullanılmıştır. Çalışma sonuçlarına göre, bitki boyu 38.93-43.91 cm, ilk bakla yüksekliği 10.05-11.04 cm, ana dal sayısı 3.44-3.81 adet/bitki, bitkide bakla sayısı 14.2-18.71 adet/bitki, baklada tane sayısı 3.58-4.08 adet/bitki, 100 tane ağırlığı 21.72-24.05 g, tane verimi 147.03-238.15 kg/da arasında değişim göstermiştir. Araştırma sonucunda en yüksek tane verimi *Bacillus atrophaeus* (N)+ *Rhizobium gallicum* bakteri uygulamalarından 238.15 kg/da olarak elde edilmiştir.

Anahtar Kelimeler: Fasulye, *Phaseolus vulgaris* L., verim, mikrobiyal gübre, inorganik gübre

ABSTRACT

This study was carried out to determine the effect of inorganic and microbial fertilizer applications on some agronomic and yield characteristics of Akman 98 bean cultivar in Van ecological conditions in 2020. The experiment was carried out in the experimental field of the Faculty of Agriculture of Yüzüncü Yıl University, in randomized blocks, according to the divided plot design with 3 replications. In this study, different microbial fertilizer isolates that promote plant growth (*Bacillus atrophaeus* (TV126C), *Bacillus-GC* group (TV119E), *Bacillus atrophaeus* (TV126C9 + *Bacillus-GC* group (TV119E) and *Rhizobium gallicum* (NCPI MZ156852)) and inorganic fertilizer combinations (Control, 100% NP full dose and 50% NP reduced dose) were used. According to the study results, plant height 38.93-43.91 cm, first pod height 10.05-11.04 cm, number of main branches 3.44-3.81 per plant, number of pods per plant 14.2- 18.71 pieces/plant, number of seeds per pod 3.58-4.08 pieces/plant, 100 grain weight 21.72-24.05 g, grain yield varied between 147.03-238.15 kg/da. As a result of the research, the highest grain yield was *Bacillus atrophaeus* (N)+ *Rhizobium gallicum* bacteria It was obtained as 238.15 kg/da from the applications.

Keywords: Beans, *Phaseolus vulgaris* L., yield, microbial fertilizer, inorganic fertilizer

NOT: Bu çalışma, ilk yazarın doktora tezinin bir kısmından üretilmiştir.

TÜRKİYE'DE *Cuscuta campestris* YUNCK'İN GENETİK ÇEŞİTLİLİĞİNİN BELİRLENMESİ

DETERMINATION OF GENETIC DIVERSITY OF *Cuscuta campestris* Yunck. IN TURKEY

Ayşe ÖZBEK

Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van/TURKEY

ORCID NO: <https://orcid.org/0000-0001-9908-4192>

İlhan Kaya TEKBUDAK

Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van/TURKEY

ORCID NO: <https://orcid.org/0000-0002-2754-2489>

Mustafa USTA

Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van/TURKEY

ORCID NO: <https://orcid.org/0000-0002-3940-2774>

İbrahim DEMİR

Bitlis Eren Üniversitesi, Fen Fakültesi, Biyoloji Bölümü, Bitlis/TURKEY

ORCID NO: <https://orcid.org/0000-0003-1533-556X>

ÖZET

Küsküt tam parazit istilacı bir bitki olması ve mücadelesinin zor olması dolayısıyla tarımsal üretim açısından önemli bir tehdit oluşturmaktadır. Türkiye'de gerek tarım alanlarında gerekse tarım dışı alanlarda *Cuscuta* cinsine ait en yaygın tür *Cuscuta campestris* Yunck.'tir. Bu çalışmada, Türkiye'nin 6 farklı coğrafik bölgesinden *C. campestris*'e ait biriktirilen toplamda 37 populasyon örneği arasındaki genetik çeşitlilik belirlenmeye çalışılmıştır. Çalışmada örneklerden izole edilmiş genomik DNA'lardan ITS bölgelerinin çoğaltılması için evrensel ITS4 ve ITS5 primerleri kullanılmıştır. Bu primerler yardımıyla, rDNA'da yer alan ITS1, 5,8S ve ITS2 bölgeleri PCR yoluyla çoğaltılmıştır. DNA dizilemesi yapılan *C. campestris* türüne ait genom bilgileri farklı programlar (Geneious Software, CLC DNA workbench ve Vector NTI) ile analiz edilmiştir. *C. campestris* bireylerine ait elde edilen DNA dizileri, National Center for Biotechnology Information (NCBI) Gen bankasına kayıtları yapılarak dünyadaki tüm araştırmacıların kullanımına sunulmuştur. Bu çalışmada, nrDNA ITS bölgesi uzunluğunun 570 ile 679 baz çifti arasında değiştiği tespit edilmiştir. Popülasyonlarda, bölgeler arasında coğrafik farklılıktan kaynaklanan, genetik farklılaşma olduğu gözlenmiştir. Sonuç olarak, *C. campestris*'in bölgeler arasındaki genetik değişkenliğini anlamak, tarımsal alanlarda bu parazit bitkinin etkisini azaltmak için bazı kontrol stratejilerinin geliştirilmesinde etkili olacaktır.

Anahtar Kelimeler: *Cuscuta campestris*, Genetik çeşitlilik, Türkiye

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ABSTRACT

Dodder is a parasitic invasive plant and poses a significant threat to agricultural production, as it is difficult to control. *Cuscuta campestris* Yunck. is the most widespread species belonging to the genus *Cuscuta* well as in non-agricultural areas of farmland in Turkey. In this study, genetic diversity between 6 different geographical regions of Turkey from the *C. campestris* collected from individuals belonging to 40 populations were studied. Universal ITS4 and ITS5 primers were used to amplify ITS regions from

genomic DNAs isolated from these samples. With the help of these primers, ITS1, 5,8S and ITS2 regions in the rDNA were amplified by PCR. The genome information of the *C. campestris* species whose DNA was sequenced was analyzed with different programs (Geneious Software, CLC DNA workbench and Vector NTI). The DNA sequences obtained from *C. campestris* individuals are registered in the National Center for Biotechnology Information (NCBI) Gene Bank and made available to all researchers around the world. In this market, it has been found that the nrDNA ITS region length varies between 570 and 679 base pairs. It has been observed that there is genetic differentiation in populations resulting from geographical differences between regions. As a result, to understand the genetic variability of *C. campestris* between regions, it will be effective in developing some control strategies to reduce the impact of this parasitic plant in agricultural areas.

Keywords: *Cuscuta campestris*, Genetic diversity, Turkey

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DİYARBAKIR EKOLOJİK KOŞULLARINDA FARKLI HÜMİK ASİT DOZLARININ PAMUK (*Gossypium hirsutum* L.) ÇEŞİTLERİNİN VERİM VE KALİTE UNSURLARI ÜZERİNE ETKİSİ (1)

THE EFFECT DIFFERENT HUMIC ACID DOSES ON THE YIELD AND QUALITY FEATURES
OF COTTON (*Gossypium hirsutum* L.) VARIETIES UNDER DİYARBAKIR ECOLOGICAL
CONDITIONS

Tamer ERYİĞİT¹

¹*Van Yüzüncü Yıl Üniversitesi, Gevaş Meslek Yüksekokulu, Bitkisel ve Hayvansal Üretim Bölümü,
Van, Türkiye*

¹ORCID ID: <https://orcid.org/0000-0001-5069-8206>

Mehmet Akif ÇELEBİ²

²*Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Tarla Bitkileri Anabilim Dalı, Van, Türkiye*

²ORCID ID: <https://orcid.org/0000-0002-3934-528X>

ÖZET

Bu çalışmada humik asidin Pamuk (*Gossypium hirsutum* L.) çeşitlerinin verim ve kalite unsurları üzerindeki etkisinin araştırılması amaçlanmıştır. Araştırmada üç pamuk çeşidi (ST-468, DP-499 ve LİMA) ve dört farklı humik asit (HA) dozu kullanılmıştır. Deneme, Diyarbakır ili Bismil ilçesi Şahintepe köyünde çiftçi arazisinde, Tesadüf Bloklarında Bölünmüş Parseller deneme desenine göre üç tekerrürlü olarak yürütülmüştür. Çalışmada; bitkisel özellikler, verim, verim unsurları ve lif teknolojik özellikleri incelenmiştir. Araştırma sonuçlarına göre çalışmada kullanılan humik asit dozlarının pamuk çeşitlerinde; odun dalı sayısı, meyve dalı sayısı, kütlü pamuk verimi ve lif pamuk verimi üzerine etkisi çok önemli ($P<0.01$) ve bitki başına boğum sayısı, lif oranı ile lif uzunluğu üzerine etkileri ise önemli ($P<0.05$) bulunmuştur. Kütlü pamuk verimi en yüksek Lima çeşidinden $285.03 \text{ kg da}^{-1}$ ile HA3 kg da^{-1} humik asit dozu uygulamasından, en düşük ise DP-499 çeşidinden $249.72 \text{ kg da}^{-1}$ ile HA1 ve HA4 humik asit dozu uygulamalarından elde edilmiştir. Diyarbakır ekolojik koşullarında pamuk çeşitleri üzerindeki olumlu etkileri açısından 20 kg da^{-1} humik asit dozunun pamuk üretiminde uygulanabileceği ve daha kararlı öneri için bu konuda daha çok çalışmanın yapılması gerektiği kanaatine varılmıştır.

Anahtar Kelimeler: Humik asit, kalite, pamuk, verim.

ABSTRACT

In this study, it was aimed to investigate the effect of humic acid on yield and quality factors of Cotton (*Gossypium hirsutum* L.) cultivars. In the trial, ST-468, DP-499, and Lima varieties and four different humic acid (HA) doses were used as the trial factor, which had shown superior performance, which was preferred by the cotton producers in the region before. The experiment was established on the farmer's land in the village of Şahintepe, Bismil district of Diyarbakır province, in three replications, in four rows in each plot, according to the Split Plots Experimental Design in Random Blocks. In the study, vegetative characteristics, yield, yield components, and fiber technological properties were investigated. According to the results of the research, the effects of the humic acid doses used in the study on the characteristics examined in cotton varieties; the number of wood branches, number of fruit branches, seed cotton yield, and fiber cotton yield were very important ($P<0.01$), number of nodes per plant, shear rate, and fiber length were significant ($P<0.05$). The highest seed cotton yield was obtained from $285.03 \text{ kg da}^{-1}$ and HA3 kg da^{-1} humic acid dose from lima variety, and the lowest from $249.72 \text{ kg da}^{-1}$ and HA1 ve HA4 kg da^{-1} humic acid dose from LİMA variety. It has been concluded that a 20 kg da^{-1} humic acid

¹ Bu makale M. Akif ÇELEBİ'in yüksek lisans tezinden hazırlanmıştır.



dose can be applied in cotton production in terms of its positive effects on cotton varieties in Diyarbakır ecological conditions, and more studies should be done on this subject for a more stable recommendation.

Keywords: Cotton, humic acid, quality, yield.

TÜRKİYE'DE ORGANİK TARIMIN MEVCUT DURUMUNUN DEĞERLENDİRİLMESİ EVALUATION OF THE CURRENT STATUS OF ORGANIC AGRICULTURE IN TURKEY

Doç. Dr. Oktay TOMAR¹

¹Kocaeli Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Kocaeli, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0001-5761-7157>

Arş. Gör. Alptekin Mert YILMAZ²

²Kocaeli Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Kocaeli, Türkiye.

²ORCID ID: <https://orcid.org/0000-0002-7062-4770>

Dr. Öğr. Üyesi Özge Can NİYAZ³

³Çanakkale Onsekiz Mart Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Çanakkale, Türkiye.

³ORCID ID: <https://orcid.org/0000-0002-4958-9931>

ÖZET

Konvansiyonel tarım faaliyetlerinde yoğun kimyasal girdi kullanımı hem insan sağlığı hem de çevre açısından olumsuzluklara sebep olmaktadır. Tarım ürünlerinde aşırı kalıntı bırakan kimyasal girdiler tarladan sofraya gıda güvenliğini olumsuz etkilemektedir. Tarımda sürdürülebilirliğin ve gıda güvenliğinin sağlanmasında organik tarım önemli bir yer tutmaktadır. Dünya genelinde yaklaşık 40 milyon hektar alanda yürütülmekte olan organik tarım faaliyetleri toplam işlenen tarım arazilerinin yaklaşık % 1'ine denk gelmektedir. Ayrıca küresel olarak 50 milyar dolarlık ekonomik hacmi bulunan organik ürünler tarım ekonomisi açısından oldukça önemlidir. Türkiye'de ilk olarak 1980'li yıllarda sözleşmeli üretim ile ortaya çıkan organik tarım kimyasal girdi kullanılmayan, hayvan refahını ön plana alan, insan sağlığına ve çevreye zarar vermeyen tarım faaliyetleri olarak tanımlanabilmektedir. Fosil yakıtların kullanımının azaltıldığı organik tarım bu özelliğiyle ulusal ekonomiye katkı sağlamaktadır. Yıllar itibarıyla incelendiğinde Türkiye'de organik tarım faaliyetinde bulunan çiftçi sayısı ve organik tarım yapılan üretim alanı artış göstermektedir. Tarım ve Orman Bakanlığı'nın 2020 yılı verilerine göre Türkiye'de organik bitkisel üretim yapan çiftçi sayısının yaklaşık 41 bin (geçiş hariç) olduğu belirlenmiştir. Her ne kadar organik tarım yapan çiftçi sayısı yıllar itibarıyla artış gösterse de dünya pazarında Türkiye'de üretilen organik ürünlerin payı oldukça az miktardadır. Ayrıca organik gıdaların Avrupa'da yoğun olarak tüketiminin gerçekleştirildiği fakat Türkiye'de organik gıda tüketiminin ürünlerin fiyatının yüksek olmasından dolayı düşük seviyede olduğu belirlenmiştir. Araştırma önerilerine göre bölgesel olarak üretim potansiyeli olan organik ürünlerin belirlenmesi ve ekim alanlarını artırılması tavsiye edilmektedir. Ayrıca sadece ihracata yönelik değil aynı zamanda iç pazara yönelik organik üretimin teşvik edilmesi de önem arz etmektedir. Bunun yanında organik tarımda sürdürülebilirliğin sağlanması amacıyla sertifikasyon sisteminin yaygınlaştırılması ve Tarım ve Orman Bakanlığı personelleri tarafından yapılan denetimlerin artırılması önerilmektedir. Özellikle organik ürün fiyatlarının yüksek olması tüketici satın alma kararlarını etkilediğinden tüketicilerin organik ürün satın alma davranışlarını etkileyen fiyat ve diğer faktörlerin belirlenmesi ve bu yönde politikalar geliştirilmesi tavsiye edilmektedir.

Anahtar Kelimeler: Organik Tarım, Türkiye, Sürdürülebilirlik

ABSTRACT

The intensive use of chemical inputs in conventional agricultural activities causes negativities in terms of both human health and the environment. Chemical inputs that leave excessive residues in agricultural products adversely affect food safety from farm to fork. Organic agriculture has an important place in

ensuring sustainability and food safety in agriculture. Organic farming activities are carried out on approximately 40 million hectares of land worldwide, corresponding to approximately 1% of the total cultivated agricultural land. In addition, organic products, which have a global economic volume of 50 billion dollars, are very important in terms of the agricultural economy. Organic agriculture, which first emerged with contract production in Turkey in the 1980s, can be defined as agricultural activities that do not use chemical inputs, prioritize animal welfare, and do not harm human health and the environment. Organic agriculture, in which the use of fossil fuels is reduced, contributes to the national economy with this feature. When examined over the years, the number of farmers engaged in organic farming activities and the area of organic farming in Turkey are increasing. According to the data of the Ministry of Agriculture and Forestry for the year 2020, it has been determined that the number of farmers engaged in organic plant production in Turkey is approximately 41 thousand (excluding the transition). Although the number of farmers engaged in organic farming has increased over the years, the share of organic products produced in Turkey in the world market is quite small. In addition, it has been determined that organic food is consumed intensively in Europe, but organic food consumption in Turkey is at a low level due to the high price of the products. According to the research recommendations, it is recommended to determine the organic products with regional production potential and to increase the cultivation areas. It is also important to encourage organic production not only for export but also for the domestic market. In addition, it is recommended to expand the certification system and increase the inspections by the personnel of the Ministry of Agriculture and Forestry to ensure sustainability in organic agriculture. Since the high prices of organic products affect the purchasing decisions of consumers, it is recommended to determine the price and other factors that affect the organic product purchasing behavior of consumers and to develop policies in this direction.

Keywords: Organic Agriculture, Turkey, Sustainability

UKRAYNA KRİZİNİN GIDA GÜVENCESİNE ETKİLERİ THE EFFECTS OF UKRAINE CRISIS ON FOOD SECURITY

Arş. Gör. Alptekin Mert YILMAZ¹

¹*Kocaeli Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Kocaeli, Türkiye.*

¹*ORCID ID: <https://orcid.org/0000-0002-7062-4770>*

Doç. Dr. Oktay TOMAR²

²*Kocaeli Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Kocaeli, Türkiye.*

²*ORCID ID: <https://orcid.org/0000-0001-5761-7157>*

ÖZET

Son yıllarda iklim değişikliği ve COVID-19 pandemisi gibi birçok kriz küresel çapta gıda güvencesini olumsuz etkileyen durumlar olarak karşımıza çıkmaktadır. Son olarak Ukrayna-Rusya savaşı da her iki ülkenin önemli bir gıda tedarikçisi konumunda olmasından dolayı gıda güvencesi konusunda endişelere sebep olmuştur. Ukrayna, bitkisel yağlar başta olmak üzere tahıl ve yağlı tohumlarda önemli bir ihracatçı konumundadır. Ukrayna'nın gübre açısından Rusya ve Beyaz Rusya'ya bağımlı oluşu tarımsal üretimde verimi doğrudan etkileyecek bir faktör olarak karşımıza çıkmaktadır. Rusya'nın dünyanın en büyük azotlu gübre ihracatçısı olması sebebiyle, uygulanacak olan ticaret kısıtlamaları; Ukrayna'nın tarımsal üretimde veriminin azalmasına da yol açacaktır. Ukrayna'nın tarımsal üretiminin azalması gıda güvencesi açısından büyük risk oluşturmaktadır. Ukrayna'nın tahıl ve ayçiçek yağı arzının azalması küresel gıda fiyatlarının artış göstermesine yol açacak ve bu durum gıdaya erişimin azalmasına neden olarak gıda güvencesini olumsuz etkileyecektir. Yapılan değerlendirmelerde Ukrayna'nın 2022 bahar döneminde ekim alanının büyük ölçüde daralma yaşayacağı, bir önceki dönemin mahsülünün veriminin düşüş göstereceği ve mahsülün hasat edilemeyeceği yönünde görüşler mevcuttur. Araştırma önerilerine göre çatışmalar sırasında tarımsal arazilere ve sivil altyapıya zarar verilmemesi gerektiği tavsiye edilmektedir. Ayrıca gıda ve gübre tedariki konusunda Ukrayna ve Rusya'ya alternatif diğer tedarikçi ülkelerin de kullanılması yoluyla çeşitlendirme yapılması ve risklerin azaltılması önerilmektedir. Özellikle Hindistan ve Avustralya'nın alternatif tahıl tedarik kaynağı olarak kullanılması ile Ukrayna'nın tahıl arzındaki düşüşün dengelenebileceği düşünülmektedir. Bunun yanında ülkelerin ulusal gıda güvencelerini sağlamak amacıyla ihracat kısıtlamaları uygulaması orta vadede sorunlara yol açabileceğinden dolayı ihracat kısıtlamaları uygulanmamalıdır. Tedarik zincirlerinin sorunsuz işleyişini sağlamak amacıyla tarım arazileri, hayvanlar, tarım makineleri ve tarımsal girdiler çatışma kaynaklı tehditlerden arındırılması gerekmektedir. Son olarak, Ukrayna ve Rusya arasındaki savaşın uzaması veya diğer ülkelere sıçraması küresel gıda krizini daha da derinleştireceğinden ve tarım arazilerinin zarar görmesine neden olacağından savaşın bir an önce sonlandırılması gerektiği tavsiye edilmektedir. Ayrıca ilerleyen dönemlerde savaşın gıda güvencesi üzerindeki olumsuz etkilerinin daha detaylı olarak değerlendirilmesi de gerekmektedir.

Anahtar Kelimeler: Gıda Güvencesi, Ukrayna Krizi, Askeri Çatışma, Gıda Politikası, Enerji

ABSTRACT

In recent years, many crises such as climate change and the COVID-19 pandemic have emerged as situations that negatively affect food security on a global scale. Finally, the Ukraine-Russia war has also caused concerns about food security, since both countries are important food suppliers. Ukraine is an important exporter of grains and oilseeds, especially vegetable oils. Ukraine's dependence on Russia and Belarus in terms of fertilizers is a factor that will directly affect the yield in agricultural production. As Russia is the world's largest nitrogen fertilizer exporter, the trade restrictions to be applied; will also lead to a decrease in the productivity of Ukraine in agricultural production. The decrease in Ukraine's

agricultural production poses a great risk in terms of food security. The decrease in Ukraine's grain and sunflower oil supply will lead to an increase in global food prices, which will lead to reduced access to food, which will negatively affect food security. In the evaluations made, there are opinions that the cultivation area of Ukraine will shrink to a great extent in the spring of 2022, the yield of the previous period's crop will decrease and the crop cannot be harvested. According to research recommendations, it is recommended that agricultural lands and civil infrastructure should not be damaged during conflicts. In addition, it is recommended to diversify and reduce risks by using other alternative supplier countries to Ukraine and Russia in food and fertilizer supply. It is thought that the decrease in Ukraine's grain supply can be balanced, especially with the use of India and Australia as alternative grain supply sources. In addition, export restrictions should not be applied since the implementation of export restrictions to ensure the national food security of countries may cause problems in the medium term. To ensure the smooth functioning of supply chains, farmland, animals, agricultural machinery and agricultural inputs need to be freed from conflict-related threats. Finally, it is recommended that the war should be ended as soon as possible, as the prolongation of the war between Ukraine and Russia or its spread to other countries will deepen the global food crisis and cause damage to agricultural lands. In addition, the negative effects of the war on food security should be evaluated in more detail in the future.

Keywords: Food Security, Ukraine Crisis, Military Conflict, Food Policy, Energy

THE SERBIA CYCLICAL EVOLUTION OF AGRICULTURAL ECONOMICAL GROWTH AND AGRICULTURAL SUPPORT POLICIES

Marija SUDAR¹

¹University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Serbia.

¹ORCID ID: <https://orcid.org/0000-0001-6809-1883>

Nikola PUVAČA²

²University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Serbia.

²ORCID ID: <https://orcid.org/0000-0002-5500-7010>

Sandra BRKANLIĆ³

³University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Serbia.

³ORCID ID: <https://orcid.org/0000-0003-0702-5692>

Jelena VAPA TANKOSIĆ⁴

⁴University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Serbia.

⁴ORCID ID: <https://orcid.org/0000-0001-8062-1154>

Marko CARIĆ⁵

⁵University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Serbia.

⁵ORCID ID: <https://orcid.org/0000-0001-5683-3819>

ABSTRACT

A country's policy to ensure food security is usually based on policies that support agricultural production, especially given the weak nature of agricultural production. In order to discern the development of agriculture under the Serbian agricultural support policies from 2001 to 2021, Our research focused on using the nonlinear MS(M)-AR(p) model to distinguish Serbian agricultural economic cycles into three growth regimes: rapid, medium, and low, and to assess their probability of shifting between these regimes. In addition to the calculation of the growth regime transfers for specific times, the average duration of each regime was also calculated. In this study, based on the data obtained, we conclude that it is due to Serbia's proactive agricultural policies that the economy has experienced relatively consistent growth. Although the Serbian economy has experienced low growth in recent years, the situation is likely to remain the same in the long run. The paper concludes with policy recommendations for agricultural development based on our research findings that strengthen agro-based policies and support agriculture, forestry, and livestock production.

Keywords: agriculture, economics, EU policy, agribusiness, support policies.

INFLUENCE OF KETAMINE-BASED ANESTHESIA ON THE SURVIVAL RATE OF SPHYNX CATS

Nikola PUVAČA¹

¹*University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Department of Engineering Management in Biotechnology, Novi Sad, Serbia.*

¹ORCID ID: <https://orcid.org/0000-0002-5500-7010>

Erinda LIKA²

²*Agricultural University of Tirana, Faculty of Veterinary Medicine, Tirana, Albania.*

²ORCID ID: <https://orcid.org/0000-0003-1107-5967>

ABSTRACT

Ketamine represents multipurpose low-cost drug which plays an important role in the emerging countries worldwide. In regions where access and funding for a wider range of drugs are problematic, its broad range of clinical applications is ideal. Ketamine's effects on the cardiovascular system in cats was thoroughly investigated in late nineties. Besides direct negative inotropy exerted on the myocardium mostly observed in the face of absent or depleted sympathetic stimulation ketamine can increase heart rate, cardiac output, blood pressure, and myocardial oxygen usage through incentive of the sympathetic autonomic nervous system. Besides, neurophysiological effects of ketamine have been extensively investigated in the feline model in the late 1960s to early 1970s. When administered intraperitoneally, racemic ketamine produced dose-dependent behavioral and electroencephalographic (EEG) changes, characterized by restlessness, excitement, and EEG desynchronization at lower doses (10 mg/kg); excitement with the inability to move and sporadic EEG hypersynchrony at moderately high doses (0.10 and 0.20 mg/kg); and excitement, profound catatonia with maintained neck muscular tone, and intermittent hypersynchrony at higher doses (20–50 mg/kg). Furthermore, there has been evidence of ketamine-based anesthesia influence on severe renal insufficiency, liver injury followed by acute liver failure. Having in mind the aim of this review was to summarize the most important aspects of the clinical pharmacology of ketamine, with the breed-specific peculiarities of Sphynx cats, to provide some explanations for the recently lethal outcomes.

Keywords: cats, Sphynx, ketamine, pharmacology, clinics, treatments.

EFFECTS OF ESSENTIAL OIL IN MYCOPLASMA (*Mycoplasma synoviae*) THERAPY AND TABLE EGGS QUALITY OF LAYING HENS

Nikola PUVAČA¹

¹University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Department of Engineering Management in Biotechnology, Novi Sad, Serbia.

¹ORCID ID: <https://orcid.org/0000-0002-5500-7010>

Erinda LIKA²

²Agricultural University of Tirana, Faculty of Veterinary Medicine, Tirana, Albania.

²ORCID ID: <https://orcid.org/0000-0003-1107-5967>

Vojislava BURSIC³

³University of Novi Sad, Faculty of Agriculture, Novi Sad, Serbia.

³ORCID ID: <https://orcid.org/0000-0001-8331-095X>

Aleksandra PETROVIĆ⁴

⁴University of Novi Sad, Faculty of Agriculture, Novi Sad, Serbia.

⁴ORCID ID: <https://orcid.org/0000-0001-7731-9077>

Gorica VUKOVIĆ⁵

⁵University of Belgrade, Faculty of Agriculture, Zemun, Serbia.

⁵ORCID ID: <https://orcid.org/0000-0003-2030-5488>

ABSTRACT

Table eggs are the most consumed food of animal origin, but hens treated with antibiotics may produce eggs contaminated with antibiotic residues. In some cases, antibiotic residues can pose a risk to consumer health. Because laying hens often contract *Mycoplasma* (*Mycoplasma synoviae*), which requires antibiotic treatment, high-quality egg production is even more challenging. Our research aimed to investigate the influence of three different antibiotics compared to the tea tree (*Melaleuca alternifolia*) essential oil administered to naturally infected laying hens with *M. synoviae*, on antibiotic residues in eggs as well as the egg nutritive and sensory qualities. A total of 20,000 laying hens, housed in one facility and divided into four lines each consisting of 5000 hens naturally infected with *M. synoviae*, was used. For the antimicrobial therapy, tetracycline (TC), oxytetracycline (OTC) and chlortetracycline (CTC) were used, respectively. As a control, tea tree essential oil (TT) was used. Based on the gained results all tetracyclines treatment residue values were significantly ($p < 0.05$) higher compared to the control treatment (TT), but without any significant differences ($p > 0.05$) between themselves. The results showed no differences in the nutritive and the sensory qualities of eggs between the control and the experimental treatments ($p > 0.05$). Based on the results of this study, it can be concluded that tea tree essential oil could be used as a natural antibiotic for treating *M. synoviae* without negatively impacting the quality of table eggs.

Keywords: eggs, health, antibiotics, residues, essential oils, tetracyclines, hens.

CONCEPTUALISING SUSTAINABLE DEVELOPMENT OF AGRICULTURAL ECONOMICS IN EUROPEAN UNION FRAMEFORK

Marija SUDAR¹

¹University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Serbia.

¹ORCID ID: <https://orcid.org/0000-0001-6809-1883>

Nikola PUVAČA²

²University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Serbia.

²ORCID ID: <https://orcid.org/0000-0002-5500-7010>

Marko CARİĆ³

³University Business Academy in Novi Sad, Faculty of Economics and Engineering Management in Novi Sad, Serbia.

³ORCID ID: <https://orcid.org/0000-0001-5683-3819>

ABSTRACT

If the European Union (EU) is to take advantage of the growing food and fiber needs of a population estimated to reach 440.9 million in 2026, then gradually decline to 441.2 million in 2050, it must develop a sustainable and resilient agribusiness sector. There are several threats within the EU context, including a dynamic climate, changing demographics of EU regions, currency fluctuations, and the reality of being a price taker in a global market. Several mechanisms are available to support agribusinesses in mitigating these threats under the current policy environment (Research and development investments, infrastructure investments, measures to improve access to and competitiveness of markets, as well as more options to support agriculture), it does not contemplate the relative readiness of individuals and businesses to act on the interventions of government. To refocus the policy framework and environment on outcomes that individuals and businesses value, this paper proposes an approach called the capabilities approach (CA). Developing, designing, and evaluating agribusiness policy can be supported by these conceptual models. In our conceptual model, the realization that the primary focus lies on achieving the outcomes valued by agribusinesses is fundamental. This recognition should be taken into account both within the constraints of the resource base as well as the capabilities of agribusiness owners to achieve valued results.

Keywords: policy, resilient, sustainable, agriculture.

***Artemisia annua* L. UÇUCU YAĞININ ANTIÖKSİDAN, ANTİBAKTERİYEL VE ANTİFUNGAL ÖZELLİKLERİ**

Artemisia annua L. OF ESSENTIAL OIL ANTIOXIDANT, ANTIBACTERIAL AND ANTIFUNGAL PROPERTIES

Doç. Dr. Oktay TOMAR¹

¹Kocaeli Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Kocaeli, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0001-5761-7157>

Öğr. Gör. Bahar SANCAR²

²Kocaeli Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Kocaeli, Türkiye.

²ORCID ID: <https://orcid.org/0000-0002-3687-1495>

ÖZET

Artemisia L., kuzey ılıman bölgelerde bulunan sert otsu ve çalimsı bir bitki cinsidir. *Artemisia*, çeşitli etki biçimleriyle çalışan aktif bileşenlerin veya ikincil metabolitlerin varlığı nedeniyle geniş bir biyoaktivite spektrumuna sahiptir. *Artemisia annua* L., Geleneksel Çin Tıbbi'nde kullanılan ve diğer birçok ülkede de doğallaştırılmış bir tıbbi bitkidir. Yüzyıllardır başta sıtma olmak üzere bulaşıcı hastalıkların tedavisinde kullanılan güçlü bir terapötik ajan olan artemisinin kaynağı birçok amaç için kullanılmaktadır. Bitkinin aktif bileşenlerinden olan artemisinin antioksidan, antibakteriyel, antifungal, antitümör ve antiinflamatuvar aktiviteye sahip olduğu bilinmektedir. Uçucu yağlar; bitkilerin tüm bölümleri ya da toprak üzerinde kalan bölümünde (herba) yer almakta ve kimyasal açıdan; poli-propanooidler, aromatik bileşikler ve seskiterpenlerden oluşmaktadır. *A. annua* uçucu yağı ise, mono ve seskiterpenler açısından zengindir ve tıbbi özelliklere sahip bir yan ürünü temsil etmektedir. Bunun yanı sıra, *A. annua* 'nın uçucu yağının yüzdesi ve bileşiminde önemli farklılıklar rapor edilmiştir (ana bileşenler; artemisia ketone (% 68'e kadar), 1,8 cineole (en fazla % 51.5'e kadar), kafur (% 48'e kadar) ve germacrene D (% 18.9'a kadar) olabilir). Uçucu yağlardan elde edilen önemli farklılıklar sayesinde antibakteriyel ve antifungal aktivitelerini destekleyen çok sayıda çalışma yapılmıştır. Bitkilerin çoğu, antimikrobiyal aktivite gösterdikleri için belirli hastalıkları tedavi etme amacıyla kullanılmıştır. *Artemisia* cinsine ait bitkilerden elde edilen uçucu yağların fenolik olmayan bileşenler açısından oldukça zengin olduğu bilinmektedir. Bu nedenle *A. annua* uçucu yağının antioksidan kapasite ve aktivite gösterdiğinin kanıtı olarak kabul edilmektedir. Bu durumda *Artemisia annua*'nın antibakteriyel, antifungal ve antioksidan aktivitesi üzerine birçok çalışma yapılmıştır. Bu çalışmada *A. annua* uçucu yağının; antioksidan, antibakteriyel ve antifungal aktiviteleri ile ilgili yapılan çalışmalar ve sonuçları derlenmiştir.

Anahtar Kelimeler: *Artemisia annua*, Antioksidan, Antimikrobiyal, Uçucu Yağ

ABSTRACT

Artemisia L. is a hardy herbaceous and shrubby plant species found in northern temperate regions. *Artemisia* has a extensive spectrum of bioactivity due to the availability of diverse effective constituents or minor metabolites that study with forms of activity. *Artemisia annua* L. is a therapeutic plant used in Conventional Chinese Medicine and nated in many other countries. The source of artemisinin, which is a powerful therapeutic agent used for centenaries in the therapy of contagious diseases, especially malaria, is used for many aims. Artemisinin, one of the effective ingredients of the plant, is common to possess antioxidant, anti-inflammatory, antibacterial, antifungal and antitumor activities. Essential oils are found in all parts of plants or in the part remaining on the soil (herba) and are chemically formed of poly-propanooides, aromatic compounds and sesquiterpenes. The essential oil of *A. annua* is affluent in mono- and sesquiterpenes. This represents a by-product with therapeutical

properties. In addition, important diversity have been reported in the composition and percentage of *A. annua* of essential oil (main components; artemisia ketone (up to 68%), 1.8 cineoles (up to 51.5%), camphor (up to 48%) and germacrene D (up to 18.9%)). Numerous studies have been acted to support their antibacterial and antifungal activities, thanks to the significant differences from essential oils. The plants many of have been used to treat specific diseases because they indicate antimicrobial activity. It is known that essential oils obtained from plants belonging to the *Artemisia* genus are quite rich in terms of non-phenolic components. For this reason, it is accepted as evidence that essential oil of *A. annua* shows antioxidant capacity and activity. Many studies have been acted to determine the antioxidant, antifungal and antibacterial activity of *Artemisia annua*. In this study, studies and results related to antifungal, antibacterial and antioxidant activities of *A. annua* essential oil were compiled.

Keywords: *Artemisia annua*, Antioxidant, Antimicrobial, Essential Oil

BİTKİ BAZLI PROTEİNLER PLANT BASED PROTEINS

Öğr. Gör. Bahar SANCAR¹

¹Kocaeli Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Kocaeli, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0002-3687-1495>

Doç. Dr. Oktay TOMAR²

²Kocaeli Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Kocaeli, Türkiye.

²ORCID ID: <https://orcid.org/0000-0001-5761-7157>

Prof. Dr. Abdullah ÇAĞLAR³

³Kocaeli Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Kocaeli, Türkiye.

³ORCID ID: <https://orcid.org/0000-0001-7216-8361>

ÖZET

Artan insan nüfusu ve sınırlı arazi kaynakları nedeniyle daha fazla besin kaynağına ihtiyaç duyulmaktadır. Bundan dolayı, hayvan bazlı proteinlere alternatif bir besin kaynağı olarak bitki bazlı proteinlerin geliştirilmesi yetersiz beslenme ve gıdaya ulaşım konusunda büyük ölçüde önem taşımaktadır. Bitki bazlı protein, bitkisel gıdalarda bulunan proteini ifade etmektedir. Bütün bitkisel besinler bir miktar protein içermekte ancak bazı bitkiler daha yüksek seviyelerde protein içermektedir. Baklagiller (nohut, siyah fasulye, mercimek, soya ve soya ürünleri vb.), sert kabuklu yemişler ve tohumlar genellikle daha yüksek proteinli bitki besinleri olarak görülmektedir. Tahıllar yüksek miktarda, meyve ve sebzeler tipik olarak en az miktarda protein içermekte ancak bazı sebzeler yüksek protein içermektedir. Bitki bazlı proteinler son derece besleyici olup sadece iyi protein kaynağı olarak değil aynı zamanda yüksek oranda lif içermekte ve vitaminler ve mineraller bakımından da zengindir. Son yıllarda, yenilenebilir ve sürdürülebilir bitki bazlı protein kaynaklarına olan ilgi giderek artmaktadır. Bunun nedenleri şu şekilde sıralanabilmektedir; artan nüfusa bağlı olarak yetersiz beslenmenin önlenmesi, düşük maliyetli, çevre dostu ve sürdürülebilir olması, hayvansal proteinin uzun süre kullanımı obezite, yüksek tansiyon ve olumsuz etkilere sahip olması ve son zamanlarda giderek artan vejetaryen beslenme biçiminin benimsenmesi şeklindedir. Bitki bazlı proteinin tüketilmesi, hastalık riskini azaltmakta, belirli kanser türlerine karşı koruma sağlamakta ve kilo yönetimi gibi birçok faydaları bulunmaktadır. Bitki bazlı proteinler hem gıda hem de ilaç endüstrilerinde yaygın olarak kullanılmaktadır. Bitki bazlı proteinler, işleme sırasında çevreye duyarlıdır ve bu durum proteinin bozulmasına yol açabilmekte ve çözünürlük gibi fonksiyonel özelliklerini etkileyebilmektedir. Bu çalışmada bitki bazlı proteinler, kullanımı, beslenmedeki yeri ve önemi, bitkilerdeki protein içerikleri hakkındaki bilgiler derlenmiştir.

Anahtar Kelimeler: Protein, Bitki Bazlı Protein, Beslenme

ABSTRACT

More food sources are needed due to the increasing human population and limited land resources. Therefore, the development of plant-based proteins as an alternative nutritional source to animal-based proteins is of great importance in terms of malnutrition and access to food. Plant-based protein refers to the protein found in plant foods. All plant foods contain some protein, but some plants contain higher levels of protein. Legumes (chickpeas, black beans, lentils, soy and soy products, etc.), nuts and seeds are generally seen as higher protein plant foods. Grains are high in protein, fruits and vegetables typically contain the least amount of protein, but some vegetables are high in protein. Plant-based proteins are

highly nutritious and not only a good source of protein, they are also high in fiber and rich in vitamins and minerals. In recent years, there has been an increasing interest in renewable and sustainable plant-based protein sources. The reasons for this can be listed as follows, prevention of malnutrition due to the increasing population, low cost, environmentally friendly and sustainable, long-term use of animal protein has obesity, high blood pressure and negative effects, and the adoption of a vegetarian diet, which has been increasing recently. Consuming plant-based protein has many benefits, such as reducing the risk of disease, protecting against certain types of cancer, and weight management. Plant-based proteins are widely used in both the food and pharmaceutical industries. Plant-based proteins are environmentally sensitive during processing, which can lead to protein degradation and affect its functional properties such as solubility. In this study, information about plant-based proteins, their use, their place and importance in nutrition, and protein content in plants have been compiled.

Keywords: Protein, Plant Based Protein, Nutrition

TIBBİ AROMATİK BİTKİLER VE UÇUCU YAĞLAR MEDICINAL AROMATIC PLANTS AND ESSENTIAL OILS

Doç. Dr. Oktay TOMAR¹

¹*Kocaeli Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Kocaeli, Türkiye.*

¹ORCID ID: <https://orcid.org/0000-0001-5761-7157>

Öğr. Gör. Bahar SANCAR²

²*Kocaeli Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Kocaeli, Türkiye.*

²ORCID ID: <https://orcid.org/0000-0002-3687-1495>

ÖZET

Bitkiler genellikle oksijen kaynağı olmasının yanı sıra, ilaç, gıda, giyim, süs ve dekoratif, parfümeri, kozmetik ve yapı malzemelerinin kaynağı olarak bilinmektedir. Aynı zamanda bitkiler birçok bileşiğin kaynağı olarak bilinen sekonder metabolitleri içermesinden dolayı tıbbi ve farmasötik uygulamalarda yer almaktadır. Tıbbi ve farmasötik uygulamalarda kullanılan tıbbi aromatik bitkilerin birçoğu uçucu yağlar açısından zengin olup, bazı hastalıkların önlenmesinde ve tedavisinde kullanılmaktadır. Aynı zamanda bu bitkiler tıbbi ve farmasötik uygulamalarda alternatif bir tedavi yöntemi sunmaktadır. Uçucu yağlar, tıbbi aromatik bitkilerin uçucu kısmından elde edilen uçucu kokulu yağlar ve ikincil metabolitlerdir. Koku endüstrisinde yaygın olarak kullanılmaktadır. Aromaterapi, uçucu yağların katkıda bulunduğu belirli koku notalarının iyileştirici güçlere sahip olduğuna inanılan alternatif bir ilaçtır. Ayrıca, sentetik koruyucuların kullanılması riskinden dolayı, gıda ürünlerinin raf ömrünü uzatmak için doğal katkı maddeleri olarak uçucu yağların kullanımına olan ilgi giderek artmaktadır. Uçucu yağların bileşimini terpenik ve terpenik olmayan uçucu bileşikler oluşturmaktadır. Tıbbi aromatik bitkilerden ekstrakte edilen uçucu yağlar; yağ asitlerinin esterleri, mono ve seskiterpenler, fenilpropanoidler, aldehit alkoller ve bazı durumlarda alifatik hidrokarbonlar gibi uçucu terpenik ve terpenik olmayan bileşik sınıfları tarafından oluşturulan doğal uçucu fraksiyonlardır. Uçucu yağlar, distilasyon, presyon ve ekstraksiyon yöntemleri ile bitkinin farklı kısımlarından elde edilebilmektedir. Uçucu yağ elde etme yöntemleri, uçucu yağın kalitesini belirleyen ana faktörlerden bir tanesidir. Uçucu yağlar; antioksidan, antikanser, antiprotozoal, antimikrobiyal ve antienflamatuar, antibakteriyel, antiviral, antifungal, antiparasidal, insektisit ve farmakolojik özelliklere sahiptir. Bu özelliklerinden dolayı kozmetik, tıp, gıda ve temizlik amaçları için kullanılmaktadır. Bu çalışmada tıbbi aromatik bitkilerden elde edilen uçucu yağların genel özellikleri, bileşimi, elde edilme yöntemleri, etki mekanizmaları ve kullanım alanları ile ilgili bilgiler derlenmiştir.

Anahtar Kelimeler: Uçucu Yağ, Sekonder Metabolitler, Uçucu Yağ Bileşimleri, Ekstraksiyon Yöntemleri

ABSTRACT

Plants are generally known as a source of oxygen, as well as medicine, food, clothing, ornamental and decorative, perfumery, cosmetics and building materials. At the same time, plants are involved in medical and pharmaceutical applications because they contain secondary metabolites known as the source of many compounds. Many of the medicinal aromatic plants used in medicinal and pharmaceutical applications are rich in essential oils and are used in the prevention and treatment of some diseases. At the same time, these plants offer an alternative treatment method in medical and pharmaceutical applications. Essential oils are essential fragrant oils and secondary metabolites obtained from the volatile part of medicinal aromatic plants. It is widely used in the fragrance industry. Aromatherapy is an alternative medicine where certain fragrance notes contributed by essential oils are believed to have healing powers. Also, due to the risk of using synthetic preservatives, there is increasing

interest in using essential oils as natural additives to extend the shelf life of food products. The composition of essential oils consists of terpenic and non-terpenic volatile compounds. Essential oils extracted from medicinal aromatic plants are natural volatile fractions formed by classes of volatile terpenic and non-terpenic compounds, such as esters of fatty acids, mono and sesquiterpenes, phenylpropanoids, aldehyde alcohols, and in some cases aliphatic hydrocarbons. Essential oils can be obtained from different parts of the plant by distillation, pressing and extraction methods. Essential oil extraction methods are one of the main factors that determine the quality of essential oil. Essential oils have antioxidant, anticancer, antiprotozoal, antimicrobial and anti-inflammatory, antibacterial, antiviral, antifungal, antiparasitic, insecticidal and pharmacological properties. Because of these properties, it is used for cosmetic, medicine, food and cleaning purposes. In this study, information about the general properties, composition, production methods, mechanisms of action and usage areas of essential oils obtained from medicinal aromatic plants has been compiled.

Keywords: Essential Oil, Secondary Metabolites, Essential Oil Components, Extraction Methods

TARIMSAL ÜRETİMDE YENİLENEBİLİR ENERJİ KAYNAKLARININ KULLANIMI USE OF RENEWABLE ENERGY RESOURCES IN AGRICULTURAL PRODUCTION

Doç. Dr. Oktay TOMAR¹

¹*Kocaeli Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Kocaeli, Türkiye.*

¹ORCID ID: <https://orcid.org/0000-0001-5761-7157>

Arş. Gör. Alptekin Mert YILMAZ²

²*Kocaeli Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Kocaeli, Türkiye.*

²ORCID ID: <https://orcid.org/0000-0002-7062-4770>

ÖZET

Enerji, bir ülkenin büyüme ve ilerlemesinde en önemli faktörler arasında yer almaktadır. Tarımda üretim, işleme, taşıma, muhafaza gibi birçok aşamada fosil yakıtların yoğun kullanımı söz konusudur. Çoğu tarım makinesi, sera gazı emisyonlarına katkıda bulunan ve buna bağlı olarak iklim değişikliğini hızlandıran fosil yakıtlarla çalıştırılır. Fakat son yıllarda iklim değişikliği, savaşlar ve salgın hastalıklar sebebiyle enerji fiyatlarının artış göstermesi yenilenebilir enerji kaynaklarının önemini ortaya koymuştur. Sürdürülebilir tarım açısından önemli bir konumda yer alan yenilenebilir enerji kaynaklarının kullanımı gelecek kuşaklara yaşanabilir bir dünya bırakılmasında önemli bir yer tutmaktadır. Fosil yakıtlara aşırı bağımlılık ekonomik ve sosyal bakımdan darboğaz yaratmaktadır. Özellikle yoğun olarak fosil yakıtlara dayalı tarımsal üretim faaliyetlerinden yenilenebilir enerji kaynaklarına yönelim sonucu enerji arz güvenliği sağlanmış olacaktır. Yenilenebilir enerji kaynakları, işletme giderlerinin azaltılmasında, fosil enerjiye ihtiyacın azaltılmasında, elektriksel güce aşırı talebin azaltılmasında, petrolün sürdürülebilirliği konusundaki endişelerden ve tedarik risklerinden dolayı oldukça önemlidir. Yenilenebilir enerji kaynakları arasında yer alan jeotermal enerji, güneş enerjisi, biyokütle enerjisi, rüzgar enerjisi ve hidro enerji tarım sektöründe kullanılmaktadır. Bu yenilenebilir enerji kaynaklarının kullanım alanları arasında sulama, ilaçlama, ısıtma ve soğutma, havalandırma, gıda kurutma ve biyoyakıt üretimi yer almaktadır. Bu kapsamda tarım sektöründe jeotermal enerji, güneş enerjisi, biyokütle enerjisi, rüzgar enerjisi ve hidro enerjinin kullanım alanlarına yer verilmiştir. Araştırma sonuçlarına göre fosil yakıtların aşırı kirlilik yarattığı, en fazla kirlilik yaratan fosil yakıtın ise kömür olduğu tespit edilmiştir. Fosil yakıtların aksine yenilenebilir enerji kaynaklarının yarattığı kirlilik ise oldukça düşük seviyededir. Araştırma önerilerine göre biyoyakıt üretiminde kullanılan tarımsal ürünlerin üretim alanlarının genişletilmesi tavsiye edilmektedir. Ayrıca jeotermal enerji potansiyeli oldukça yüksek olan Türkiye'nin bu potansiyeli tarımsal üretimde değerlendirmesi gerektiği düşünülmektedir.

Anahtar Kelimeler: Tarımsal Üretim, Yenilenebilir Enerji, Sürdürülebilirlik

ABSTRACT

Energy is among the most important factors in the growth and progress of a country. Fossil fuels are used extensively in agriculture at many stages such as production, processing, transportation, and preservation. Most agricultural machinery is powered by fossil fuels, which contribute to greenhouse gas emissions and, in turn, accelerate climate change. However, the increase in energy prices due to climate change, wars, and epidemics in recent years has revealed the importance of renewable energy sources. The use of renewable energy sources, which is in an important position in terms of sustainable agriculture, has an important place in leaving a livable world to future generations. Excessive dependence on fossil fuels creates economic and social bottlenecks. Energy supply security will be ensured as a result of the trend towards renewable energy sources, especially from agricultural production activities based on fossil fuels. Renewable energy sources are very important in reducing

operating costs, reducing the need for fossil energy, reducing excessive demand for electrical power, concerns about the sustainability of oil, and supply risks. Geothermal energy, solar energy, biomass energy, wind energy, and hydro energy, which are among the renewable energy sources, are used in the agricultural sector. The usage areas of these renewable energy sources include irrigation, spraying, heating and cooling, ventilation, food drying, and biofuel production. In this context, the usage areas of geothermal energy, solar energy, biomass energy, wind energy, and hydro energy in the agricultural sector are included. According to the results of the research, it has been determined that fossil fuels create excessive pollution, and the fossil fuel that creates the most pollution is coal. Contrary to fossil fuels, the pollution created by renewable energy sources is at a very low level. According to the research proposals, it is recommended to expand the production areas of agricultural products used in biofuel production. In addition, it is thought that Turkey, which has a very high geothermal energy potential, should utilize this potential in agricultural production.

Keywords: Agricultural Production, Renewable Energy, Sustainability

EVALUATION OF SALMONELLA CONTAMINATION IN VARIOUS COMMERCIAL CANINE FOOD IN IRAN

Arezoo ALLAMEH HAERI¹, Ehsan KHAKSAR^{2,}, Iradj ASHRAFI TAMAF³*

¹ *Department of Microbiology, Faculty of Veterinary Medicine, Garmsar Branch, Islamic Azad University, Garmsar, Iran.*

² *Department of Clinical Sciences, Faculty of Veterinary Medicine, Garmsar Branch, Islamic Azad University, Garmsar, Iran*

³ *Department of Microbiology, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran.*

ABSTRACT

Salmonella is one of the most important disease common between humans and animals. In recent years, the lack of accurate monitoring in the production of commercial dog food has led to foodborne disease throughout the world. There have been numerous reports of salmonella infection in humans associated with pet treats of animal origin.

The main objective of this study is to determine the degree of salmonella contamination in commercial dog treats on sale for the first time in Iran.

120 specimens of pet treat for dog were tested over a nine months period, (December 2019 to August 2020), using conventional culture detection methods and PCR method.

Salmonella Infantis was isolated from 2 (1.6%) out of the 120 pet treats.

This study underlines that all of the animals, pet owners and veterinarians are at the high risk of salmonellosis associated with dog treats.

Keywords: BARF, PCR, Salmonella Infantis

ENHANCED PRODUCTION OF PHYTASE FROM *Aspergillus oryzae* IN SOLID STATE FERMENTATION AND ITS UTILITY IN IMPROVING FOOD NUTRITION

Bijender Singh^{1,2} and Pragya¹*

¹Laboratory of Bioprocess Technology, Department of Microbiology, Maharshi Dayanand University, Rohtak- 124001, Haryana, India.

²Department of Biotechnology, Central University of Haryana, Jant-Pali, Mahendergarh-123031, Haryana, India

ABSTRACT

Microbial phytases have attracted both scientists and farmers as undigested food-phytates are released into environment leading to pollution and algal blooms in water bodies. Microbial phytase have improved bioavailability of nutrients in food and feed ingredients. We have studied the production of protease-resistant and thermostable phytase from *Aspergillus oryzae* SBS50 in solid state fermentation using mixed substrate i.e. wheat bran and rice straw. Placket-Burman design identified glucose, Tween 80, moisture ratio and magnesium sulphate as significant factors affecting phytase production by the mould. Further optimization using response surface methodology, approx. 2.29-fold increase in phytase production was obtained. *Aspergillus oryzae* SBS50 phytase was immobilized on Ca-alginate matrix that exhibited more stability at high temperatures and better storage stability as compared to free enzyme. Immobilized phytase hydrolyzed the phytate contents in wheat and pearl millet flours with concomitant improvement in nutritional quality of these flours. The important findings of this investigation will be discussed.

STRUCTURE-BASED DRUG REPURPOSING TO INHIBIT THE DNA GYRASE OF *MYCOBACTERIUM TUBERCULOSIS*

Balasubramani G L¹, Rinky Rajput¹, Manish Gupta¹, Pradeep Dahiya², Jitendra K Thakur², Rakesh Bhatnagar³ and Abhinav Grover¹

¹*School of Biotechnology, Jawaharlal Nehru University, New Delhi - 110067.*

²*National Institute of Plant Genome Research, Aruna Asaf Ali Marg, New Delhi.*

³*Banaras Hindu University, Banaras, Uttar Pradesh-221005, India*

ABSTRACT

Drug repurposing is an alternative avenue for identifying new drugs to treat tuberculosis (TB). Although TB can be cured with anti-tubercular drugs, the emergence of multidrug-resistant and extensively drug-resistant strains of *Mycobacterium tuberculosis* H37Rv (Mtb), as well as the significant death toll globally, necessitate the development of effective drugs to treat TB. In this study, drug repurposing approach was employed to address this drug resistance problem by screening drugbank database to identify novel inhibitors of the Mtb target enzyme, DNA gyrase. The compounds were screened against the ATPase domain of gyrase B subunit (MtbGyrB47), and the docking results showed Echinacoside, Doxorubicin, Epirubicin, and Idarubicin possess high binding affinities against MtbGyrB47. Comprehensive assessment using fluorescence spectroscopy, SPR, and CD titration studies revealed that Echinacoside as a potent binder against MtbGyrB47. Further, ATPase, and DNA supercoiling assays exhibited IC₅₀ values of 2.1-4.7 μ M for Echinacoside, Doxorubicin, Epirubicin, and Idarubicin. Among these compounds, the least MIC₉₀ of 6.3 μ M and 12 μ M were observed for Epirubicin and Echinacoside, respectively. Hence, our findings indicate that Echinacoside and Epirubicin target mycobacterial DNA gyrase, inhibit its catalytic cycle, and retard mycobacterium growth. Further these compounds exhibits potential scaffolds for optimizing novel anti-mycobacterial agents that can act on drug-resistant strains.

Keywords: ATP hydrolysis, ATPase, DNA gyrase, DNA supercoiling, drug repurposing, *Mycobacterium tuberculosis*

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DIVERSITY OF PHORETIC MITES LIVING IN THE BODIES OF SPRUCE BARK BEETLES, IN ROMANIA

Minodora Manu¹, Marilena Onete¹

¹Romanian Academy, Institute of Biology Bucharest, Department of Taxonomy, Ecology and Nature Conservation, street Splaiul Independenței, no. 296, zip code 0603100, PO-BOX 56-53, fax 040212219071, tel. 040212219202, Bucharest, Romania

ABSTRACT

The objectives of this study is to determine the species diversity of the phoretic mites collected from *Ips typographus* and to undertake a comparative analysis of the phoretic mite communities from natural and planted Norway spruce stands from Romania.

Methods: Twelve spruce stands were investigated located in the South-Western Romania, in 2013. The study area includes 70-120 year old Norway spruce stands, plantation (RM) or natural forests (OR). For beetle collecting twelve barrier pheromone AtraTYP PLUS traps were used. The phoretic mites were collected from the body surface, under elytra and from elytra declivity. The statistical analysis was performed with PAST software.

Results: In total 1421 individuals of *Ips typographus* were captured and examined of these 42.08% had been colonized by mites. In the natural spruce stands, 666 individuals bark beetle were identified, with a mean of 111 ± 28.08 individuals per site of which only 41.44 % had been colonized by mites. The mean number of *Ips typographus* per site that contained mites was 46 ± 14.11 . In the planted forests, 755 individual bark beetles were found (with a mean number of 125.83 ± 36.71 per site); 42.64% were colonized by mites, with a mean value of 53.66 ± 21.82 per site.

Conclusions: Seven Mesostigmata mite species were identified in natural and planted Norway spruce stands in Romania. The dominant species was *Dendrolaelaps quadrisetus* accompanied in the planted forest stands by *Trichouropoda polytricha* and *Uroobovella ipidis*. The comparative analysis of phoretic mite communities from natural and planted Norway spruce stands in Romania revealed that on the one hand there are no significant differences in species diversity and numerical abundance but on the other hand there are differences in the species composition and the affiliation of species to the different dominance classes.

Key words: forest, mite, phoretic, spruce.

TREATMENT OF PRIMARY TRIGEMINAL NEURALGIA: A COMPARATIVE STUDY OF MICROVASCULAR DECOMPRESSION SURGERY AND STEREOTACTIC GAMMA KNIFE RADIOSURGERY

Dr. Moneer K. Faraj

M.B.Ch.B, FICMS, FACS, FICS, IFAANS

Assistant Professor Of Neurosurgery

College of Medicine, University Of Baghdad

Dr. Bassam Mahmood Flamerz Arkawazi

M.B.Ch.B. F.I.C.M.S

Assistant Professor Of Neurosurgery

Alkindy College Of Medicine, University Of Baghdad

ABSTRACT

Objectives: To compare the clinical efficacy of microvascular decompression surgery (MVD) and gamma knife radiosurgery (GKR) as a treatment for patients with primary trigeminal neuralgia (TN) and evaluate the outcome regarding pain relief, recurrence, and complications with both modalities of treatment.

Patients and Methods: A randomized prospective study conducted in The Neurosciences Hospital, Baghdad, Iraq. Eighty-four patients with TN from January 2016 to January 2018, 45 patients had GKR while 39 patients treated with MVD. The pain evaluated pre- and post-operatively using the Barrow Neurological Institute Pain Intensity scale (BNIPI), visual analog scale (VAS) and Brief Pain Inventory Facial (BPI-Facial) scoring systems. In GKR procedure, the trigeminal root entry zone targeted with a radiation dose of 80 Gy. MVD was performed using retro-sigmoid approach. Follow-up period was two years.

Results: Both groups showed a considerable decrease in BNIPI scores and VAS scores in the postoperative two years follow-up compared with the preoperative scores with a P -value <0.01 . However, pain relief rate was significantly higher in the MVD group (92.3%) compared to that of GKR groups (73.3%) with a P value of 0.02. Postoperative VAS scores of the MVD group were remarkably lower as compared with those treated with GKR during the same postoperative time. ($P=0.01$).

Conclusion: GKR and MVD offered safe and efficient treatment options. MVD remains the standard surgical method of treatment for patients with TN with better pain relief rate, lesser pain recurrence rate and faster response than GKR.

Keywords: Gamma knife radiosurgery, Microvascular decompression surgery, Stereotactic radiosurgery, Trigeminal neuralgia.

BREEDING WITHOUT BREEDING: THE SECOND GENERATION

Yousry A. El-Kassaby¹, Eduardo P. Cappa², Blaise Ratcliffe¹, Charles Chen³, Milan Lstiburek⁴

¹*Faculty of Forestry, The University of British Columbia, Vancouver, BC, Canada*

²*Instituto Nacional de Tecnología Agropecuaria (INTA), Instituto de Recursos Biológicos, Centro de Investigación en Recursos Naturales, Buenos Aires, Argentina*

³*Department of Biochemistry and Molecular Biology, Oklahoma State University, Oklahoma, USA*

⁴*Faculty of Forestry and Wood Sciences, Czech University of Life Sciences, Prague, Czech Republic*

ABSTRACT

Forest tree improvement programs suffer from protracted breeding cycles measured in decades. El-Kassaby and Lstiburek (Genet. Res. 2009) and El-Kassaby et al (PLOS ONE 2011) introduced the “Breeding without Breeding (BwB)” concept, where the breeding phase needed to create a structured pedigree for genetic parameters estimation, is assembled through pedigree reconstruction with the SSRs molecular markers (i.e., *A-matrix*). This resulted in eliminating the breeding step of the classical recurrent selection “selection-breeding-testing” phases. With the recent advances in DNA sequencing, the substantial reduction of DNA fingerprinting costs made it feasible to utilize DNA sequence data rather than SSRs for fingerprinting. DNA sequence data are advantageous compared to SSRs fingerprinting, as they do not only unravel the contemporary pedigree among mating individuals, but also unveil their historic genomic relationship (i.e., genealogical relationships and identity-by-descent), thus linking tested individuals (i.e., *G-matrix*). Here, using data from interior spruce and eucalyptus progeny testing trials, we present examples of the *G-matrix* application superiority by comparing the generated theoretical accuracies of breeding values, resulting in capturing higher genetic gain. We implemented a multi-trait, multi-site analytical approach to compare various SNP selection schemes and clearly demonstrate the unprecedented advantages of such approach.

Key Words: Tree breeding, DNA fingerprinting, pedigree reconstruction, contemporary and genomic relationships, breeding value

THE CURRENT STATE OF THE TECHNOLOGY FOR THE PRODUCTION OF OXYSTABLE COMPOSITIONS OF VEGETABLE OILS FOR FUNCTIONAL NUTRITION

Mukhametov Almas

Kazakh National Agrarian Research University, Faculty of Technology and Bioresources

Almaty, Kazakhstan

ORCID ID: <https://orcid.org/0000-0002-3615-1869>

Kazhymurat Asemay

Kazakh National Agrarian Research University, Faculty of Technology and Bioresources

Almaty, Kazakhstan

ORCID ID: <https://orcid.org/0000-0001-5359-5528>

ABSTRACT

Oxidative stability is an important parameter for evaluating the shelf life of oils and fats. It is largely influenced by fatty acid composition and the level of minor constituents such as tocopherols, free fatty acids.

In this regard, it is necessary to study the trend and the current state of the research on the technology of oxidative stability of vegetable oil compositions.

The aim of the research is to solve a set of scientific and practical problems aimed at developing the technology of oxystable compositions of vegetable oils for functional nutrition.

The work was carried out within the framework of program-targeted financing of the Ministry of Agriculture of the Republic of Kazakhstan for 2021-2023. IRN - BR10764977.

According to the analysis, it can be seen that at present the market offers a variety of developments in the technology of oxystable compositions of vegetable oils for functional nutrition. But patent and literature data indicate that the studied natural and synthetic antioxidants do not always effectively inhibit the processes of oxidation and oxidative degradation of vegetable oil lipids.

Thus, the search for effective methods and compositions that can significantly increase the oxidative stability and extend the shelf life of vegetable oil and products containing it is still relevant.

Having studied the trends in the vegetable oil market and made an analysis of literary patent sources, we came to the decision to develop a technology for oxystable compositions for functional nutrition from flaxseed oil with the addition of local Kazakh vegetable safflower oil to provide more effective antioxidant protection.

The raw materials selected for work are directed to further research on the study of the chemical composition, as well as the possibility of their use in the technological process.

The analysis of literature data indicates the relevance and need to continue and strengthen the direction of research on the development of technology for oxystable compositions for functional nutrition with their possible introduction to the market of Kazakhstan.

Keywords: vegetable oils, oxystability, linseed oil, safflower oil

DEVELOPMENT AND CHARACTERIZATION OF A MULBERRY SAUCE

Liana C. Salanță, Maria Tofană, Carmen R. Pop, Anamaria Pop, Anca C. Fărcaș

Department of Food Science and Department of Food Engineering, Faculty of Food Science and Technology, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Romania

ABSTRACT

Mulberry (*Morus alba* L., *Morus nigra* L.) belongs to the Moraceae family and is highly valued and consumed worldwide. Mulberry fruits are generally consumed as fresh fruits, jams, and juices. In the last years, the pharmacological properties of mulberry fruits were highlighted in many papers. The aim of this study was to evaluate the biologically active compound content in the mulberry fruits and to develop a new food product. The samples were collected from two locations (Bistrita and Cluj county). All fruits were picked at the biologically ripe stage. The mulberries were harvested randomly according to shape and color uniformity. After picking, the fruits were divided into three categories for further process (fresh, dryer, and frozen). The antioxidant capacity, vitamin C, polyphenols and flavonoids content were quantified by using spectrophotometry. The total phenolic content ranged from 81.65 to 442.22 mg GAE/100g in the fruit samples and was 132.48 mg GAE/100g for the product obtained. The radical scavenging capacity ranged between 13.43-91.68% for the mulberries fruits and 40.58 % for the sauce. Total phenolic content was found to be notably higher in the case of the black fruit extracts. In this regard, the black fruits were used for the development of a food product. The barbeque sauce obtained can be used both for glazing, chops, thighs, especially juicy ribs before frying, and as an authentic Romanian sauce after cooking. The results obtained in this study demonstrate that the barbeque sauce can be used as a valuable source of phenolic compounds with bioactive potential, with practical applications in the food industry and gastronomy.

Keywords: Mulberry (*Morus alba*, *Morus nigra*), Polyphenols, Bioactive compounds

DETERMINING THE STAGE OF *ANAPLASMA MARGINALE* INFECTION IN FIELD BLOOD SAMPLES FROM CATTLE USING REAL-TIME PCR: HAEMATOLOGY AND SERUM BIOCHEMISTRY FINDINGS

Onyinyechukwu Ada AGINA^{1,2}

¹University of Nigeria, Faculty of Veterinary Medicine, Enugu State, Nigeria.

¹ORCID ID: <https://orcid.org/0000-0003-4486-8306>

Mohd Rosly SHAARI³

³Malaysian Agricultural Research and Development Institute, Serdang, Selangor, Malaysia.

Nur Mahiza Md ISA²

²Universiti Putra Malaysia, Faculty of Veterinary Medicine, Serdang, Selangor, Malaysia

Mokrish AJAT²

²Universiti Putra Malaysia, Faculty of Veterinary Medicine, Serdang, Selangor, Malaysia

Mohd Zamri SAAD²

²Universiti Putra Malaysia, Faculty of Veterinary Medicine, Serdang, Selangor, Malaysia.

Hazilawati HAMZAH²

²Universiti Putra Malaysia, Faculty of Veterinary Medicine, Serdang, Selangor, Malaysia.

ABSTRACT

Anaplasma marginale is the causative agent of bovine anaplasmosis and it is transmitted by the ixodid tick, *Rhipicephalus spp.* It is an obligate intracellular gram-negative bacterium which resides within the cytoplasm of blood cells and infects endothelial cells. In field conditions, researchers find it difficult to determine the stage of blood pathogen infections hence, the use of real-time PCR (RT-PCR) to quantify the parasite gene copy numbers. A total of 130 blood samples were obtained from Malaysian cattle. Genomic DNA was extracted from whole blood using the DNeasy® Blood and Tissue kit. Haematology and serum biochemistry analyses were performed using automated haematology and chemistry analysers. Real-time PCR amplification was performed using 2x SensiFast SYBR® Hi-ROX mix, forward and reverse DNA primer sequences (Forward 5'-AAGGCGAGGAGCTGTTTAAG-3' and Reverse 5'-CTACTGCCTCACAAGGACGA-3') targeting MSP5 gene of *Anaplasma marginale*, 100ng of template DNA and molecular grade water using previously reported thermal cycling conditions. A melt curve was generated to verify the specificity of the amplifications. *Anaplasma marginale* was detected in 49/130 (37.8%) cattle, and its melt curve showed a single PCR product with melting temperature at 82°C. Cattle showing clinical signs (pale mucous membrane, anorexia, cachexia and jaundice) had 18,110 – 14,849,590 parasite gene copy (GC)/µl while subclinical carriers had 579 – 17,593 parasite GC/µl. Haematobiochemical findings in cattle with high parasite gene copy numbers include normocytic normochromic anaemia, hyperproteinemia, degenerative left shift, anisocytosis, hyperkalaemia, hypernatremia, hyperchloridemia, hyperglobulinemia, hyperbilirubinemia due to increase in unconjugated bilirubin level, and significantly low serum urea level and high inorganic phosphate. Cattle with low parasite gene copy numbers had hyperproteinemia, degenerative left shift, hyperglobulinemia, hypernatremia, and hyperkelema. Therefore, cattle with parasite gene copy numbers between 18000 to 14000000 could be regarded as clinical or acute cases while those with GC numbers between 579 – 17000 could be regarded as subclinical cases.

Keywords: *Anaplasma marginale*, cattle, gene copy, SYBR green chemistry, haematology, serum biochemistry, quantitative PCR

YALANÇI ZƏFƏRAN ,TÜND ŞOKOLAD VƏ GÜNƏBAXAN TUMUNUN ANTİRAKDİKAL AKTİVLİYİN TƏYİNİ

Məmmədova Lalə Nail qızı

doktorant

Teymurlu Familə Fariz qızı

magistrant

Bakı Dövlət Universiteti, Bakı, Azərbaycan

ANNOTASIYA

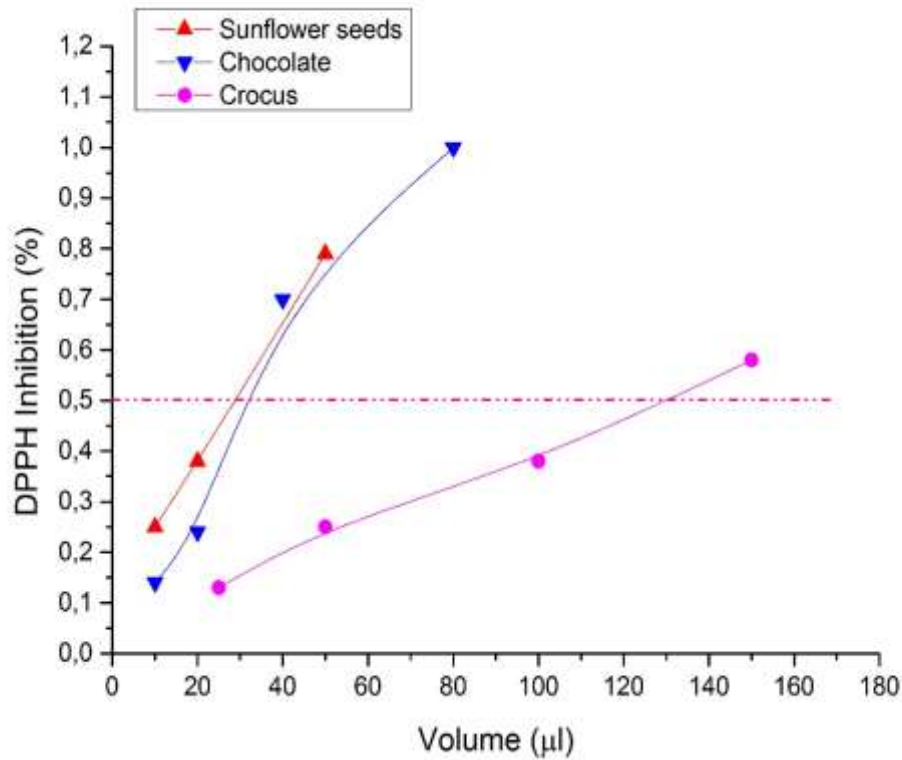
Verilmiş tədqiqat işində yalançı zəfəran,tünd şokolad və günəbaxan tumundan alınan ekstraktların antioksidant aktivliyi təyin edilmişdir. Bunun üçün tədqiqat obyektərinin DPPH metodu ilə antioksidant aktivlik faizi müəyyən edilmişdir. Əldə olunan nəticələr nümunələrin zəngin qida dəyərinin olduğu, (yalançı zəfəran,tünd şokolad və günəbaxan tumundan) ekstraktlarının güclü antioksidant xassəsinin olduğu müəyyənləşdirildi.

Açar sözlər: antioksidant, zəfəran,şokolad,günəbaxan tumu, DPPH metodu, sərbəst radikallar

İnsan orqanizminin sağlamlığının qorunmasının əsas şərtlərindən biri rasionel qidalanmadır. Rasionel qidalanmanın əsasını təşkil edən təbii bioloji aktiv maddələr, güclü antioksidant xassələrinə görə mühüm tədqiqat obyektinə çevrilmişdir [1, səh. 118]. Antioksidant birləşmələr orqanizmdə əmələ gələn sərbəst radikallara qarşı müdafiə funksiyası yerinə yetirir. Elmi ədəbiyyatda onkoloji və ürək-damar xəstəliklərinin yaranmasında oksidləşdirici stressin mühüm rolu olduğunu, rasionda antioksidantların kifayət qədər qəbul olunmadığı haqqında məlumatlar vardır [2, səh. 38]. Bu səbəbdən təbii antioksidantların tədqiqi biologiya, tibb, farmakologiya, qida sənayesi üçün mühüm əhəmiyyət kəsb edir.

Tədqiqatın məqsədi yalançı zəfəran,tünd şokolad və günəbaxan tumunun antiradikal aktivliyinin təyini və müqayisə edilməsidir. Tədqiqat zamanı yalançı zəfəran,tünd şokolad və günəbaxan tumu xırdalanaraq nümunə ekstraktları alınmış, antioksidant aktivliyinin təyini üçün DPPH metodundan istifadə olunmuş, inhibirləşmə reaksiyasının kinetik əyrisi spektrofotometrik metodla qeyd edilmişdir .

Aparılan tədqiqatlar zamanı əldə olunan nəticələr müqayisə edilmişdir .



(şək. 1).

Şək. 1. Müxtəlif həcmdə ekstraktlarının DPPH inhibirləşdirmə faizi

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STUDY OF THE CHEMICAL COMPOSITION OF POMEGRANATE SEEDS AND ITS INTRODUCTION IN EXTENSION THE SHELF LIFE OF BURGERS

Baidiaa Hafidh Mohammed, Ashraq Monir Mahmed, Aliaa Mohsen Ghadban

Department of Food Science, College of Agricultural Engineering Sciences, University of Baghdad

ABSTRACT

The study aimed to estimate the chemical composition of pomegranate seed powder and its content of protein, fat, ash, moisture and phenolic compounds (5.25, 18.23, 0.968, 4.926, 683.7), respectively. Then a aqueous extract was prepared from the pomegranate seed powder and added to the chicken meat burger product, as the aqueous extract was added to the burger mixtures with three concentrations, 0.5, 1, 1.5%. Burger after storage for 1, 2, 3, 4 weeks at a temperature of 5 ° C . the effect of the addition on the physical and sensory characteristics was studied, as well the estimation of the peroxide number and the value of malonaldehyde (TBA) for the burger samples after storage for 1, 2, 3, 4 weeks at a temperature of 5 ° C . The results showed that the addition of aqueous extract of pomegranate seeds improved the physical properties of burger nettles (Thawing Loss, change in diameter after cooking, change in thickness after cooking) compared to the control model without any addition. the value of the peroxide number, it was for the burger models of the control group and the models to which the aqueous extract was added at a rate of 0.5, 1, 1.5% immediately after manufacturing, it reached (0.85, 0.83, 0.75, 0.74) mEq, respectively. As for the values of the peroxide number after 4 weeks of Storage, it increased in the samples of the control group and the models to which the aqueous extract was added by 0.5, 1, 1.5% and it was (1.20, 1.13, 1.09 and 1.12), respectively. the value of the TBA, it was for the burger models of the control group and the models to which the aqueous extract was added at a rate of 0.5, 1, 1.5% immediately after manufacturing (0.698, 0.681, 0.682, 0.676), respectively, while the value of the TBA increased after preservation for 4 weeks at a temperature 5 ° C percentages of the burger models for the control group and the models to which the aqueous extract was added at a percentage of 0.5, 1, 1.5%, and it amounted to (1.15, 0.95, 0.982, 0.935) respectively. The results of the sensory evaluation of the burger models, there was no clear effect on the sensory characteristics of the burger, and the highest scores were obtained by the D model (containing a aqueous extract of 1.5%), and then the rest of the manufactured models came.

Key words: Pomegranate seeds, aqueous extract, burger

DOĞU ANADOLU'DA ÇİFTÇİLERİN RUMİNANT BESLEME ALIŞKANLIKLARINA İLİŞKİN BİR ANKET ÇALIŞMASI: AĞRI İLİ ÖRNEĞİ

A SURVEY STUDY ON RUMINANT FEEDING HABITS OF FARMERS IN EASTERN
ANATOLIA: A CASE OF AĞRI

Necmettin YİĞİT¹

¹Van Yüzüncü Yıl Üniveristesi, Ziraat Fakültesi, Zootečni Bölümü, Van, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0002-6957-0840>

Cemal BUDAĞ²

²Van Yüzüncü Yıl Üniveristesi, Ziraat Fakültesi, Zootečni Bölümü, Van, Türkiye.

²ORCID ID: <https://orcid.org/0000-0003-3532-7727>

ÖZET

İnsan beslenmesinde önemli yeri olan hayvansal üretim, bilgi ve üretim teknolojisinin gelişmesine paralel olarak gelişmektedir. Ancak bu gelişme düzeyi, ülke ve bölgelerin sahip oldukları çeşitli farklılıklara bağlı olarak aynı olmamaktadır. Bu çalışmada Ağrı ili ve ilçelerinde hayvancılık yapan üreticilerin sosyo-demografik özellikleri, hayvan ve arazi varlıkları ile hayvan besleme alışkanlıkları belirlenmiştir. Araştırmanın materyalini, Ağrı ili ve ilçelerinde faaliyet gösteren toplam 380 üreticiden anket yolu ile toplanan veriler oluşturmuştur. Deneklerden elde edilen verilerin MS Excel programına veri girişi yapılmış ve bu veriler kullanılarak sayısal ve oransal değerler hesaplanmıştır.

Yapılan değerlendirmede, üreticilerin %83.42'sinin erkek %16.58'minin kadın, üreticilerin yaş ortalamasının 50.53 olduğu görülmüştür. Üreticilerin eğitim durumları; okuryazar %14.74, sadece okur yazar %32.63, ilkökul mezunu %34.21, 37ortaokul mezunu %7. lise mezunu %8.42, önlisans mezunu %0.79 ve lisans mezunu %1.84 şeklindedir. Üreticilerin % 39,47'u işletmelerinde sığır, koyun ve keçiyi birlikte bulundururken, %44.47'si sadece sığır, %15.53'ü sadece koyun ve %0.53'ü sadece keçi bulundurmaktadır. Süt üretimi yapan üreticilerin %32.95'i hayvanlarına bütün yıl sadece kaba yem verdikleri belirlenmiştir. Üreticiler tarafından tercih edilen kaba yemlerin oranı; yonca %57.02, korunga %7.02, çayır otu %1.75, saman %30.70 ve diğer kaba yem çeşitleri %3.51'dir. Yoğun yem tercihleri ise şu şekildedir; arpa %39.66, buğday %12.07, mısır %3.45, kepek %12.50, fabrika yemini %32.33 olduğu görülmüştür.

Yapılan bu araştırmada bölgede; üreticilerin büyük çoğunluğunun eğitim düzeyinin düşük ve yaş oranının yüksek, kullanılan hayvan materyalinin çoğunlukla yerli ırklardan oluştuğu, her tür hayvan rasyonlarında samanın yüksek oranda kullanıldığı, meraya dayalı beslemenin ve merada kalma süresinin fazla, geleneksel bilginin yoğun olarak kullanıldığı, işletme başına düşen arazi varlığının ve hayvan sayısının az, ailedeki birey sayısının fazla olduğu sonucuna varılmıştır.

Anahtar kelimeler: Ağrı, çiftçi, hayvansal üretim, ruminant hayvanlar, yem çeşitleri.

ABSTRACT

Animal production, which has an important place in human nutrition, develops in parallel with the development of information and production technology. However, this level of development is not the same due to various differences between countries and regions. In this study, socio-demographic characteristics of animal producers, animal and land assets and animal feeding habits in Ağrı province and its districts were determined. The material of the research was the data collected by questionnaire from a total of 380 producers operating in the province of Ağrı and its districts. The data obtained from the subjects were entered into the MS Excel program and numerical and proportional values were calculated using these data.

In the evaluation, it was seen that 83.42% of the producers were male, 16.58% were female, and the average age of the producers was 50.53. Educational status of the producers; literate 14.74%, only literate 32.63%, primary school graduate 34.21%, secondary school graduate 7%, high school graduate 8.42%, associate degree graduate 0.79% and undergraduate graduate 1.84%. While 39.47% of the producers keep cattle, sheep and goat together in their enterprises, 44.47% only have cattle, 15.53% only have sheep and 0.53% only have goats. It has been determined that 32.95% of the producers producing milk only give roughage to their animals. The ratio of roughage preferred by the producers; alfalfa 57.02%, Sainfoin 7.02%, meadow grass 1.75%, straw 30.70% and other roughage

varieties are 3.51%. Intense feed preferences are as follows; barley 39.66%, wheat 12.07%, corn 3.45%, bran 12.50%, factory feed 32.33%.

In this research; It was clearly seen that the majority of the producers in the region have a low level of education and a high age ratio, the animal material used mostly consists of local breeds, the straw is used at a high rate in all kinds of animal rations, the pasture-based feeding and the duration of stay in the pasture are high, the traditional knowledge is used intensively, number of land assets and animals per farm are low and the number of individuals in the family is high.

Key words: Agri, animal production, farmer, feed types, ruminant animals.

FİDE GELİŞİM DÖNEMİNDEKİ BAZI BUĞDAY ÇEŞİTLERİNDE (*Triticum durum* L.) FİZYOLOJİK VE BİYOKİMYASAL ÖZELLİKLER ARASI KORELASYON ANALİZİ

ANALYSIS OF CORRELATION BETWEEN PHYSIOLOGICAL AND BIOCHEMICAL
PROPERTIES IN SOME WHEAT VARIETIES (*Triticum durum* L.) SEEDLING DEVELOPMENT
PERIOD

*Naşide Evvel UYAN*¹

¹Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü, Van, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0000-0000-0000>

*Erol ORAL*²

²Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü, Van, Türkiye
<https://orcid.org/0000-0001-9413-1092>

ÖZET

Bu çalışma, buğday (*Triticum aestivum* L.) çeşitlerinde farklı tuz (NaCl) dozlarının (0 mM, 150 mM ve 300 Mm) uygulamalarının bazı büyüme parametreleri ve biyokimyasal özellikler üzerine etkilerini belirlemek amacıyla yürütülmüştür. Deneme tesadüf parselleri deneme desenine göre 4 tekerrürlü olarak kontrollü şartlarda iklim odasında yürütülmüştür. Çalışmada buğday bitkisinin kök uzunluğu, gövde uzunluğu, kök yaş ağırlığı, gövde yaş ağırlığı, kök kuru ağırlığı, gövde kuru ağırlığı, yaprak alanı, klorofil miktarı, bitki sıcaklığı, yaprak dokularında iyon sızıntısı, lipid peroksidasyon düzeyi (MDA), yaprak dokularında bağıl su içeriği ve membran dayanıklılık indeksi gibi özellikler incelenmiştir. Elde edilen veriler kullanılarak yapılan korelasyon analizi sonucunda kök uzunluğu ile gövde kök yaş ağırlığı (0.395**), gövde yaş ağırlığı (0.914**), gövde kuru ağırlığı (0.523**), kök kuru ağırlığı (0.717**), yaprak alan indeksi (0.774**), klorofil oranı (0.830**), yaprak dokularında membran dayanıklılık indeksi (0.381**) olumlu pozitif korelasyon olduğu görülmüştür. Kök uzunluğu ile malodialdehid (-0.0845**) içerikleri arasındaki ilişkide ise olumsuz negatif bir ilişki tespit edilmiştir.

Anahtar Kelimeler: Buğday, korelasyon kat sayısı, tuz dozları.

ABSTRACT

This study was carried out to determine the effects of different salt (NaCl) doses (0 mM, 150 mM and 300 Mm) on some growth parameters and biochemical properties of wheat (*Triticum aestivum* L.) cultivars. The experiment was carried out in a controlled climate chamber with 4 replications according to the randomized plot design. In the study, root length, stem length, root fresh weight, stem fresh weight, root dry weight, stem dry weight, leaf area, amount of chlorophyll, plant temperature, ion leakage in leaf tissues, lipid peroxidation level (MDA), relative water in leaf tissues of wheat plant. properties such as content and membrane durability index were examined. As a result of the correlation analysis using the obtained data, root length and stem root fresh weight (0.395**), stem fresh weight (0.914**), stem dry weight (0.523**), root dry weight (0.717**), leaf area index (0.774**), chlorophyll ratio (0.830**), membrane durability index (0.381**) in leaf tissues were found to be positively correlated. There was a negative correlation between root length and malodialdehyde (-0.0845**) contents.

Keywords: Wheat, correlation coefficient, salt doses.

ETLİK CİVCİVLERİN BEYİN LİPİT PEROKSİDASYONU VE KARACİĞERDEKİ SUDA ÇÖZÜLEBİLEN ANTİOKSİDANLARIN DÜZEYLERİ ÜZERİNE EMBRİYONUN SARI KESESİNE VİTAMİN E ENJEKSİYONUNUN ETKİSİ

EFFECT OF VITAMIN E INJECTION IN YOLK SAC OF EMBRYO ON LIPID PEROXIDATION IN BRAIN AND WATER-SOLUBLE ANTIOXIDANTS LEVELS IN LIVER TISSUES IN THE BROILER CHICKS

¹*Elif BABACANOĞLU*

¹*Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Zootečni Bölümü, Van, Türkiye*

¹ORCID ID: <https://orcid.org/0000-0002-6329-315X>

²*Mehmet Reşit KARAGEÇİLİ*

²*Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Zootečni Bölümü, Van, Türkiye*

²ORCID ID: <https://orcid.org/0000-0001-8433-0397>

ÖZET

Bu çalışmada, etlik damızlık yumurtalarına in ovo vitamin E (IO vit E) enjeksiyonunun 3 günlük yaştaki civcivlerin karaciğer dokusundaki askorbik asit (vit C) ve glutatyon (GSH) düzeyleri ile beyin dokusundaki malondialdehit (MDA) konsantrasyonu üzerine etkisi incelenmiştir. Bu amaçla, toplam 160 adet kuluçkalık yumurtanın yarısına herhangi bir işlem yapılmayarak kontrol grubu oluşturulmuştur. Diğer yumurtalara 250 µl vitamin E (37.5 mg dl-α-tokoferol asetat/yumurta) solüsyonu kuluçkanın 7. gününde sarı keseye enjekte edilmiştir. Kuluçkadan çıkan civcivler ad-libitum beslenme ve standart büyüme koşullarında 3 günlük yaşa kadar yetiştirilmiştir. Üç günlük yaş tamamlandıktan sonra her gruptan rastgele seçilen 10 adet civcivin karaciğer ve beyin dokularından elde edilen ekstraktlarda beyin dokusunda lipit peroksidasyonu saptamak amacı ile MDA konsantrasyonu ile karaciğer dokusunda vit C ve GSH düzeyleri ölçülmüştür. Malondialdehit düzeyi üzerine deneme grupları arasındaki farklar önemsiz ($p=0.467$) olup kontrol grubunda 12.44 µg/g ve IO vit E grubunda 12.39 µg/g olarak MDA düzeyi saptanmıştır. Etlik civcivlerin karaciğer dokusundaki vit C düzeyi kontrol grubunda 199.14 µg/g ve IO vit E grubunda 215.79 µg/g olarak bulunmuştur. Karaciğer dokusundaki vit C düzeyi üzerine deneme grupları arasındaki fark önemsiz saptanmıştır ($p=0.544$). Karaciğer dokusundaki GSH düzeyi kontrol grubunda 963.04 µg/g ve IO vit E grubunda 850.65 µg/g olarak bulunmuş, ancak GSH düzeyi üzerine IO vit E uygulamasının etkisi önemsiz saptanmıştır ($p=0.173$). Sonuç olarak, etlik damızlık yumurtalarına in ovo vitamin E uygulamasının karaciğer dokusundaki suda çözülebilir antioksidanlar olan Vit C ve GSH düzeylerinin değişmemesi ile ilişkili olarak beyin dokusundaki lipit peroksidasyonu etkilemediği sonucu ortaya çıkmıştır.

Anahtar kelimeler: İn ovo enjeksiyon, vitamin E, etlik civciv, suda çözünen antioksidanlar, malondialdehit

ABSTRACT

In this study, the effects of in ovo vitamin E (IO vit E) injection into broiler eggs on ascorbic acid (vit C) and glutathione (GSH) levels in liver tissue and malondialdehyde (MDA) concentration in brain tissue of 3-day-old chicks were investigated. For this purpose, a control group was formed without any treatment on half of a total of 160 hatching eggs. The other eggs were injected with 250 µl of vitamin E (37.5 mg of dl-α-tocopherol acetate/egg) solution into the yolk sac on the 7th day of incubation. The hatched chicks were reared up to 3-day-old under ad-libitum feeding and standard growth conditions. At 3-day-old, 10 chicks were randomly selected each group, and MDA concentration in brain tissue for determining lipid peroxidation, and vit C, and GSH levels in liver tissue were measured. Malondialdehyde level was insignificant between experimental groups ($p=0.467$), and MDA levels were

found to be 12.44 $\mu\text{g/g}$, and 12.39 $\mu\text{g/g}$ in the control group, and IO vit E group, respectively. The vit C level in liver tissue of broiler chicks was 199.14 $\mu\text{g/g}$ in the control group, and 215.79 $\mu\text{g/g}$ in the IO vit E group. In terms of vit C levels in liver tissue, the difference between the experimental groups was found to be insignificant ($p=0.544$). The GSH level in the liver tissue was found to be 963.04 $\mu\text{g/g}$ in the control group, and 850.65 $\mu\text{g/g}$ in the IO vit E group, but the effect of IO vit E application on the GSH level was insignificant ($p=0.173$). As a result, it was concluded that the application of in ovo vitamin E to broiler breeder eggs did not affect lipid peroxidation in the brain tissue due to the unchanged levels of Vit C, and GSH (water-soluble antioxidants) in the liver tissue.

Keywords: In ovo injection, vitamin E, broiler chick, water soluble antioxidants, malondialdehyde

ETLİK CİVCİVLERİN KAN SERUMUNDAKİ TOPLAM LİPİT, PROTEİN VE FOSFOLİPİT DÜZEYİ ÜZERİNE EMBRİYONUN SARI KESESİNE ENJEKTE EDİLEN VİTAMİN E'NİN ETKİSİ

EFFECT OF INJECTED VITAMIN E TO YOLK SAC OF EMBRYO ON THE TOTAL LIPID, PROTEIN AND PHOSPHOLIPID LEVELS IN THE BLOOD SERUM OF BROILER CHICKS

¹*Elif BABACANOĞLU*

¹*Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Zootečni Bölümü, Van, Türkiye*

¹*ORCID ID: <https://orcid.org/0000-0002-6329-315X>*

²*Mehmet Reşit KARAGEÇİLİ*

²*Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Zootečni Bölümü, Van, Türkiye*

²*ORCID ID: <https://orcid.org/0000-0001-8433-0397>*

ÖZET

Bu çalışmada, çıkış sonrası 72 saatlik etlik civcivlerin kan serumundaki toplam lipit, protein ve fosfolipit düzeyleri üzerine kuluçkanın 7. gününde embriyonun sarı kesesine in ovo vitamin E enjeksiyonunun etkisini belirlemek amaçlanmıştır. Toplam 160 adet kuluçkalık yumurtanın yarısı enjekte edilmeyen grup (kontrol), diğer yarısı ise enjeksiyon grubu olan vitamin E grubuna (Vit E) kuluçkanın 7. gününde embriyonun sarı kesesine 25 µl vitamin E in ovo yöntem kullanılarak enjekte edilmiştir. Kuluçkadan çıkan civcivler cinsiyet ayrımı yapıldıktan sonra günlük yaşta civcivlere 72. saate kadar standart büyüme koşulları uygulanmıştır. Her gruptan 10 adet erkek ve dişi civcivler seçilerek bu civcivlerden kan alınmıştır. Kan örneklerinden elde edilen serumlarda toplam lipit, protein ve fosfolipit düzeyleri ölçülmüştür. Vit E grubunda serum toplam protein düzeyi kontrol grubuna göre daha yüksek saptanmıştır. İn ovo vitamin E uygulaması ve cinsiyetin serum toplam lipit ve fosfolipit düzeyleri üzerine etkisi önemsiz bulunmuştur. Ancak, serum toplam lipit, protein ve fosfolipit düzeyleri üzerine grup ve cinsiyet arasındaki etkisi önemli saptanmıştır. Bu etkisi, Vit E grubundaki dişilerin serum toplam protein düzeyinin (P=0.044) vit E grubu erkek civcivler ve kontrol grubundan daha yüksek olmasından, vit E grubu dişilerde serum fosfolipit (P=0.012) ve serum toplam lipit düzeylerinin (P=0.018) bu grubun erkek civcivleri ve kontrol grubundaki dişi civcivlere göre daha yüksek olmasından kaynaklanmıştır.

Bu çalışma, embriyonun sarı kesesine vitamin E enjeksiyonunun çıkıştan sonra 72 saatlik yaşta dişi civcivlerin dokularında artan vitamin E düzeyine bağlı olarak kan serumunda toplam protein, fosfolipit ve lipit düzeylerini artırması ile sonuçlanmıştır.

Anahtar kelimeler: İn ovo enjeksiyon, vitamin E, etlik civciv

ABSTRACT

In this study, it was aimed to determine the effect of in ovo vitamin E injection into the yolk sac on the 7th day of embryonic age on the serum total lipid, protein and phospholipid levels of broiler chicks at 72th-hour after hatching. For the aim, half of 160 hatching eggs were the non-injected group (control), and the other half in the injected group (Vit E) was injected 25 µl of vitamin E by in ovo method into yolk sac of embryo on the 7 day of incubation. After gender determining, newly hatched chicks were reared under standart rearing conditions up to 72th hours. Total lipid, protein and phospholipid levels were measured in serum obtained from blood samples taken from 10 male and female chicks selected from each group. Serum total protein level was higher in the Vit E group than in the control group. The effects of in ovo vitamin E administration and gender on serum total lipid and phospholipid levels were found to be insignificant. However, the effect of the interaction between group and gender on serum total lipid, protein and phospholipid levels was found to be significant. These interactions were due to

the fact that serum total protein level ($P=0.044$) of females in the vit E group was higher than the male chicks in the vit E group and the control group, and levels of serum lipid ($P=0.018$) and phospholipid ($P=0.012$) of females in the vit E group were higher than males in the vit E group and females in the control group.

This study resulted in an increase in the levels of total protein, phospholipid and lipid in the blood serum depend on increased vitamin E the level in tissues of the female chicks at 72-hour-old after hatching by influence of in ovo vitamin E injection.

Keywords: In ovo injection, vitamin E, broiler chick

ÇELTİK BİTKİSİNDE BİYOTİK VE ABİYOTİK STRES ETMENLERİ BIOTIC AND ABIOTIC STRESS FACTORS IN RICE PLANTS

Ahmet KORKMAZ

*Prof. Dr., Ondokuz Mayıs Üniversitesi Ziraat Fakültesi Toprak Bilimi ve Bitki Besleme Bölümü,
Samsun/Türkiye*

ORCID ID: 0000-0001-5595-0618

Güney AKINOĞLU

*Arş. Gör. Dr., Ondokuz Mayıs Üniversitesi Ziraat Fakültesi Toprak Bilimi ve Bitki Besleme Bölümü,
Samsun/Türkiye*

ORCID ID: 0000-0003-4624-2876

İlkay ÇOKA

*Öğretim Görevlisi, Mersin Üniversitesi Gülnar Mustafa Baysan Meslek Yüksekokulu Bitkisel ve
Hayvansal Üretim Bölümü, Mersin/Türkiye*

ORCID ID: 0000-0001-8387-8457

ÖZET

Son 10 yıl içerisinde küresel iklim değişikliği ve istenmeyen çevresel koşullardan kaynaklanan üretim kayıpları sürekli olarak artmıştır. Çeltik mahsulü, farklı sıcaklıklar, iklimler ve toprak-su koşulları ile karakterize edilen çok çeşitli ortamlarda yetiştirilir. Bu nedenle mahsuller, hem biyotik hem de abiyotik olmak üzere çeşitli stres türlerine maruz kalır. Biyotik stresler arasında; böcek zararlıları, mantarlar, bakteriler, virüsler yer almaktadır. Diğer yandan, abiyotik stresler arasında; tarımsal kuraklık ve toprakta aşırı tuzluluk, yüksek veya düşük sıcaklıklar, su baskınları, yüksek ışık, toprakta düşük besin mineral eksikliği, ağır metal fazlalığı, ortam kirleticileri ve rüzgâr sayılabilir. Genel olarak, tüm bu streslerin sürdürülebilir çeltik üretimi için ciddi bir tehdit olarak kabul edildiğine inanılmaktadır. Bu stresler arasında patojen, kuraklık, aşırı sulama veya su altında kalma, besin yetersizliği, aşırı gübre beslenmesinden kaynaklanan toksisite ve yüksek tuzluluk stresi faktörleri dünya tarımı üzerinde büyük bir etkiye sahiptir ve ortalama verimi % 50'den fazla azaltır.

Çeltik bitkileri, karmaşık stres koşullarına yanıt vermek için özel mekanizmalar geliştirmiştir. Bitkinin bireysel strese tepkileri, ilgili stresin doğası ve şiddetine, stresle karşılaşılacak bitkinin yaşına ve bitkilerin yapısal stres toleranslı doğasına bağlı olarak değişir. Abiyotik stresleri önlemek veya tolere etmek için yaygın bitki tepkileri arasında stomaların kapanması, azalan fotosentez, artan reaktif oksijen süpürme aktivitesi, azaltılmış yaprak büyümesi ve artan kök uzunluğu bulunur. Patojenler gibi biyotik stresler de bitkilerin stomaları kapatmasına ve fotosentezi azaltmasına neden olur. Patojenlere karşı diğer bitki tepkileri, fitoaleksinler ve reaktif oksijen türleri dahil olmak üzere toksik bileşiklerin üretimini ve lokalize hücre ölümünün indüksiyonunu içerir. Bu tepkilerin çoğu fitohormonlar tarafından koordine edilir. Absisik asit (ABA) ve jasmonik asit (JA) hormonları kritiktir. Patojenlere karşı bağışıklık için bitkiler öncelikle salisilik asit (SA), JA ve etilen sinyaline güvenirlir.

Abiyotik stres tepkisi, hem ABA'ya bağımlı hem de ABA'dan bağımsız birçok transkripsiyon faktörü (TF) ailesi tarafından düzenlenir. ABA ile indüklenen temel lösün fermuar (bZIP) TF'leri içerir. Bu TF'ler, stomatal kapanmaya, dehidrasyon tolerans genlerinin ekspresyonuna ve diğer uyarlanabilir fizyolojik tepkilere neden olur.

Stres faktörlerinin zamanında izlenmesi ve tanınması, yeterli çiftlik girdilerinin sağlanması ve hızlı morfolojik teşhisler, stresin mahsuller üzerindeki olumsuz etkilerini azaltabilir. Bir stres faktörünün etkisi altında kalan çeltik bitkileri, yaprakların renginde, biçiminde ve dokusunda belirgin semptomlar gösterir. Bazı durumlarda mikro semptomları görsel tanı ile yakalamak ve değerlendirmek zordur.

Anahtar Kelimeler: Çeltik, biyotik stres, abiyotik stres, absisik asit, jasmonik asit, transkripsiyon faktörü

ABSTRACT

Production losses due to global climate change and undesirable environmental conditions have increased continuously in the last 10 years. The rice crop is grown in a wide variety of environments characterized by different temperatures, climates and soil-water conditions. Therefore, crops are subjected to various types of stress, both biotic and abiotic. While biotic stresses include insect pests, fungi, bacteria, viruses, abiotic stresses include agricultural drought and excessive salinity in soil, high or low temperatures, flooding, high light, low nutrient mineral deficiency in soil, heavy metal excess, environmental pollutants and wind. It is generally believed that all these stresses are considered as a serious threat to sustainable rice production. Among these stresses, pathogen, drought, over-irrigation or submersion, nutrient deficiency, toxicity from over-fertilization, and high salinity stress factors have a major impact on world agriculture and reduce the average yield by more than 50%.

Rice crops have evolved specific mechanisms to respond to complex stress conditions. Plant responses to individual stresses vary depending on the nature and severity of the stress involved, the age of the plant, and the structural stress-tolerant nature of plants. Common plant responses to avoid or tolerate abiotic stresses include closure of stomata, decreased photosynthesis, leaf growth and increased reactive oxygen scavenging activity and root length. Like pathogens, biotic stresses cause plants to close stomata and reduce photosynthesis. Other plant responses to pathogens include the production of toxic compounds, including phytoalexins and reactive oxygen species, and the induction of localized cell death. Many of these responses are coordinated by phytohormones. Abscisic acid (ABA) and jasmonic acid (JA) hormones are critical in this process. For immunity against pathogens, plants primarily rely on salicylic acid (SA), JA, and ethylene signaling.

The abiotic stress response is regulated by several families of transcription factors (TFs), both ABA-dependent and ABA-independent. ABA-induced essential leucine zipper (bZIP) contains transcription factors (TFs). These TFs cause stomatal closure, expression of dehydration tolerance genes, and other adaptive physiological responses. Timely monitoring and recognition of stressors, provision of adequate farm inputs, and rapid morphological diagnoses can reduce the adverse effects of stress on crops. Rice plants under the influence of a stress factor show distinctive symptoms in the color, shape and texture of the leaves. In some cases, it is difficult to capture and evaluate microsymptoms with visual diagnosis.

Keywords: Rice, biotic stress, abiotic stress, abscisic acid, jasmonic acid, transcription factor

DOMATES MEYVESİNDE YAYGIN BİR ŞEKİLDE GÖRÜLEN FİZYOLOJİK BOZUKLUKLAR

COMMON PHYSIOLOGICAL DISORDERS IN FRESH TOMATO FRUIT

Ahmet KORKMAZ

*Prof. Dr., Ondokuz Mayıs Üniversitesi Ziraat Fakültesi Toprak Bilimi ve Bitki Besleme Bölümü,
Samsun/Türkiye*

ORCID ID: 0000-0001-5595-0618

Güney AKINOĞLU

*Arş. Gör. Dr., Ondokuz Mayıs Üniversitesi Ziraat Fakültesi Toprak Bilimi ve Bitki Besleme Bölümü,
Samsun/Türkiye*

ORCID ID: 0000-0003-4624-2876

İlkay ÇOKA

*Öğretim Görevlisi, Mersin Üniversitesi Gülnar Mustafa Baysan Meslek Yüksekokulu Bitkisel ve
Hayvansal Üretim Bölümü, Mersin/Türkiye*

ORCID ID: 0000-0001-8387-8457

ÖZET

Domates meyvesinin önemli fizyolojik bozuklukları çiçek burnu çürüklüğü, güneş yanıklığı, meyve çatlaması, kedi yüzü meyve bozukluğu, yeşil yaka, lekeli olgunlaşma, meyvede puflaşma, iç kahverengileşmesi ve domatestede yara izidir. Bu fizyolojik bozuklukların nedenleri arasında; genetik yatkınlık, çevresel faktörler, sulama uygulamaları, bitkinin beslenme durumu ve kültürel uygulamalar sayılabilir.

Çiçek burnu çürüklüğü (BER), hem yeşil hem de olgun meyvede görülen bir fizyolojik bozukluktur. Meyvenin çiçek burnunda (alt tarafında), değişik çaplarda muntazam olmayan, kahverengi, esmer dairesel lekeler halinde görülür. Çürüten bu kısımlar esmerleşerek kurur ve deri gibi sertleşir.

Güneş yanıklığı, güneşe maruz kalan yeşil meyvede meydana gelir. İlk belirti beyazımsı parlak kabarıklık görüntüleridir. Olgunlaşan meyvede kırışık, donuk sarımsı, ölmüş beyazımsı dokular giderek çöker ve basık bölgeler meydana getirir.

Domates meyvesinin kabuğunda, meyvenin iç dokusunu açığa çıkaran çatlaklar iki şekilde ortaya çıkabilir. Bunlardan ilki eşmerkezli (concentric) çatlamalar diğeri ise radyal (radial) çatlamalardır.

Domates meyvesi çiçek burnunda düzgün olmayan girintiler, çıkıntılar ve derimsi bant halindeki yaralar ile adeta kedi yüzünü andıran biçimsiz bir şekil alır. Meyvenin şekli çok bozulur, yüzünde de içi boş girintiler, büyük çukurlar olur. Bu fizyolojik bozukluk, domatesin uzun süreli düşük sıcaklığa maruz kalması sonucu gelişir.

Domatestede yeşil yaka, stresin neden olduğu fizyolojik bir problemdir. Genellikle serada yetiştirilen domatesleri etkiler ve meyve üzerinde yemeyi tatsız hale getiren sert, yeşil alanların oluşmasına neden olur.

Yeşil yaka (yeşil omuzluluk), bazı domates çeşitlerinde sorun oluşturmaktadır. Meyvenin sap bölgesinde, meyvenin yüzeyi koyu renkte olup, bu kısım olgunlaşmaz.

Lekeli olgunlaşma meyvede lokalize olan normal kırmızı pigmentlerin noksanlığı olarak belirlenir. Bu lekeli alanlar olgun meyvenin üst ve yanlarında geniş sarı veya grimsi yeşil lekeler olarak görülür.

Puflaşma; meyve iç duvarı ve odacıklar arasında boşlukların oluşması, meyve düzleşmesi ve tohum sayısı azalması olarak tanımlanır. Puflaşmış meyvelerde tohumun etrafını çevreleyen jelin çok az

oluştugu ya da hiç oluşmadığı gözlenir. Meyveler yuvarlak olmayıp, düz kenarlı veya köşeli bir yapı gösterir.

İç kahverengileşmesi tütün mozaik virüsünden kaynaklı bir meyve bozukluğudur. Bulaşmış olan meyvelerin taç yapraklarının çevresi grimsi yeşil renktedir. Meyve kabuğu kesilerek kaldırıldığında meyve eti dokusunun kahverengileştiği görülür.

Domateste yara izi ise çiçek anterinin, büyürken gelişen meyveye yapışmasıyla meydana gelir. Karakteristik semptom; fermuarı ya da bir dikiş izini andıran, enine izleri olan, ince, uzunlamasına, kuru ve kahverengi bir yara izidir.

Anahtar kelimeler: Domateste fizyolojik bozukluklar, çiçek burnu çürüklüğü, puflaşma, kedi yüzü meyve bozukluğu, lekeli olgunlaşma

ABSTRACT

Some important physiological disorders of fresh tomato fruit are blossom end rot, sunscald, fruit cracking, cat-facing, green back, blotchy ripening, puffiness, internal browning and stitching. The causes of these physiological disorders include genetic predisposition, environmental factors, irrigation practices, nutritional status of the plant and cultural practices.

Blossom end rot (BER) is a physiological disorder that occurs in both green and ripe fruit. It appears as irregular brown spots of varying diameters on the blossom end of the fruit. These rotting areas turn brown and dry and become hard like leather.

Sunscald occurs on green fruit exposed to the sun. The initial symptom is a whitish shiny area that appears blistered. The killed, bleached tissues gradually collapse, forming a slightly sunken area that may become pale yellowish and wrinkled as the fruit ripens.

Cracks on the skin of the tomato fruit, which expose the inner tissue of the fruit, can occur in two ways. The first of these is concentric cracks and the other is radial cracks.

Cat-facing is a term used to describe misshapen fruit with irregular bulges at the blossom end and bands of leathery scar tissue. The shape of the fruit is very distorted, and there are hollow recesses and large pits on its face. This physiological disorder develops as a result of prolonged exposure of tomatoes to low temperatures.

Tomato greenback is a physiological problem caused by stress to the plant. It usually affects greenhouse-grown tomatoes and causes hard, green areas to form on the fruit that make it unpleasant to eat.

Blotchy ripening is determined as a deficiency of normal red pigments localized in the fruit. These spotted areas appear as large yellow or grayish green spots on the top and sides of the mature fruit.

Puffiness is defined as the formation of spaces between the fruit inner wall and the chambers, fruit flattening and reduction in the number of seeds. In puffed fruits, little or no formation of the gel surrounding the seed is observed. The fruits are not round, but show a straight-edged or angular structure.

Internal browning is a fruit disorder caused by the tobacco mosaic virus. The periphery of the petals of the infected fruits is grayish green. When the fruit peel is cut and removed, it is seen that the fruit flesh texture turns brown.

Stitching/Zippering is caused by anthers that are attached to the ovary wall of a newly forming fruit. The characteristic symptom of this physiological disorder is a thin, longitudinal, dry, brown scar with transverse scars resembling a zipper or a stitch scar.

Keywords: Physiological disorders in tomato, blossom end rot, puffiness, cat-facing, blotchy ripening

TUZ STRESİ ALTINDAKİ BİBER BİTKİSİNDE MAGNEZYUM UYGULAMALARININ MİKRO ELEMENT ALIMI ÜZERİNE ETKİSİNİN ARAŞTIRILMASI

INVESTIGATION OF THE EFFECT OF MAGNESIUM APPLICATIONS ON MICRO ELEMENT INTAKE IN PEPPER PLANT UNDER SALT STRESS

Özlem ÜZAL

Doç. Dr., Van Yüzüncü Yıl Üniv. Ziraat Fakültesi Bahçe Bitkileri Bölümü

ORCID NO: 0000-0002-1538-820X

Fikret YAŞAR

Prof. Dr., Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Bahçe Bitkileri Bölümü

ORCID NO: 0000-0001-6598-8580

ÖZET

Bu çalışmada, tuz stresi altındaki biber bitkisine farklı dozlarda uygulanan magnezyumun mikro element alımına etkileri araştırılmıştır. Çalışma kontrollü şartlardaki 16/8 saatlik aydınlık/ karanlık fotoperiyotta, 25 °C de ve % 70 nemli iklim odasında, su kültüründe yürütülmüştür. Demre sivri biber çeşidine ait tohumlar pomza doldurulmuş 40x25x5 cm boyutlarındaki plastik çimlendirme kaplarına ekilmiştir. Kotiledon yaprakları yatay duruma gelen ve ilk gerçek yaprakları görülmeye başlayan fidelerde sulama Hoagland besin çözeltisiyle yapılmaya başlanmıştır. Pomza ortamında 2. gerçek yaprakları da oluşan fideler su kültürüne alınmıştır. Fideler iki hafta süreyle su kültüründe büyütülmüş ve 4-5 gerçek yaprağa sahip olan fidelere tuz (100 mM NaCl) uygulamasına başlanmıştır. Her hafta yinelenen çözeltilerin tazelenmesi aşamasında, tuz uygulamalarının aynı konsantrasyonda devamı sağlanmıştır. Biber fidelerine tuzla birlikte (NaCl) 5 farklı dozda (24.64 ppm, 49.28 ppm, 73.92 ppm, 98.56 ppm, 123.2 ppm) MgSO₄ ilave edilmiştir. Tuz uygulamasının 20. gününde bitki örnekleri alınmıştır. Bitkilerin toplam bitki ağırlığının yanında, stres altındaki bitkilerin kök, gövde ve yapraklarındaki mikro element miktarları (Cu, Fe, Zn, Mn) belirlenmiştir. Tuzlu ortamda artan düzeyde magnezyumun, NaCl'nin zararlı etkisini azaltıcı ve/veya ortadan kaldırıcı yönde olmak üzere bitkide mikro element miktarları ve taşınmasında genellikle olumlu etki yapmıştır. Mikro besin elementlerinin tuz stresi altındaki alınımlarında tuza tepki olması için kontrole göre artışlar olmuştur. Tuz stresi altındaki biber fidelerine artan dozlarda Mg uygulamalarının tuzun olumsuz etkisini azaltmada kısmen de olsa etkili olduğu yapılan ölçüm ve analizler sonucunda söylenebilir.

Anahtar kelimeler: biber (*Capsicum annum*), iyon birikimleri, magnezyum, NaCl, tuz stresi

ABSTRACT

In this study, the effects of magnesium applied at different doses to pepper plants under salt stress on microelement uptake were investigated. The study was carried out under controlled conditions in a 16/8 hour light/dark photoperiod, at 25 °C and in a water culture room with 70% humidity. Seeds of Demre green pepper cultivar were sown in 40x25x5 cm plastic germination pots filled with pumice. Irrigation was started with Hoagland nutrient solution in the seedlings whose cotyledon leaves became horizontal and the first true leaves started to appear. The seedlings, which also formed the second true leaves in the pumice medium, were taken into water culture. The seedlings were grown in water culture for two weeks and salt (100 mM NaCl) application was started to the seedlings with 4-5 true leaves. The continuation of salt applications at the same concentration was ensured during the renewal of the solutions repeated every week. The seedlings were grown in water culture for two weeks and salt (100 mM NaCl) application was started to the seedlings with 4-5 true leaves. 5 different doses (24.64 ppm, 49.28 ppm, 73.92 ppm, 98.56 ppm, 123.2 ppm) of MgSO₄ was added to pepper seedlings along with salt (NaCl). Plant samples were taken on the 20th day of salt application. In addition to the total plant weight of the

plants, the amount of microelements (Cu, Fe, Zn, Mn) in the roots, stems and leaves of the plants under stress were determined. Increasing levels of magnesium in the salty environment generally had a positive effect on the amount and transport of microelements in the plant, reducing and/or eliminating the harmful effect of NaCl. There were increases in the intake of micronutrients under salt stress compared to control for salt response. As a result of the measurements and analyzes, it can be said that increasing doses of Mg applications to pepper seedlings under salt stress are partially effective in reducing the negative effects of salt.

Key words: pepper (*Capsicum annum*), ion accumulations, magnesium, NaCl, salt stress

FARKLI BESİN SOLUSYONU UYGULANAN BİBER FİDELERİNDEKİ MAKRO ELEMENT BİRİKİMLERİ

MACRO ELEMENT ACCUMULATIONS IN PEPPER SEEDLINGS APPLIED WITH DIFFERENT NUTRITIONAL SOLUTIONS

Fikret YAŞAR

Prof. Dr., Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Bahçe Bitkileri Bölümü

ORCID NO: 0000-0001-6598-8580

Özlem ÜZAL

Doç. Dr., Van Yüzüncü Yıl Üniv. Ziraat Fakültesi Bahçe Bitkileri Bölümü

ORCID NO: 0000-0002-1538-820X

ÖZET

Bu çalışma, farklı içeriklere sahip besin solüsyonları uygulanan biber fidelerinin makro element birikimine etkisini belirlemek amacıyla yapılmıştır. Çalışma split klimalı iklim odasında (%70 nem, 24 ± 2 °C sıcaklık, 16 saat aydınlık ve 8 saat karanlık) yapılmıştır. Çalışma materyali olan Genetika F1 sivri biber çeşidi tohumları, 60 mm çaplı ve 65mm derinliğe sahip viyollerdeki torf:perlit (3:1) karışımına ekilmiş ve biber tohumları çimleninceye kadar saf su ile sulanmıştır. Daha sonra çimlenen biber fideleri farklı oranlarda besin elementleriyle hazırlanan altı farklı besin solüsyonu ile her bir fideye aynı ölçüde olacak şekilde sulanmıştır. Bunların dışında N-P-K+ME ticari ayrı bir uygulama olarak kullanılmıştır. N-P-K ticari gübresi uygulanan kontrol uygulaması dışında, Hoagland besin çözeltisine göre N ve B sabit tutulup artan dozda K, P, Mg, Ca, Fe, Mn, Cu, ve Zn besin elementleri uygulanarak bitkiler yetiştirilmiştir. Fideler dikim olgunluğuna geldiklerinde örnek alma işlemi yapılmıştır. Fidelerin toprak üstü toplam bitki ağırlıkları ölçülmüştür. Ayrıca fidelerin orta kısmındaki yaprak ve gövde kısımlarından makro besin elementi analizi için örnekler alınmıştır. Fidelerde makro bitki besin elementi içeriklerinden; azot (N), fosfor (P), potasyum (K), magnezyum (Mg), kalsiyum (Ca) element içeriklerinin analizleri yapılarak Duncan çoklu karşılaştırma testine tabi tutularak istatistiksel olarak değerlendirilmiştir. Bitkilerin N, P, K, Mg ve Ca birikimleri bakımından uygulamalar arasında önemli farklılıkların olduğu görülmüştür.

Anahtar kelimeler: Besin reçetesi, Biber, Bitki besleme, Makro element birikimi.

ABSTRACT

This study was carried out to determine the effect on macro element accumulation of pepper seedlings treated with nutrient solutions with different contents. The study was carried out in a split air-conditioned climate room (70% humidity, 24 ± 2 °C temperature, 16 hours light and 8 hours dark). The seeds of Genetika F1 pointed pepper variety, which is the study material, were sown in a peat:perlite (3:1) mixture in viols with a diameter of 60 mm and a depth of 65 mm, and the pepper seeds were watered with distilled water until they germinated. Then, the germinating pepper seedlings were irrigated with six different nutrient solutions prepared with different ratios of nutrients. Apart from these, N-P-K+ME was used as a separate commercial application. In order to determine that the mature seedlings are the best quality and mature; Except for the control application in which N-P-K commercial fertilizer was applied, the plants were grown by applying increasing doses of K, P, Mg, Ca, Fe, Mn, Cu and Zn nutrients while keeping N and B constant according to the Hoagland nutrient solution. When the seedlings reached planting maturity, sampling was done. Above-ground total plant weights of the seedlings were measured. In addition, samples were taken from the leaves and stems in the middle of the seedlings for macronutrient analysis. From macro plant nutrient content in mature seedlings; Nitrogen (N), phosphorus (P), potassium (K), magnesium (Mg), calcium (Ca) elemental contents were



analyzed and statistically evaluated by Duncan multiple comparison test. It was observed that there were significant differences between the treatments in terms of N, P, K, Mg and Ca accumulations of the plants.

Key words: Nutrition recipe, pepper, plant nutrition, macro element accumulation.

RESPIRATORİK DİSTRES SENDROMLU BİR BUZAĞIDA KONJESTİF KALP YETMEZLİĞİ

CONGESTIVE HEART FAILURE IN A CALF WITH RESPIRATORY DISTRESS SYNDROME

Şükrü DEĞİRMENÇAY

Atatürk Üniversitesi Veteriner Fakültesi İç Hastalıkları Anabilim Dalı, Erzurum, Türkiye

ORCID ID: <https://orcid.org/0000-0002-3920-6343>

ÖZET

Respiratorik distres sendrom (RDS), akciğerlerin gelişim yetersizliği ve sürfaktan eksikliğinden kaynaklanan solunum güçlüğü ile karakterize bir sendromdur. Bu vaka raporunun amacı RDS'li bir buzağıda tespit edilen konjestif kalp yetmezliği varlığını bildirmektir. 20 günlük, erkek, Simental ırkı buzağı erken doğma, doğduğundan beri halsizlik, hareket etmeye karşı isteksizlik, sürekli yatma ve gelişme geriliği, öksürük, hareket edince nefes nefese kalma ve ardından bayılma şikayetleri ile kliniğimize getirildi. Fiziksel muayenede rektal sıcaklık 35,6°C, kalp frekansı 104/dk, solunum frekansı 48/dk ve kapiller dolum zamanı 5 saniye, dispne ve siyanotik mukoz membranlar tespit edildi. Torasik oskültasyonda hırıltılı sesler ve sistolik üfürüm mevcuttu. Torasik radyografilerde akciğer hacminin küçüldüğü, akciğerlerde enflamasyon şekillendiği ve sağ taraflı kalpte büyüme olduğu tespit edildi. Ekokardiyografik muayenede triküspit kapakta yetmezlik ve sağ atriumda dilatasyon gözlemlendi. Hemogramda nötrofilik lökositoz saptandı. Kan gazı analizinde dispne ve hipoksi ile uyumlu olarak venöz kan pH, pO₂ ve sO₂ düzeylerinde azalma, pCO₂ düzeylerinde yükselme saptandı. Biyokimyasal bulgulardan cTnI, CK-MB, CK, AST ve LDH aktivitelerinde belirgin yükselme tespit edildi. Tedaviyi reddeden hasta sahibinden buzağının 1 gün sonra öldüğü bilgisine ulaşıldı. Sonuç olarak RDS'li bu buzağıda konjestif kalp yetmezliği ve sekonder akciğer enfeksiyonuna bağlı olarak yaşamı tehdit edecek düzeyde hipoksinin oluştuğu tespit edildi. Triküspit kapak yetmezliğinin ve atrial dilatasyonun konjenital kaynaklı veya RDS'de arttığı bildirilen pulmoner dolaşım basıncı kaynaklı olabileceği düşünüldü. Bu vaka raporu, RDS'li buzağılarda kardiyak hasar oluşabileceğini ve bu hasarın değerlendirilmesinde cTnI, CK-MB, CK, AST ve LDH parametrelerinin kullanılabilirliğini ve ekokardiyografinin antemortem tanıdaki değerini vurgulamaktadır.

Anahtar Kelimeler: Buzağı, Ekokardiyografi, Konjestif Kalp Yetmezliği, Kalp Hasarı, Respiratorik Distres Sendrom

ABSTRACT

Respiratory distress syndrome (RDS) is a syndrome characterized by respiratory distress caused by insufficient development of the lungs and surfactant deficiency. The purpose of this case report is to establish the presence of congestive heart failure detected in a calf with RDS. A 20-day-old male Simmental calf was brought to our clinic with complaints of premature birth, weakness, reluctance to move, constant recumbency and growth retardation since birth, cough, breathlessness when moving and syncope afterwards. The physical examination revealed a rectal temperature of 35.6 °C, heart rate of 104 beats per minute, respiratory rate of 48 breaths per minute and capillary refill time of 5 seconds, dyspnea and cyanotic mucous membranes. On thoracic auscultation wheezing and systolic murmur were present. Thoracic radiographs revealed reduced lung volume and inflammation in the lungs and cardiomegaly, affecting the right side. Echocardiography showed tricuspid valve regurgitation and right atrial dilatation. Neutrophilic leukocytosis was detected in the hemogram findings. Blood gas analysis revealed a reduction in venous blood pH, pO₂ and sO₂ levels, and an increase in pCO₂ levels, consistent with dyspnea and hypoxia. In biochemical findings, a significant increase was detected in cTnI, CK-MB, CK, AST and LDH activities. The owner refused the treatment and after a day he reported the death of his calf. As a result, congestive heart failure and secondary lung infection caused life-threatening hypoxia in this calf with RDS. Tricuspid valve regurgitation and atrial dilatation could be due to



congenital origin or pulmonary circulation pressure which has been reported to be increased in RDS. This case report highlights that cardiac damage may occur in calves with RDS and cTnI, CK-MB, CK, AST and LDH parameters can be used in the evaluation of this damage and the value of echocardiography for antemortem diagnosis.

Keywords: Calf, Echocardiography, Congestive Heart Failure, Heart Damage, Respiratory Distress Syndrome

BAHÇE BİTKİLERİ ÜRÜNLERİNDE BİTKİSEL ANAEROBİK SOLUNUM ÜRÜNLERİNİN HASAT SONRASI KULLANIMI

POSTHARVEST USE IN HORTICULTURAL CROPS OF PLANT-BASED ANAEROBIC RESPIRATION PRODUCTS

Rezzan KASIM¹

¹Kocaeli Üniversitesi Ziraat Fakültesi Bahçe Bitkileri Bölümü, Kocaeli, TÜRKİYE

¹ ORCID ID: <https://orcid.org/0000-0002-2279-4767>

Mehmet Ufuk KASIM²

²Kocaeli Üniversitesi Ziraat Fakültesi Bahçe Bitkileri Bölümü, Kocaeli, TÜRKİYE

²ORCID ID: <https://orcid.org/0000-0003-2976-7320>

ÖZET

Canlı bitki dokuları, oksijensiz ortamda anaerobik solunum gerçekleştirir. Fermentasyonda denilen bu olay sonucunda, bitki hücreleri için toksik etkilere sahip asetaldehit ve etanol üretilmektedir. Fermentasyon birçok gıda ürününün üretilmesinde kullanılan bir teknik olmakla beraber, etil alkol önemli bir yakıt ve dezenfektan hammaddesi olarak da değerlendirilmektedir. Özellikle atık bitkisel ürünlerin bu amaçla kullanılması önemli bir katma değer sağlamaktadır.

Etil alkol ve asetaldehitin yüksek dozları, üretildikleri hücre ve dokularda zarar yaparken, uygun dozlarda, dışarıdan uygulandığı ürünlerde olumlu etkilere neden olmaktadır. Bu maddelerin harici uygulamalarında buhar ve sıvı daldırma şeklinde iki farklı yöntem kullanılabilir. Etanol ve asetaldehitin antimikrobiyal etkisinin uzun zamandan beri biliniyor olmasından dolayı, öncelikle hasat sonrası mikroorganizmalar ile mücadele için kullanılmışlardır. Zaman içerisinde asetaldehitin kullanımının insan sağlığı açısından güvenli olmadığı tespit edildikten sonra çalışmalar etanol üzerinde yoğunlaşmıştır.

Bahçe bitkileri ürünleri su içeriklerinin yüksek olması nedeni ile çabuk bozulabilir ürünler olarak sınıflandırılmaktadır. Bu ürünlerin hasat sonrası kalitelerinin korunması ve dayanım sürelerinin uzatılması amacı ile başta düşük sıcaklıkta depolama ve ambalajlama gibi uygulamalar yapılmaktadır. Etanol uygulamaları da son 10-15 yıldır kullanılabilirliği araştırılan uygulamalardan biri olarak karşımıza çıkmaktadır.

Hasattan sonra uygulanan etanol ve asetaldehit ile ilgili çalışmaların; başta mikroorganizmalar ile mücadelede olmak üzere, uçucu bileşiklerin artırılması, etilen üretiminin baskılanması, yumuşamanın kontrolü, üşüme zararının engellenmesi, renk bozulmalarının geciktirilmesi, solunum, şeker ve asit içeriğinin iyileştirilmesi üzerinde yoğunlaştığı görülmektedir. Bu çalışmamızda etanol ve asetaldehitin hasat sonrası kullanımı ve ürünler üzerindeki etkileri incelenmiştir.

Etanol uygulanan ürünlerde hasat sonrası kalitenin arttığı; depo ve raf ömrünün uzadığı belirlenmiştir. Buradaki önemli husus ise kullanılacak dozun iyi belirlenmesidir. Aksi takdirde kullanılan doz ya etkisiz kalacak kadar düşük düzeyde veya toksik olabilecek kadar yüksek düzeyde olabilecektir.

Anahtar Kelimeler: Etanol, asetaldehit, hasat sonrası, mikroorganizmalar, kalite

ABSTRACT

Living plant tissues perform anaerobic respiration in the absence of oxygen. As a result of this phenomenon called fermentation, acetaldehyde and ethanol are produced, which have toxic effects for plant cells. Although fermentation is a technique used in the production of many food products, ethyl

alcohol is also considered as an important fuel and disinfectant. Especially the use of waste plant products for this purpose provides an important added value.

While high doses of ethyl alcohol and acetaldehyde cause damage to the cells and tissues where they are produced, they cause positive effects in products that are applied externally at appropriate doses. Two different methods, steam and liquid immersion, can be used for external applications of these materials. Since the antimicrobial effects of ethanol and acetaldite have been known for a long time, they were primarily used to combat microorganisms after harvest. After it was determined that the use of acetaldehyde was not safe for human health over time, studies focused on ethanol.

Horticultural products are classified as perishable products due to their high water content. In order to preserve the post-harvest quality of these products and to extend their durability, applications such as low temperature storage and packaging are carried out. Ethanol applications are one of the applications whose usability has been investigated for the last 10-15 years.

Studies on ethanol and acetaldehyde applied after harvest; It is seen that it focuses on increasing volatile compounds, suppressing ethylene production, controlling softening, preventing chills, delaying discoloration, improving respiration, sugar and acid content, especially in the fight against microorganisms. In this study, the post-harvest use of ethanol and acetaldehyde and their effects on the products were investigated.

Post-harvest quality increased in ethanol-treated products; It has been determined that the storage and shelf life is extended. The important point here is to determine the dose to be used well. Otherwise, it can either remain low enough to be ineffective or be high at a toxic level.

Keywords: Ethanol, acetaldehyde, postharvest, microorganisms, quality

BİTKİSEL ÜRETİMDE YENİ BİR YAKLAŞIM: TERAS-BALKON BAHÇELERİ A NEW APPROACH IN CROP PRODUCTION: TERRACE-BALCONY GARDENS

Mehmet Ufuk KASIM¹

¹*Kocaeli Üniversitesi Ziraat Fakültesi Bahçe Bitkileri Bölümü, Kocaeli, TÜRKİYE*

¹ ORCID ID: <https://orcid.org/0000-0003-2976-7320>

Rezzan KASIM²

²*Kocaeli Üniversitesi Ziraat Fakültesi Bahçe Bitkileri Bölümü, Kocaeli, TÜRKİYE*

² ORCID ID: <https://orcid.org/0000-0002-2279-4767>

ÖZET

Her geçen gün kentlerde yaşayan nüfus artmaktadır. 1960 yılında kentsel nüfus Dünya genelinde %33,6; AB ülkelerinde %62,1; Türkiye’de %31,5 iken, 2017 yılında sırası ile %54,7; %76,4 ve %74,4’e yükselmiştir. Kentleşme ile birlikte insanlar çok katlı beton yapılar içerisinde, doğadan uzak yaşamaya başlamışlardır. Bu durum yeşil alanların azalmasına, mental anlamda insanların zayıflamasına neden olmuştur. Böylece gelişmiş kentlerde yeşil alanların artırılması oldukça önem kazanmış, bu kapsamda 40 şehirde yapılan değerlendirmede en yüksek yeşil alan bakımından ilk sırayı Norveç’in başkenti Oslo (%68) alırken, İstanbul %2,2 ile sonuncu sırada yer almıştır. Şehirlerin aşırı betonlaşması, sağlıklı ve taze sebzelere ulaşmayı da zorlaştırmaktadır. Bu nedenle son yıllarda evlerin teras, balkon hatta çatılarında yenilebilir bitkisel ürün yetiştirmek bir alternatif olarak ortaya çıkmıştır. Bu eğilimin 3 farklı amacı bulunmaktadır: 1) taze ve sağlıklı (pestisit vb. kalıntısı bulunmayan) ürün üretmek, 2) üretimi daha ucuza mal etmek, 3) psikolojik terapi sağlamaktır. Bu amaçla en basit olarak saksıda yetiştiricilikten başlayarak, topraksız tarım ve dikey tarım tekniklerine kadar yöntemler kullanılabilir. Ayrıca su ve enerji giderlerini azaltmak amacı ile yağmur hasat sistemleri ile güneş enerjisinden de faydalanılmaktadır. Teras ve balkonlarda üretilebilecek ürünler arasında; domates, biber, patlıcan, salatalık, fasulye, maydanoz, tere, roka, çilek gibi tek yıllık ürünlerin yanı sıra ahududu, böğürtlen, Bektaşî üzümü, yaban mersini gibi küçük boyutlu çok yıllık bitkilerde yer alabilmektedir.

Bu çalışmada, balkon ve teraslarda modern bitki üretim teknikleri açıklanarak, örnekler sunulmuştur. Ayrıca bu alanlarda yapılan yetiştiricilikte kullanılacak sulama uygulamaları, bitki besleme ve budama teknikleri de açıklanmıştır. Ek olarak, insanlar yoğun iş yaşamlarından dolayı bitkilerin bakımını aksatabileğinden, bu gecikmelerin önüne geçmek amacı ile uygulanabilecek basit otomasyon sistemleri hakkında da bilgiler verilmiştir. Son olarak su, gübre ve enerji maliyetlerinin düşürülmesine yönelik olarak geliştirilebilecek proje örnekleri de sunulmuş olup, bu yöntemlerin gelecekte bireysel ya da ailenin ihtiyacı olan bazı bitkisel ürünlerin karşılanmasında kullanılabilirliği de değerlendirilmiştir.

Anahtar Kelimeler: Kentleşme, teras-balkon bahçeciliği, taze gıda

ABSTRACT

The population living in cities is increasing day by day. While the urban population was 33.6% worldwide, 62.1% in EU countries, 31.5% in Turkey in 1960, it increased to 54.7%, 76.4% and 74.4% in 2017, respectively. With urbanization, people started to live in high buildings, away from nature. This situation causes the decrease of green areas and weakening of people in the mental sense. Increasing green areas in developed cities has gained great importance. In this context, the highest green area is in Oslo, the capital of Norway (68%), while Istanbul ranked last with 2.2% in the evaluation made in 40 cities. The overconcretion of cities also makes it difficult to reach healthy and fresh vegetables. In this context, growing edible plant products on terraces, balconies and even roofs of houses has become an alternative. This technique has 3 different purposes: 1) to produce fresh and healthy products (without

pesticides etc.), 2) to cost less, 3) to provide psychological therapy. For this purpose, methods can be used starting from the simplest pot cultivation to soilless agriculture and vertical farming techniques. In addition, rain harvesting systems and solar energy are also used to reduce water and energy costs. Among the products that can be produced on terraces and balconies; It can be used for annual crops such as tomatoes, peppers, eggplants, cucumbers, beans, parsley, cress, rocket, strawberries, as well as small-sized perennial plants such as raspberry, blackberry, gooseberry, and blueberry.

In this study, modern plant production techniques on balconies and terraces are explained and examples are presented. Irrigation applications, plant fertilization and pruning methods that can be used in these areas are explained. People can delay the care of plants due to their busy work lives. In order to prevent these delays, information is given about simple automation systems that can be applied. In addition, examples of projects that can be developed to reduce water, fertilizer and energy costs are also presented. With this study, the usability of some herbal products for the individual or family needs in the future was also evaluated.

Keywords: Urbanization, terrace-balcony gardening, fresh food

MUŞ YÖRESİNDE YETİŞTİRİLEN YEREL ÜZÜM ÇEŞİTLERİNİN FENOLOJİK ÖZELLİKLERİ VE SICAKLIK TOPLAMI İSTEKLERİNİN BELİRLENMESİ

DETERMINATION OF PHENOLOGICAL CHARACTERS AND EFFECTIVE HEAT
SUMMATION REQUIREMENTS OF LOCAL GRAPE CULTIVARS GROWN IN MUŞ
PROVINCE

Fatma AYTEMİŞ¹

¹*Yüksek Lisans Öğrencisi, Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Bahçe Bitkileri
Anabilim Dalı, Van, Türkiye*

ORCID ID: 0000-0001-7199-8881

Adnan DOĞAN²

²*Dr. Öğretim Üyesi, Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Van,
Türkiye*

ORCID ID: 0000-0002-8623-0629

Cüneyt UYAK³

³*Dr. Öğretim Üyesi, Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Van,
Türkiye (Sorumlu Yazar)*

ORCID ID: 0000-0002-6101-6845

ÖZET

Bu çalışma, Muş yöresinde yetiştirilen Çilistrig, Sinciri, Kaşper, Vakkas, Dana Gözü, Güz Üzümü, Keçi Memesi, Elazığ Beyazı, Elazığ Kırmızısı, Beyaz Üzüm ve Hıyan Asması yerel üzüm çeşitlerinin fenolojik özelliklerini ve Etkili Sıcaklık Toplamı İsteklerini (EST) belirlemek amacıyla 2019 ve 2020 yıllarında gerçekleştirilmiştir. Üzüm çeşitlerinin iki yıl süreyle tomurcuk patlaması, tomurcuk sürmesi, tam çiçeklenme, tane tutumu, ben düşme ve hasat tarihleri ile uyanma- tam çiçeklenme, tam çiçeklenme-ben düşme, ben düşme-hasat ve uyanma-hasat dönemleri arasındaki Etkili Sıcaklık Toplamı İstekleri (EST) belirlenmiştir. Üzüm çeşitlerinde tomurcuk patlamasının 12 Mayıs-29 Mayıs, tomurcuk sürmesinin 22 Mayıs-16 Haziran, tam çiçeklenmenin 22 Haziran-4 Temmuz, tane tutumunun 5 Temmuz-18 Temmuz, ben düşmenin 4 Ağustos-28 Ağustos ve hasat tarihlerinin 5 Eylül-30 Eylül tarihleri arasında olduğu tespit edilmiştir. Üzüm çeşitlerinde tam çiçeklenmeden hasada kadar geçen gün sayısının 73 gün (Elazığ Beyazı) ile 98 gün (Çilistrig ve Sinciri), tomurcukların patlamasından hasada kadar geçen gün sayısının ise 105 gün (Elazığ Beyazı) ile 139 gün (Çilistrig ve Sinciri) arasında olduğu saptanmıştır. Üzüm çeşitlerinin fenolojik dönemlere göre, Etkili Sıcaklık Toplamı İsteklerinin (EST) uyanma-tam çiçeklenme arasında 345 gün-derece (Çilistrig ve Sinciri) ile 529 gün-derece (Kaşper), tam çiçeklenme-ben düşme arasında 479 gün-derece (Dana Gözü) ile 987 gün-derece (Çilistrig), ben düşme-hasat arasında 310 gün-derece (Elazığ Beyazı) ile 783 gün-derece (Sinciri), uyanma-hasat arasında ise 1193 gün-derece (Elazığ Beyazı) ile 1785 gün-derece (Çilistrig ve Sinciri) arasında değiştiği belirlenmiştir. Üzüm çeşitlerinin Etkili Sıcaklık Toplamı İsteklerinin (EST) çeşit, yıl ve fenolojik safhalara göre değişiklik gösterdiği tespit edilmiştir.

Anahtar Kelimeler: Üzüm Çeşidi, Muş, Fenolojik Özellikler, Etkili Sıcaklık Toplamı

ABSTRACT

This study was carried out to determine the phenological characters and Effective Heat Summations (EHS) Requirements of Çilistrig, Sinciri, Kaşper, Vakkas, Dana Gözü, Güz Üzümü, Keçi Memesi, Elazığ Beyazı, Elazığ Kırmızısı, Beyaz Üzüm and Hıyan Asması local grape cultivars grown in Muş province in 2019 and 2020. For two years, bud-break, bud sprouting, full bloom, fruit-set, veraison and

harvest dates of grape cultivars were recorded and their Effective Heat Summations (EHS) Requirements between bud-break-full bloom, full bloom-verasion, verasion-harvest and bud-break-harvest periods were determined. It was determined that phenological dates were between 12-29 May for bud-break, 22 May-16 June for bud sprouting, 22 June-4 July for full bloom, 5-18 July for fruit-set, 4-28 August for verasion and 5-30 September for harvest dates. In grape cultivars, it was determined that the number of days from full bloom to harvest was between 73 days (Elazığ Beyazı) and 98 days (Çilistrig and Sinciri), and the number of days from bud-break to harvest was between 105 days (Elazığ Beyazı) and 139 days (Çilistrig and Sinciri). According to the phenological periods of grape cultivars, Effective Heat Summations (EHS) Requirements varied from 345 day-degree (Çilistrig and Sinciri) to 529 day-degree (Kaşper) between bud-break and full bloom, from 479 day-degree (Dana Gözü) to 987 day-degree (Çilistrig) between full bloom and verasion, from 310 day-degree (Elazığ Beyazı) to 783 day-degree (Sinciri) between verasion and harvest, from 1193 day-degree (Elazığ Beyazı) to 1785 day-degree (Çilistrig and Sinciri) between bud-break and harvest. It was founded that Effective Heat Summations (EHS) Requirements of grape cultivars varied according to cultivar, year and phenology stages

Key Words: Grape Cultivar, Muş, Phenological Characters, Effective Heat Summations

**ÖLMEZ ÇİÇEK (*Helichrysum italicum* (Roth) G. Don) UÇUCU YAĞININ KİMYASAL
KOMPOZİSYONU, ANTİOKSİDAN VE ANTİMİKROBİYAL ETKİLERİ**
CHEMICAL COMPOSITION, ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES OF
EVERLASTING (*Helichrysum italicum* (Roth) G. Don) ESSENTIAL OIL

Esin YILDIRIM

MSc. Bezmialem Vakıf Üniversitesi Sağlık Bilimleri Enstitüsü

İlker DEMİRBOLAT

Dr. Bezmialem Vakıf Üniversitesi Fitoterapi Eğitim, Araştırma ve Uygulama Merkezi,

Ezgi ERKAN

Sage Botanics

Murat KARTAL

Prof. Dr. Bezmialem Vakıf Üniversitesi Fitoterapi Eğitim, Araştırma ve Uygulama Merkezi,

Murat TUNÇTÜRK

Prof. Dr. Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölümü

ÖZET

Doğal bir antioksidan olan ölmez çiçek (*Helichrysum italicum*) uçucu yağı kozmetik sektörü tarafından kullanılan en popüler bileşenlerden birisidir. Baharatımsı kokusu ile parfüm sektöründe de tercih edilmektedir. Bu çalışmamızda Datça yöresinden toplanan ölmez çiçek bitkisinden elde edilen uçucu yağın kimyasal kompozisyonu, antioksidan ve antimikrobiyal özellikleri incelenmiştir. Ölmez çiçek uçucu yağ verimi %0.27 olarak tespit edilmiştir. Uçucu yağın kimyasal kompozisyonu gaz kromatografisi kütle spektrometresi ve gaz kromatografisi alev iyonlaşma detektörü (GS-MS/FID) ile analiz edilmiş ve 30 adet bileşen tespit edilerek miktarları belirlenmiştir. Uçucu yağın ana bileşenleri γ -curcumene (%13.98), neril asetat (%11.67) ve alfa pinene (%10.84) olarak bulunmuştur. Uçucu yağın DPPH ile ölçülen antioksidan aktivitesi (IC_{50}) 37.63 ($\mu\text{g}/\text{mL}$) olarak bulunmuştur. Beta karoten/linoleik asit (BCB) antioksidan testinde ise ölmez çiçek uçucu yağı %78 inhibisyon yapmıştır. Ölmez çiçek uçucu yağı gram pozitif ve gram negatif 6 farklı bakteri ile 2 adet maya ile yapılan disk difüzyon ve broth mikrodilüsyon antimikrobiyal aktivite testlerinde oldukça başarılı sonuçlar vermiştir.

Anahtar Kelimeler: Ölmez çiçek, uçucu yağ, kimyasal kompozisyon, antioksidan, antimikrobiyal

ABSTRACT

Everlasting (*Helichrysum italicum*) essential oil, a natural antioxidant, is one of the most popular ingredients used by the cosmetic industry. The spicy scented essential oil is also being requested in the perfume industry. In this study, the chemical composition, antioxidant and antimicrobial properties of the essential oil obtained from the *Helichrysum italicum* grown in Datça region of Turkey were investigated. The essential oil yield was determined as 0.27%. The chemical composition of the essential oil was analysed by gas chromatography mass spectrometry and gas chromatography flame ionization detector (GS/MS-FID). 30 components of the essential oil were determined and quantified. The main components of the essential oil were found to be γ -curcumene (13.98%), neryl acetate (11.67%) and alpha pinene (10.84%). The antioxidant activity (IC_{50}) of the essential oil was measured by DPPH and found to be 37.63 ($\mu\text{g}/\text{mL}$). In the beta carotene/linoleic acid (BCB) antioxidant test, essential oil of *Helichrysum italicum* had an inhibition of 78%. *Helichrysum italicum* essential oil performed high antimicrobial activities measured with CLSI disc diffusion and broth microdilution methods against 6 different bacteria and 2 yeast strains.

Keywords: Everlasting flower, essential oil, chemical composition, antioxidant, antimicrobial

USE OF INFRARED THERMOGRAPHY FOR DETERMINING MEAT QUALITY ET KALİTESİNİ BELİRLEMEDE KIZILÖTESİ TERMOGRAFINİN KULLANIMI

Berna YANMAZ

*Burdur Mehmet Akif Ersoy University, Faculty of Veterinary Medicine, Department of Public Health,
Burdur, Turkey*

ORCID ID: <https://orcid.org/0000-0002-4176-9487>

ABSTRACT

In recent years, meat quality has started to take an important place in food products. Conditions such as stress, pain and infection before slaughter reduce the quality of meat. It has been determined that the pre-slaughter stress level is directly related to the tenderness, aroma, juiciness and shelf life of the meat. Many studies have reported that handling and stress applied to pre-slaughter animals affect meat quality by changing the pH and color of meat, muscle glycogen and firmness temperature. There are many different techniques used to determine meat quality, these include invasive and non-invasive techniques. Chemical methods, mechanical methods and inspection methods, which are among the traditional methods used in determining the quality of meat and meat products, have begun to leave their place to non-invasive methods because they are both time-consuming and boring. Due to advances in technology, the popularity of non-invasive techniques has increased. Non-invasive techniques include ultrasound imaging, dual-energy X-ray absorptiometry, tomographic imaging, optical imaging, magnetic resonance imaging, biopsy imaging. Thermography can be considered the newest of these invasive techniques. Today, this technology is used for the determination of body temperature in animals. Thermographic measurements can be made from different parts of the body such as skin and eyes. Although measuring skin temperature is easier than measuring facial temperature, the presence of residue, hair, feces and water on the skin causes erroneous results by changing the temperature values. Due to minimal artifact formation, eye temperature measurement is used more frequently than other parts of the body. Evaluation of eye temperature in cattle is directly related to meat quality, as it is an indicator of pre-slaughter stress and pain in animals. In conclusion, infrared thermography may be one of the techniques that can be used to evaluate both meat quality and animal welfare.

Keywords: Eye, food, temperature.

ÖZET

Son yıllarda et kalitesi gıda ürünlerinde önemli bir yer almaya başlamıştır. Kesim öncesi stres, ağrı, enfeksiyon gibi durumlar etin kalitesini düşürür. Kesim öncesi stres seviyesinin etin yumuşaklığı, aroması, sululuğu ve raf ömrü ile doğrudan ilişkili olduğu belirlenmiştir. Birçok çalışma, kesim öncesi hayvanlara uygulanan taşıma ve stresin etin pH ve rengini, kas glikojenini ve sertlik sıcaklığını değiştirerek et kalitesini etkilediğini bildirmiştir. Et kalitesini belirlemede kullanılan birçok farklı teknik vardır, bunlar invaziv ve invaziv olmayan teknikleri içerir. Et ve et ürünlerinin kalitesinin belirlenmesinde kullanılan geleneksel yöntemler arasında yer alan kimyasal yöntemler, mekanik yöntemler ve muayene yöntemleri, hem zaman alıcı hem de sıkıcı olmaları nedeniyle yerini invaziv olmayan yöntemlere bırakmaya başlamıştır. Teknolojideki gelişmeler nedeniyle, invaziv olmayan tekniklerin popüleritesi artmıştır. İnvaziv olmayan teknikler arasında ultrason görüntüleme, çift enerjili X-ışını absorpsiyometrisi, tomografik görüntüleme, optik görüntüleme, manyetik rezonans görüntüleme, biyopsi görüntüleme yer almaktadır. Termografi, bu invaziv tekniklerin en yenisi olarak kabul edilebilir. Günümüzde bu teknoloji hayvanlarda vücut ısısının tespiti için kullanılmaktadır. Deri ve göz gibi vücudun farklı bölgelerinden termografik ölçüm yapılabilir. Deri sıcaklığını ölçmek yüz sıcaklığını ölçmekten daha kolay olsa da cilt üzerinde kalıntı, kıl, dışkı ve su bulunması sıcaklık değerlerini değiştirerek hatalı sonuçlara neden olur. Minimal artefakt oluşumu nedeniyle göz sıcaklığı ölçümü vücudun diğer bölgelerine göre daha sık kullanılır. Sığırlarda göz sıcaklığının değerlendirilmesi,



hayvanlarda kesim öncesi stres ve ağrı belirtisinin göstergesi olduğundan, et kalitesi ile direkt ilişkilidir. Sonuç olarak, termografi hem et kalitesini hem de hayvan refahını değerlendirmek için kullanılabilir tekniklerden biri olabilir.

Anahtar kelimeler: Göz, gıda, sıcaklık.

**MACHINE LEARNING ALGORITHMS FOR ESTIMATING THE IMPACT OF H₂O₂
CONCENTRATION AND TIME ON IN VITRO GERMINATION OF INDUSTRIAL HEMP
(*Cannabis sativa* L.)**

Muhammad ASIM

*Department of Plant Protection, Faculty of Agricultural Sciences, Sivas University of Science and
Technology, Sivas, Turkey*

ORCID ID: 0000-0002-8524-9029

Büşra YILDIRIM

*Department of Agricultural Sciences, Institute of Graduate Studies, Sivas University of Science and
Technology, Sivas, Turke*

ORCID ID: 0000-0001-9250-9020

Seyid Amjad ALİ

Department of Information Systems and Technologies, Bilkent University, Ankara, Turkey

ORCID ID:00000-0003-4693-2164

ABSTRACT

Hemp (*Cannabis sativa* L.) is an industrial plant belonging to the family ‘Cannabaceae’. Hemp is one of the first cultivated plants in human history, and has been used in different parts of the World along with flax as a fiber plant. Hemp breeding studies have become very important in Turkey to develop a hemp variety for a specific environment. Scientists have turned to modern breeding methods like biotechnological applications, rather than classical breeding in breeding studies, due to the fact that modern breeding methods are effective in shortening both economic and breeding times. Hemp is considered as recalcitrant crops due to low in vitro germination and regeneration capacity. In this study, an experiment was conducted to check the effects of H₂O₂ on the germination, of Narlısaray hemp population, followed by data validation using three different machine learning algorithms. Surface sterilized seeds were cultured on MS medium for in vitro germination. Statistical analyses were performed and results revealed the better performance of treating seeds for 48 h at 2% H₂O₂ compared to H₂O. Data validation was done by using three different ML algorithms (GP, SVR, and KNN), and performance metrics (R^2 , MSE and MAE). Results revealed the better performance of KNN ($R^2=0.865$; MSE = 0.011; MAE = 0.065) followed by SVR ($R^2=0.819$; MSE = 0.015; MAE = 0.103), and GP model ($R^2=0.783$; MSE = 0.018; MAE = 0.103). Results attained through ML models can be employed to validate the data more precisely.

Keywords: Biotechnology, *Cannabis sativa*, In vitro germination, Machine Learning

SIMULATION AND OPTIMIZATION OF A SOLAR PUMPING SYSTEM FOR AGRICULTURAL IRRIGATION

Said Dlimi^{1}, Lhoussine Limouny², Hayat Elkhatat³*

¹ LEIE, Dept. of Physics, Faculty of Sciences, University Chouaib Doukkali, El jadida, Morocco

² ESIM, Dept. of Physics, Faculty of Sciences and technics, University Moulay Ismail, Errachidia, Morocco

³Electrical Engineering Department, University Abdelmalek Essaadi, ENSAT, Morocco

ABSTRACT

In this manuscript, we have analyzed and simulated the behavior of a photovoltaic pumping system using the pSpice software. In order to better understand some of the system's specific regimes, and in particular the permanent magnet DC motor, we have shown the simulation results of the motor-pump-hydraulic circuit assembly while feeding the motor directly from a fixed DC voltage, and then we have associated to this assembly a photovoltaic generator that feeds directly the pump drive motor. We have found an acceptable efficiency of the motor-pump system for minimum sunlight values and excellent for higher values.

Keywords: Photovoltaic, DC motor, Agricultural pumping

EFFECT OF SALICYLIC ACID ON THE IONIC ACCUMULATION AND DISTRIBUTION FOR SALT TOLERANCE IN *Oryza sativa* L.

D. Jini*

*Assistant Professor, Department of Biotechnology,
Malankara Catholic College, Mariagiri, Kaliakkavilai Post, Kanyakumari District,
Tamil Nadu, India – 629153*

ABSTRACT

The most significant problem with rice production in coastal areas was soil salinity. Improvement of rice plants for the salt tolerance was an important way for the economic utilization of coastal zones. One of the main phenolic substances that reduced the impact of salt stress in plants is salicylic acid (SA). In this study, the effect of SA on salt tolerance in rice seedlings was investigated by its role in ionic (Na^+ , Cl^- , and K^+) accumulation and distribution. The accumulation of ions (Na^+ , Cl^- and K^+) were determined by Inductively Coupled Plasma Mass Spectrometry (ICPMS) and Ion Chromatography (IC). The distribution of these ions was analysed by Scanning Electron Microscope (SEM) fitted with a microanalysis unit of EDAX type. The salt stress increased the Na^+ and Cl^- accumulation in shoot and root tissue of the rice seedlings that was reduced by the SA application. The K^+ content in the salt treated rice seedling tissue was lesser which was improved by the SA treatment. The current study found that applying SA to ASD16 and BR26 rice plants reduced the negative effects of salt stress. As a result, the SA could be employed as a possible growth regulator to help rice plants to grow and produce more yield under salt stress condition.

Key words: Salicylic acid, Salt tolerance, *Oryza sativa*, Na^+ , Cl^- , Germination

HAPLOTYPE DIVERSITY IN THE MITOGENOME OF VAQUITA (*Phocoena sinus*)

Widya Pintaka Bayu PUTRA

Research Center for Applied Zoology - National Research and Innovation Agency, Bogor, Indonesia

ABSTRACT

Vaquita (*Phocoena sinus*) is the one of marine mammal species with the conservation status of critically endangered. This species can be found at Mexico's Gulf of California, USA. This study was aimed to observed the haplotype diversity in the mitogenome (16,319 bp) of Vaquita based on the GenBank database. Three molecular softwares of BioEdit, MEGA-X and DNAsp were used in this study for the sequence analysis. Research showed that seven-teen (17) mutation sites were detected in the thirteen (13) mitogenome of Vaquitas. These mutation were detected at tRNA (1 mutation), rRNA (3 mutations), ND2 (1 mutation), ATP6 (1 mutation), ND4L (2 mutations), ND4 (2 mutations), ND6 (4 mutations) and D-loop (3 mutations). The haplotype diversity (H_d) in the animal studies was 0.91 (high category). Hence, total nine (9) haploypes (Hap.) were determined in the animal studies with the Pairwise genetic distance between 0.0001 to 0.0006. According to the Neighbor-joining tree, the Vaquita in this study can be clustered into Haplogroup A (Hap.2, Hap.3, Hap.4, Hap.5, Hap.7 & Hap.8) and Haplogroup B (Hap.1, Hap.6 & 9). In addition, the highest haplotype frequency in the animal studies was observed in Hap.9 (4 animals) and followed by Hap.1 (2 animals). Meanwhile, each another haplotype consisted of 1 animal. The Neutrality test of Fu's F_s statistics and Tajima's D value were -2.509 and -1.159, respectively. A negative value in the Neutrality test indicated that low nucleotide variation in the species population was caused by species expansion. It can be concluded that the mutation site in the mitogenome of Vaquita in the present study included of low and may be caused by the inbreeding.

Keywords: GenBank, Haplotype, Mitogenome, Mutation site, Vaquita

SEBZELERDE AŞILAMA ÇALIŞMALARI GRAFTING STUDIES ON VEGETABLES

Mevlüde TATAR

Alata Horticulture Research Institute, 33740, Mersin, Turkey

ORCID NO:0000-0002-3707-1721

ÖZET

Bitki yetiştiriciliğinde aşılama yöntemi bilinenin aksine yeni bir teknoloji değil, oldukça eski bir geçmişe sahiptir. Bitkisel aşılamamanın tarihi kitabelerde M.Ö. 1500'lü senelerde Uzakdoğu da ağaçlarda yapıldığı ve başarılı sonuçlar alındığı bildirilmektedir. Sebzelede aşılama ise 1920'li yılların başında ilk defa Kore ve Japonya'da karpuz su kabağı anacı üzerine aşılama yapılmış ve başarı sağlanmıştır. Aşılı fideler, çeşitli toprak kaynaklı hastalıklara ve abiyotik stres koşullarına direnç sağlamalarıyla verimde önemli oranda artışı gibi üstünlüklerden dolayı aşılı fide kullanımı bu ülkelerden sonra birçok ülkede yaygın olarak uygulanmaktadır. Ülkemizde ise son yıllarda kullanımı artmıştır. Sebze türlerinde değişik aşılama yöntemleri uygulanmış; İngiliz Dilcikli (Yanaştırma), Yarma, Kakma (Koltuk), Eğimli Kesik (slant-cut), Yatay Kesik (horizontal-cut) ile Tüp aşılama teknikleri olarak bilinmektedir. Son yıllarda özellikle Kore ve Japonya gibi ülkeler son teknolojilerden yararlanarak aşı robotlarıyla sebzelede aşılama yapmaktadır. Bu derlemenin amacı; sebzelede aşılamamanın nedenleri, dünyada ve ülkemizdeki yeri, aşılı fide üretimindeki gelişmeler, dünyada ve ülkemizde yapılan araştırmalar ve son dönemlerdeki gelişmeler özetlenmiştir.

Anahtar kelimeler: Sebze, aşılama, dilcikli, yarma, kakma

ABSTRACT

Contrary to what is known, the grafting method in plant breeding is not a new technology, but has a very old history. The history of herbal vaccination is in the inscriptions BC. It is reported that it was made on trees in the Far East in the 1500s and successful results were obtained. Inoculation in vegetables, on the other hand, was grafted on watermelon gourd rootstock for the first time in Korea and Japan in the early 1920s, and success was achieved. The use of grafted seedlings is widely practiced in many countries after these countries, due to advantages such as a significant increase in yield by providing resistance to various soil-borne diseases and abiotic stress conditions. In our country, its use has increased in recent years. Different grafting methods were applied in vegetable species; English Tongue (Splice), Split, Inlay (Seat), Curved, it is known as slant-cut, horizontal-cut and tube grafting techniques. In recent years, countries such as Korea and Japan have been vaccinating vegetables with vaccine robots by making use of the latest technologies. The purpose of this review; reasons of grafting in vegetable growing, its place in the world and in our country, developments in grafted seedling production, researches done in the world and in our country and recent developments are summarized.

Keywords: Vegetable, grafting, scalloped, splitting, inlay

MUŞ YÖRESİNDE YETİŞTİRİLEN YEREL ÜZÜM ÇEŞİTLERİNİN FENOLOJİK ÖZELLİKLERİ VE SICAKLIK TOPLAMI İSTEKLERİNİN BELİRLENMESİ

DETERMINATION OF PHENOLOGICAL CHARACTERS AND EFFECTIVE HEAT
SUMMATION REQUIREMENTS OF LOCAL GRAPE CULTIVARS GROWN IN MUŞ
PROVINCE

Fatma AYTEMİŞ¹

¹*Yüksek Lisans Öğrencisi, Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Bahçe Bitkileri
Anabilim Dalı, Van, Türkiye*

ORCID ID: 0000-0001-7199-8881

Adnan DOĞAN²

²*Dr. Öğretim Üyesi, Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Van,
Türkiye*

ORCID ID: 0000-0002-8623-0629

Cüneyt UYAK³

³*Dr. Öğretim Üyesi, Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Van,
Türkiye (Sorumlu Yazar)*

ORCID ID: 0000-0002-6101-6845

ÖZET

Bu çalışma, Muş yöresinde yetiştirilen Çilistrig, Sinciri, Kaşper, Vakkas, Dana Gözü, Güz Üzümü, Keçi Memesi, Elazığ Beyazı, Elazığ Kırmızısı, Beyaz Üzüm ve Hıyan Asması yerel üzüm çeşitlerinin fenolojik özelliklerini ve Etkili Sıcaklık Toplamı İsteklerini (EST) belirlemek amacıyla 2019 ve 2020 yıllarında gerçekleştirilmiştir. Üzüm çeşitlerinin iki yıl süreyle tomurcuk patlaması, tomurcuk sürmesi, tam çiçeklenme, tane tutumu, ben düşme ve hasat tarihleri ile uyanma- tam çiçeklenme, tam çiçeklenme-ben düşme, ben düşme-hasat ve uyanma-hasat dönemleri arasındaki Etkili Sıcaklık Toplamı İstekleri (EST) belirlenmiştir. Üzüm çeşitlerinde tomurcuk patlamasının 12 Mayıs-29 Mayıs, tomurcuk sürmesinin 22 Mayıs-16 Haziran, tam çiçeklenmenin 22 Haziran-4 Temmuz, tane tutumunun 5 Temmuz-18 Temmuz, ben düşmenin 4 Ağustos-28 Ağustos ve hasat tarihlerinin 5 Eylül-30 Eylül tarihleri arasında olduğu tespit edilmiştir. Üzüm çeşitlerinde tam çiçeklenmeden hasada kadar geçen gün sayısının 73 gün (Elazığ Beyazı) ile 98 gün (Çilistrig ve Sinciri), tomurcukların patlamasından hasada kadar geçen gün sayısının ise 105 gün (Elazığ Beyazı) ile 139 gün (Çilistrig ve Sinciri) arasında olduğu saptanmıştır. Üzüm çeşitlerinin fenolojik dönemlere göre, Etkili Sıcaklık Toplamı İsteklerinin (EST) uyanma-tam çiçeklenme arasında 368 gün-derece (Hıyan Asması) ile 529 gün-derece (Kaşper), tam çiçeklenme-ben düşme arasında 604 gün-derece (Sinciri) ile 972 gün-derece (Çilistrig), ben düşme-hasat arasında 310 gün-derece (Elazığ Beyazı) ile 763 gün-derece (Sinciri), uyanma-hasat arasında ise 1486 gün-derece (Elazığ Beyazı) ile 1801 gün-derece (Çilistrig ve Sinciri) arasında değiştiği belirlenmiştir. Üzüm çeşitlerinin Etkili Sıcaklık Toplamı İsteklerinin (EST) çeşit, yıl ve fenolojik safhalara göre değişiklik gösterdiği tespit edilmiştir.

Anahtar Kelimeler: Üzüm Çeşidi, Muş, Fenolojik Özellikler, Etkili Sıcaklık Toplamı

ABSTRACT

This study was carried out to determine the phenological characters and Effective Heat Summations (EHS) Requirements of Çilistrig, Sinciri, Kaşper, Vakkas, Dana Gözü, Güz Üzümü, Keçi Memesi, Elazığ Beyazı, Elazığ Kırmızısı, Beyaz Üzüm and Hıyan Asması local grape cultivars grown in Muş province in 2019 and 2020. For two years, bud-break, bud sprouting, full bloom, fruit-set, veraison and

harvest dates of grape cultivars were recorded and their Effective Heat Summations (EHS) Requirements between bud-break-full bloom, full bloom-verasion, verasion-harvest and bud-break-harvest periods were determined. It was determined that phenological dates were between 12-29 May for bud-break, 22 May-16 June for bud sprouting, 22 June-4 July for full bloom, 5-18 July for fruit-set, 4-28 August for verasion and 5-30 September for harvest dates. In grape cultivars, it was determined that the number of days from full bloom to harvest was between 73 days (Elazığ Beyazı) and 98 days (Çilistrig and Sincirri), and the number of days from bud-break to harvest was between 105 days (Elazığ Beyazı) and 139 days (Çilistrig and Sinciri). According to the phenological periods of grape cultivars, Effective Heat Summations (EHS) Requirements varied from 368 day-degree (Hıyan Asması) to 529 day-degree (Kaşper) between bud-break and full bloom, from 604 day-degree (Sinciri) to 972 day-degree (Çilistrig) between full bloom and verasion, from 310 day-degree (Elazığ Beyazı) to 763 day-degree (Sinciri) between verasion and harvest, from 1486 day-degree (Elazığ Beyazı) to 1801 day-degree (Çilistrig and Sinciri) between bud-break and harvest. It was founded that Effective Heat Summations (EHS) Requirements of grape cultivars varied according to cultivar, year and phenology stages

Key Words: Grape Cultivar, Muş, Phenological Characters, Effective Heat Summations

**INFLUENCE OF TWEEN NATURE AND TYPE ON PHYSICOCHEMICAL PROPERTIES
AND STABILITY OF SPEARMINT ESSENTIAL OIL (MENTHA SPICATA L.)
STABILIZED WITH BASIL SEED MUCILAGE NANOEMULSION**

Nader Ghaffari Khaligh^{a,b,}, Hayedeh Gorjian^b*

^a Nanotechnology and Catalysis Research Center, Institute of Postgraduate Studies, University of Malaya, 50603 Kuala Lumpur Malaysia

^b Department of Food Science and Technology, Sari Agricultural Sciences and Natural Resources University, Sari, Iran

ABSTRACT

The influence of three non-ionic emulsifying agents, including Tween 20, Tween 40, and Tween 80, was investigated on the formation and some properties of nanoemulsions prepared from spearmint essential oil. The nanoemulsions were prepared using the ultrasonic emulsification method. The average particle size (Z-average), particle size dispersion index (PDI), zeta potential, viscosity, turbidity, pH, and physical stability of nanoemulsions were monitored at 4 °C for 35 days. The results showed that the nature and type of emulsifying agent had a significant effect ($P < 0.05$) on the properties mentioned above. As-prepared samples with Tween 20 exhibited the lowest value (Z-average). It demonstrated that the emulsifiers Tween 20 and Tween 80 could be used to form nanoemulsions, in which the stability of nanoemulsion increased in the presence of Tween 20. The effect of storage time on the parameters of particle size (Z-average), particle size dispersion index (DPI), zeta potential, turbidity, and viscosity was statistically significant ($P < 0.05$).

Keywords: Nanoemulsion, non-ionic emulsifying agent, Physical properties, Spearmint essential oil, Basil seed mucilage

VETERINARY AN OVERVIEW

Kaberi PRAMANIK

Banasthali Vidyapith University, 1st Year Student

BSc Biotechnology, Jaipur, Rajasthan, India.

ABSTRACT

India is the largest animal husbandry sector in the world with largest livestock population to supports the livelihoods of more than two-thirds of the rural Population, mainly small and marginal farmers. Livestock can sustain the food demands of the rural households and also provides stability at the time of crop failures. Therefore, Sustainable animal production and health is important as healthy animals are closely related to healthy people and healthy environment. Department of Biotechnology (DBT), Ministry of Science and Technology has been supporting basic and applied research in frontier areas of Livestock and animal biotechnology since its inception. The major emphasis of this program is towards enhancement of livestock production & productivity, and improving animal health through biotechnological interventions. The number of projects under this ambit has Increased over the years and has contributed significantly as large number of technologies, Products, newer vaccines, diagnostics have been developed and commercialized.

The Pharmaceutical sector attracts a lot of attention given its high-profile nature. But the sector that does not receive as much attention is its poorer cousin – the Veterinary sector. This is surprising, given the huge impact that the animal husbandry business has on the Indian economy. Veterinary refers to a branch of agriculture, making it arguably one of the oldest industry known to mankind. After all, early civilization was essentially farm based, and besides growing crops, families reared cattle, sheep, goats, poultry, pigs, etc., not just for their domestic use but also for trading with others. Thus, the selective breeding of different livestock became a vital element of their economic lives early in human civilization.

Therefore the conclusion is the industry's growth journey can only be upward. The growing consolidation & professionalization of the dairy, poultry, piggery & other related sectors (coupled with the government's professed aim of doubling farm income), and the emergence of the pet-loving urban class, only spells good times For the vet care business. The change of focus by the animal husbandry farmer from treatment to prevention not only aids productivity improvements but also ensures steady growth for the animal health care.

Keywords: Technology, Biotechnology, Veterinary, Civilization, Animals.

FOOD HABITS AND DENTAL HEALTH: EXAMPLE FROM TRIBAL AND NON-TRIBAL COMMUNITIES OF BASTAR DISTRICT IN CHHATTISGARH, INDIA

Konuri Ravi Kumar

Research Scholar, School of Anthropology & Tribal Studies, Shaheed Mahendra Karma Vishwavidyalaya, Bastar, Jagdalpur: 494001, District Bastar, Chhattisgarh

Swapan Kumar Kolay

Professor & Head, School of Anthropology & Tribal Studies, Shaheed Mahendra Karma Vishwavidyalaya, Bastar, Jagdalpur: 494001, District Bastar, Chhattisgarh

ABSTRACT

The Tribal and Non-tribal groups inhabiting in Bastar region of Chhattisgarh, India show distinct cultural features. But community groups based on biological characteristics is not distinctly visible. One of the important cultural variabities is the type of food they consume; thus ecology shapes the food grown in the area and the food habits. Food has a very important role to play in the wear and tear of the teeth. It has been observed that the incidence of a disease like a dental caries is found differently in this area, part of it, on account of food contents consumed by the people. Such a disease affects people's health and in tern it affects the other functions of the body like that elementary system, sugar contents in the blood as well as the heart. Even in pregnancy changes are found too, in the teeth which may affect the fetus. The various investigations in eight different villages under Bakavand block of Bastar district in Chhattisgarh reveal that caries accounts for a large number of tooth extractions, which have a lot of bearing and consequences on the individual. Due to these extractions depending upon the age group, vital man-hours are lost in the economic sphere. It has also been reported that there exists a relationship between dental morbidity and a few genetical traits. Thus in view of this, it is of vital importance to understand the food habits and their implications on tooth morbidity due to dental pathology and its role in Tribal and Non-tribal way of life, both biologically and culturally.

Key Words: Tribal, Non-tribal, Cultural variabities, Ecology, Food habits, Dental morbidity.

PERCEPTION KNOWLEDGE AND ATTITUDES OF PEOPLE REGARDING FOOD ALLERGY IN PAKISTAN: MYTH, MISCONCEPTIONS AND REALITY

Muniza Javed^{1},*

**¹Lahore College for Women University, Lecturer, Sociology, Lahore, Pakistan*

ORCID ID: 0000-0003-4289-7189

Dr. Asma Seemi Malik²

²Lahore College for Women University, Assistant Professor, Sociology, Lahore, Pakistan

ORCID ID: 0000-0003-3464-6267

Sheeza Bashir³

³ Lahore College for Women University, Research Student, Sociology, Lahore, Pakistan.

ABSTRACT

Background: Food allergy is an unusual and inappropriate reaction in immune system caused right after eating any specific food. Food allergy reactions happen when the immune system reacts to certain proteins in food. Food allergy may start from childhood or as an adult age. Food allergy reactions vary from mild reaction to severe life-threatening symptoms. All food allergies are potentially life threatening for some people (**Dayle Hayes et al., 2020**). So, it is important to know the allergies' reaction and how to avoid them. Food allergy can be IGE-mediated and non-IGE-mediated (**Claudia M. Lopez 2021**). The prevalence of food allergy is increasing, but the behavior towards food allergy in Pakistan is much neglected. There are some myths and misconception that people label to the allergic people.

Purpose: The purpose of the present study is to explore the people's perceptions, experiences, misconceptions, and myths related to food allergy.

Methodology: The researcher did quantitative research and gather data through questionnaire form and the number of respondents is 180. These respondents are students from major universities of Punjab Pakistan. A questionnaire about food allergies integrated for the targeted audience (age group 16-40), for exploring their perceptions, knowledge, and attitudes about food allergies.

Results & conclusion: Out of total respondents 56.6% were female and 44.4% were male. 83.9% were familiar with food allergies and 55.6% responded that the prevalence of food allergies is increasing in Pakistan. 82.1% respondents were in a view that the poor attention to food allergies can harm adversely to food allergic people.

Keywords: food allergy, misconception, perceptions, food allergy prevalence, myth

HOW ARE ENERGY AND AGRICULTURAL COMMODITY PRICES RELATED?

Dr. Ehsan Rasoulinezhad

Faculty of World Studies, University of Tehran, Iran

ABSTRACT

Objectives

This study explores and compares the nexus between energy price and agricultural food price among five United Nations-defined regional groups, namely the African group, the Asia Pacific group, the Eastern European group, the Latin American and Caribbean group and the Western European.

Methods

To conduct the analysis of relationship between energy price and food price, data over the period of 2000 -2020 are gathered and evaluated by the Panel-VAR (Vector Autoregressive) model.

Results

The major findings reveal that correlation between prices of oil as a proxy for energy and agricultural foods are is higher in less-developed regions. In addition, food prices in all five regional groups respond positively to oil price shock which means the movements in energy and agricultural food prices are in one side around the world. Moreover, oil price fluctuation has a larger contribution to agricultural food price in three regions of Africa, Latin America and Eastern European group in long-run. Furthermore, there is bi-directional causality relationship between oil price and food price in the Asia Pacific group, the Eastern European group and the Western European and Others group, while there is a uni-directional causality relationship running from oil price to food price in the African group and the Latin American and Caribbean group.

Conclusions

Agricultural food prices are more sensitive to energy price volatilities in less developed regions or regions with lower-income levels. Therefore, it would be useful for the countries in these regions to diversify their energy consumption or strengthen their national economy against exogenous shocks from global oil market. The higher sensitivity of agricultural food prices to volatilities of energy price in these regions shows a stronger energy-food prices' integration which should be considered as an important signal for policy makers to ensure economic, energy and food securities.

Keywords: oil price, food price, panel-VAR estimation technique

ANALYSIS OF PESTICIDE DISTRIBUTION THROUGH DERMAL EXPOSURE ASSESSMENT (DREAM) AMONG PESTICIDE SPRAYERS IN MALAYSIA

*Nurulain Mustafa Udin¹, Sharifah Norkhadijah Syed Ismaila², Vivien How¹, Emilia Zainal
Abidin¹*

¹*Department of Environmental and Occupational Health, Universiti Putra Malaysia, 43400 Serdang
Selangor, Malaysia*

²*Institut Pengajian Sains Sosial (IPSAS), Universiti Putra Malaysia, 43400 Serdang Selangor,
Malaysia*

ABSTRACT

Introduction: The three main routes involved in transporting pesticide from its sources to the skin surface are emission, deposition and transfer. This study aimed to analyze the pesticide exposure distribution on different body parts of pesticide sprayers from pesticide emission, deposition and transfer mechanism. **Methods:** Dermal Exposure Assessment Method (DREAM) was used to evaluate dermal exposure to pesticide of 160 pesticide sprayers working in the main agriculture sector i.e. paddy, vegetable, cocoa, and oil palm. The Kruskal Wallis Test was used to identify the differences on exposure routes between agriculture sectors. **Results:** Cocoa pesticide sprayers had the highest exposure (29.31 ± 48.97 DU) through emission while paddy farmers had the highest exposure (144.31 ± 30.23 DU) from deposition. For exposure caused by transfer oil palm pesticide sprayers had the highest total transfer exposure (39.45 ± 10.98 DU). Emission contribute the least of the total exposure among pesticide sprayers in all agriculture sectors, which indicate less occurrence of major leaks, splashes and spills during pesticide spraying. Pesticide sprayers in paddy fields have the highest pesticide exposure through deposition (144.31 ± 30.23 DU) and transfer (30.54 ± 1.19 DU), particularly on upper body parts. Vegetable pesticide sprayers were exposed the most on lower body parts, caused by deposition of spray droplets from low crop spraying. **Conclusion:** This study provides insights of pesticide distribution on body parts, where intervention strategies could be developed by prioritizing the from relevant exposure routes.

Keywords: Pesticides, dermal, DREAM, exposure, agriculture

GENETICALLY MODIFIED CROPS: AN OVERVIEW

Anisha Chauhan

Banasthali Vidyapith University

ABSTRACT

Global demand for food is increasing with the growing world population and Decreasing arable land. Food and agricultural systems have to respond to Several changes with increasing international competition, globalization and Rising consumer demands for improved food equality safety, health Enhancement and convenience. Modern biotechnology involving the use of RD NA technology/ genetic engineering emerged as a powerful tool for improving. The quality and quantity of food supply. Available worldwide with aim of Enhancing productivity, decreasing the use of certain agricultural chemicals, Modifying the inherent properties of crops, improving the nutritional value or Even increasing shelf life. Genetically modified crops (GMCs, GM crops, or Biotech crops) are plants used in agriculture, the DNA of which has been Modified using genetic engineering techniques. Genetic engineering is the Simple addition, deletion, or manipulation of a single trait in an organism to Create a desired change. In most cases, the aim is to introduce a new trait to The plant which does not occur naturally in the species. Methods Gene guns (Biolistics) ‘shoot’ target genes into plant cells. It is the most common method. DNA is Bound to tiny particles of gold or tungsten which are subsequently shot into Plant tissue or single plants cells under high pressure. The accelerated particles Penetrate both the cell wall and membranes. The DNA separates from the Metal and is integrated into plant DNA inside the nucleus. This method has Been applied successfully for many cultivated crops, especially monocots like Wheat or maize, for which transformation using agrobacterium tumefaciens Has been successful. The major disadvantage- serious damage can be done to The cellular tissue. Traits

GM crops grown today, or under development, have been modified with Various traits. These traits include improved shelf life, disease resistance, stress Resistance, herbicide resistance, production of useful goods such as biofuel or Drugs and ability to absorb toxins and for use in bioremediation of pollution.

Key words: genetic engineering, shelf life, anti sense, manipulation.

COMBINATION THERAPY IN ASTHMA: A REVIEW

Anamika GAUTAM

Banasthali Vidyapith, Jaipur, India

ABSTRACT

Asthma can be defined as a chronic inflammatory disease of the airways that is reversible either spontaneously or by treatment. Despite the exponential increase in asthma research, the prevalence of asthma is on the increase, especially in children and young adults in western societies. Inhaled therapies are the mainstay of asthma management. This is often in the form of combined therapy using two drugs in a single device to ensure adjustable maintenance dosing. Several studies have shown that combination therapy using long-acting beta-agonists (LABA) and inhaled corticosteroids (ICS) in a single inhaler device confers complementary and synergistic effects in the management of asthma. It further improves patient compliance and reduces the complexity of treatment and morbidity associated with the disease. Recent studies have shown the combination therapy to serve as maintenance and a reliever therapy with the same efficacy as the short-acting beta agonists (SABA). This review was able to show the advantages of using combination therapy in asthma patients. This has been a subject of review at both national and international levels as there is no single medication that is effective against both the inflammatory and broncho-constrictive components of this disorder. Recent studies have shown that Budesonide/formoterol in a single inhaler is effective maintenance and reliever agent in both adults and children. It has also been found to be safe and more efficacious than fixed-dosing. In addition to convenience and patient compliance, combination devices also help towards an individualized approach to asthma management and reduce the complexity of treatment; this appears ideal for adoption by the primary care physician with a view for the patient to effectively achieve control of his own condition.

Keywords: Asthma, Combination Therapy, Inhaled Corticosteroids, Long-Acting Beta Agonists.

STUDY OF RED MEAT PRODUCTION IN BROILER CHICKENS BY MANIPULATION OF THYROID HORMONES

Amir KARIMI¹

¹University of Tabriz, Faculty of Ahar Agriculture & Natural Resources, Department of Animal Science, Tabriz, Iran

¹ORCID ID: <https://orcid.org/0000-0002-2682-4978>

Parvaneh BANDEH-ELAHI²

² University of Tabriz, Faculty of Ahar Agriculture & Natural Resources, Department of Animal Science, Tabriz, Iran

Shahryar BEHROUZI³

³ University of Urmia, Faculty of Agriculture, Department of Animal Science, Urmia, Iran

Elham HAGHVIRDILOU⁴

⁴ Agriculture ministry, Agriculture office of Tabriz, Department of Animal Science, Tabriz, Iran⁴

ABSTRACT

Poultry meat, especially broiler chickens, is an essential source of protein for human society. Existing evidence suggests that growth and thyroid hormones are primarily responsible for the natural growth and development of domestic birds. Thyroid hormones are the most important controllers of metabolism and heat. Also, thyroid hormones positively affect cellular and consequently histological differentiation for the final function of the organs such as the testis. The aim of this study was the evaluation of chicken meat development via manipulation of thyroid hormones. A total number of 300 one-day broiler chicks were allocated in three experimental groups with four replicates each and 25 chickens per replicate (per cage) in a completely randomized design. Experimental groups included: 1) control group (C), 2) Hyperthyroidism treatment: inclusion of 0.1 gr levothyroxine in Kg of feed intake in grower phase, during 21-35 days-of-age (T), and 3) Hypothyroidism treatment: inclusion of 0.1 gr propylthiouracil in kg of feed intake in grower phase, during 21-35 days-of-age (PTU). There were substantial differences among experimental groups in feed intake and FCR at 35 d; levothyroxine administration induced lower feed intake (76.94 gr/d) and FCR (2.11) than the control group (73.86 gr/d and 1.94, respectively; $P < 0.05$); but propylthiouracil administration had no substantial effects on commercial traits ($P > 0.05$), while it led to lower body weight versus control group at 49 d (2778.7 and 2989.8 gr, respectively; $P < 0.05$). Assessment of Fe concentration in chicken meat between experimental groups declared higher Fe concentration in propylthiouracil (0.009%) group versus others ($P < 0.05$), additionally, meat colorimeter by hunter lab examination indicated redder (Factor A) meat in propylthiouracil group (Factor A: 94.68, $P < 0.05$). Results of this study showed that transient hypothyroidism in the grower phase after feed restriction leads to higher Fe retention in boiler chick meat.

Keywords: Broiler Chicks, Red Meat, Thyroid Hormones.

EFFECTS OF TRANSIENT HYPO-AND HYPERTHYROIDISM IN SEMINIFEROUS TUBULAR DIAMETER AND SERTOLI CELL POPULATION IN MALE JAPANESE QUAILS

*Amir KARIMI*¹

¹University of Tabriz, Faculty of Ahar Agriculture & Natural Resources, Department of Animal Science, Tabriz, Iran.

¹ORCID ID: <https://orcid.org/0000-0002-2682-4978>

*Najm-alain MOHAMMADI*²

² University of Tabriz, Faculty of Ahar Agriculture & Natural Resources, Department of Animal Science, Tabriz, Iran.

*Shahryar BEHROUZI*³

³ University of Urmia, Faculty of Agriculture, Department of Animal Science, Urmia, Iran.

*Davoud KIANIFARD*⁴

⁴ University of Tabriz, Faculty of Veterinary Science, Tabriz, Iran.

ABSTRACT

The aim of the present experiment was to investigate the effect of transient Hypo-And Hyperthyroidism on testicular histology and reproductive performance in Japanese quail. To perform this experiment, a total of 160 42-day-old Japanese male quails were used in a completely randomized design in four treatments and four replications in each treatment. All animals were fed the same basal diet. Experimental treatments were: 1) Control treatment (basal diet; C), 2) Hyperthyroidism treatment: inclusion of 0.1 gr levothyroxine in Kg of feed intake (T), and 3) Hypothyroidism treatment: inclusion of 0.1 gr propylthiouracil in kg of feed intake (PTU). All experimental diets were fed from 2 to 8 week-of-age. At the end of the experiment, two birds per replication were sacrificed and their reproductive organs removed for further measurements. After the carcass dissection, the testis samples were carried to the histology lab in the 10% formalin solution. Statistical analysis showed at the end of 8 week-of-age, thyroid hormones T3 and T4 had the highest amount in control (1.26 µg/dl and 1.49 ng/dl, respectively) and levothyroxine (1.34 µg/dl and 1.57 ng/dl, respectively) treatments versus propylthiouracil (1.12 µg/dl and 1.27 ng/dl, respectively) treatment. Examination of testicular tissue in the birds at the end of the 8 weeks-of-age showed that propylthiouracil was more effective on histological indices versus control. There was a significant difference between propylthiouracil (418.33 µm) and levothyroxine and control groups (348.62 and 397.18 µm, respectively) in seminiferous tubular diameter (P<0.05). Also, results indicated that the thickness of the germinal layer and the number of Sertoli Cells were higher in propylthiouracil (209.63 µm and 58.2 cells/µm²) group than other experimental groups (P<0.05). It seems the inclusion of 0.1 gr of propylthiouracil in Kg of diet leads to higher testicular indices, which may have positive effects on reproductive performance.

Keywords: Japanese Quail, Levothyroxine, Propylthiouracil, Reproductive Performance.

EFFECTS OF HYDROALCOHOLIC EXTRACTS OF MEDICINAL PLANTS ON HISTOLOGICAL INDICES OF REPRODUCTIVE ORGANS IN MALE JAPANESE QUAILS

Amir KARIMI¹

¹University of Tabriz, Faculty of Ahar Agriculture & Natural Resources, Department of Animal Science, Tabriz, Iran.

¹ORCID ID: <https://orcid.org/0000-0002-2682-4978>

Behzad PARSA²

² University of Tabriz, Faculty of Ahar Agriculture & Natural Resources, Department of Animal Science, Tabriz, Iran.

Shahryar BEHROUZI³

³ University of Urmia, Faculty of Agriculture, Department of Animal Science, Urmia, Iran.

Davoud KIANIFARD⁴

⁴ University of Tabriz, Faculty of Veterinary Science, Tabriz, Iran.

Zabihallah NEMATI⁵

⁵ University of Tabriz, Faculty of Ahar Agriculture & Natural Resources, Department of Animal Science, Tabriz, Iran.

ABSTRACT

The current study was carried out to evaluate the effects of herbal extracts of fennel (*Foeniculum vulgare*) and rosemary (*Rosmarinus officinalis*) on histological indices of reproductive organs. A total of 60 male quails were arranged in a completely randomized design with three experimental groups and four replications in each. Experimental treatments were 1) C: the control group (basal diet without any herbal extract), 2) F: basal diet + 350 mg of fennel extract in kg of diet, and 3) R: basal diet + 350 mg of Rosemary extract in kg of diet. All treatments were fed from 6 to 30 week-of-age. At the end of the experiment two birds per replication were sacrificed and their reproductive organs removed for further measurements. After the carcass dissection, the testis samples were carried to the histology lab in the 10% formalin solution. Statistical analysis showed the highest thigh bone Ash was observed in the Fennel group (7.41%) versus Control (6.06%; $P < 0.05$) while it wasn't statistically different from Rosemary (6.79%) experimental group ($P > 0.05$). Also, there was no significant difference in relative testicular weights among the experimental groups ($P > 0.05$), while histological evaluation showed the germinal layer was thicker in Rosemary group versus Control (186.1 and 175.1 μm , respectively; $P < 0.05$). Additionally, the histological study indicated a higher number of spermatocyte cells in Fennel and Rosemary (60.7 and 58.9 cells/ μm^2 , respectively) groups versus Control (56.2 cells/ μm^2 ; $P < 0.05$). Conclusively, the results showed addition of Rosemary extract in the diet leads in higher histological indices of the testis.

Keywords: Histological Indices, Japanese Quails, Fennel, Rosemary.

MICROPROPAGATION OF ATROPA BELLADONNA L

Stanislava Stateva

*Agricultural Academy, Institute of Plant Genetic Resources, „Konstantin Malkov” Sadovo, Plovdiv,
Bulgaria*

ORCID ID: <https://orcid.org/0000-0002-6016-2904>

ABSTRACT

Herbs play an important role in the prevention and treatment of many diseases. Over 80% of the world's population uses medicinal plants, and according to the World Health Organization, this percentage is constantly growing. Preservation of the species requires it to be studied in its entirety under controlled conditions. The experiment tested 2 main media - Quorin & Lepoivre and Murashige & Skoog. The effect of auxins IBA and IAA at concentrations of 0.2, 0.5 and 1.0 mg /l in three consecutive replicates every 10 days was studied. There were fewer roots with less developed root system in the auxin IAA variants than in the control variant, which had a very well-developed root system. It was found that there was no statistically significant difference between the heights, the number of leaves and the number of explant roots in 0.2 mg / l IBA and the control variant with statistical error $\alpha = 1\%$.

VEGETABLE NUTRITION AND BENEFITS

Ananda Majumdar

(0000-0003-3045-0056) - ORCID / *Connecting Research and Researchers*

Ananda Majumdar / University of Alberta - Academia.edu

*The University of Alberta (Bachelor of Education after Degree Elementary, Faculty of Education, Community Service-Learning Certificate and Certificate in International Learning, CIL) **

Harvard Graduate School of Education (Professional Education as a Child Development

*Educator, Certificate in Early Education Leadership (CEEL-Series 2), online) **

*Intern, Digital Museum and Diaspora, Migration, GRFDT, New Delhi, India (April 2021- Present, Online) **

*Workshop in Babeş-Bolyai University (UBB), Faculty of Letters, Romania, Early Crisis of Christianity, 2022**

Book Pecker Fellow, Peace X, India (April 1, 2021- September 1, 2021, Online) best fellow in the social science department and computer literacy

Certificate in Migration Studies, GRFDT, New Delhi, India (September 2020-March 2021, Online)

Grant MacEwan University (Diploma in HR Management)

Jadavpur University (Master of Arts in International Relations)

Sikkim Manipal University (Master of Business Administration in HR and Marketing Management)

MBB College, Tripura University (Bachelor of Arts in Political Science)

Antarctic Institute of Canada (Researcher and Writer), Servicing Community Internship

Program (SCiP) Funded by the Government of Alberta

Member of Student Panel, Cambridge University Press,

Member of the Association of Political Theory (ATP) University of Massachusetts

Student Member of ESA (European Studies Association), Columbia University, U.S.

General Coordinator, Let's Talk Science, University of Alberta

Early Childhood Educator, Brander Garden After School Parents Association

People & Cultural Analyst, Riipen Internship

ABSTRACT

Fresh Vegetables are awarded almost all the nutritional values. The human body requires those values of nutrition for a healthy lifestyle. Fresh vegetables are good sources of minerals, vitamins, dietary fibre, antioxidants etc. Fruits such as vegetables are low in calories and fats, but they cover a good proportion of vitamins and minerals. All kinds of green-yellow-orange vegetables are the sources of potassium, iron, vitamin B-complex, vitamin-C, vitamin-A, vitamin K, calcium, magnesium etc. Like fruits, vegetables such as potatoes, carrots, and eggplants are the home for antioxidants. Vegetables help protect human health from oxidant stress, diseases, cancer etc. vegetables help create a capability to fight against oxidants. In this context, boosting immunity is an essential element. The nutrition of vegetables attracted fitness consciousness and proven health benefits. Ordinary vegetables such as bitter melon, spinach, Chinese cabbage, eggplant etc., have meagre calories. But the scientific studies explore

that because of the nutritional richness; those everyday vegetables are good for helping the human Body. It helps to stay fit and from illness. The human Body spends an amount of food absorption called 'Basal metabolism rate.' Therefore, it is a fact that vegetable nutrition in a standard diet helps lose weight.

Human beings should eat at least 5-7 servings of vegetables daily. Seasonal vegetables should be encouraged as well. Vegetable like oranges colour is rich in vitamin -A and B, zeaxanthin, and citroxanthins, while dark-green vegetables are suitable bases for minerals and phenolic etc. vegetables should be collected from the farm owners directly. Vegetables should always be eaten in small quantities for their lasting long. Therefore, the features should always be fresh, bright in colour and flavour. The preparation of making vegetables constantly should be washing them thoroughly especially green leafy vegetables. It should be rinsed in salt water and then through the cool water. The paper's objective is to discuss the importance of vegetables in human life. The paper's outcome will create more sense, conscience, and concern for having vegetable food. The methodology of the article has been conducted by documentary analysis. The feature question of the paper is how does the campaign work for better vegetable nutrition globally?

Keywords: Nutrition, Vegetables, Calories, Antioxidant, Vitamin, Salt Water.

OLIVE OILS ENRICHED WITH LYCOPENE FROM TOMATO BY-PRODUCTS: THE RELATIONSHIP OF LYCOPENE CONTENT WITH COLOUR AND ANTIOXIDANT ACTIVITY

H. EL BASETT^{1}, F. RAFAKI² & H. HAJJAJ¹*

1- Laboratory of Plant Biotechnology and Molecular Biology, Faculty of Sciences of Meknes, BP 11201 Zitoune Meknes city (Morocco) – Cluster of Competency “Agri-food, Safety and Security” IUC VLIR-OUS, Moulay Ismail University, Marjane 2, BP 298, Meknes city (Morocco)

2- Laboratory « Les Conserves de Meknès » (LCM), Les Conserves de MEKNES – AICHA-, Industrial Zone Aïn Slougui, BP 217 Meknes city (Morocco)

ABSTRACT

The tomato processing industry generates a large number of by-products, usually consisting of peels and seeds. These by-products, as promising sources of lycopene, could be used to replace synthetic food antioxidants with natural antioxidants. In this study, olive oils were enriched with lycopene from dried tomato by-products, especially peels, by maceration. The stability of lycopene in virgin olive oil (VOO) and refined olive oil (ROO) was studied in the temperature range of 10-40 °C. The total lycopene content and DPPH free radical scavenging activity of the enriched oils were determined by spectrophotometric methods, and the color was evaluated according to the CIELab color space. The results showed that the lycopene content of the oils increased significantly with increasing incorporation of dried tomato peels. Finally, the color parameters of the oils were significantly influenced. Enriched oils could be a potential source of lycopene and could have significant antioxidant activity when ingested as part of a diet.

Keywords: Lycopene, Tomato by-products, Olive oils, Antioxidant activity.

MALATYA YÖRESİNDE YETİŞTİRİLEN STANDART VE YEREL BAZI ÜZÜM ÇEŞİTLERİNİN FENOLOJİK ÖZELLİKLERİ VE SICAKLIK TOPLAMI İSTEKLERİNİN BELİRLENMESİ

DETERMINATION OF PHENOLOGICAL CHARACTERS AND EFFECTIVE HEAT
SUMMATION REQUIREMENTS OF STANDARD AND LOCAL SOME GRAPE CULTIVARS
GROWN IN MALATYA PROVINCE

Sema KÜSMÜŞ¹

¹*Yüksek Lisans Öğrencisi, Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Bahçe Bitkileri
Anabilim Dalı, Van, Türkiye*

ORCID ID: 0000-0002-0677-0001

Adnan DOĞAN²

²*Dr. Öğretim Üyesi, Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Van,
Türkiye*

ORCID ID: 0000-0002-8623-0629

Cüneyt UYAK³

³*Dr. Öğretim Üyesi, Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Van,
Türkiye*

ORCID ID: 0000-0002-6101-6845

ÖZET

Bu çalışma, Malatya yöresinde yetiştirilen Kureyş, Köhnü, Amasya, Şilfoni, Mazırım, Kızılatım, Hasandede, Kabarcık, Tahannebi, Cardinal, Barış, Banazı Karası, Öküzgözü, Kalecik Karası, Trakya İlkeren, İtalya ve Tekirdağ Çekirdeksiz standart ve yerel üzüm çeşitlerinin fenolojik özelliklerini ve Etkili Sıcaklık Toplamı İsteklerini (EST) belirlemek amacıyla 2014 ve 2015 yıllarında gerçekleştirilmiştir. Üzüm çeşitlerinin iki yıl süreyle tomurcuk patlaması, tomurcuk sürmesi, tam çiçeklenme, tane tutumu, ben düşme ve hasat tarihleri ile uyanma-tam çiçeklenme, tam çiçeklenme-ben düşme, ben düşme-hasat ve uyanma-hasat dönemleri arasındaki Etkili Sıcaklık Toplamı İstekleri (EST) belirlenmiştir. Üzüm çeşitlerinde tomurcuk patlamasının 26 Mart-20 Nisan, tomurcuk sürmesinin 10 Nisan-10 Mayıs, tam çiçeklenmenin 8 Mayıs-30 Mayıs, tane tutumunun 18 Mayıs-14 Haziran, ben düşmenin 20 Temmuz-10 Ağustos ve hasat tarihlerinin 18 Ağustos-15 Eylül tarihleri arasında olduğu tespit edilmiştir. Üzüm çeşitlerinde tam çiçeklenmeden hasada kadar geçen gün sayısının 81 gün (İtalya) ile 117 gün (Köhnü), tomurcukların patlamasından hasada kadar geçen gün sayısının ise 125 gün (Şilfoni ve İtalya) ile 161 gün (Köhnü) arasında olduğu saptanmıştır. Üzüm çeşitlerinin fenolojik dönemlere göre, Etkili Sıcaklık Toplamı İsteklerinin (EST) uyanma-tam çiçeklenme arasında 121 gün-derece (Trakya İlkeren) ile 384 gün-derece (Öküzgözü), tam çiçeklenme-ben düşme arasında 815 gün-derece (Kabarcık) ile 1188 gün-derece (Öküzgözü), ben düşme-hasat arasında 441 gün-derece (Şilfoni, Tekirdağ Çekirdeksiz ve İtalya) ile 894 gün-derece (Köhnü), uyanma-hasat arasında ise 1564 gün-derece (Trakya İlkeren) ile 2256 gün-derece (Öküzgözü) arasında değiştiği belirlenmiştir. Malatya yöresinin üzüm çeşitlerine göre uyanmadan hasat tarihine kadar iklimin 2014 yılı iklim verilerine göre karşıladığı EST toplamı (uyanma-hasat) 2368 gün-derece, 2015 yılı iklim verilerine göre 1940 gün-derece olarak belirlenmiştir. Malatya yöresi uzun yıllar (1991-2020) iklim verilerine göre EST değeri (1 Nisan-31 Ekim) 2222 gün-derece olarak hesaplanmıştır. Bulunan uzun yıllar EST değer aralığı yörenin “*Sıcak-Ilman:1951-2250 gün-derece*” yapıda olduğunu göstermektedir. Üzüm çeşitlerinin Etkili Sıcaklık Toplamı İsteklerinin (EST) çeşit, yıl ve fenolojik safhalara göre değişiklik gösterdiği tespit edilmiştir.

Anahtar Kelimeler: Üzüm Çeşidi, Malatya, Fenolojik Özellikler, Etkili Sıcaklık Toplamı

ABSTRACT

This study was carried out to determine the phenological characters and Effective Heat Summations (EHS) Requirements of Kureys, Köhnü, Amasya, Şilfoni, Mazırım, Kızılatım, Hasandede, Kabarcık, Tahannebi, Cardinal, Barış, Banazı Karası, Öküzgözü, Kalecik Karası, Trakya İlkeren, İtalya and Tekirdağ Seedless standard and local grape cultivars grown in Malatya province in 2014 and 2015. For two years, bud-break, bud sprouting, full bloom, fruit-set, verasion and harvest dates of grape cultivars were recorded and their Effective Heat Summations (EHS) Requirements between bud-break-full bloom, full bloom-verasion, verasion-harvest and bud-break-harvest periods were determined. It was determined that phenological dates were between 26 March-20 April for bud-break, 10 April-10 May for bud sprouting, 8-30 May for full bloom, 18 May-14 June for fruit-set, 20 July-10 August for verasion and 18 August-15 September for harvest dates. In grape cultivars, it was determined that the number of days from full bloom to harvest was between 81 days (İtalya) and 117 days (Köhnü), and the number of days from bud-break to harvest was between 125 days (Şilfoni and İtalya) and 161 days (Köhnü). According to the phenological periods of grape cultivars, Effective Heat Summations (EHS) Requirements varied from 121 day-degree (Trakya İlkeren) to 384 day-degree (Öküzgözü) between bud-break and full bloom, from 815 day-degree (Kabarcık) to 1188 day-degree (Öküzgözü) between full bloom and verasion, from 441 day-degree (Silfoni, Tekirdağ Seedless and İtalya) to 894 day-degree (Köhnü) between verasion and harvest, from 1564 day-degree (Trakya İlkeren) to 2256 day-degree (Öküzgözü) between bud-break and harvest. According grape cultivars, total Effective Heat Summations (EHS) met by Malatya province from bud-break to harvest date was determined as 2368 day-degree according to 2014 climate data and 1940 day-degree according to 2015 climate data. According to the climate data for many years (1991-2020), the Effective Heat Summations (EHS) value (between 1 April and 31 October) of Malatya province was calculated as 2222 day-degree. The Effective Heat Summations (EHS) value range found for many years indicates that the Malatya province is in the "Hot-Warm: 1951-2250 day-degree" structure. It was founded that Effective Heat Summations (EHS) Requirements of grape cultivars varied according to cultivar, year and phenology stages.

Key Words: Grape Cultivar, Malatya, Phenological Characters, Effective Heat Summations

IDENTIFYING THE WNT/BETA CANTENINPATHWAY AND miRNA CROSS TALK OVER THE EXPRESSION LEVEL OF CHEK2 AND LRPIB TUMOR SUPPRESSOR GENE IN BREAST CANCER

*Momna Mehmood**, *Muhammad Naeem Faisal**, *Alishbah Roobi*, *Noreen Aslam*, *Aiza Kamal Khan*

¹*Institute of Physiology and Pharmacology, University of Agriculture Faisalabad, Pakistan*

ABSTRACT

Objectives: Cancer is a group of interrelated diseases in which cells undergo uncontrolled proliferation and differentiation. Carcinogenesis/ Tumor-genesis is a phenomenon in which genetic alteration assist the mechanism of cells to make uncontrolled growth of cells without any growth stimulus. Breast cancer (BC) is a second utmost cause of deaths in females as well as it is the most common malignancy in women round the globe. More than hundreds of genes that are involved in the breast cancer are identified till date. Genomic analysis of these genetic alterations would be helpful to put more light on breast cancer pathobiology and better understanding of associated molecular mechanisms. Mostly, mutation in genes occur in protein coding regions. The objective of this study was to identify the expression level of CHEK2, LRPIB, tumor suppressor gene KRAS, Src and role of micro RNA in breast cancer.

Methods: Biopsy Samples were collected and kept in the solution containing 10% formalin and 0.9% normal saline. Significant down regulation in LRPIB (<0.9854) was observed in breast cancer patients as compared to control.

Results: The KRAS and Src gene show significant up regulation ($p<0.05$) of expression level in breast cancer patients when compare with normal tissues. Micro RNA 140, 145 and 238 also show up regulation in breast cancer samples when compared with normal breast tissues. qRT-PCR was used to analyze the gene expression level. Histo-pathological results showed that excessive proliferation rate, atypical glandular and cell hyperplasia in cancer samples when compared with normal tissues. ANOVA and DMR tests were used to observe the significance of data.

Conclusion: By mutating the upregulated genes in tumor cells can be helpful in controlling breast cancers.

Keywords: Breast cancer, WNT/BETA canteninpathway, micro RNA

CNF A COUSIN OF CNT IS OFFERING A NEW ARENA FOR NANOMEDICINE STUDIES

*Anuradha Pandey Dubey and Madhuri Sharon**

Sharon Institute of Nanotechnology, Parishkar College of Global Excellence, Jaipur, Rajasthan, India

ABSTRACT

Nanoparticles with size range between 1-100 nm have unique physical and chemical properties which help them to interact with different living systems as their nanosized dimensions show similarity with many biomolecules that play a vital role in living organisms. There is a rapid surge in the use of various carbon nanomaterial such as carbon nanotube, carbon-dots and graphene in various fields including nanomedicine. Recently carbon nanofibers which is very similar to CNT in basic structure and properties i.e.graphitic nature and high aspect ratio, has gathered more attention for its use in nanomedicine arena. As compared to CNT, CNF has rough surface due to broken graphene and high porosity offers many advantages. The other unique physical properties are high strength, low density, metallic conductivity, electrical conductivity, tuneable morphology, chemical and environmental stabilities, as well as compatibility with organo-chemical modification are also being utilized in nanomedicine field. The new opportunities that are being envisaged are for antibacterial treatment, tissue engineering, drug delivery, cancer treatment, dental applications and many more. The uniqueness of CNFs in terms of cellular interactions make them desirable for diagnostic and medical applications e.g. CNFs filled with nanoparticles are used to enhance the response of oral drug one more level in oral drug analyses. The rough surface of CNF is suitable for functionalization as well as creating composites or conjugates

The properties of polymer nanocomposites depend on the characteristics of the components and on the interaction polymer-nanofiller. Several researchers have shown that the application of CNF Nanocomposites with ceramic or metal matrices in biomedicine is confined to the creation of tough orthopedic or dental implants such as a calcium phosphate nanocomposite filling in a tooth, Silver nanoparticles have shown evidence of anti-bacterial properties, and implementation into a polymer-matrix allows for their slow release ensuring a maintained anti-bacterial environment able to inhibit the growth of microorganisms upon it, Nanomaterials such as graphene, carbon nanotubes and Carbon Nano Fiber can be used as reinforcing agents to polymer constructs, which has applications in bone tissue replacement. It is found that CNF nanocomposites enable to enhance therapeutic efficacy, reduce the side effects of conventional treatments in cancer and also decreases the possibility of drug resistance. The present research study mainly focuses on how the use of CNF nanocomposites in the field of medicines is a promising improvement over the existing materials in use and in the processes of treating, curing, diagnosing, preventing diseases thus improving human health.

Keywords: Nanocomposites, Carbon Nano fiber, nanomedicine, Carbon Nano tubes, nano-fillers.

EFFECT OF VARIOUS MANURES AND CONCENTRATION OF RICE HUSK SILICA EXTRACT ON GROWTH AND YIELD OF SWEET CORN (*Zea mays saccharata* Sturt)

Subandi, M.¹, and Budy Frasetya T.Q², and Hazna Tania Sopyani³

^{1,2,3}Agrotechnology Department of Faculty of Science and Technology, the State Islamic University of Sunan Gunung Djati of Bandung

ABSTRACT

Sweet corn is a trendy commodity, but the production fluctuates year by year. One of the limiting factors for sweet corn growth is the availability of nutrients. The distribution of the right manure and the right concentration of rice husk silica extract is expected to increase the growth and yield of sweet corn plants. This study aims to determine the interaction between the various manures and rice husk silica extract concentration on the growth and yield of sweet corn plants and determine the most optimal type of manure and rice husk silica extract concentration for the growth and yield of sweet corn. This research was conducted in June – August 2021. The method used in this study was a 2-factor Randomized Block Design. The first factor is the kind of manure (chicken manure 20 t ha⁻¹, goat manure 20 t ha⁻¹, and cow manure 20 t ha⁻¹) and the second factor is the concentration of rice husk silica extract (10 ml L⁻¹, 20 ml L⁻¹, and 30 ml L⁻¹) so there were 16 treatments with 3 replications each. Based on this study, there was an interaction on the length of the cob. There was also an independent effect of the type of manure on the parameters of plant height, leaf area, the diameter of cobs without husks, wet weight of cobs with husk, wet weight of cobs without husk, sweetness, and harvest index. The independent influence of rice husk silica extract concentration was found in the parameters of leaf area, wet weight of cobs with husk, wet weight of cobs without husks, sweetness, and harvest index. Application of chicken manure 20 t ha⁻¹ and concentrations of rice husk silica extract 20 ml L⁻¹ have the potential to increase the growth and yield of sweet corn plants.

Keywords: extract, manure, silica, sweet corn.

EVALUATION OF *BORO* RICE CULTIVARS OF ASSAM, INDIA FOR THEIR COLD AND HEAT STRESS TOLERABILITY BASED ON VARIOUS MORPHO-PHYSIOLOGICAL PARAMETERS

Mehzabin Rehman and Bhaben Tanti

*Plant Molecular Biology Laboratory, Department of Botany,
Gauhati University, Guwahati – 781014, Assam, India*

ABSTRACT

Over the past years, rice cultivation has faced various types of environmental stress in due course of their life cycle. Of which, cold and heat stresses are some of the major factors affecting rice cultivation in a number of ways thereby limiting its productivity and yield. The present study was carried out to evaluate 27 *boro* rice cultivars of Assam, India for their potential resistance to cold and heat stresses. Based on various morpho-physiological parameters, the *boro* rice cultivars showed varying degrees of tolerability under cold and heat stress. From the data so generated, the total stress response index (TSRI) values were calculated which revealed Buro as the most tolerant cultivar under both the stress conditions. On the other hand, Disang was found to be the most susceptible cultivar under cold stress, while Swarnabh was found to be the most susceptible cultivar under heat stress. Similarly, Kolong was found to be highly tolerant under heat stress and Laal Bihari was found to be highly tolerant under cold stress. Moricha was found to be highly susceptible under cold stress and China Boro being highly susceptible under heat stress. Apart from this, a few varieties also revealed certain contrasting differences among them under both the stress conditions, which include China Boro and Swarnabh being highly susceptible to heat stress, were found to be moderately tolerant varieties under cold stress. Thus, the findings suggest that the morpho-physiological traits can be useful for evaluating rice varieties under stress conditions and TSRI can prove to be a suitable marker for developing promising rice varieties in future rice breeding programmes.

Keywords: *Boro* rice (*Oryza sativa* L.), cold and heat stress, morpho-physiological parameters, total stress response index (TSRI)

STUDY OF THE EFFECT OF DIFFERENT LEVELS OF SALINITY WITH $MgCl_2$ ON GERMINATION AND SEEDLING CHARACTERISTICS IN RICE VARIETIES

Gergana DESHEVA

*Institute of Plant Genetic Resources "Konstantin Malkov", Agricultural Academy, 4122 Sadovo, 2
Druzhba str., Bulgaria*

Svilena TOSHEVA

*Institute of Plant Genetic Resources "Konstantin Malkov", Agricultural Academy, 4122 Sadovo, 2
Druzhba str., Bulgaria*

Evgenia VALCHINOVA

*Institute of Plant Genetic Resources "Konstantin Malkov", Agricultural Academy, 4122 Sadovo, 2
Druzhba str., Bulgaria*

Albena PENCHEVA

*Institute of Plant Genetic Resources "Konstantin Malkov", Agricultural Academy, 4122 Sadovo, 2
Druzhba str., Bulgaria*

ABSTRACT

The aim of the study was to analyse the effect of different $MgCl_2$ concentrations on germination and seedling characteristics in five rice cultivars belong to species *Oriza sativa* L. - Osmanchik 97, Kameo, CL 34, Gala and Luna. Six salinity levels were studied (low concentrations: 50 mM and 100 mM $MgCl_2$ solutions, medium concentrations: 150 mM and 200 mM $MgCl_2$ solutions and high concentrations: 250 mM and 300 mM $MgCl_2$ solutions). Deionized distilled water was used as control. The data for germination energy (%), germination percentage (%), coefficient of velocity of germination (% day⁻¹), germination rate index, mean germination time (day), shoot and root length (cm), fresh weight (mg plant⁻¹) of shoot and root and dry weight (mg plant⁻¹) of shoot and root were recorded. Vigor index and salt tolerance index were also calculated.

Application of medium and high doses of salinity with $MgCl_2$ had a suppressive effect on seed germination. Increasing the salinity concentration from 50 to 100 mM $MgCl_2$ prolonged the mean germination time and had a inhibitory effect on shoot and root growth, this effect being more pronounced in roots.

At high levels of salinity (250-300 mM $MgCl_2$), the studied varieties were classified as non-tolerant to shoot growth. At 50 mM $MgCl_2$ the tolerance of the varieties was very high except for the Luna variety for which the tolerance was high. At 100 mM $MgCl_2$ the varieties were classified as moderately tolerant, except for Cameo, which had a low tolerance. At 150 mM $MgCl_2$ the tolerance of the cultivars ranged from medium (Cameo and Gala) to low (Osmanchik 97, Luna and CL 34) and at 200 mM $MgCl_2$ from low (Cameo and Gala) to very low (Osmanchik 97, Luna and CL 34).

At medium and high levels of $MgCl_2$ (150-300 mM $MgCl_2$), the studied varieties were classified as non-tolerant with respect to root growth. At 50 mM $MgCl_2$ all cultivars had medium tolerance and at 100 mM $MgCl_2$ their root growth salt tolerance was low, respectively.

Key words: rice, *Oriza sativa* L., germination, salinity, seedling growth, $MgCl_2$

ASSESSMENT OF THE CONSEQUENCES OF APPLYING GENE EXPRESSION MODULARITY ON QUANTITATIVE TRAITS OF RUMINANTS AND POULTRY

Dr. Omar MARDENLI

University of Aleppo, faculty of agriculture, Syria

ORCID ID: 0000-0002-6092-7604

Assist. Prof. Dr. Mahdi Saleh Mohammad AL-KERWI

University Of Al-Qadisiah, Faculty Of Agriculture, Iraq

ORCID ID: 0000-0002-6699-9027

Prof. Dr. Ali Sami Amin AL-TAWASH

University Of Al-Qadisiah, Faculty Of Agriculture, Iraq

Orcid ID: 0000-0003-1055-5117

Assist. Prof. Dr. Ali Abd Al-Jabbar IBRAHIM

University Of Al-Qadisiah, Faculty Of Agriculture, Iraq

ORCID ID: 0000-0003-3361-4618

ABSTRACT

At the level of animal production, the dependency relationship between genetic improvement programs and genetic engineering was based on the achievement of several strategic goals to meet the increasing needs of animal protein, improve product quality and increase resistance to diseases. The mechanism of development of the BLUP methodology and the reduced animal model allowed the estimation of expected differences in offspring and the prediction of transmission competence within livestock breeds, which would provide a full explanation of the phenotype for the target productive traits. Mainly, the applications of genetic engineering have been characterized by the manipulation of DNA so that its markers are combined to increase the efficiency of traditional breeding methods, and these markers contain information that will determine the phenotype, paving the way for genetic engineering to manipulate the DNA sequence directly. The production of genetically modified cattle, small ruminants (sheep and goats) and poultry contributed to providing a wider knowledge about the genes that control growth by manipulating factors and rates of growth (e.g., involving of growth hormone (GH) to raise the growth rates at cattle). Modification of the unique genes responsible for the formation of milk at cattle led to a clear change in its properties (e.g., involving of human lactoferrin, which increases the proportion of proteases, prevents bacterial growth and reduces mastitis). Several gene polymorphisms and candidate genes closely related to the studied quantitative trait have been identified (e.g., lactation in high producing dairy cows, secretion of lipoproteins, intestine DNA sequences, organismal, embryonic and tissue development in poultry). The mechanism for determining quantitative trait loci (QTL) based on candidate genes has been characterized by many disadvantages including poor knowledge of gene function and lack of control over the effect of other unidentified loci when evaluating a specific region of genome of the studied trait.

Keywords: gene expression, quantitative trait, ruminants, poultry

THE EFFECT OF CHITOSAN-BASED COATING ON THE QUALITY OF FRESH REDFISH (*Sebastes marinus*) FILLET DURING COLD STORAGE

*Huynh Thi Ai Van*¹

¹*Faculty of Food Technology, Nha Trang University, No. 2 Nguyen Dinh Chieu St., Nhatrang City, Vietnam.*

*Margrét Geirsdóttir*², *Cecile Dargentolle*²

²*Icelandic food and biotech R&D Company, Vínlandsleið 113, Reykjavík, Iceland.*

ABSTRACT

The main aim of this study was to evaluate the improvement of quality obtained thanks to the chitosan-based coating on Redfish fillet under cold storage. In this research, four different skinned Redfish fillet groups treated with different solutions (water, ascorbic acid 1%, chitosan 1.5 %, chitosan 1.5% combined with gelatin 2%) were stored at 2 – 3°C for 12 days to determine the changes (colour, peroxide value (PV), thiobarbituric acid reactive substances (TBARS), TVC and *Pseudomonas. spp*, Torry freshness Score) during preservation. Chitosan with 90% degree of deacetylation and Tilapia skin gelatin with 200 bloom were used. The obtained research results revealed that fish gelatine combined with chitosan coating increased significantly the whiteness ($p < 0.05$). Besides, the chitosan-based coating limited significantly the lipid oxidation on Redfish fillets during cold storage ($p < 0.05$). The PV was stable at the level of 1 to 2.1 mmol/kg and the TBARS had a slight increase from 3.8 $\mu\text{mol/kg}$ to 11 $\mu\text{mol/kg}$ in chitosan-based coated samples over the first 8 days of storage. Fish gelatin combined with chitosan coating also showed a delay on TVC and *Pseudomonas. spp* during cold storage. The chitosan-based coating could prolong significantly the freshness of Redfish fillets and increased the shelf life of Redfish fillets during cold storage ($p < 0.05$). The shelf life of groups chitosan-based was estimated to be longer than 12 days of cold storage.

Keywords: chitosan-based, coating, cold storage, quality.

EFFECT OF RESIDUES AND FRESH EXTRACT OF MEDICINAL PLANTS ON SOIL NUTRIENTS AND *Zea mays* L. YIELDS

*Anvar Ghaderi*¹, *Behnam Dovlati*^{*2}, *Ebrahim Sepehr*³, *Mohsen Barin*⁴ and *Amir Rahimi*⁵

1- Master of Soil Science, Department of Soil Science, Faculty of Agriculture, Urmia University

2- * Assistant Professor, Department of Soil Science, Faculty of Agriculture, Urmia University

3- Professor, Department of Soil Science, Faculty of Agriculture, Urmia University

4- Assistant Professor, Department of Soil Science, Faculty of Agriculture, Urmia University

5- Assistance Professor, Department of Agronomy, Faculty of Agriculture, Urmia University

ABSTRACT

Allochemical of medicinal plants can affect on biotic and abiotic processes of soil as well as the growth status of plants. The aim of this study was to study the nutrients status of soil and *Zea maize* plant and the effect of allele-chemicals of powder and extract of medicinal plant (*Origanum vulgare* L. and *Melissa officinalis*) as well as microbial inoculation (Mycorrhiza and PGPR) on plant and soil. This study was performed as two experiments with *Origanum vulgare* L. and *Melissa officinalis* plants. Each experiment done as a factorial, the first factor in two levels (including plant extracts and powders as 2%) and the second factor in three levels (including Mycorrhiza and PGPR inoculation and control) in a completely randomized design with three replications. Fresh plant extract and dry powder of medicinal plant were mixed uniformly with the soil. Then, microbial treatments were applied under disinfected corn seeds as a one centimeters layer. Three suitable plants were maintained after germination of seeds during the growth period (60 day). Yield and nutrients concentration in soil and plants, as well as chemical properties and the root colonization were determined by standard methods after plants harvesting. The results showed that the allochemical effects of medicinal plants on root colonization and the nutrients concentration in soil and plants were different however, the effectiveness of *Origanum vulgare* L. was significantly different than *Melissa officinalis*. Also, the allochemical effect of fresh plant extract was higher than dry powder of medicinal plant on the nutrients concentration in soil and plants. Thus, the greatest impact was observed in declining the concentration of phosphorus (P) and zinc (Zn) and the least was in soil potassium (K). Decreasing of phosphorus and zinc concentrations in treatment with *Origanum vulgare* L. extract was 35.9% and 50.6%, and in *Melissa officinalis* extract was 12 and 35.6% respectively. The amount of root colonization in the treatment with fresh extract without microbial inoculation for *Origanum vulgare* L. and *Melissa officinalis* were 25.6% and 23.3%, while in the treatment with dry powder was 38.9% and 36.7% respectively. Root colonization were decreased in the *Origanum vulgare* L. and *Melissa officinalis* extracts uninoculated treatments by 43.5% and 48.4%, and dry powder treatment by 14% and 18.9% respectively. On the other hand, microbial inoculation improved the nutrient status of the soil and plants, and significantly prevented the reduction of measured traits. As a result, medicinal plant residual resulted in decreasing available forms of nutrients for the target plants, or maybe inhibit the nutrient uptake by the roots. So, microbial inoculation was the best strategy and it prevents a severe decrease in the concentration of nutrients to deal with this condition.

Keywords: Allelopathy, Allelochemical of medicinal plants, Nutrients uptake, PGPR, Mycorrhiza

FUTURE OF FOOD SUPPLY CHAIN MANAGEMENT IN INDIAN AGRICULTURE

Asha Devi. J^{1}. Sumi A M*. Dr. K.S Chandrasekar²*

*¹Research Scholars, Institute of Management in Kerala (IMK), University of Kerala,
Thiruvananthapuram, Kerala, INDIA.*

*²Professor & HoD, Institute of Management in Kerala (IMK), University of Kerala,
Thiruvananthapuram, Kerala, INDIA.*

ABSTRACT

Agriculture in India is a livelihood for most of the population and can never be underestimated. Although its contribution to the gross domestic product (GDP) has reduced to less than 20 percent, other sectors' contribution increased faster and agricultural production has also increased. It has made it self-sufficient and taken from being a begging bowl for food after independence to a net exporter of agriculture and allied products. Total foodgrain production in the country is estimated to be a record 291.95 million tonnes, according to the second advance estimates for 2019-20. The Indian Council for Agricultural Research (ICAR) forecasts that demand for foodgrain will increase to 345 million tonnes by 2030. Food supply chain management is when agro-based product(s) movement from the initial supplier to the final user appears with all non-value adding expenses. Usually, supply chain management is between partners such as a retailer and a preferred supplier or a restaurateur and a preferred supplier of a particular ingredient. From a supplier 's perspective, supply chain management can mean more than this. Moreover, one needs to apply that and adapt that in a slightly different way for perishable agriculture produce. Three key issues govern the food supply chain in the future. They are globalization, consolidation, and power. These issues give rise to a series of ethical considerations that could be positive or negative depending on the adopted position. This study focus on understanding the future of food supply chain management in Indian agriculture.

Keywords: Food, Production, Food Supply Management, Agriculture, India.

**ИССЛЕДОВАНИЕ ИНТЕНСИВНОСТИ УГЛЕВОДНОГО БРОЖЕНИЯ
МОЛОЧНОКИСЛЫХ БАКТЕРИЙ ДЛЯ ПРИГОТОВЛЕНИЯ ПРОБИОТИЧЕСКОГО
НАПИТКА**

INVESTIGATION OF THE INTENSITY OF CARBOHYDRATE FERMENTATION OF LACTIC
ACID BACTERIA FOR THE PREPARATION OF A PROBIOTIC DRINK

Сағындыков Утемурат Зулхарнаевич

Евразийский национальный университет им. Л. Н. Гумилева

г. Нур-Султан, Казахстан

Нурыш Аида Бексултанкызы

Магистрант Евразийского национального университета им. Л. Н. Гумилева,

г. Нур-Султан, Казахстан

Амангосова Инабат

Студент Евразийского национального университета им. Л. Н. Гумилева,

г. Нур-Султан, Казахстан;

АННОТАЦИЯ

В настоящее время потребление молочных продуктов имеет большую актуальность. В рационе человека молочные продукты являются одним из важнейших элементов. В данной статье рассказывается о проявлении интенсивности углеводного брожения молочнокислых бактерий, описывается их сахаролитическое свойство. Исследование интенсивности углеводного брожения штаммов молочнокислых бактерий является актуальным для производства широкого спектра ферментированных продуктов.

Ключевые слова: Молочнокислые бактерии, ферментация, брожение.

ABSTRACT

Currently, the consumption of dairy products is of great relevance. Dairy products are one of the most important elements in the human diet. This article describes the manifestation of the intensity of carbohydrate fermentation of lactic acid bacteria, describes their saccharolytic property. The study of the intensity of carbohydrate fermentation of lactic acid bacteria strains is relevant for the production of a wide range of fermented products.

SYNTHESIS OF ZnO/PVA NANOCOMPOSITE USING AQUEOUS FOR FOOD PACKAGING

Enyew Amare Zereffa

Department of Applied Chemistry, School of Applied Natural Science, Adama Science and Technology University, Ethiopia

ORCID ID: 0000-0001-5334-9626

ABSTRACT

The application of flexible polymer nanocomposites for food packaging to inactivate microorganisms associated with foods is the demand of the present-day food industry to assure quality throughout the packaging operation. The utilization of polyvinyl alcohol (PVA) assisted zinc oxide nanocomposite for food stuff packaging has been very attractive in the recent past. Nanostructured ZnO was synthesized at optimized pH (10.5) from different ratios of zinc acetate and *Moringa oleifera* leaf extract (1:7, 1:3, 1:1 and 3:1). ZnO coated polyvinyl alcohol (ZnO/PVA) nanocomposites were prepared from 5, 9, 13 and 16 % by wt of ZnO and PVA by solution casting method. The thermal stability of ZnO synthesized with 1:1 ratio at pH 10.5 was investigated with TGA/DTA. The analytical techniques such as X-ray diffraction (XRD), ultra-violet visible analysis (UV-Vis), Fourier-transform infrared spectroscopy (FTIR), and scanning electron microscope (SEM) were used for the characterization of the synthesized ZnO and ZnO/PVA nanocomposites (NCs). The antibacterial activity of the synthesized ZnO and ZnO/PVA NCs were evaluated against gram negative *E. coli* & gram positive *S. aureus* bacteria. The electrochemical stability of ZnO/PVA NCs was also investigated by cyclic voltammetric (CV) method. The thermogram of ZnO indicated that the oxide was found to be stable even beyond 500°C. The SEM analysis revealed rod shaped morphology for synthesized ZnO from 1:1 ratio at pH 10.5. But the nanocomposite prepared with 5% of ZnO of (1:1) at the same pH exhibited uniformly dispersed rod-shaped particle on the surface as well as in matrix of polyvinyl alcohol film. According to XRD result, ZnO synthesized with more percentage of plant extract resulted in the small size crystallites while that with low percentage of plant extract resulted in the larger crystallite size. The antibacterial inhibition efficiency of ZnO/PVA NCs was better and found to increase with increase with the amount of ZnO.

Keywords: Nanocomposite, synthesis, antibacterial activity, morphology, food packing

EVIDENCE OF BUBBLES IN PAKISTAN AND ITS MAJOR TRADING PARTNERS' STOCKS MARKET'S

Naureen Maqbool

Department of Economic Comsats University Islamabad

Mumtaz Ahmed, PhD

Department of Economics, COMSATS University Islamabad

ABSTRACT

A world is a Global village. The 'global village' term is particularly true for the international economy because all countries are connected and related to each other's economies, which are negatively and positively affected by each other. The financial crisis is a common example that shows how bubbles in one market hit the global economies. Thus, it is mandatory to detect, and date stamp the bubbles (if any) in a market of any country. The stock market of a developing country like Pakistan is also affected by bubbles occurred in its major trading partners stock markets. As the stock exchange plays an essential part in the economy as it circulates local resources and directs them to fruitful investment, therefore detecting stock market bubbles is essential and one can save its economy from crises by identifying bubbles which can help in achieving sustainable growth. Pakistan's economy is heavily dependent on trade. So, it is important to identify bubbles in Pakistan's major trading partners (importing as well as exporting countries) stocks exchanges. If there is any bubble in trading partners, that bubble is likely to have some impact on Pakistan's economy. Thus, detection of bubbles (if any) is crucial and current literature with respect to Pakistan is silent on this. This void is filled by this research where a state of art econometric approach is used. Specifically, the study applies supremum augmented Dickey Fuller (SADF) and the generalized SADF (GSADF) tests to detect the existence of multiple bubbles in stock market of Pakistan and its eleven major trading partners using latest and maximum available daily time series data. Some useful policy implications are stated based on findings of the study.

Key Words: Multiple Bubbles; Closing stock prices; generalized supremum ADF; Bootstrap

PHYTOCHEMICAL AND BIOCHEMICAL CHARACTERIZATION OF BIOACTIVE COMPOUNDS FROM FRESH AND AIR DRIED ETHANOLIC LEAF EXTRACT OF *Tagetes erecta* (L.) (AMARILLO)

Ralf Benjo G. Morilla^{1*}, and Cesar G. Demayo²

¹Master of Science in Biology Student, Department of Biological Sciences, College of Science and Mathematics, Mindanao State University-Iligan Institute of Technology, Iligan City, Philippines

²Professor, Department of Biological Sciences, College of Science and Mathematics, Mindanao State University-Iligan Institute of Technology, Iligan City, Philippines

ABSTRACT

Objective: To evaluate selected biological properties of *Tagetes erecta* (L.) fresh, and air-dried ethanolic leaf extracts and provide a scientific basis for the traditional medicinal uses of *Tagetes erecta* (L.) leaves in the mountainous area of the municipality of Kapatagan, Lanao del Norte.

Methods: The fresh and air-dried leaves of *Tagetes erecta* (L.) were powdered and subjected to extraction using ethanol to obtain an ethanolic extract. Then, each of the extracts that were obtained was stored in storage vials and used for phytochemical screening, ferric reducing antioxidant power (FRAP) assay, and Gas Chromatography-Mass Spectrometry (GC-MS).

Results: Identification of bioactive compounds through phytochemical screening revealed the presence of saponins, tannins, flavonoids, alkaloids, and steroids. FRAP assay showed that fresh ethanolic leaf extracts from *T. erecta* (L.) showed lower reducing power values than air-dried ethanolic leaf extracts. Qualitative determination of the different biologically active compounds from fresh and air-dried ethanolic leaf extracts of *Tagetes erecta* (L.) using GCMS revealed different types of high and low molecular weight chemical entities with varying amounts present in each of the extracts. GCMS revealed a total of fourteen (14) compounds. Of the fourteen, nine (9) compounds were known to have anti-inflammatory properties. These chemical compounds are considered biologically and pharmacologically important.

Conclusions: The study established the comparison between the fresh and air-dried ethanolic leaf extracts of *Tagetes erecta* (L.). Thus, this study proved that traditional medicinal uses of *T. erecta* (L.) leave in Kapatagan, Lanao del Norte may have a scientific basis.

**CONSTRAINTS AND STRATEGIES FOR IMPROVING AGRICULTURAL
INTERVENTION PROJECTS IN NIGERIA: EXPERIENCE FROM MULTINATIONAL
NERICA RICE DISSEMINATION PROJECT IN EKITI STATE, NIGERIA**

Ojo, O.F and Dimelu, M.U

Department of Agricultural Extension

University of Nigeria, Nsukka. Nigeria

ABSTRACT

Agriculture is the principal source of food and livelihood in Nigeria, making it a critical sector for reduction of poverty and attainment of food security in Nigeria. Looking at the constraints affecting uptake of agricultural innovations for enhanced production is an important step in formulating/strategizing future policies. The study examines constraints and strategies for improving agricultural intervention programmes in Nigeria with particular attention to the multinational NERICA Rice Dissemination Project in Ekiti State, Nigeria. Data for the study were collected from 51 rice farmers that participated in the NERICA project and 10 extension staff of Agricultural Development Programme through the use of interview schedule and structured questionnaire. Data were analyzed using percentage and factor analysis with varimax rotation.

The results show that the programme was constrained by logistics, production, socio-cultural and technical-related factors. The perceived strategies for improving Multinational NERICA Rice Dissemination Project, from the extension staff's perspective were early payment of counterpart fund by the government (90%), reduced extension-farmer ratio (90%), and involvement of farmers in project planning and implementation (70%) amongst others. Farmer's perceived strategies for improving project were adequate training for farmers on the new technologies (100%), provision of borehole in farmers' field to ease the scarcity of water (98.0%) amongst others. In achieving sustainability and quality performance in agricultural intervention projects in Nigeria, the place of farmers and beneficiaries is strategic. Therefore, the study recommends that, farmers should be involved in the planning and implementation of agricultural intervention programmes and projects for greater performance and sustainability.

Key words: Agricultural programme, multinational, NERICA, rice, project, technology

HEALTH AND CULTURE

Rupal Devi

Student of BALLB 1st year pursuing from BPS University of women, Sonipat, Haryana, India

ABSTRACT

Culture is a pattern of ideas, customs and behaviors shared by particular people or society. It is constantly evolving culture may include all or a subset of the following characteristics like, ethnicity, language, gender, age, sexual orientation, education, health etc.

Health can be defined as a state of well being whether physically, mentally, socially.

The influence of culture on health is vast. It affects perceptions of health, illness and death, beliefs about causes of disease, approaches to health promotion how illness and pain are experienced and expressed where patients seek help and types of treatment patients offer.

As explained above, that every culture has its own customs, which influences diseases.

These cultures are involved in matters of personal hygiene, nutrition, immunization, seeking early medical care, family planning – in short, the whole way of life.

There are various impacts of cultural factors like,

- Environmental Sanitation
 1. By disposal of human excreta
 2. Disposal of other wastes
- Our food habits also had impacts on our health.
- Personal Hygiene
- Marriage and sexuality

Cultural factors are highly involved in matters of personal hygiene, nutrients, immunization, seeking early medical care, family planning, disposal of refuse, excreta, etc.

Keywords – Culture, Health, Impacts of culture on health

References - <https://www.slideshare.net/arijitkundu88/impact-of-culture-on-health>

<https://kidsnewtocanada.ca/culture/influence>



AIR POLLUTION IMPACTS OF HUMAN HEALTH AND THE ENVIRONMENT

Dr.C.Vijai, Dr.Worakamol Wisetsri, Dr.Purushothaman.N

*Associate Professor, Department of Commerce and Business Administration, Vel Tech Rangarajan
Dr. Sagunthala R&D Institute of Science and Technology-INDIA*

ORCID ID: 0000-0003-0041-7466

*Department of Manufacturing and Service Industry Management, Faculty of Business and Industrial
Development, King Mongkut's University of Technology North Bangkok, THAILAND*

*Assistant Professor, Department of Commerce, Patrician College of Arts and Science, Chennai,
INDIA*

ABSTRACT

Air pollution is a major problem of recent decades, which has a serious toxicological impact on human health and the environment. The main consequences of air pollution are global warming, acid rain, smog, ozone depletion etc. According to W.H.O. report air pollution causes about 2 million premature deaths worldwide per year. In this paper, we aimed to discuss the toxicology of major air pollutants, causes, effects, sources of emission, and their impact on human health and the environment.

Keywords: Ecosystem, Global Warming, Human Health, Environment, Pollution, Smog.

ANIMAL TISSUE OPTICAL PROPERTIES ESTIMATION FOR USE IN VETERINARY MEDICINE AND FOOD INDUSTRY

Alaa Sabeeh^{a,b}, Ekaterina N. Lazareva^{a,d}, Omnia Hamdy^c, and Valery V. Tuchin^{a,d,e}

^aScience Medical Center, Saratov State University, Saratov 410012, Russia

^bInstitute of Laser for Postgraduate Studies, University of Baghdad, Baghdad, Iraq

^cDepartment of Engineering Applications of Laser, National Institute of Laser Enhanced Sciences (NILES), Cairo University, Giza Governorate 12613, Egypt

*^dLaboratory of Laser Molecular Imaging and Machine Learning, Tomsk State University,
Tomsk 634050, Russia*

^eLaboratory of Laser Diagnostics of Technical and Living Systems, Institute of Precision Mechanics and Control, FRC "Saratov Scientific Centre of the Russian Academy of Sciences," Saratov 410028, Russia

ABSTRACT

The development of optical biomedical methods and techniques has stimulated great interest in the study of optical properties of human and animal tissues, which define the efficacy of tissue optical probing and light action on tissue and when are known (measured) allow predicting precise photon propagation trajectories and fluence rate distribution within irradiated tissues. The precision of tissue laser ablation in veterinary medicine and the examination of its freshness and suitability for human use in food industry depend the spectral properties of tissues. Therefore, for all these applications, the knowledge of tissue optical properties is of great importance for the interpretation and quantification of diagnostic data and prediction of light and absorbed energy distribution. However, the investigations demonstrate a variety of advanced biomedical technologies, which are in direct need of precise knowledge of the optical properties of tissues. Optical properties of tissues play an important role in tissue characterization and how fresh it is, including the refractive index (RI), absorption coefficients (μ_a), scattering coefficients (μ_s), or the reduced scattering coefficient (μ_s'), and the anisotropy factor (g). These parameters are high wavelength dependent and give functional information of the tissue such as total hemoglobin content, tissue oxygenation, protein and water fractions. However, estimating the optical properties of any tissue requires measurements of diffuse reflectance (R_d), diffuse transmittance (T_d), and collimated transmittance (T_c). Experimentally, these measurements can be obtained either by integrating spheres techniques or with methods based on distant detectors array. Optical differentiation is a promising tool in biomedical diagnosis mainly because of its safety. According to histopathology, the values of tissue optical properties differ for different tissues and hence could be used for differentiation of norm and pathology. This paper presents the results of the measurements and estimation of tissue optical properties, where an experimental setup was implemented to measure diffuse optical reflectance and transmittance of the ex vivo samples.

Keywords: Tissue optical properties; transcranial laser irradiation; optical transmission; diffuse reflectance.

METHODS OF ARSENIC DECONTAMINATION OF SOIL AND WATER

E. Sepehr^{1} and M. A. Shiriazar²*

¹*Prof. of Soil Science, Faculty of Agriculture, Urmia University, Urmia, Iran*

²*PhD student of Soil Science, Faculty of Agriculture, Urmia University, Urmia, Iran*

ABSTRACT

Arsenic as a carcinogenic element whose presence in soil and water resources at higher than accepted concentration considered as an environmental treat. Soil and water contamination by arsenic is the most important source of its entry into the human food chain. Commonly organic and inorganic forms of arsenic can exist in the environment which compared to organic forms, inorganic compounds of arsenic (arsenate and arsenite) are more toxic due to their higher solubility and mobility. Arsenic in soil is usually adsorbed onto the surfaces of soil particles, especially iron (oxy)hydroxides and as a component of soil minerals, which its stability and mobility depend on environmental conditions such as pH, Eh and the presence of competing ions. Arsenic detoxification techniques are categorized into three physical, chemical and biological types. Low cost, environment-friendly, lack of toxic residue production, arsenic speciation and easy operation are the important factors that influence the choice of method. In this paper, the factors that affect concentration and speciation of arsenic in soil and water are reviewed. In the following, the methods of arsenic decontamination of soil and water with emphasis on its adsorption and immobilization methods using natural, non-polluting, abundant and high adsorption capacitance materials are reviewed.

Keywords: Arsenic, Toxicity, Iron oxyhydroxides, Adsorption

CITRUS OIL NANO-EMULSIONS - SO MANY OPTIONS BUT ONE CHOICE: PHYSICAL STABILITY AND ANTIBACTERIAL ACTIVITY IN THE FOOD FIELD

Madalina-Lorena Medeleanu¹, Fărcaș Anca Corina^{1,2}, Cristina Coman^{1,2}, Loredana Leopold^{1,2}, Carmen Pop¹, Socaci Sonia Ancuța^{1,2}

¹*Faculty of Food Science and Technology, University of Agricultural Sciences and Veterinary Medicine, 40000 Cluj-Napoca, Romania*

²*Institute of Life Sciences, University of Agricultural Sciences and Veterinary Medicine, 400372 Cluj-Napoca, Romania*

ABSTRACT

In this study, nano-emulsions were prepared through ultrasonication method, using citrus oils as the lipidic phase and Tween 80 and ethanol as the surfactant, co-surfactant respectively, additionally their stability was assessed under different storage conditions. Two types of citrus oil nano-emulsions were prepared by mixing 4% (v/v) of oil phase (tangerine and lime essential oils) with 3% (v/v) of Tween 80, 3% (v/v) of ethanol and 90% of deionized water using a magnetic stirrer and sonication at 72 amplitudes for 15 minutes. At the end of the process nano-emulsions were obtained with a 40-50 nm particle size. The particle size, turbidity, morphology and antibacterial properties were investigated. The stability of the obtained nano-emulsions was monitored under different environmental conditions (storage at room temperature, at 37°C, refrigeration, freezing). After five days each emulsion exhibited different degrees of gravitational separation, but the nano-emulsions stored at 37°C were the most unstable, showing coalescence. The most stable was the one kept in the freezer. The antibacterial activity was investigated against *Escherichia coli*, *Salmonella spp*, and *Staphylococcus aureus* using MIP and Disk Diffusion Method. Incorporation of citrus essential oils into nano-emulsions systems leads to their good physical stability and antibacterial activity, which makes them ideal for use in food and beverages fields.

Acknowledgement: This work was supported by a grant of the Romanian Ministry of Education and Research, CNCS - UEFISCDI, project number PN-III-P4-ID-PCE-2020-1847, within PNCDI III.

MATHEMATICAL MORPHOLOGICAL IMAGE PROCESSING IN AGRICULTURE

Prof. Afaq Ahmad^{1} and Prof. Dr. Syed Mohammed Rizwan²*

¹Electrical and Computer Engineering Department, College of Engineering, Sultan Qaboos University, Muscat, Oman

*²Department of Applied Mathematics and Science, National University of Science & Technology
P.O. Box 2322, PC 111, Muscat, Oman*

ABSTRACT

Mathematical Morphology is a technique applied as one of the basic methods of image processing. The technique have been fruitfully applied to many applications in various fields such as agriculture, medical, number plate recognition, and fault detection. The aim of this paper to demonstrate the basics of Mathematical Morphology. The paper will also elaborate as examples of various applications including an application in the field of agriculture.

**FACTORS DRIVING ADOPTION AND CONSTRAINING THE NON-ADOPTION OF
BIOFORTIFIED ORANGE FLESHED SWEET POTATOES (OFSP) AMONG FARMERS IN
ABIA STATE, NIGERIA**

Jane Mbolle Chah, Ifeoma Quinette Anugwa, Ifeanyi Miracle Nwafor

Department of Agricultural Extension, University of Nigeria, Nsukka, Nigeria

ORCID ID: <https://orcid.org/0000-0002-9179-8008>

ABSTRACT

This study sought to determine the factors that drive the adoption and constrain the non-adoption of Orange Fleshed Sweet Potato (OFSP) varieties among farmers in Abia State, Nigeria. Multistage sampling procedure was used in selecting sixty sweet potato farmers (thirty adopters and non-adopters each). Participatory tools such as structured interview schedule, key informant interviews and personal observation were employed for quantitative and qualitative data collection. The data was analyzed using descriptive statistical tools like, percentage, mean scores and factor analysis. The results of the study revealed that a greater percent of both adopters and non-adopters of OFSP were males. Although the adopters were older than the non-adopters, they were more educated, cosmopolite, cultivated larger farm sizes, earned more income, had more extension contact and access to credit than the non-adopters. The majority of adopters had high knowledge, while non-adopters had moderate knowledge of OFSP. The adopters were motivated to adopt the OFSP mainly as a result of its pleasant taste, profit from the sale of its roots and vines and not necessarily because of its perceived health benefits of supplementing vitamin A. Perceived constraints to the adoption of OFSP by non-adopters were particularly the complexity of OFSP production techniques and the high cost of OFSP vines and roots. Thus, extension agents should create more sensitization and provide education about OFSP to farmers. Additionally, concerted efforts should be made by the research institutes to provide adequate and easily accessible inputs (vines and other planting materials) so that more farmers can produce vitamin A rich OFSP.

Keywords: Agriculture, adoption, farmers, orange-fleshed sweet potatoes, vitamin A

GENDER DIFFERENCES IN PERCEIVED VULNERABILITY AND ADAPTATION STRATEGIES TO CLIMATE CHANGE EFFECTS ON ARABLE CROP PRODUCTION IN ENUGU STATE, NIGERIA

Ifeoma Quinette Anugwa, Precious Chinenye Agbo, Agwu Ekwe Agwu

Department of Agricultural Extension, University of Nigeria, Nsukka, Nigeria

ORCID ID: <https://orcid.org/0000-0002-9179-8008>

ABSTRACT

Climate change is a global threat to sustainable crop production, especially in developing countries like Nigeria. The vulnerability of rural farmers to climate change is worsened by gender disparities. This paper reveals existing gender differences in perceived vulnerability to climate change effects on arable crop production in Enugu State, Nigeria. A multistage sampling technique was utilized in selecting 96 farmers. Percentage, mean scores, and t-test statistics were used in data analysis. Men were vulnerable to climate change as a result of traditional beliefs/practices, loss of properties as a result of flooding, and lack of weather forecasting technology, while women noted their vulnerability to the effects of climate change in terms of decision making as to what and where to plant, poor access to farming resources such as irrigation facilities, and influence of culture in terms of who should cultivate, plant, weed, etc. The adaptation strategies mostly practiced by men in cushioning the effects of climate change on arable crop production were rainwater storage and planting of trees, while the adaptation strategies mostly practiced by women were terracing and rainwater storage, among others. The major constraints to climate change adaptation identified by men include poor access to extension services and lack of access to improved crop varieties, while the women identified poor storage facilities and lack of access to improved crop varieties, among others, as major constraints. It is recommended that policy makers design appropriate interventions along gender lines aimed at managing the effects of climate change on arable crop production.

Keywords: Agriculture, adaptation strategies, climate change, gender, vulnerability

INFLUENCE OF THE SIZE AND SHAPE OF APPLES ON THE DRYING PROCESS

Olena HUSAROVA

Candidate of Technical Sciences (PhD), Senior Researcher

Institute of Engineering Thermophysics of the National Academy of Sciences of Ukraine

ORCID NO: 0000-0001-7622-9168

ABSTRACT

The drying process is the main in the technological cycle of obtaining fruit chips. The quality of the finished product and energy performance depend on the correct drying. Drying to low humidity of 6...8% leads to a significant increase in energy costs of the process and its duration. The process of heat and mass transfer and in general the drying process is significantly influenced by the parameters of the drying agent, such as temperature, speed and moisture content, as well as the size of the cut of the dehydrated material. When apples are dried, the quality of the chips is directly related to the temperature and duration of the drying process.

Therefore, when determining the optimal drying regimes during the production of apple chips, it is necessary to minimize the duration of the dehydration process, to ensure the production of a product with specified organoleptic characteristics, to minimize energy costs.

The work is devoted to the study of the influence of the size and shape of slicing apples on the drying process during the production of chips, finding ways to intensify the process, development of energy-efficient heat technology for the production of apple chips.

Objects and methods of research. Drying was carried out by the method of staged convective drying to a final humidity of 6%. Drying agent temperature – 80...60 °C, speed – 1.5 m/s, moisture content – 10 g/kg of dry air. The temperature of apples during drying did not exceed 60 °C. Prepared apples were cut into slices, semicircles and quarters 2...3 mm, 3...4 mm and 5...6 mm thick.

Results. A study of the influence of the size and shape of slicing apples on the drying process showed that the shape of the raw material does not significantly affect the drying time, and reducing the thickness of apples reduces the duration of the process. Thus, reducing the thickness of apple slices from 4...5 mm to 3...4 mm reduces the drying time by 30...35%, and up to 2...3 mm – by 50...60%.

Chips with a crispy structure, light cream color, pleasant sour-sweet taste and smell typical of fresh apples were obtained from samples cut into 4...5 mm and 3...4 mm thick. During drying, due to shrinkage of the cut material with a thickness of 2...3 mm, chips with disturbed structure and shape were obtained.

Conclusions. To obtain apple chips, it is recommended to cut the raw material into slices and semicircles 3...4 mm thick. This will reduce the duration of the process, reduce energy costs and get chips of proper quality.

Keywords: Chips, Drying, Size and Shape of Apples, Energy Efficiency.

POPULARITY OF HERBAL, HOLISTIC AND ALTERNATIVE REMEDIES IN FIGHTING AGAINST COVID-19 IN THE TRADITIONAL MEDICINES OF THE INDIAN SUBCONTINENT

Parisa Ehteshamnia

Master Student in Indian Studies, Faculty of World Studies, University of Tehran

Maziar Mozaffari Falarti

Department of South, East Asia & Oceanian Studies, Faculty of World Studies, University of Tehran

ABSTRACT

With the onset of the Covid-19 pandemic in 2019, one of the most controversial issues globally has been the unproven claims of some traditional and natural medicine and remedies for the treatment of this disease. Traditional medicines, is therefore believed by many to be as an alternative, or a more cost effective replacement, to modern medicine that can not only protect against the Covid-19 virus but also can potentially cures it and give the needed 'hope'. According to the World Health Organization traditional medicine can broadly be defined as a set of knowledge, skills, and practices based on the indigenous theories, beliefs, and experiences of different cultures that have been used in health as well as in the prevention, diagnosis, improvement, and treatment of physical and mental illness. The Indian Subcontinent, with a population of almost two billion, is indeed no exception. . In fact, in terms of the total number of people infected with Covid-19 three of the top twenty nations (that of Bangladesh, India and Pakistan) are located in the Subcontinent. From politicians to holy men and even people in the medical profession, within nearly all corners of this region, believing that traditional medicine is an alternative to modern medicine and that as bizarre and superstitious as some of the remedies may sound yet it should be taken seriously in fighting again Covid-19. Ayurveda, Siddha, and Unani in particular are some of the world's oldest holistic healing systems originating and connected to the region, which are still popular and whom its practitioners have offered alternative views in curing and protecting against Covid-19. In a continuation to an earlier project in this study, the authors will focus on some of the popular practices and herbal alternatives that exists amongst the predominantly Muslim and Hindus population of the Indian Subcontinent to counter Covid-19. It will conclude that despite some controversy and confusion on the application and what constitutes herbal remedies and traditional medicine yet essentially made from natural ingredients in some instances their effectiveness cannot be ruled out. In the words of an aphorism of the 19th century German philosopher Friedrich Nietzsche: "What doesn't kill you makes you stronger ".

Keywords: Ayurveda; traditional medicine, herbal remedies, Indian Subcontinent, Covid-19 cure

LOADED n-Hydroxyapatite/SSG 3D SCAFFOLDS AS A DRUG DELIVERY SYSTEM OF NIGELLA SATIVA FRACTIONS FOR THE MANAGEMENT OF LOCAL ANTIBACTERIAL INFECTIONS

Mohammed DALLI^{1}, Abdelqader El Guerraf², Salah-eddine AZIZI¹, Nadia GSEYRA¹*

¹ *Laboratory of Bioresources, Biotechnology, Ethnopharmacology and Health, Faculty of Sciences, University Mohammed the First, P.O. Box 524, Oujda 60000, Morocco*

² *Laboratory of Applied Chemistry and Environment, Faculty of Sciences, University Mohammed the First, P.O. Box 524, Oujda 60000, Morocco*

ABSTRACT

As a result of their close similarities to the inorganic mineral components of human bone, hydroxyapatite nanoparticles (n-HAp) are widely used in biomedical applications and for the elaboration of biocompatible scaffold drug delivery systems for bone tissue engineering. In this context, a new efficient and economic procedure was used for the consolidation of n-HAp in the presence of various *Nigella sativa* (NS) fractions at a near-room temperature. The research conducted in the present study focuses on the physicochemical properties of loaded n-HAp 3D scaffolds by NS fractions and the *in vitro* antibacterial activity against Gram-negative (*Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853, *Klebsiella pneumoniae* ATCC 27853), and Gram-positive (*Staphylococcus aureus* ATCC 29213, *Enterococcus faecalis* ATCC 700603) bacteria. In order to better understand the effect of the inserted fractions on the HAp molecular structure, the elaborated samples were subject to Fourier transform infrared (FTIR) and X-ray diffraction (XRD) spectroscopic analyses. In addition, the morphological investigation by scanning electron microscope (SEM) of the loaded n-HAp 3D scaffolds demonstrated the presence of a porous structure, which is generally required in stimulating bone regeneration. Furthermore, the fabricated 3D composites exhibited significant antibacterial activity against all tested bacteria. Indeed, MIC values ranging from 5 mg/mL to 20 mg/mL were found for the HAp-Ethanol fraction (HAp-Et) and HAp-Hexane fraction (HAp-Hex), while the HAp-Aqueous fraction (HAp-Aq) and HAp-Methanol fraction (HAp-Me) showed values between 20 mg/mL and 30 mg/mL on the different strains. These results suggest that the HAp-NS scaffolds were effective as a drug delivery system and have very promising applications in bone tissue engineering.

Keywords: Hydroxyapatite; 3D scaffolds; *Nigella sativa*; organic fractions; antibacterial activity

THE KINETICS OF N MINERALIZATION IN SALT-AFFECTED SOILS WITH DIFFERENT PLANT RESIDUES

E. Sepehr^{1}, J. Abdollahi, V. Feiziasl², M.H. Rasouli-Sadaghiani¹, and A. Samadi¹*

¹*Prof. of Soil Science, Faculty of Agriculture, Urmia University, Urmia, Iran*

²*Associate Prof. of Dryland Agricultural Research Institute (DARI), Agricultural Research Education and Extension Organization (AREEO), Maragheh, Iran*

ABSTRACT

Mineralization and immobilization are two important processes that control soil nitrogen availability in low-input soils in the semiarid and arid regions. The objective of this research was to investigate the effect of various plant residues on nitrogen mineralization kinetics in saline and sodic soils. This research was performed as an incubation experiment under aerobic conditions in a factorial completely randomized design, including three types of soil (calcareous, saline-sodic and sodic) and five plant residues (corn stalks, sunflower stalks, wheat straw, clover and vetch residues) with control treatment (soil without plant residues) in three replications. The results showed that the soil type and plant residue significantly ($p < 0.01$) affected nitrogen mineralization. The highest quantities of net N mineralization was obtained from the vetch and clover residues in calcareous soil. Net N mineralization/immobilization (Nm/i) varied from -29.7 to 145.2 mg N kg⁻¹ and significantly correlated with N concentration ($r = 0.98$ to 0.99 , $P < 0.01$), C/N ratio ($r = -0.91$ to -0.94 , $P < 0.01$), lignin/N ratio ($r = -0.91$ to -0.94 , $P < 0.01$), (cellulose/lignin) / N ratio ($r = -0.96$ to -0.98 , $P < 0.01$) and N/P ratio ($r = 0.76$ to 0.79 , $P < 0.01$) of the plant residues. The highest amounts of N₀ (nitrogen mineralization potential) and N_{0k} (nitrogen availability index) were obtained from calcareous soils treated with vetch and clover residues Due to the high decomposition of these residues in calcareous soil. The net nitrogen mineralization in the studied soils was as follows: calcareous>sodic>saline-sodic. Results showed that vetch and clover residues are efficient amendment to reclaim saline and sodic soils, and to improve N availability. Finally it is concluded that vetch and clover residues supply a larger fraction of available nitrogen for succeeding plants but wheat, corn and sunflower residues increased immobilization and significantly decreased soil available nitrogen so it is necessary to use nitrogen fertilizers along with these residues into the soil.

Keywords: Kinetics, N mineralization, Plant residues, Saline-sodic soil, Calcareous soil.

EVALUATION OF A SYNTHETIZED COMPOUND AS AN EFFICIENT CORROSION INHIBITOR FOR MILD STEEL IN HYDROCHLORIC ACID

Nawal. SETTI¹, Yassine.KADDOURI¹, Rachid.TOUZANI¹, Ali.DAFALI¹

¹Laboratory of Applied and Environmental Chemistry (LCAE), Mohammed First University, Faculty of Science, Department of Chemistry, 60000 Oujda, Morocco

ABSTRACT

The anti-corrosion properties of mild steel in molar HCl have been investigated by electrochemical and gravimetric methods. Moreover, thermodynamic parameters were calculated using the variation of temperature in weight loss measurements. The results of experimental studies indicate that the organic compound is a good corrosion inhibitor of mild steel in acidic medium. The inhibition efficiency increases with the concentration of inhibitor. The polarization measurement also showed that this inhibitor acts essentially as a mixed one. EIS measurements have revealed that the charge transfer resistance increased with increase in inhibitor concentration. The thermodynamic parameters show that the compound adsorbs on the metal surface according to the Langmuir adsorption isotherm. Effect of temperature indicates that inhibition efficiency decreases with temperature between 35 and 65°C.

AGRICULTURAL DEVELOPMENT UNDER CLIMATE CHANGE CONTEXT – A CASE OF RICE PRODUCTION IN THE VIETNAMESE MEKONG DELTA

Nguyen Thanh Binh and Le Van Thuy Tien*

Mekong Delta Development Research Institute, Can Tho University, Vietnam

ORCID NO: 0000-0002-9315-5590

ABSTRACT

The Vietnamese Mekong Delta (VMD) plays an important role in rice production for national food security and international trade but it is considered as the most vulnerable region to climate change. This study aims at analyzing current rice cropping systems and rice development in the last decade (2010-2020) using statistical data from 13 provinces and 3 field visits to different ecological zones (upper, middle and coastal areas) in the VMD. The results show that rice cropping systems vary places to places depending on the interaction between nature and human system, especially irrigation development. Most cases, the annual growth rates of planted area, production and yield tend to increase in the period of 2010-2015 and decline in the period of 2016-2020. The analysis also indicates that rice production falls down deeply in heavy drought and salinity intrusion years of 2016 and 2020. Under climate change context, sea level rise and development of upstream Mekong countries, the risk will increase, particularly in the coastal areas. Therefore, agricultural transformation towards nature based approach (i.e. from mono rice cropping to integrated rice-shrimp farming system) is a good way for future of agriculture in the VMD. This experience can be valuable for other deltas in the globe.

Keywords: agricultural transformation, rice, risk, salinity intrusion, Mekong delta

PREVALENCE OF ANTIBIOTIC SELF-MEDICATION BY LEFTOVERS IN THE LEBANESE POPULATION

Deema Rahme

Pharmacy Practice Department, Faculty of Pharmacy, Beirut Arab University, Beirut, Lebanon

Introduction:

Antibiotic resistance is a major global concern. Overuse of antibiotics including the use of leftovers without medical prescription can be a leading cause. This study aimed to investigate the prevalence and related factors of antibiotics leftover in self-medication in Lebanese households.

Methods:

This was a community-based descriptive cross-sectional study conducted from March 2019 to October 2019. Data was collected by a direct interview using a structured questionnaire delivered personally. Descriptive statistics, cross-tabulation, and logistic regression were executed using SPSS version 26.

Results:

Among 600 selected households, 420 households (70%) had antibiotics used for self-medication. The most common type of antibiotic found was Amoxicillin(36%) followed by Fluoroquinolones (28%). Most of the antibiotics were in the form of tablets (85%). Antibiotics were mainly prescribed by community pharmacists(45%). Self-medication was observed in 65% of the families with antibiotics leftovers.

The main reasons for self-medication were resolution of illness from previous experience (40.4%) and Inability to seek medical care (30%). The most common disease for self-medication was upper respiratory tract infections (40%).

The factors that were significantly associated with self-medication of antibiotics were Female gender (adjusted OR = 2.81; 95%CI: 2.01, 3.26) and Lack of knowledge about antibiotic use (adjusted OR = 1.13; 95%CI: 1.03, 3.20) with self-medication of antibiotics.

Conclusion:

Almost more than half of the Lebanese population targeted are self-medicated with antibiotics. Therefore, public education campaigns to raise awareness about the risks of irrational consumption of antibiotics such as self-medication.

There is a massive need for implementing strict regulations for restricting antibiotic dispensing in pharmacies with prescriptions.

Advances in Knowledge:

- Antibiotics leftovers are a potential risk of antibiotic resistance. However, limited studies investigated antibiotic leftovers in the community and the factors associated with them. This is the first study in Lebanon tackling this issue and shedding a light on the drastic sequences of this problem.

Application to Patient Care:

- Reducing the inappropriate use of leftover antibiotics is mandatory.
- Education programs regarding the proper use of antibiotics and the insistence on adherence targeting both health personnel (especially physicians) and community members should be encouraged.
- Enforcement of regulations on non-prescription medicine use is a must.
- Pharmacists in Lebanon should be nowadays more strict on dispensing antibiotics without prescription

CROSSLINKING OF STARCH USING CITRIC ACID

A G Gerezgiher¹, T Szabó¹

*¹Institute of Ceramics and Polymer Engineering, University of Miskolc, H-3515 Miskolc-
Egyetemváros, Hungary*

ABSTRACT

To improve mainly the water resistivity and related physical and mechanical properties of starch biopolymer, citric acid was used to modify the chemical structure of starch by crosslinking the polymer chains. Corn starch films were produced first by dispersing 4% (w/w) starch in water, adding glycerol (36% of the weight of starch) and citric acid (20% of the weight starch) successively, allowing them to react at different pH. Water absorption, FTIR, DMA, DSC and SEM tests were done to characterize the thin film samples. Results showed that the availability of glycerol is a critical factor for the crosslinking and plasticity property of the film. Samples prepared with citric acid crosslinked starch without the inclusion of glycerol were brittle and easily disintegrated in water as crystals. The crosslinking reaction done under acidic conditions was found more effective than the other reactions. Generally, citric acid has effectively crosslinked corn starch polymer molecules reducing the amount of hydroxyl group in their structure. As a result, improvement in the water-resistant is observed.

Keywords: Citric acid, Crosslinking, Starch, biopolymers

DEVELOPMENT OF FUNCTIONALIZED MoS_2 /AUPt CORE-SHELL NPS FOR SERS ENHANCEMENT BIOMOLECULE DETECTION VIA THE INCORPORATION OF CV

*Md Ahasan Habib, Rutuja Mandavkar, Shusen Lin, Rakesh Kulkarni, Sanchaya Pandit, Shalmali Burse, Puran Pandey, Sundar Kunwar, Jihoon Lee**

Department of Electronic Engineering, College of Electronics and Information, Kwangwoon University, Nowon-gu Seoul 01897, South Korea.

ABSTRACT

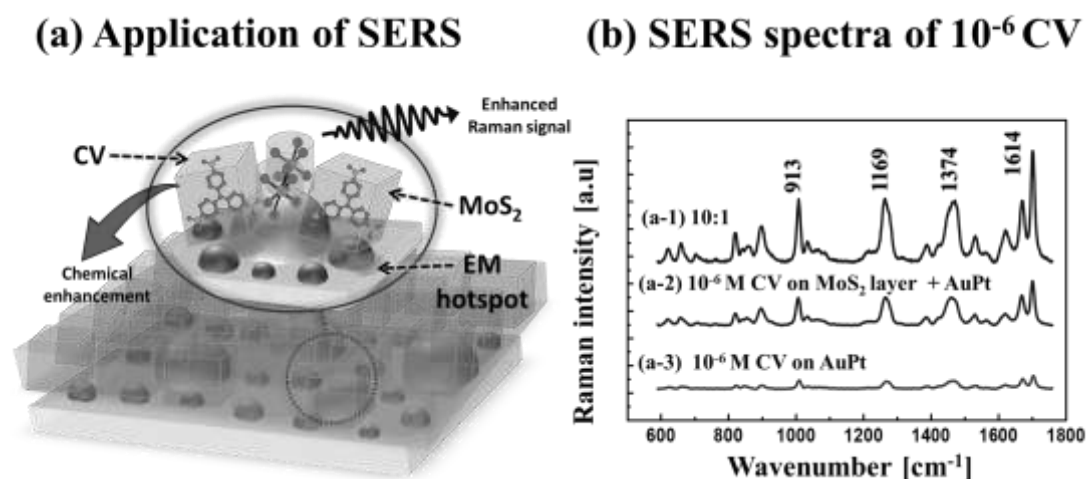


Fig. 1. (a) Dual-step hybrid SERS scheme through the blending of CV and MoS_2 NPs on the core-shell AuPt hybrid NPs. (b) SERS spectra of 10^{-6} M CV by different approaches: (a-1) 10:1 mixture of CV and MoS_2 NPs on AuPt HNPs, (a-2) CV on MoS_2 layer/AuPt HNPs, and (a-3) CV on AuPt HNPs [1].

The surface-enhanced Raman spectroscopy (SERS) is an analytical technique for the molecule detection even at an extremely low concentration. The SERS has great value in the chemical analysis, biomarker identification, food safety and other biological trace detection fields [2]. In this work, a core-shell AuPt hybrid NPs (HNPs) is used in collaboration with a unique mixture of molybdenum disulfate (MoS_2) nanoparticles (NPs) to increase the molecular Raman vibration of crystal violet (CV) as seen in Fig. 1 [1]. The SERS signal of CV is largely improved by the 10:1 mixture of CV and MoS_2 NPs on AuPt HNPs as seen in Fig. 2(b). The plasmonic metal nanoparticles (AuPt HNPs) generate an increased electromagnetic field due to their localized surface plasmon resonance (LSPR) to electromagnetic enhancement (EM) and also chemicals enhancement (CE) by MoS_2 helps preferential route charge transfer between the metal surface attached chemical species that caused a change in the polarizability [3].

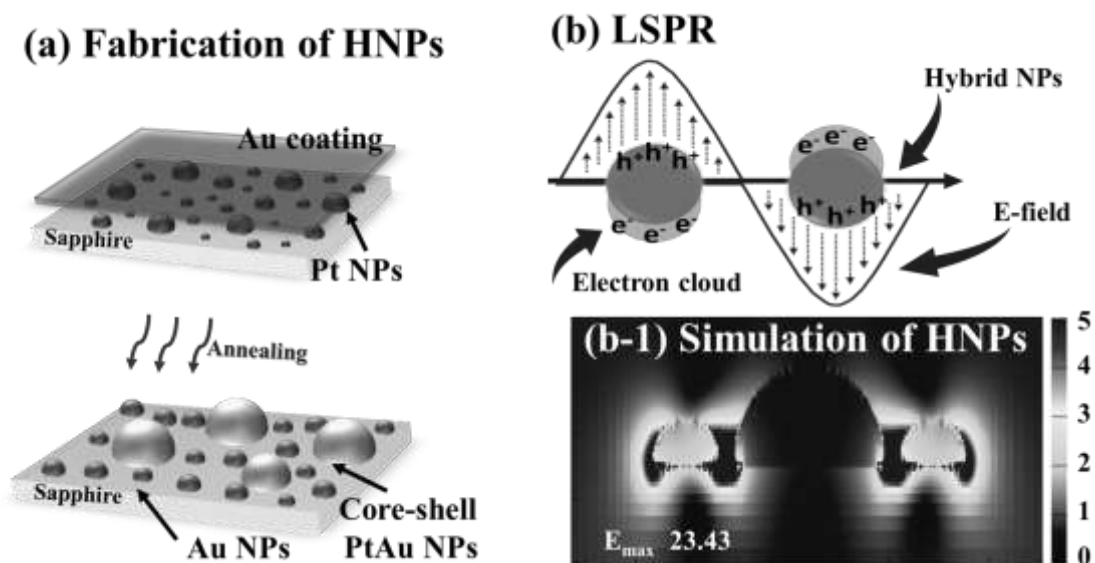


Fig. 2. (a) Schematic presentation of AuPt hybrid nanoparticle (HNP) fabrication technique. HNP refers to core-shelled AuPt NPs with Au background nanoparticles in the substrate. (b) Localized surface plasmon resonance (LSPR) of HNPs. (b-1) E-field distribution of HNP by the finite-difference time-domain (FDTD) simulation.

For the fabrication of AuPt NPs, a unique two-step solid-state dewetting technique is used, as shown in Fig. 2(a), which can provide strong electromagnetic hot spots at interstitial edges. The combination of electrochemistry with mechanisms of LSPR wavelength shifts is essentially based on analyte–surface binding interactions produced by the excitation spectrum of noble metallic nanoparticles that could enhance the performance of the detection of biomolecules in presence of hot spot density [4]. The 2-D transition metal analytes MoS₂ provide a giant chemical enhancement effect with high mobility characteristics to the electric field for modulating abundant active sites [5]. The combined EM and CM are mutually giving rise to the considerably increased SERS signals of CV where the enhanced hot spots are caused by the strong and rich charge transfer by the MoS₂ NPs. Moreover, the FDTD simulations confirm the improved electromagnetic field distributions for various nanostructure designs and hybrid combinations, including HNPs, alloy NPs, and MoS₂/HNPs as shown in Fig. 2 (b).

Keywords: SERS, Bio-molecule detection, MoS₂ NPs, Bi-metallic NPs, Food safety.

Acknowledgements

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CRedit authorship contribution statement

Rutuja Mandavkar: Methodology, Writing –review & editing. Shusen Lin: Data curation. Rakesh Kulkarni: Data curation. Sanchaya Pandit: Data curation. Shalmali Burse: Data curation. Md Ahasan Habib: Data curation. Puran Pandey: Methodology. Sundar Kunwar: Methodology, Writing –review & editing. Jihoon Lee: Conceptualization.

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DEVELOPMENT OF AN ULTRASENSITIVE BIOSENSOR BASED ON THE HIGHLY POROUS Pt/CuO/Pt HYBRID ELECTRODE

Rutuja Mandavkar^a, Rakesh Kulkarni^a, Md. Ahasan Habib^a, Shalmali Burse^a, Shusen Lin^a, Sundar Kunwar^b, Adel Najjar^c, S.Assa Aravindh^d, Jae-Hun Jeong^a, Jihoon Lee^{a*}

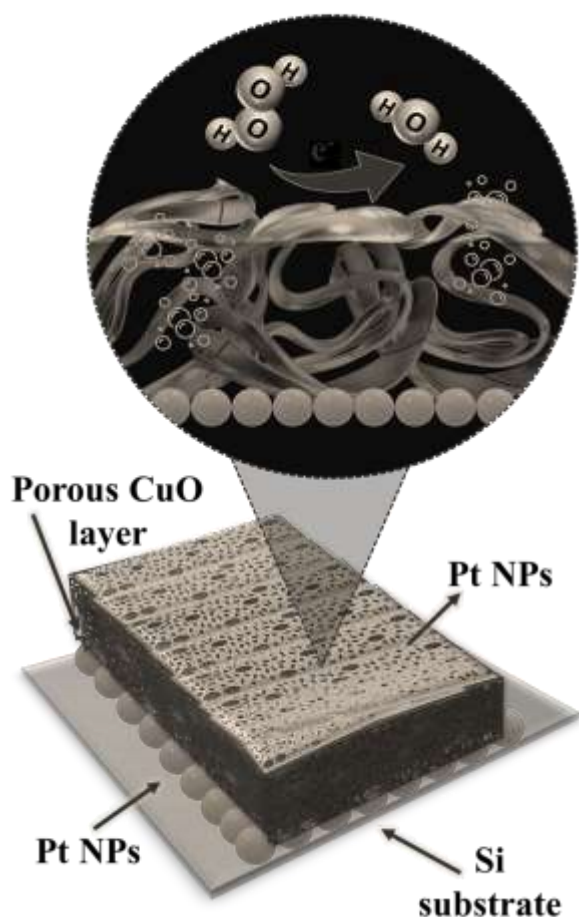
^aDepartment of Electronic Engineering, College of Electronics and Information, Kwangwoon University, Nowon-gu Seoul 01897, South Korea.

^bCenter for Integrated Nanotechnologies (CINT), Los Alamos National Laboratory, Los Alamos, NM 87545, USA.

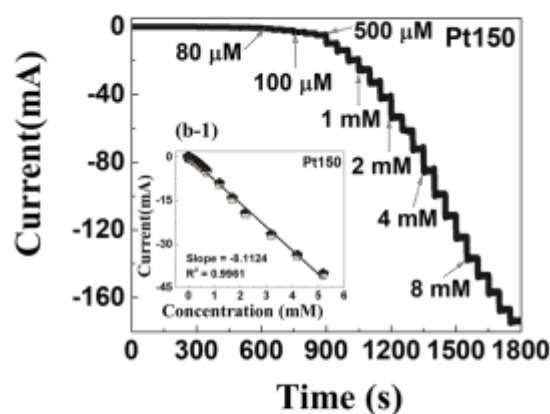
^cDepartment of Physics, College of Science, United Arab Emirates University, Al Ain 15551, United Arab Emirates.

^dNano and Molecular Systems Research Unit (NANOMO), University of Oulu, Pentti Kaiteran katu 1, 90570 Oulu, Finland.

(a) Hybrid nanoarchitecture



(b) Detection of H₂O₂



(c) Selectivity test

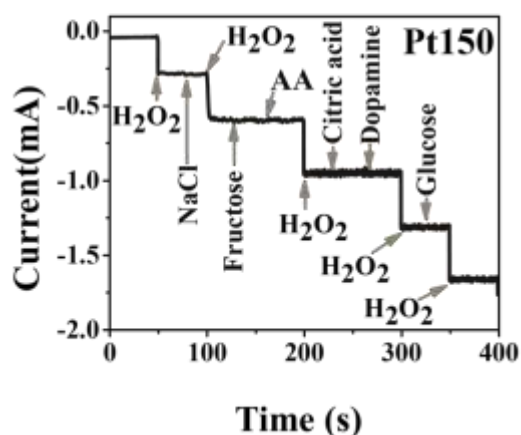


Fig. 1. Fabrication of porous Pt/CuO/Pt biosensor and electrochemical detection of H₂O₂. (a) Schematic presentation of porous Pt/CuO/Pt hybrid platform. (b) Chronoamperometry (CA) response of Pt/CuO/Pt hybrid electrode towards H₂O₂ detection. (c) Selectivity response against various interfering species. [1]

Hydrogen peroxide (H₂O₂) has an important role as a signal molecule to regulate a fundamental environmental, chemical and biological process [2]. The porous Pt/CuO/Pt electrode is an electrochemical hybrid biosensor composed of Pt NPs decorated on a highly porous CuO/Pt template

fabricated utilizing a physio-chemical technique for the detection of hydrogen peroxide (H_2O_2) as shown in Fig. 1(a). The porous CuO layer is constructed using an electrochemical deposition method known as the dynamic hydrogen bubbling technique and the metallic Pt NP decoration is accomplished via PVD and post-annealing. The hybrid platform achieved improved electrocatalytic performance with the rapid electron transfer between the analyte's redox centers and the electrode surface [3]. The platform demonstrated a superior sensitivity of $16,694 \mu\text{A mM}^{-1} \text{cm}^{-2}$ with a limit of detection of 2.91 nM ($S/N = 3$) which is ~ 8 times better than the only CuO/Pt template as shown in Fig. 1(b). A biosensor exhibited a broad linear range of selectivity against interfering chemicals such as NaCl, fructose, ascorbic acid, citric acid, dopamine, and glucose shown in Fig. 1(c). The super-porous CuO layer dramatically improves the electrochemically active surface area, and the Pt NP coating improves conductivity and charge buildup for H_2O_2 reduction substantially [4][5].

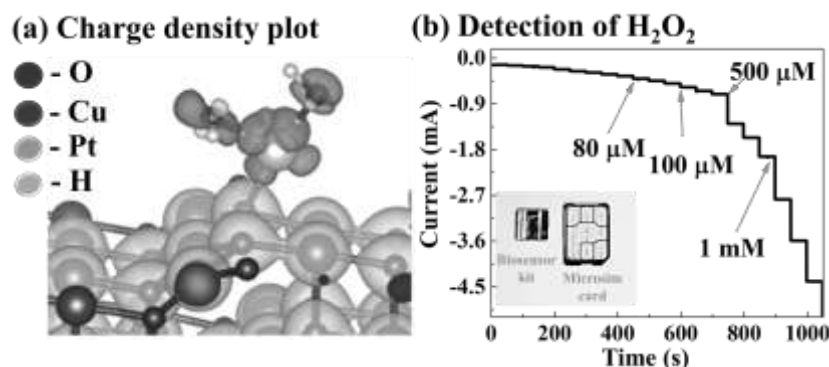


Fig. 2. DFT simulation and H_2O_2 detection through biosensor kit. (a) Charge density simulation of Pt/CuO after adsorption of H_2O_2 . (b) CA response towards H_2O_2 detection for biosensor kit. [1]

The density functional theory (DFT) simulations verify the superiority of CuO over Cu_2O and Pt over Pd for H_2O_2 detection established through adsorption energy, the density of states, and charge accumulation calculations. A charge accumulation was seen at the Pt atom oriented towards the bonds, and this charge gain has the potential to disrupt the O-H bond when H_2O_2 is bonded over the Pt atom [6] as shown in Fig. 2(a). Furthermore, a biosensor kit fabricated on a single chip exhibited a sensitivity of $11,325 \mu\text{A mM}^{-1} \text{cm}^{-2}$ with a limit of detection of 4.1 nM ($S/N = 3$) as shown in Fig. 2(b). It indicates the feasibility of practical applications with good performance.

Keywords – Hybrid biosensor, Porous CuO, Pt nanoparticles, Electrochemical detection, H_2O_2 detection, DFT simulation.

CRedit authorship contribution statement

Rutuja Mandavkar: Investigation, Formal analysis, Visualization, Validation, Writing – original draft, Writing – review & editing. Rakesh Kulkarni: Investigation, Writing – review & editing. Md Ahasan Habib: Investigation, Writing – review & editing. Shalmali Burse: Investigation, Writing – review & editing. Shusen Lin: Investigation, Writing – review & editing. Sundar Kunwar: Investigation, Formal analysis, Writing – review & editing. Adel Najar: Writing – review & editing, Funding acquisition. S. Assa Aravindh: Software, Writing – review & editing. Jae-Hun Jeong: Conceptualization, Methodology, Investigation, Project administration, Validation, Writing – review & editing, Funding acquisition. Jihoon Lee: Supervision, Resources, Funding acquisition, Writing – review & editing.

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NON-ENZYMATIC SUPER POROUS HYBRID CUO/PT NPS PLATFORM FOR DETECTION OF HYDROGEN PEROXIDE (H₂O₂) AND VARIOUS OTHER BIOMOLECULES

*Rakesh Kulkarni, Sundar Kunwar, Rutuja Mandavkar, Jae-Hun Jeong and Jihoon Lee**

Department of Electronic Engineering, College of Electronics and Information, Kwangwoon University, Nowon-gu Seoul 01897, South Korea.

ABSTRACT

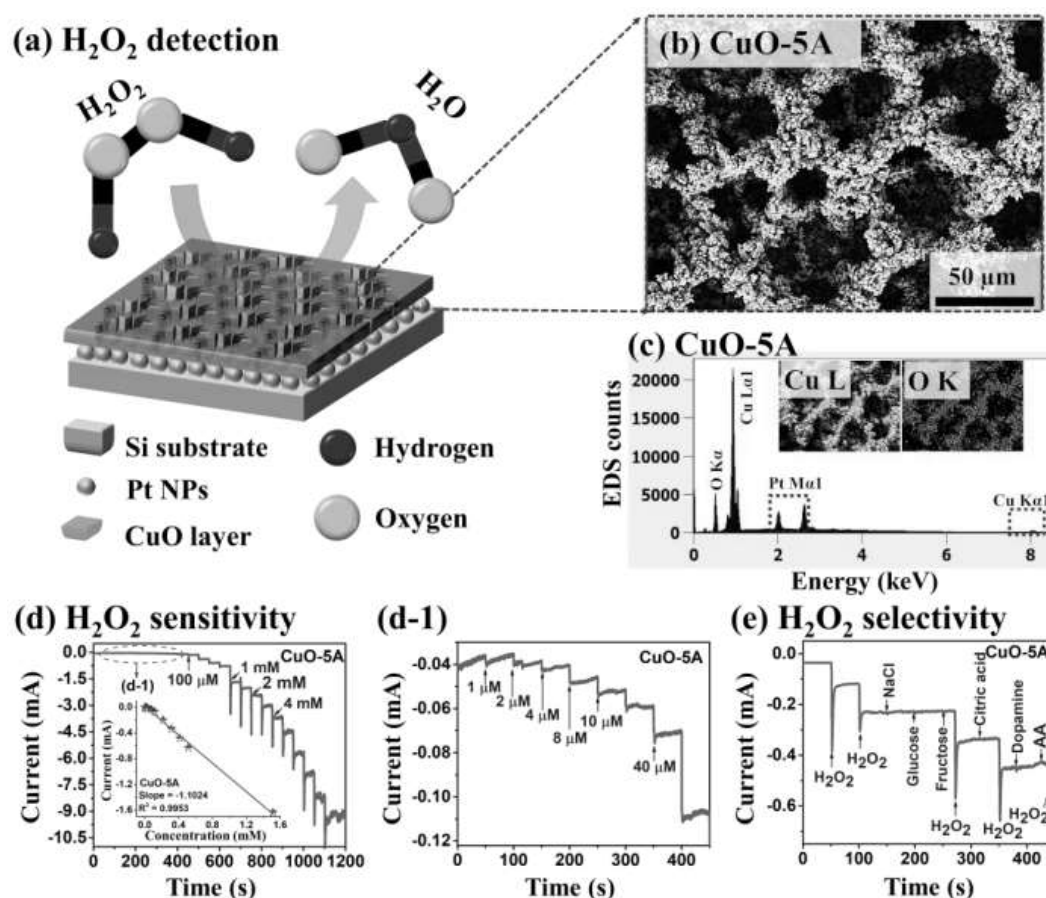


Fig 1: (a) Illustrates the H₂O₂ bio-molecule detection by CuO/Pt super porous hybrid platform. (b) SEM image of typical porous CuO-5A nanostructure. (d) – (d-1) Chrono-amperometric response of CuO-5A sample upon dropwise addition of H₂O₂ concentration from 1 μM – 4 mM in a 0.1 M PBS solution of a pH 7.4 at -0.4 V potential, inset shows the linear calibration curve based on current versus H₂O₂ concentration. (e) Selectivity test for different bio-molecules in 0.1 M PBS [1].

In the fields of bio-sensors, biomedical industrial analysis and electrochemistry, the rapid and reliable detection of H₂O₂ bio-molecule is crucial [2]. The development of effective and reliable non-enzymatic sensors such as hydrogen peroxide (H₂O₂) could pave the way for the electrochemical detection of bio-molecules. The enzyme-modified electrodes has been actively investigated due to its simple, efficient, and analytical approach [3]. However, the enzymatic sensor efficiency is hampered by the physical and biological factors. To overcome the limitations, the non-enzymatic electrochemical sensors have recently attracted a lot of attention due to fast reaction time, long-term stability and high sensitivity. Non-enzymatic electrochemical sensing electrodes have been widely researched using metals (Pt, Au, Pd and

Ag), metallic alloys (Ag-Au, Pt-Pd and Pt-Au), and metallic oxides (CeO₂, NiO and CuO) [4]. Recently, the copper oxide (CuO) of various nanostructures with a narrow bandgap at ~ 1.2 eV are getting a lot of attention due to the low toxicity and low cost [5]. On the other hand, platinum nanoparticles (Pt NPs) are known for their high catalytic ability and stability in harsh environment. Herein, the highly super porous hybrid platform of CuO/Pt NPs is developed on Si substrate for the efficient detection of biomolecule, i.e., H₂O₂. The hybrid ultra-porous CuO/Pt platform performs well in terms of sensitivity, stability and accuracy due to its large catalytic active surface area. As illustrated in Fig. 1, a unique physiochemical strategy is used to fabricate the hybrid super porous CuO/Pt platform in two steps: i.e., (i) physical vapor deposition of Pt NPs and (ii) electrochemical deposition of porous CuO using dynamic hydrogen bubbling approach. Under the optimal conditions, the hybrid CuO/Pt platform exhibits a high sensitivity of up to 2,205 mA/cm² and a limit of detection (LOD) of 140 nM with a wide detection range. Also, it showed the high sensitivity towards various other bio-molecules such as glucose, fructose, dopamine and ascorbic acid at a different applied potentials. The hybrid CuO/Pt platform can be a promising candidate for the H₂O₂ biomolecule detection [1].

Keywords: hybrid CuO/Pt sensor, physiochemical approach, biomolecule detection, H₂O₂ sensor, non-enzymatic sensor.

Acknowledgment

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Author Contributions: R.K, S.K, R.M, J.J and J.L. participated in the experiment design and carried out the experiments. R.K, S.K, R.M, J.J and J.L. participated in the characterizations and analysis of data. J.J. and J.L. designed the experiments and testing methods. R.K. S.K. and J.L. carried out the writing. All authors helped in drafting and read and approved the final manuscript

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DETECTION OF R6G BIOMOLECULAR DYE BY UTILIZING THE GRAPHENE QUANTUM DOTS ON THE HYBRID CORE-SHELL Pd@Ag NPs

*Shalmali Burse, Rutuja Mandavkar, Shusen Lin, Rakesh Kulkarni, Sanchaya Pandit, Sundar Kunwar and Jihoon Lee**

Department of Electronic Engineering, College of Electronics and Information, Kwangwoon University, Nowon-gu Seoul 01897, South Korea.

ABSTRACT

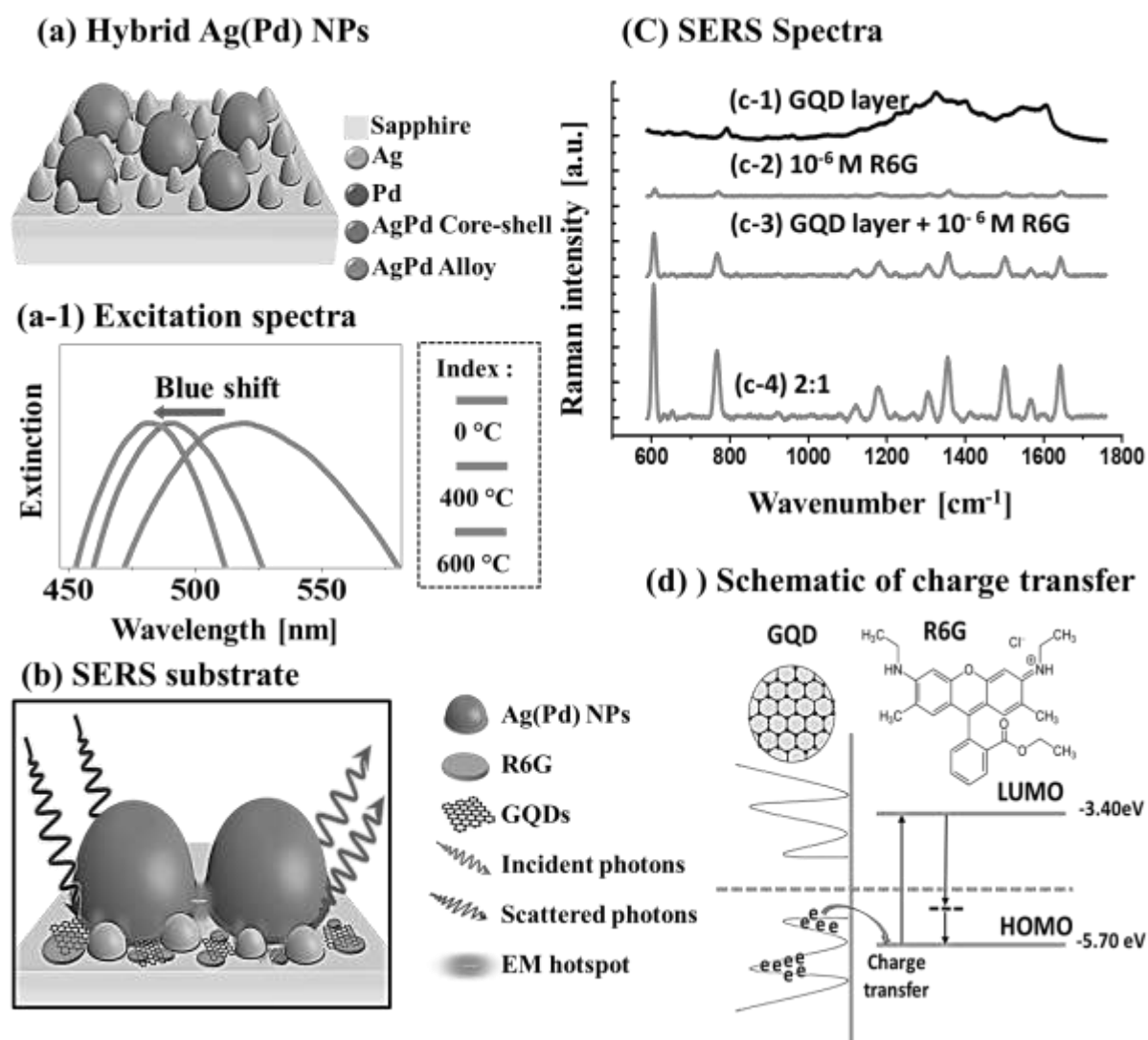


Figure 1. (a) Schematic representation of Pd@Ag hybrid core-shell NPs fabricated by the solid-state dewetting method. (a-1) Extinction spectra of Pd@Ag hybrid core-shell NPs. (b) SERS substrate constructed on the Pd@Ag core-shell NPs and GQDs. (c) SERS spectra measured on the Pd@Ag core-shell hybrid NPs substrate. (d) schematic of ground-state charge transfer mechanism with the GQDs for SERS enhancement [1].

With the improved stability and their biocompatibility, the compound of silver (Ag) and palladium (Pd) plasmonic metallic nanoparticles can be as a novel approach for designing the SERS enhancement [2].

The bi-metallic or core-shell nanoparticles (NPs) can be utilized as a surface-enhanced Raman spectroscopy (SERS) substrate due to the large surface area and high localized surface plasmon resonance (LSPR) [3]. Here, a simple growth approach of solid-state dewetting can offer the dynamic evolution of bimetallic NPs such as hybrid core-shell Pd@Ag NPs with the Ag NPs as secondary background NPs as shown in Fig. 1(a). As compared to monometallic Ag and Pd NPs, the hybrid core-shell Pd@Ag NPs can exhibit an improved plasmonic LSPR as shown in Fig 1(a-1). The gradual blue shift is shown by the narrow LSPR peaks due to the unique morphology of core-shell Pd@Ag NPs. The Rhodamine 6G (R6G) molecule is used to explore the enhanced SERS performance with the incorporation of graphene quantum dots (GQDs) on the hybrid core-shell Pd@Ag NPs as shown in Fig 1(b). The hybrid nano construction of GQDs/HNPs delivers significantly altered e-field with the denser hotspots in between the small particle spacing and background ag NPs [4]. The dangling bonds present on the edge of GQDs can effectively adsorb the probe molecules R6G [5]. The significant improvement in the SERS signals can be attributed to the combination of chemical and electromagnetic enhancement via the GQDs and plasmonic hybrid core-shell Pd@Ag NPs, as shown in Fig. 1(d). The hybrid arrangement of Pd@Ag NP and GQDs substrate can provide sufficient surface area for the R6G molecule adsorption as well as incident light capture for the significantly enhanced SERS [1].

Keywords: Surface-enhanced Raman spectroscopy (SERS), Hybrid Pd@Ag NPs, R6G and GQDs, LSPR, solid-state dewetting.

Acknowledgments

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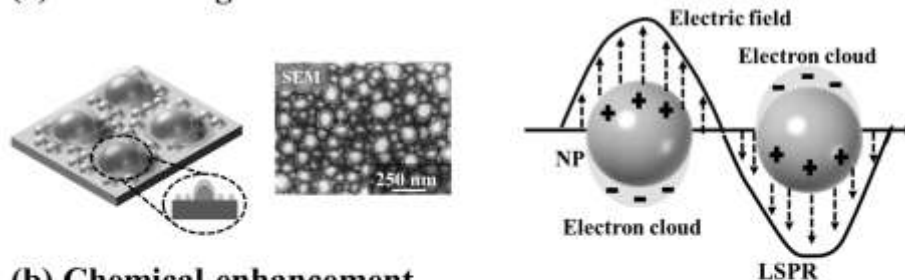
MoS₂ NANOPATELETS ON HYBRID CORE-SHELL AuPt NANOPARTICLES FOR THE SURFACE-ENHANCED RAMAN SPECTROSCOPY (SERS) ENHANCEMENT OF METHYLENE BLUE

Shusen Lin^a, Rutuja Mandavkar^a, Rakesh Kulkarni^a, Sanchaya Pandit^a, Shalmali Burse^a, Md Ahasan Habib^a, Sundar Kunwara* and Jihoon Lee**

^a Department of Electronic Engineering, College of Electronics and Information, Kwangwoon University, Nowon-gu, Seoul, 01897, South Korea.

ABSTRACT

(a) Electromagnetic enhancement



(b) Chemical enhancement

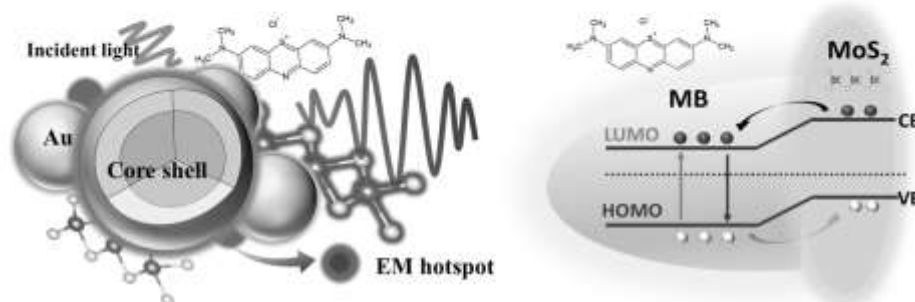


Figure 1: (a) Schematic of electromagnetic enhancement. (b) Schematic of chemical enhancement.[1]

Surface-enhanced Raman spectroscopy (SERS) is a powerful vibrational spectroscopy technique in detecting various bio-molecules at low concentrations. SERS can find various applications in biomolecule detection, biosensor, environmental science and other fields.[1][2] Until now, the electromagnetic mechanism (EM) via the surface plasmon excitation and chemical mechanism (CM) through the charge transfer process are widely accepted as the enhancement mechanisms of SERS as shown in Fig. 1. [3] In the case of EM, the interaction between adsorbed molecules and surface plasmon is imperative. The Au and Ag NPs nanostructures are widely known due to their stability in air and strong localized surface plasmon resonance (LSPR). Besides the classic Ag and Au, the Cu and Pt metallic nanostructures have been explored as a promising plasmonic material and the combination of different metals with various shapes and coatings also demonstrate the SERS enhancement.[2] At the same time, the CM by exploiting the charge transfer is another excellent method for increasing the weak intensity of Raman signals. Molybdenum disulfide (MoS₂), a promising 2D material with exceptional charge transfer ability and thermal stability, can demonstrate effective SERS enhancement.[4][5] To this end, constructing a nano-architecture using both CM and EM could be a successful technique that can provide significantly improve the originally weak Raman signals.

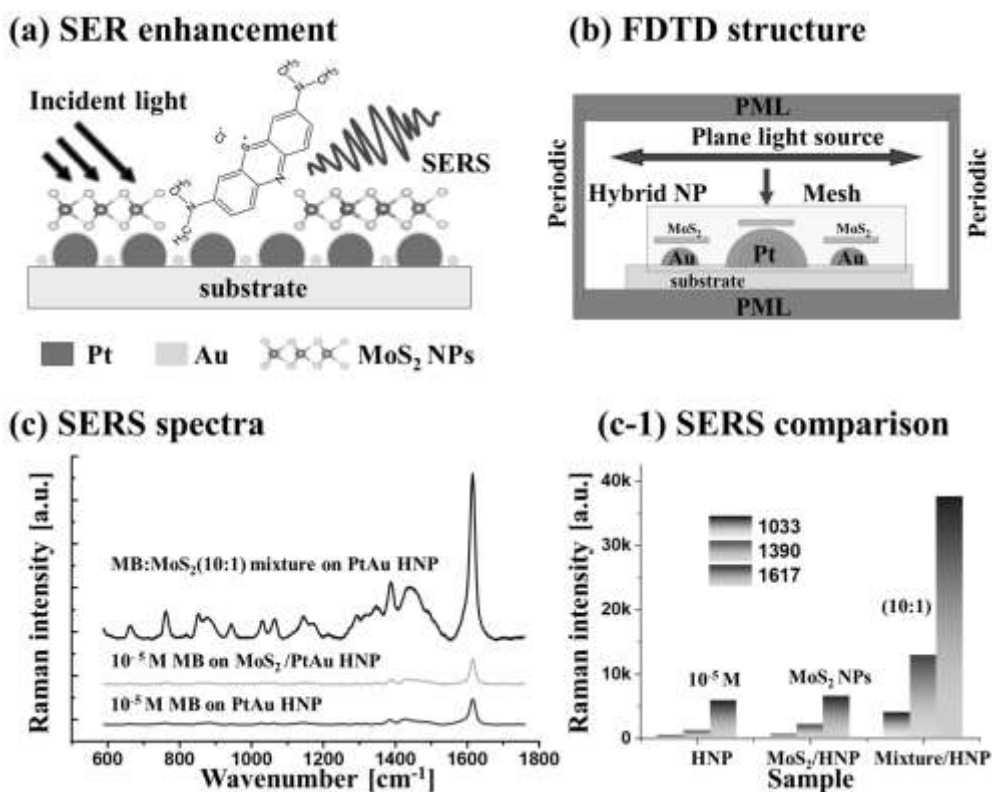


Figure 2: (a) Schematic of SERS enhancement by MoS₂-MB mixture and AuPt nanoparticles. Electromagnetic enhancement. (b) Schematic of FDTD simulation for AuPt nanoparticles with MoS₂ nanoplatelets. (c) Comparison of SERS spectra. (c-1) Corresponding summary plots. [1]

In this work, a hybrid SERS nano-architecture incorporating the core-shell AuPt hybrid nanoparticles and MoS₂ nanoplates is proposed in order to improve the SERS of methylene blue (MB) as shown in Fig. 2. The bi-metallic AuPt hybrid nanoparticles (NPs) are obtained by a two-step solid-state dewetting process (SSD). The optimized NPs platform is fabricated by accurately controlling the growth parameters such as annealing temperature and thickness of metal materials. The superiority of hybrid AuPt NPs is proven by the finite difference time domain (FDTD) simulations in Fig. 2(b). Further, the mixture of MoS₂ nanoplatelets and MB molecules is applied on the NPs template for the SERS application. The peak intensity is improved near 10 times according to the strong LSPR from hybrid core-shell AuPt nanostructure and charge transfer process between MoS₂ and MB as clearly summarized in Figs. 2(c) and 2(c-1).

Keywords: SERS, methylene blue, MoS₂, hybrid core-shell AuPt nanoparticles.

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Financial support from National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIT) (no. NRF-2020R1I1A1A01060937 and NRF-2018R1A6A1A03025242) and in part by the research grant of Kwangwoon University in 2022 is gratefully acknowledged.

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ENRICHED-BIOCHAR EFFECTS ON PHOSPHORUS ADSORPTION BEHAVIOR IN SALINE AND NON-SALINE SOILS OF LAKE URMIA BASIN

Roghayeh Mousavi¹, MirHassan Rasouli-Sadaghiani^{2}, Ebrahim Sepehr² and Mohsen Barin³*

1. PhD Graduated of Soil Science, Faculty of Agriculture, Urmia University, Urmia, Iran

2. Prof. of Soil Science, Faculty of Agriculture, Urmia University, Urmia, Iran

3. Associated Prof. of Soil Science, Faculty of Agriculture, Urmia University, Urmia, Iran

ABSTRACT

Study of sorption isotherms is one of the important methods for assessing the phosphorus status of soils, which can provide useful information about adsorption P and the factors affecting it. In order to, a batch experiment was performed with phosphorus concentrations (0 to 35 mg/l) in two soils with different electrical conductivity (EC) (2 and 15 dSm⁻¹) by a variety of biochar treatments including simple apple-grape biochar (BC), rock phosphate- biochar (BC-RP), enriched-biochar (BC-H₃PO₄-RP) and (BC-HCl-RP), triple superphosphate (TSP) and control (Cont). The results indicated that phosphorus sorption capacity varied between the soils. Biochar treatments were effective in reducing the phosphorus adsorption of both soils. Due to BC-H₃PO₄-RP and BC-HCl-RP treatments, the maximum phosphorus adsorption of soils decreased, in S1 soil by 14 and 23 % and in S2 soil 26 and 19%, respectively. Enriched biochars significantly reduced the buffering indices of both soils, which indicated phosphorus adsorption significantly decreased and increased the availability of phosphorus for the plant. Standard phosphorus requirement of S2 soil was lower than S1 soil by both equations therefore, enriched biochar can be an effective strategy to increase the phosphorus availability and reduce the use of chemical fertilizers in saline and non-saline conditions; however more field studies are needed for a clear understanding of the potential of P-enriched biochar as a fertilizer alternative.

Key words: biochar, phosphorus adsorption, enrichment, saline soil

EFFECT OF BIOCHAR AND MICROBIAL INOCULATION ON P, Fe, and Zn BIOAVAILABILITY IN A CALCAREOUS SOIL

Roghayeh Vahedi¹, MirHassan Rasouli-Sadaghiani^{1,}, Mohsen Barin¹*

1- PhD Student, Professor and Assistant Prof. of Soil Science, respectively, Faculty of Agriculture, Urmia University, Urmia, Iran;

ABSTRACT

To identify effective ways of increasing the yield of crops grown in nutrient-poor calcareous soils, the combined effects of biochar addition and inoculation with plant growth promoting rhizobacteria (PGPR) and arbuscular mycorrhizal fungi (AMF) on wheat growth and soil properties were investigated under rhizobox conditions. Measured soil properties included pH, electrical conductivity (EC), organic matter content (OM), the availability of P, Fe, and Zn in the rhizosphere, and the uptake of these elements by plants. Combined biochar addition and microbial inoculation were shown to significantly increase the concentration of available forms of P, Fe, and Zn in the soil when compared to non-biochar treatments. The highest soil pH (7.82) was observed following biochar addition without microbial inoculation. The EC following biochar addition and PGPR inoculation was significantly higher than the other treatments, and the soil OM content was highest when combining AMF inoculation with biochar addition. The available P content after AMF inoculation combined with biochar addition was 27.81% higher than the control conditions, and AMF inoculation increased Fe and Zn bioavailability by factors of 2.38 and 1.29, respectively, when combined with biochar addition relative to AMF inoculation alone. The simultaneous biochar addition and PGPR inoculation significantly increased P uptake by the plants. The highest shoot Fe and Zn uptake rates were observed after a simultaneous application of biochar and PGPR inoculation. Under these conditions, shoot uptake was higher than seen when combining biochar addition with AMF inoculation by factors of 1.64 and 1.21, respectively. In general, it can be concluded that combining inoculation with growth-promoting bacteria and biochar addition can effectively improve nutrient availability to plant and soil conditions.

Keywords: Organic matter; Pruning waste; Nutrient availability; Microorganism; Rhizobox

EFFECT OF BIOCHAR ON NITROGEN MINERALIZATION DYNAMICS OF A PERI-URBAN CROPLAND AMENDED WITH POULTRY MANURE

*Segun O. Oladele**

Department of Agronomy, Faculty of Agriculture, Adekunle Ajasin University Akungba Akoko, Nigeria

ABSTRACT

The incorporation of biochar as a soil conditioner is being promoted due to its stability and long-term impact on soil physical and chemical properties. However, its impact on nutrient mineralization dynamics, particularly on peri-urban cropland soils amended with livestock waste is yet to be ascertained. Here, we examine how biochar affected the nitrogen (N) mineralization dynamics of a peri-urban cropland soil amended with poultry manure. A 30-day soil microcosm incubation experiment was carried out using 100 g of soil in 200 ml containers at 25°C and 40% of its water holding capacity. After 2, 8, 15, and 30 days of incubation, changes in the mineral N fractions (NO_3^- and NH_4^+) were determined. Results revealed that biochar altered the dynamics of soil N mineralization, with a particular impact on soil ammonification. In the presence of biochar, the amount of NH_4^+ -N generated from the mineralization of poultry manure was significantly reduced. This could be alluded to the C/N ratio, nutrient immobilization and sorption sites on the biochar surface, which inhibits the mineralization rate of poultry manure. Thus, biochar decreased the availability of soil mineral N as a consequence of a low mineralization rate which will decrease the risk of NO_3^- -N leaching to groundwater and environmental pollution when using N-rich livestock waste.

PRODUCTIVITY OF WINTER RAPE IN UKRAINE DEPENDING ON THE METHOD, DEPTH OF TILLAGE, ROW SPACING AND SOWING DATE

Gamajunova V.V.¹, Sydiakina O.V.², Honenko L.G.¹,

Garó I.M.¹, Baklanova T.V.², Iskakova O.Sh.¹

¹*Mykolaiv National Agrarian University, Mykolaiv, Ukraine*

²*Kherson State Agrarian and Economic University, Kherson, Ukraine*

ABSTRACT

Ukraine is best known in the world for the production of high-quality grain of strong and valuable wheat, as well as sunflower and sunflower oil. Quite a prominent place among the group of highly liquid crops is occupied by winter rape, which has a wide range of uses, including for the production of environmentally friendly fuel – bioethanol. These crops are important both for the country's own needs and for exports.

Currently, hostilities are underway in Ukraine, not all agricultural lands have the opportunity to successfully grow crops. Therefore, in those lands that can be cultivated, it is necessary to implement the most efficient elements of technology in order to get as many products as possible. This is extremely important when growing winter oilseed rape. Our three-year research has identified the most optimal measures for growing winter oilseed rape. The study was conducted during 2013–2015 with the variety Champion of Ukraine, in the following years the results are widely implemented in the production of more modern varieties and hybrids of this valuable crop. Therefore, the identified and optimized elements of the technology of growing winter oilseed rape are relevant.

We present the influence of the main measures, in particular the method of tillage, row spacing and sowing time on the yield and quality of winter rapeseed. Studies have shown that winter oilseed rape plants respond significantly to all studied elements of the technology, which to varying degrees affected its productivity (table 1).

Seed yields reached the minimum values due to a combination of the following factors: plowing to a depth of 25–27 cm, sowing in the first decade of September with a row spacing of 15 cm – on average over the years of research in this case formed 4.54 t/ha. Against the background of disking to a depth of 12–14 cm for the same sowing dates and width between rows received 4.24 t/ha, which is 0.3 t/ha or 7.1% less. Later sowing dates and increased row spacing in all years of research provided lower yields of winter rapeseed.

In 2021, which proved to be favorable in terms of moisture, winter rapeseed for a combination of the above factors formed a seed yield of 6.38 t/ha.

It is worth noting that the studied factors significantly affected the main indicators of seed quality, as evidenced by the tables. Thus, most of the fat accumulated in the seeds for sowing in the first decade of September in a row. Increasing the width between rows to 30 and 60 cm led to a decrease in fat content in winter rapeseed. Slightly more fat was accumulated during plowing compared to disking.

The accumulation of crude protein (protein) in winter rapeseed occurred with a slightly different relationship. The tendency to increase this indicator was observed against the background of disking to a depth of 12–14 cm compared to plowing to a depth of 25–27 cm and an increase in the width between rows. This is a very important indicator of quality in the case of rapeseed processing. It is known that rapeseed meal in the dry mass contains 37–43% protein, which directly determines this culture as an important source of feed protein. In addition, rapeseed protein contains sulfur amino acids, which are absent in the protein of legumes and cereals. Therefore, the addition of rapeseed to feed mixtures is extremely important in animal nutrition.

Of course, the most optimal elements of the technology of growing winter oilseed rape not only affected the content of fat and crude protein in the seeds, but also affected the conditional yield of these components per unit area. The sowing period had a clearer effect on the conditional collection of oil and protein per hectare (Table 1). The method of tillage did not have a significant effect, and increasing the width of the rows from 15 cm to 30 and 60 cm led to less conditional collection of oil and protein.

Table 1 – Yield, basic quality indicators and conditional yield of oil and protein depending on the studied factors (average over three years)

Experience options			Seed yield, t/ha	Seed content, %		Conditional yield, t/ha	
soil processing, factor A	sowing time, factor B	row spacing, cm, factor C		fat	crude protein	oil	protein
Disking 12–14 cm	I decade of September	15	4,24	44,7	24,25	1,99	1,08
		30	3,78	44,5	24,44	1,75	0,96
		60	3,51	44,2	24,53	1,63	0,91
	II decade of September	15	3,54	44,2	24,27	1,59	0,87
		30	3,23	43,8	24,57	1,42	0,80
		60	2,98	43,8	24,63	1,35	0,76
	III decade of September	15	2,59	42,0	23,98	1,17	0,67
		30	2,31	42,1	24,07	1,04	0,60
		60	2,18	41,7	24,12	0,96	0,55
Plowing 25–27 cm	I decade of September	15	4,54	45,5	24,21	1,97	1,05
		30	4,04	45,0	24,32	1,75	0,94
		60	3,89	45,1	24,49	1,67	0,91
	II decade of September	15	3,74	44,3	24,12	1,64	0,89
		30	3,47	43,3	24,38	1,50	0,85
		60	3,28	43,7	24,41	1,39	0,78
	III decade of September	15	2,72	42,6	24,00	1,07	0,60
		30	2,50	42,2	24,16	0,99	0,57
		60	2,29	42,1	24,22	0,92	0,53
Smallest significant difference (SSD ₀₅): A = 0,08; B = 0,05; C = 0,04							

Thus, for the cultivation of winter oilseed rape in Ukraine due to changes in climatic conditions, it is advisable to plow to a depth of 25–27 cm as the main tillage, and sow it in the first decade of September in the usual row method with a row spacing of 15 cm.

OCCUPATIONAL SAFETY IN AGRICULTURAL TRACTOR OPERATIONS

Ana GALAIO

¹ *Polytechnic Institute of Beja, Portugal*

*Rui ISIDORO*²

Polytechnic Institute of Beja, Portugal.

²ORCID ID: <https://orcid.org/0000-0002-2475-8591>

ABSTRACT

The way that large corporates management is changing thru out the years is becoming very dangerous in what concerns to the user of toxic chemicals and with the use of IT technologies.

This Evolution brings on new risks and requires and upgrade development from the corporations involved with occupational health and safety.

Farming is sometimes related to occupational hazards in wich concerns the farmes health. This objctive of this paper is to prevent future agrucultural hazards envolving heavy machinery.

For the final goal to be achieved we had some steps to complete, such as inquiries to the farmes, we had to check out if they had hazardous maps and placed to the farms so that we could check the veichles and the machinery, with all the information gathered we could use a risk evaluation method.

As future work, control measures are presented to minimize the impact this activity has on the health of its operators.

It is therefore important to note that health and safety at work should be seen as an investment and not as a cost. All workers, regardless of age, sex, race, citizenship, territory of origin, religion, political or ideological beliefs, are entitled to work under conditions of hygiene and safety.

Keywords: Health and safety at work; Operations with agricultural tractors; Risk assessment

INTERCONNECTEDNESS AMONG EXCHANGE RATE MARKETS OF PAKISTAN WITH ITS MAJOR TRADING PARTNERS

Saman Razzaq

Department of Economics, COMSATS University Islamabad (CUI), Islamabad, Pakistan. Email:

Mumtaz Ahmed

Department of Economics, COMSATS University Islamabad (CUI), Islamabad, Pakistan.

ABSTRACT

The world is a global village and there is a rise in the level of integration as well as trade openness across the globe. Thus, it is very important to examine the nature, level, and magnitude of connectedness between a country and its trading partners. This study takes a lead and examines the volatility spillovers across exchange rate markets with a focus on Pakistan and its major trading partners. The empirical analysis is based on the latest available daily data on exchange rates of major trading partners (importing as well as exporting countries with import and exports share of more than 60%). The empirical analysis makes use of the recently proposed state of art approach by Diebold and Yilmaz (2012; known as DY-12) and the Barunik and Krehlik (2012, 2018) (BK-12) approaches respectively, where the former approach examines the volatility spillovers in time domain while the latter does the same job in the frequency domain by analyzing spillover in the short, medium and long run. The study yields interesting results. Some relevant policy implications are discussed as well.

Key Words: Vector Autoregressive Model; Rolling Window; Time-Varying approach; Frequency and Time Domain

TIME VARYING CONNECTEDNESS AMONG FUEL PRICES IN ENERGY ECONOMY USING A TIME-FREQUENCY BASED FRAMEWORK

Fawad Ullah Baig

Department of Economics, COMSATS University Islamabad (CUI), Islamabad, Pakistan. Email:

Mumtaz Ahmed

Department of Economics, COMSATS University Islamabad (CUI), Islamabad, Pakistan.

ABSTRACT

In recent past, a sharp price hike is seen in international as well as domestic fuels. Several studies are available examining the level of connectedness of crude oil prices. However, not a single study is available on examining the nature, level and magnitude of connectedness among domestic fuels. The present study considers this issue and analyzes the connectedness of major domestic fuels in Pakistan. The empirical exercise is based on two recently proposed state of art approaches by Diebold and Yilmaz (2012) and Barunik and Krehlik (2018). Latest available monthly time series data is used for commonly used fuels in Pakistan including Euro Premier/Petrol, Light Diesel Oil, High Speed Diesel, Kerosene Oil. An advantage of using both DY-12 and BK-12 approaches is that the empirical analysis provides complete picture by providing nature, level and magnitude of connectedness among major fuels in context of time as well as frequency domains. Specifically, the frequency domain analysis provides results for the short, medium and long term. Some very interesting results are found followed by the discussion of relevant policy implications.

Key Words: Forecast Error Variance Decomposition; Time Varying; Frequency and time domain

OPTIMIZATION OF BIOFERTILIZER FORMULATION FOR PHOSPHORUS SOLUBILIZING: APPLICATION OF RESPONSE SURFACE METHODOLOGY

Masoumeh Hosseini¹, Mohsen Barin^{1,*}, Mir Hassan Rasouli-Sadaghiani, Farrokh Asadzadeh¹

¹ Department of Soil Science, Faculty of Agriculture, Urmia University, Urmia, Iran

ABSTRACT

This study aimed to analyze and quantify the effect of different ratios of vermicompost, phosphate rock and sulfur on P solubilization and release by *Pseudomonas fluorescens*, and to identify optimal levels of those variables for preparation of an efficient biofertilizer. Twenty experiments were defined by the surface response method based on a central composite design (CCD), and the effect of various quantities of vermicompost, phosphate rock and sulfur encoded by -1, 0 or +1 on P solubilization was explored. The results revealed the high efficiency of the CCD model in estimating P solubilization ($R^2 = 0.9035$). Among the independent variables studied, linear effect of sulfur and organic matter (vermicompost), the quadratic of phosphate rock, interaction organic matter \times phosphate rock had the largest influence on the observed P solubilization rate. Statistical analysis of the coefficients in the CCD model revealed the positive effect of vermicompost, vermicompost \times phosphate rock, and phosphate rock \times phosphate rock in increasing P solubilization. The optimal composition for P solubilization was predicted to be 58.8% vermicompost, 35.3% phosphate rock and 5.8% sulfur, which would maximize P solubilization to 1684.39 mg.kg⁻¹ by *P. fluorescens*. The amount of dissolved phosphate was more than 90%. ANOVA confirmed the model accuracy and validity with respect to the *F* value (10.41), *P* value (< 0.001) and non-significant lack of fit.

Keywords: Biofertilizer; Central composite design; Modeling; Phosphate solubilizing bacteria

THE EFFECT OF CUMIN ESSENTIAL OIL ON BLOOD CELLS OF *Galleria mellonella*

Zahra Tavakolizadeh¹ and Reza Sadeghi*¹

¹Department of Entomology and Plant Pathology, College of Abureihan, University of Tehran

ABSTRACT

Galleria mellonella is one of the most important pests of agricultural products. Due to the adverse effects of chemical pesticides, the need for alternative methods is inevitable. Essential oils and plant extracts are suitable candidates as alternatives to synthetic chemical compounds. Blood cells play an important role in the insect's immune system and protect them from environmental stress or chemical and microbial toxins, so the study and recognition of these cells in response to essential oils can be an effective step in assessing the extent and effect of essential oils on Show pest. This study was performed to investigate the effect of essential oil on blood cells and to investigate the pest defense system, smoking toxicity and repulsion. In this experiment, the total number of blood cells, granulocytes and plasmocytes of wax moth larvae (*G. mellonella*) were calculated after injecting cumin essential oil at intervals of 3, 12 and 24 hours. The results showed that with increasing time, the number of plasmacytocytes decreased and the number of granulocytes and the total number of cells at 3 and 12 hours after the test first decreased and then increased. Causes changes in the total number of blood cells. The decrease in blood cell count may be due to the formation of nodules and capsules around the invaders, as well as the effect of secondary metabolites in some pathogens. However, the increase in the number of blood cells in some cases can be due to the stimulation of hemopoiesis due to the presence of pathogens in the blood. Changes in plasma cell counts are due to the loss of blood cells or may be due to cell defense activity. Blood cells that were treated in vitro under the influence of essential oil became nodular or cumulative. Changes in the number of granulocytes indicate their function in activating the insect defense system against foreign bodies. Experiments showed that this compound has a very good repellent so that after 24 hours we saw 100% repellent with a concentration of 20%.

Keywords: Granulocytes, Plasmocytes, *Galleria mellonella* , Defense system, Cumin essential oil

OPTIMIZATION OF CULTURE CONDITIONS FOR ZINC PHOSPHATE SOLUBILIZATION BY *Aspergillus* sp. USING RESPONSE SURFACE METHODOLOGY

Fatemeh Hashemnejad¹, Mohsen Barin^{1*}, Mir Hassan Rasouli-Sadaghiani¹, Maryam Khezri² ·
Youbert Ghoosta³, Farrokh Asadzadeh¹

¹Department of Soil Science, Faculty of Agriculture, Urmia University, Urmia, Iran;

²Agricultural Research, Education and Extension Organization, (AREEO), Iranian Research Institute
of Plant Protection, Tehran, Iran

³Department of Plant Pathology, Faculty of Agriculture, Urmia University, Urmia, Iran.

ABSTRACT

Zinc (Zn) is an essential trace element for plant growth and development, but Zn deficiency is common in many types of soil, due to either low total Zn concentrations or low availability of soluble, plant-accessible forms. In the latter cases, harnessing microorganisms' potential to solubilize Zn can play an important eco-friendly role in sustainable agriculture. However, micro-organisms' in vitro solubilization potential is strongly influenced by their culture medium's composition, which must therefore be optimized when screening and applying microorganisms as biofertilizers. In order to have modeling effects of varying levels of a carbon source (fructose, 5–30 g L⁻¹), a nitrogen source (ammonium sulfate, 2–10 g L⁻¹), and zinc phosphate (Zn₃(PO₄)₂, 2–15 g L⁻¹) on *Aspergillus*-mediated Zn release from the zinc phosphate, a central composite design (CCD) experiment with 20 combinations of surface variables and surface response method was used. The resulting model had high predictive ability ($R^2 = 0.9454$), and showed that the Zn₃(PO₄)₂ and (NH₄)₂SO₄ concentrations were the first and second most important factors for amounts of Zn released, respectively. The results also indicated that 14.6 g L⁻¹ fructose, 10 g L⁻¹ (NH₄)₂SO₄, and 15 g L⁻¹ Zn₃(PO₄)₂ was the optimal combination for maximizing Zn release under our culture conditions. It concluded that the study highlights the utility of response surface modeling for optimizing multiple cultivation variables when screening microbial taxa for solubilizing Zn, or maximizing other microbial activities.

Keywords: Central composite design · Culture medium components · Insoluble zinc compounds · Modeling · Solubilization

RECENT RESEARCHES FOR COENZYME Q10 FROM FOOD MATRICES. SUPPLEMENTATION IN AGING AND DISEASES

Andersina-Simina PODAR¹, Anca-Corina FĂRCAȘ¹, Sonia-Ancuța SOCACI^{1}*

¹University of Agricultural Sciences and Veterinary Medicine from Cluj-Napoca, Romania, Faculty of Food Science and Technology, Department of Food Science, Cluj-Napoca, Romania

¹ORCID ID: <https://orcid.org/0000-0001-9665-3142>

<https://orcid.org/0000-0002-1392-4080>

<https://orcid.org/0000-0003-0594-4628>

Cristina-Anamaria SEMENIUC^{2}, Maria-Ioana SOCACIU², Melinda FOGARASI²*

²University of Agricultural Sciences and Veterinary Medicine from Cluj-Napoca, Romania, Faculty of Food Science and Technology, Department of Food Engineering, Cluj-Napoca, Romania

²ORCID ID: <https://orcid.org/0000-0002-9721-4560>

<https://orcid.org/0000-0002-8871-1995>

<https://orcid.org/0000-0002-9561-1183>

ABSTRACT

Introduction: In the literature, Coenzyme Q10 (CoQ₁₀) usually is identified as a the only endogenously synthesized lipid-soluble antioxidant compound (Weber *et al.*, 1997). Coenzyme Q10, also referred as ubiquinone-10, is a member of the group of ubiquinones (Coenzymes Q), which are benzoquinone homologues, contained 10 isoprenoid units, widely distributed in all living organisms. It is well known that CoQ₁₀ plays an important role as an essential electron carrier in the mitochondrial respiratory chain and energy production (in form of ATP, an essential component of respiration). In addition, it has been shown that CoQ₁₀ (mainly in the reduced form) can act as an antioxidant, protecting numerous cellular membranes and plasma lipoproteins from free radical-induced damage and prevents DNA damage (Mattila and Kumpulainen, 2001). Moreover, CoQ₁₀ has become a popular adjuvant in the treatment of heart disease as well as the object of study in the treatment of a number of other diseases such as Parkinson's and Alzheimer's. CoQ₁₀ is supplied from two sources; endogenous synthesis and exogenous sources (foods and supplements) (Ercan and El, 2011). Most animal-originated foods, such as meat, egg, and dairy products, are critical sources of CoQ₁₀ (Bae *et al.*, 2018). Other available food sources of CoQ₁₀ can be vegetables oil, fish, bee pollen and microorganisms. But the problem is correlated to the absorbability of CoQ₁₀ which becomes more difficult with age, because of its higher molecular mass (863.7 Da) and poor water solubility, the efficiency of absorption and bioavailability of CoQ₁₀ from foods is poor. However, the absorption of CoQ₁₀ for oral administration is limited (Pyo, 2010) and in general, the recommended dosage is 100-200 mg/day CoQ₁₀ to achieve a therapeutically beneficial effect in the body. (Tobin, *et al.*, 2014).

Aims: This review focused on the health benefits of CoQ₁₀ dietary supplementation and its bioavailability for human body.

Materials and Methods: In order to achieve the set goal, a screening of the scientific literature from the last 20 years dealing with this theme, was conducted. The literature screening was performed using: National Centre for Biotechnology Information (PubMed), Science Direct, Web of Science, Nature and Elsevier databases. Most researchers have used the method of direct solvent extraction and saponification to extract the CoQ₁₀ from various food matrices and the quantification was performed by high performance liquid chromatography (HPLC) analysis using a diode array detection (DAD), photodiode array detection (PDA), or ultraviolet (UV) detection, setting the detector wavelength at 275 nanometer.



Results: Stress, migrains, headaches, infections, chronic inflammation, different illnesses, poor eating habits, and aging are only a few disorders which affect the organism`s ability to provide adequate amounts of CoQ10. More than 200 clinical trials have investigated its use as a drug or dietary supplement and reported beneficial effects for human health.

Conclusion: Researches suggest that using CoQ10 supplements alone or in combination with other nutritional supplements may help to maintain the health of elderly people or treat some of the health conditions and diseases.

Keywords: Absorption, Coenzyme Q10, dietary supplementation, health benefits

MERİNOS IRKI KOYUNLARDA PROSTAGLANDİN TABANLI PROTOKOL ÖNCESİNDE GnRH UYGULAMASININ FERTİLİTE ÜZERİNE ETKİSİ

THE EFFECT OF GnRH ADMINISTRATION BEFORE PROSTAGLANDIN-BASED PROTOCOL ON REPRODUCTIVE PERFORMANCE IN MERINO SHEEP

Bariş GÜNER

Balıkesir Üniversitesi, Veteriner Fakültesi, Doğum ve Jinekoloji AD, Balıkesir, Türkiye

ORCID ID: 0000-0001-6414-6752

ÖZET

Çalışmanın amacı, sezon içi dönemde (Temmuz/Ağustos) Merinos koyunlarda prostaglandin tabanlı senkronizasyon protokolü öncesinde GnRH uygulamasının fertilité üzerine etkinliğini arařtırmaktır. Çalışma, yaklaşık bir ay önce progesteron tabanlı senkronizasyon protokolü uygulaması sonrası gebe kalmayan koyunlar üzerinde yapıldı. Bu koyunlar (n=83), kontrol grubu (CON, n=27) ve iki tedavi grubu olmak üzere rastgele üç gruba ayrıldı. Tedavi gruplarındaki koyunlara, 9 gün arayla iki doz (PP, n=28) prostaglandin $f_{2\alpha}$ (PGF $_{2\alpha}$, kloprostenol, 125 µg) veya iki doz PGF $_{2\alpha}$ 'dan 7 gün öncesi gonadotropin salgılatıcı hormon (GnRH, buserelin, 10 µg) kombinasyonu (GPP, n=28) uygulandı. İkinci PGF $_{2\alpha}$, ilk PGF $_{2\alpha}$ enjeksiyondan sonra kızgınlık göstermeyen koyunlara uygulandı. Doğal çiftleşme için kullanılan 15 baş fertil koçun çiftleşme boyası ile kızgınlık tespiti yapıldı. Çiftleşme sonrası 25. günde transrektal ultrasonografi ile gebelik muayenesi yapıldı. Östrus tespit oranı gruplar arasında istatistiksel olarak (P>0.05) farklı değildi (CON; %77.8, GPP; %67.8, PP; 60.7). Birinci ve ikinci PGF $_{2\alpha}$ sonrası kızgınlık tepkisinin dağılımları GPP ve PP grupları için sırasıyla %46.4; %21.4, %42.9; %17,8'dir. Çalışmanın başlangıcı ile doğal çiftleşme arasındaki ortalama gün CON, GPP ve PP grupları için 2.81±1.54, 3.47±1.34 ve 3.06±1.89 idi. Gebelik oranı gruplar arasında (CON; %44,4, GPP; %42,8, PP; 35,7) istatistiki olarak değışmedi (P>0.05). Sonuç olarak, kontrol grubu ile karşılaştırıldığında prostaglandin tabanlı senkronizasyon protokolü veya bu protokolden önce GnRH ilavesi sonrasında fertilité parametreleri değışmedi.

Anahtar kelimeler: GnRH, cloprostenol, gebelik oranı, koyun

ABSTRACT

The objective of the study was to investigate the efficacy of GnRH before prostaglandin-based synchronization protocol on fertility in Merino sheep during the breeding season (July/August 2021). The study was conducted on sheep that did not conceive after the application of the progesterone-based synchronization protocol approximately one month ago. These sheep (n=83) were randomly divided into three groups as control group (CON, n=27) and two treatment groups. In treatment groups, sheep were treated with either two doses of prostaglandin $f_{2\alpha}$ (PGF $_{2\alpha}$, cloprostenol, 125 µg) 9 days apart (PP, n=28) or in combination with gonadotropin-releasing hormone (GnRH, buserelin, 10 µg) 7 days before the two doses of PGF $_{2\alpha}$ (GPP, n=28). The second PGF $_{2\alpha}$ was administered in sheep that did not show estrous after the first PGF $_{2\alpha}$ injection. Estrous detection was performed with mating mark of 15 fertile rams which were used for natural mating. Pregnancy examination was performed using transrectal ultrasonography on d 25 after mating. The estrous detection rate was not statistically different (P>0.05) among groups (CON; 77.8%, GPP; 67.8%, PP; 60.7). Distributions of estrous response to the first and second PGF $_{2\alpha}$ were 46.4%; 21.4%, 42.9%; 17.8% for GPP and PP groups, respectively. The mean interval (d) between the onset of the study and natural mating was 2.81±1.54, 3.47±1.34, and 3.06±1.89 for CON, GPP, and PP groups. It was found that the pregnancy rate did not change (P>0.05) among groups (CON; 44.4%, GPP; 42.8%, PP; 35.7). In conclusion, fertility parameters did not change following prostaglandin-based synchronization protocol or the addition of GnRH before this protocol compared to control group.

Keywords: GnRH, cloprostenol, pregnancy rate, sheep

İKLİM DEĞİŞİKLİĞİNİN BİTKİ HASTALIKLARINA OLAN ETKİLERİ EFFECTS OF CLIMATE CHANGE ON PLANT DISEASES

Elen İNCE^{1*}

^{1*}*Biological Control Research Institute, Adana, Turkey*

ÖZET

Dünya nüfusunun hızla artmasına paralel olarak gıda ihtiyacının karşılanması en önemli sorun haline gelmektedir. Bu durum da, tarımsal faaliyetleri yaşadığımız yüzyılın ve geleceğin en stratejik sektörü haline getirmektedir. Toprak ve su kaynaklarının gün geçtikçe azalıyor olması nedeniyle, bitkisel ürünlerin en verimli şekilde gıdaya dönüşmesi ve bunun da sürdürülebilirlik ilkesi içerisinde yapılması önemlidir. Fakat bu duruma tehdit oluşturan birçok parametre vardır. Bunlardan birisi de iklim değişikliğidir. İklim değişikliği, tarımı yapılan ürünlerde ve doğal bitki örtüsünde gelecekte oluşabilecek virüs ve diğer hastalıklar açısından nasıl bir salgın oluşturabileceğine dair bilgi elde edilmesi, küresel anlamda gıda güvenliği ve doğal ekosistemler için oldukça büyük önem taşımaktadır. Global anlamda etkin, verimli ve sürdürülebilir tarımsal faaliyetler esnasında, yaşanan iklim değişikliği ile birlikte daha önce minor olarak bulunan, salgın olmayan ve endemik olarak etkisini sürdüren bitki hastalıkları artmış ve ülkeler arası ticaret vasıtasıyla da farklı ülkelere taşınarak yaygınlığını artırmış durumdadır. İklim değişikliğiyle birlikte, son 30 yıl içerisinde farklı ısı isteklerine ihtiyaç duyan patojenleri aktive ederek sorunların artmasına ve değişken hastalık etmenlerinin varlık göstermesine neden olmaktadır. Ürün kayıplarına, meyve kalitesinin azalmasına, bitkinin yaşam süresinin kısılmasına ve etkin bir mücadele yönteminin olmaması nedeniyle bitki virüs ve fitoplazma hastalıkları bu anlamda büyük önem taşımaktadır. Bu çalışmada, Doğu Akdeniz Bölgesi içerisinde yer alan farklı illerde gerek üretici şikayetleri, gerekse Bakanlık Müdürlüklerinin hastalığı tanılayamadıkları durumlarda yapılan arazi gözlemleri ve laboratuvar çalışmaları sonucunda, bağ üretim alanlarında farklı virüs (*Grapevine leafroll associated viruses*) ve fitoplazma (*Candidatus Phytoplasma solani*) hastalıkları tespit edilmiş ve daha önce yaygınlığı az olarak bilinen veya daha önce bilinmeyen bu etmenler bölgemizde de görülebilmektedir. Çoğu durumda bağlarda her iki etmenin karışık olarak enfekte olması ile daha yoğun hastalık tabloları ile karşılaşmıştır.

Anahtar Kelimeler: iklim değişikliği, bitkisel üretim, virüs, fitoplazma.

ABSTRACT

The most important problem is becomes that in parallel with the rapid increase of world's population is satisfying food needs. This situation makes agricultural activities the most strategic sector of the century and the future. Since soil and water resources are decreasing day by day, it is important that plant products are transformed into food in the most efficient way and this is done within the principle of sustainability. But there are many parameters that pose a threat to this situation. One of them is climate change. Obtaining information about how climate change may cause an epidemic in terms of viruses and other diseases that may occur in the agricultural products and natural vegetation in the future is of great importance for global food security and natural ecosystems. During the global effective, productive and sustainable agricultural activities, together with the climate change experienced, plant diseases that were previously minor, non-epidemic and endemic have increased and their prevalence has increased by being transferred to different countries through inter-country trade. With climate change, it activates pathogens that need different heat demands in the last 30 years, causing problems to increase and variable disease factors to exist. Plant virus and phytoplasma diseases are of great importance in this sense due to product losses, decrease in fruit quality, shortening of the life span of the plant and the lack of an effective control method. In this study, different virus (*Grapevine leafroll associated viruses*) and phytoplasma (*Candidatus Phytoplasma solani*) diseases were detected in vineyard production areas as a result of both producer complaints and field observations when Ministry Directorates could not diagnose



the disease in different provinces in the Eastern Mediterranean Region. and these factors, which were known to be less common or previously unknown, could also be seen in our region. In most cases, more intense disease symptoms were encountered with the mixed infection of both pathogens in the vineyards.

Key words: climate changes, plant production, virus, phytoplasma.

BİLGİSAYARLI GÖRÜ SİSTEMLERİ VE GIDA UYGULAMALARI COMPUTER VISION SYSTEMS AND FOOD APPLICATIONS

Emine OKUMUŞ

*Van Yüzüncü Yıl Üniversitesi Mühendislik Fakültesi Gıda Mühendisliği Bölümü, Zeve Kampüsü,
65080, Tuşba, Van, Türkiye.*

*Department of Food Engineering, Faculty of Engineering, Van Yüzüncü Yıl University, Zeve Campus,
65080, Tuşba, Van, Turkey.*

ORCID ID: <https://orcid.org/0000-0001-5266-8633>

ÖZET

Gıda kalitesi ve güvenliği günlük hayatımızın vazgeçilmez bir parçasıdır. Tüketicilere lezzetli, güzel görünümlü ve güvenilir gıdalar sunmak amacıyla gıda üretimi ve işlenmesinin her aşamasında dikkatli ve tedbirli olunması gerekmektedir. Yüksek kaliteli ve güvenli gıda ürünlerine olan talebin artması, gıda ve tarım ürünlerinde kalitenin doğru, hızlı ve objektif olarak değerlendirmesinin önemini artırmaktadır. Gıda endüstrisinde bilgisayarlı görüntüleme sistemlerinin kullanımı ise uzun yıllardır bilinmektedir. Bilgisayarlı görü teknolojisinin gıda endüstrisindeki başlıca uygulama alanları, tahıl ürünleri, meyveler, sebzeler, cips, peynir ve pizza gibi işlenmiş gıdaların kalite değerlendirmesini içermektedir. Kullanılan bu sistemler üretim hatlarında hızlilik, hasarsız olarak ürünleri değerlendirme imkânı, uygulamada kolaylık ve verimli çalışma gibi birçok mühendislik problemlerine çözüm sağlayan avantajlar sunmaktadır. Bilgisayarlı görü sistemlerinin gıda endüstrisinde ve özellikle yüksek kapasitedeki üretim hatlarında ekonomik, hijyenik, tutarlı ve objektif değerlendirme olanakları sayesinde giderek daha fazla ürünün denetim ve değerlendirmesinde kullanım alanı oluşmaktadır. Bu çalışma, bilgisayarlı görüntüleme tekniklerinin gıda uygulamaları hakkında bilgiler vermek üzere oluşturulmuştur.

Anahtar Kelimeler: Bilgisayarlı görü sistemleri, gıda uygulamaları, gıda endüstrisi.

ABSTRACT

Food quality and safety are an indispensable part of our daily lives. It is necessary to be careful and cautious at every stage of food production and processing in order to offer delicious, good-looking, and safe foods to consumers. Increasing demand for high-quality and safe food products increases the importance of accurate, fast, and objective evaluation of quality in food and agricultural products. The use of computer vision systems in the food industry has been known for many years. Major application areas of computer vision technology in the food industry include the quality assessment of processed foods such as cereals, fruits, vegetables, chips, cheese, and pizza. These systems, which are used, offer advantages that provide solutions to many engineering problems such as speed in production lines, the possibility of evaluating products without damage, ease of application, and efficient operation. Computer vision systems are used in the control and evaluation of more and more products, thanks to the economic, hygienic, consistent, and objective evaluation possibilities in the food industry and especially in high-capacity production lines. This study was created to give information about food applications of computerized imaging techniques.

Keywords: Computer vision systems, food applications, food industry.

ACI PELİN OTU (*Artemisia absinthium* L.) VE CEVİZ (*Juglans regia* L.) EKSTRELERİNİN BAZI KÜLTÜR BİTKİSİ VE YABANCI OT TOHURLARININ ÇİMLENMESİ ÜZERİNE ETKİSİ

EFFECT OF ABSINTH WORMWOOD (*Artemisia absinthium* L.) AND WALNUT (*Juglans regia* L.) EXTRACTS ON SEED GERMINATION OF SOME CULTIVATED PLANTS AND WEEDS

Eren ERGÜN

Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Bitki Koruma Bölümü, Van.

Işık TEPE²

² Prof. Dr. Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Bitki Koruma Bölümü, Van, Türkiye.

²ORCID ID: <https://orcid.org/0000-0002-9156-9467>

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ÖZET

Bu çalışmada allelopatik etkisi olduğu bilinen acı pelin otu (*Artemisia absinthium* L.) ve ceviz (*Juglans regia* L.) ekstrelerinin bazı kültür bitkileri ve yabancı ot tohumlarının çimlenmesi üzerine etkisi araştırılmıştır. Böylece pestisitlere alternatif olabilecek bazı biyokimyasal bileşiklerin kullanılabilirliği araştırılacaktır. Yapılan çalışmada acı pelin otunun yeşil aksam ve cevizin taze meyve kabuğundan elde edilen su ve etanol ekstreleri kültür bitkilerinden domates, hıyar, buğday ve mısır; yabancı otlardan semizotu (*Portulaca oleracea* L.), it üzümü (*Solanum nigrum* L.), kırmızı köklü horozibiği (*Amaranthus retroflexus* L.) ve şeytan elması (*Datura stramonium* L.) tohumlarına uygulanmıştır. Çalışma 2020 yılında Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi herboloji laboratuvarında yürütülmüştür. Bitkilerden elde edilen su ve etanol ekstreleri acı pelin otu ve ceviz için %0 (kontrol), %5, %10, %15 ve %20 oranlarında tohumlara uygulanmıştır. Her bir Petri kabının içine iki kat steril kurutma kağıdı konulduktan sonra üzerine mısır için 10'ar; buğday, domates ve hıyar için 20'şer; yabancı ot tohumları için ise 50'şer tohum bırakılmıştır. Ekstreler önce filtre kağıdından geçirilmiş daha sonra 11 cm'lik Petri kaplarına 5 ml olacak şekilde uygulanmıştır. Denemeler dört tekerrürlü olarak kurulmuştur.

Yapılan çalışmada, acı pelin otunun su ekstrelerinin %15 ve daha yüksek konsantrasyonları domates, hıyar ve buğday tohumlarının çimlenmesini önemli ölçüde etkilemiş; hatta %20'lik konsantrasyonda domateste %89, hıyarda %76 ve buğdayda %53 oranında çimlenmeyi azaltmıştır. Mısır tohumlarının çimlenmesi üzerindeki etkisi ise önemsiz bulunmuştur. Su ekstreleri semizotu tohumlarında %5 ve daha yüksek konsantrasyonlarda, kırmızı köklü horozibiği tohumlarında ise %10 ve daha yüksek konsantrasyonlarda çimlenmeyi önemli ölçüde azaltmıştır. Acı pelin otunun etanol ekstrelerinin %5 ve daha yüksek konsantrasyonları domates, hıyar, mısır, buğday, semizotu ve kırmızı köklü horozibiği tohumlarının çimlenmesini tamamen engellemiştir. Cevizden elde edilen gerek su gerek etanol ekstreleri tüm konsantrasyonlarda domates, hıyar, mısır ve buğday tohumlarının çimlenmesini engellemiştir. İt üzümü ve şeytan elması tohumlarının kontrol grupları dahil olmak üzere bütün dozlarında yeterli ve homojen çimlenme sağlanamadığı için etki düzeyleri değerlendirmeye alınamamıştır. Sonuç olarak, acı pelin otu ve ceviz ekstrelerinin yoğunlukları arttıkça çimlenmeyi daha fazla engelledikleri, elde edilen etanol ekstrelerinin ise su ekstrelerine göre tohum çimlenmesini engellemede daha etkili olduğu anlaşılmıştır.

Anahtar kelimeler: Allelopati, acı pelin otu, ceviz, bitki ekstraktı, tohum, çimlenme.

ABSTRACT

In this study, the effects of absinth wormwood (*Artemisia absinthium* L.) and walnut (*Juglans regia* L.) extracts, known to have allelopathic effects, on the germination of some cultivated plant and weed seeds were investigated. Thus, the usability of some biochemical compounds that can be an alternative to pesticides will be investigated. In the study, water and ethanol extracts were obtained from the green parts of absinth wormwood and the pericarp of the walnut, and applied to the seeds of common purslane (*Portulaca oleracea* L.), black nightshade (*Solanum nigrum* L.), redroot pigweed (*Amaranthus retroflexus* L.), and jimsonweed (*Datura stramonium* L.). The study was carried out in the herbology laboratory at Van Yüzüncü Yıl University, in 2020. The water and ethanol extracts were applied to the seeds at 0% (control), 5%, 10%, 15%, and 20% for absinth wormwood and walnut. After placing two layers of sterile filter paper in each Petri dish, 10 seeds for corn; 20 for wheat, tomato, and cucumber; 50 seeds were left for each weed. The extracts were filtered and then applied to 11 cm Petri dishes as 5 ml. Experiments were set up with four replications.

As a result of the study, 15% and higher concentrations of water extracts of absinth wormwood significantly affected the germination of tomato, cucumber, and wheat seeds; even at 20% concentration, it reduced germination by 89% in tomato, 76% in cucumber and 53% in wheat. The effect on the germination of corn seeds was found to be insignificant. Water extracts significantly reduced germination in common purslane seeds at concentrations of 5% and higher and at concentrations of 10% and higher in redroot pigweed seeds. 5% and higher concentrations of ethanol extracts of absinth wormwood completely inhibited the germination of tomato, cucumber, corn, wheat, purslane, and redroot pigweed seeds. Both water and ethanol extracts from walnuts inhibited the germination of tomato, cucumber, corn, and wheat seeds at all concentrations. Their effect levels could not be evaluated since adequate and homogeneous germination could not be achieved in all doses of black nightshade and jimsonweed seeds, including the control groups. In conclusion, it was understood that as the density of absinth wormwood and walnut extracts increased, they inhibited germination more, and the ethanol extracts obtained more effective in preventing seed germination than water extracts.

Keywords: Allelopathy, absinth wormwood, walnut, plant extract, seed, germination.

BİTKİ GELİŞİMİNİ TEŞVİK EDEN RİZOBAKTERİLER ve *Trichoderma harzianum*'UN DOMATESTE SORUN OLAN MAVİ ÇİÇEKLİ CANAVAROTU (*Phelipanche ramosa* (L.) Pomel)'NUN ÇİMLENMESİ ÜZERİNE ETKİLERİ

EFFECTS OF PLANT GROWTH-PROMOTING RHIZOBACTERIA (PGPR) AND *Trichoderma harzianum* ON GERMINATION OF BROOMRAPE (*Phelipanche ramosa* (L.) Pomel) PROBLEM IN TOMATO

Enes FİDAN¹

¹Arş. Gör. Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Bitki Koruma Bölümü, Van, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0002-4567-2375>

Işık TEPE²

² Prof. Dr. Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Bitki Koruma Bölümü, Van, Türkiye.

²ORCID ID: <https://orcid.org/0000-0002-9156-9467>

ÖZET

Solanaceae familyasına ait olan domates (*Solanum lycopersicum* L.), hem ülkemizde hem de dünyada yaygın olarak yetiştiriciliği yapılan bir sebzedir. Türkiye de dahil dünyanın birçok ülkesinde domates, patlıcan, patates gibi bitkilerde mavi çiçekli canavar otu (*Phelipanche ramosa* (L.) Pomel) önemli bir sorundur. Tam parazit bir bitki olan canavarotu konukçu bitkilerin köklerine tutunarak, buradan gerekli su ve besin maddelerini temin eder. Bu durum konukçu bitkinin gelişimini yavaşlatıp önemli ölçüde verim kayıplarına neden olur. Bu çalışmada, başta domates olmak üzere birçok kültür bitkisinde sorun olan ve halihazırda bir mücadele yöntemi bulunmayan canavarotuna karşı *Trichoderma harzianum*, bitki gelişimini teşvik eden iki adet Rhizobakteri (*Pseudomonas caspiana* ve *Bacillus yelezensis*) ve bunların kombinasyonları ile canavarotunun çimlenmesinin engellenmesi amaçlanmıştır. Ana materyal olarak Rio Grande standart domates (*Solanum lycopersicum* L.) çeşidi kullanılmış ve mavi çiçekli canavar otu (*Phelipanche ramosa* (L.) Pomel) tohumları 2019 yılında Van'da domates yetiştiriciliği yapılan alanlardan toplanmıştır. Çalışma 2021 yılında Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Bitki Koruma Bölümü Herboloji iklim odasında yürütülmüştür. Denemeler 4 litre hacimli saksılarda, dört tekerrürlü, canavarotu ve canavarotsuz olarak iki grup olacak şekilde kurulmuştur. Canavarotlu ve canavarotsuz uygulamalar kıyaslandığında yaprak sayısı, toplam boy, toplam yaş ve toplam kuru ağırlıktaki fark istatistiksel olarak önemli bulunurken, sürgün çapı ve klorofil içeriğinde ise fark önemli bulunmamıştır. Uygulamalar kendi arasında değerlendirildiğinde canavarotlu grupta toplam kuru ağırlıktaki fark istatistiksel olarak önemli bulunmuş, diğer uygulamalarda ise fark önemli bulunmamıştır. Veriler, mavi çiçekli canavarotunun domates köklerinde oluşturduğu tüberkül sayısı açısından değerlendirildiğinde uygulamalar arasındaki farkın istatistiksel olarak önemli bulunduğu, *B. Yelezensis* ve *T. harzianum* uygulamaların diğer uygulamalara göre daha az tüberkül oluşturduğu gözlenmiştir. Projenin ilk yıl verilerinden elde edilen bu sonuçlara göre canavarotunun genel olarak domatesin klorofil içeriği, yaprak sayısı, toplam boy ve toplam ağırlığını düşürdüğü anlaşılmaktadır.

Anahtar Kelimeler: Domates, Canavarotu, Bitki Gelişimini Teşvik Eden Rhizobakteriler (PGPR), *Trichoderma harzianum*

ABSTRACT

Tomato (*Solanum lycopersicum* L.), a member of the Solanaceae family, is a commonly produced vegetable in both our country and throughout the world. Broomrape (*Phelipanche ramosa* (L.) Pomel) is an important problem in plants such as tomato, eggplant, and potato in many countries, including Turkey. The broomrape, a parasitic plant, adheres to the roots of the host plants and provides the necessary water and nutrients from there. This situation slows down the development of the host plant

and causes significant yield losses. In this study, it was aimed to prevent the germination of broomrape with *Trichoderma harzianum*, two plants' growth-promoting Rhizobacteria (*Pseudomonas caspiana* and *Bacillus yelezensis*), and their combinations against broomrape, which is a problem in many cultivars, especially tomatoes, and for which there is no control method yet. Rio Grande standard tomato (*Solanum lycopersicum L.*) cultivar was used as the main material, and broomrape (*Phelipanche ramosa (L.) Pomel*) seeds were collected from tomato growing areas in Van in 2019. The study was carried out in Van Yüzüncü Yıl University, Faculty of Agriculture, Plant Protection Department, Herbology climate room in 2021. The research was set up in 4-liter pots, with four replications, in two groups, with and without broomrape. When the applications with and without broomrape were compared, the difference in the number of leaves, total height, total fresh and total dry weight was statistically significant, but the difference in shoot diameter and chlorophyll content was not significant. When the applications were compared among themselves, the difference in total dry weight in the broomrape group was statistically significant, while the difference was not significant in other applications. When the data were compared in terms of the number of tubercles formed on tomato roots, it was observed that the difference between applications was statistically significant, and *B. yelezensis* and *T. harzianum* applications formed fewer tubercles than other applications. According to these results obtained from the first-year data of the project, it is understood that the chlorophyll content, number of leaves, total height, and total weight of the tomato decreased in general.

Keywords: Tomato, Broomrape, Plant growth-promoting Rhizobacteria (PGPR), *Trichoderma harzianum*

KEKLİKTE (ALECTORİS CHUKAR) TRAKEA’NIN HİSTOLOJİK YAPISI VE EPİTEL İLE BEZLERDEN SENTEZLENEN MÜSİNLERİN HİSTOKİMYASAL PROFİLİ
HISTOLOGICAL STRUCTURE OF THE TRACHEA AND THE HISTOCHEMICAL PROFILE OF MUSINS SYNTHETIC FROM EPITELS AND GLANDS IN PARTRIDGE (ALECTORIS CHUKAR)

Nurşin AYDIN

Doktorant, Dicle Üniversitesi Veteriner Fakültesi

ORCID ID: 0000-0003-0265-3163

Şerife YAY

Yüksek Lisans Öğrencisi, Dicle Üniversitesi Veteriner Fakültesi

ORCID ID: 0000-0002-1870-4618

Fatma ÇELENK

Doktorant, Dicle Üniversitesi Veteriner Fakültesi

ORCID ID: 0000-0002-9677-8372

Bayram BAYRAM

Dr. Öğr. Üyesi, Şırnak Üniversitesi, İdil Meslek Yüksekokulu Laborant ve Veteriner Sağlık Programı

ORCID ID: 0000-0002-5738-918X

ÖZET

Müsinler; enfeksiyöz etkenlere karşı, vücudun dış ortamla ilişkisi olan bölgelerinde bazı hücrelerin ürettiği glikoproteinlerdir ve bunlar fiziksel bir bariyer olarak işlev gören mukusun ana komponentleridir. Solunum yollarındaki mukus tabakası da hava yolu ile alınan partiküllere karşı akciğerlerin savunmasında önemli bir rol oynar. Bunun öneminden dolayı keklik trakeal bezlerin ve kadeh hücrelerinin salgıladığı müsinlerin kimyasal durumunu ortaya koymayı amaçladık. Bu nedenle özel bir çiftlikten temin edilmiş 5 dişi 5 erkek olmak üzere toplamda 10 erişkin ve sağlıklı keklik kullanıldı. Bütün olarak alınan trakealar, %10'luk formol-alkolde tespit edildikten sonra rutin histolojik takip prosedürleri izlenerek dokular parafine bloklandı. Bloklardan alınan 5 µm'lik kesitler histolojik ve histokimya boyamalarına maruz bırakıldı. Histolojik analiz için Crossman'ın üçlü boyaması, histokimya analiz için ise PAS, PAS-AB (pH 2,5), AF-AB (pH 2,5) ve PAPS boyamaları yapıldı. Histolojik olarak keklik trakesinin de diğer kanatlı türlerinde olduğu gibi yarım halka şeklinde kıkırdak halkalarıyla çevrili olduğu ayrıca epitelinin lümenine doğru uzanmış silyalara sahip olduğu görüldü. Trakeal bezlerin ise intraepitelyal konumlu olup basit alveolar tipte olduğu tespit edildi. Histokimyasal olarak incelendiğinde ise özellikle kadeh hücrelerinde olmak üzere bez epitelinde de yoğun PAS (+) reaksiyon, PAS-AB kombine boyanmada epitel yüzeyinde baskın AB (+) reaksiyon, AB-AF boyanmada ise eşit olarak hem AB hem AF (+) reaksiyonlar mevcuttu. Ayrıca PAPS boyanmada da güçlü reaksiyonlar mevcuttu. Kısacası değişen yoğunluklarda hem epitel hem de bez epitel hücrelerinin nötral ve asidik (sülfatlı ve karboksilli) müsinler ile N-asetilsialomüsinleri içerdiği gözlemlendi. Sonuç olarak salgılanan müsin tipleri dikkate alındığında, hem kayganlaştırıcı hem koruyucu görevi bulunan müsin tiplerinin keklik trakeasında yoğun şekilde mevcut olduğu ve kekliklerin solunum yollarının, güçlü bir mekanizma ile korunduğu anlaşılmış oldu.

Anahtar Kelimeler: Bez, Histokimya, Keklik, Müsin, Trakea

ABSTRACT

Mucins; they are glycoproteins produced by some cells in areas of the body that are in contact with the external environment against infectious agents, and they are the main components of mucus that function as a physical barrier. The mucus layer in the respiratory tract also plays an important role in the defense of the lungs against airborne particles. Due to the importance of this, we aimed to reveal the chemical status of mucins secreted by partridge tracheal glands and goblet cells. For this purpose, a total of 10 adult and healthy partridges, 5 females and 5 males, obtained from a private farm were used. After the whole tracheae were fixed in 10% formol-alcohol, the tissues were blocked in paraffin by following routine histological follow-up procedures. 5 µm sections taken from the blocks were subjected to histological and histochemistry staining. Crossman's triple staining was performed for histological analysis, and PAS, PAS-AB (pH 2.5), AF-AB (pH 2.5) and PAPS stains were performed for histochemical analysis. Histologically, it was observed that the partridge trachea was surrounded by cartilage rings in the form of a half-ring, as in other poultry species, and its epithelium had cilia extending towards the lumen. Tracheal glands were found to be intraepithelial and simple alveolar type. When examined histochemically, there was intense PAS (+) reaction in glandular epithelium, especially in goblet cells, predominant AB (+) reaction on epithelial surface in PAS-AB combined staining, and both AB and AF (+) reactions equally in AB-AF staining. There were also strong reactions in PAPS staining. In short, it was observed that both epithelial and glandular epithelial cells contain neutral and acidic (sulfated and carboxylated) mucins and N-acetylsialomucin at varying densities. As a result, considering the mucin types secreted, it was understood that mucin types, which have both a lubricating and protective function, are intensely present in the grouse trachea and the respiratory tracts of the grouse are protected by a strong mechanism.

Keywords: Gland, Histochemistry, Mucin, Partridge, Trachea

DİYARBAKIR EKOLOJİK KOŞULLARINDA YETİŞTİRİLEN BAZI KETENCİK (*Camelina sativa* L. crantz) GENOTİPLERİNİN AGRONOMİK ÖZELLİKLERİNİN İNCELENMESİ

INVESTIGATION OF THE AGRONOMIC CHARACTERISTICS OF SOME FALSE FLAX (*Camelina sativa* L. crantz) GENOTYPES UNDER DIYARBAKIR ECOLOGICAL CONDITIONS

Prof. Dr. Sema BAŞBAĞ¹

¹ Dicle Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü, Diyarbakır, Türkiye

¹ORCID ID: <https://orcid.org/0000-0002-9324-5175>

Öğr. Gör. Nazlı AYBAR YALINKILIÇ²

²Muş Alparslan Üniversitesi, Uygulamalı Bilimler Fakültesi, Bitkisel Üretim ve Teknolojileri Bölümü, Muş, Türkiye

²ORCID ID: <https://orcid.org/0000-0002-7462-775X>

Ziraat Yüksek Müh. Şilan ÇİÇEK³

³ Dicle Üniversitesi, Ziraat Fakültesi, Fen Bilimleri Enstitüsü, Diyarbakır, Türkiye

³ ORCID ID: <https://orcid.org/0000-0002-4486-7322>

ÖZET

Geniş kullanım alanı ve tohumlarındaki yüksek yağ oranı nedeniyle alternatif bir yağ bitkisi olan ketenciğin üzerine yapılan çalışmaların artırılması ve üretim desenine eklenmesi büyük önem arz etmektedir. Artan dünya nüfusunun beslenme ve enerji ihtiyacının karşılanmasında meydana gelen zorluklarla birlikte Omega-3 kaynaklarının bitkisel kaynaklardan temin edilmesi fikrinin de ön plana çıkmasından dolayı ketenciğin önemi son yıllarda giderek artmaktadır. Bu çalışma 2017 yılında bazı ketencik genotiplerinin bazı bitkisel özelliklerinin belirlenmesi amacıyla Dicle Üniversitesi Ziraat Fakültesi Tarla bitkileri araştırma ve deneme alanında yürütülmüştür. Diyarbakır ekolojik koşullarında yürütülen bu çalışmada ketenciğin *Camelina sativa* L. türüne ilişkin 15 adet genotipi materyal olarak kullanılmıştır. Araştırma tesadüf blokları deneme deseni uyarınca 4 tekerrürlü olarak kurulmuştur. Çalışmada bitki boyu, ilk dallanma yüksekliği, yan dal sayısı, boş kapsül sayısı, dolu kapsül sayısı, bin dane ağırlığı ve kapsüldeki tohum sayısı gibi parametreler incelenmiştir. Çalışmada incelenen özellikler açısından genotipler istatistiksel olarak önemli farklılıklar bulunmuş ve çalışmadan elde edilen sonuçlara göre genotipler; bitki boyu bakımından 46,95-62,75 cm, bitkide yan dal sayısı açısından 5,40-10,45 adet, ilk dallanma yüksekliği özelliği açısından 16,85- 36,40 cm, bitki başına boş kapsül sayısı 18,90-33,35 adet, bitki başına dolu kapsül sayısı 35,97-86,72 adet, kapsül başına tohum sayısı bakımından ise 7,37-12,57 adet arasında değerler almıştır. Araştırma sonucunda elde edilen bulgular neticesinde; Ames 2, PI 258367 ve PI 650153 nolu ketencik genotiplerinin incelenen özellikler yönünden diğer genotiplere göre daha ümit var olarak değerlendirilebileceği sonucuna varılmıştır.

Anahtar Kelimeler: Ketencik, *Camelina sativa*, Kapsül, Diyarbakır

ABSTRACT

Due to its wide usage area and high oil content in its seeds, it is of great importance to increase the studies on camelina, which is an alternative oil plant, and to add it to the production pattern. The importance of camelina has been increasing in recent years due to the difficulties in meeting the nutritional and energy needs of the increasing world population, as well as the idea of supplying Omega-3 sources from plant sources. This study was carried out in the field crops research and experiment area of Dicle University Faculty of Agriculture in order to determine some vegetative characteristics of some camelina genotypes in 2017. In this study carried out in Diyarbakir ecological conditions, 15 genotypes of *Camelina sativa* L. of camelina were used as material. The research was established in a randomized

block design with 4 replications. In the study, parameters such as plant height, first branching height, number of side branches, number of empty capsules, number of full capsules, thousand-grain weight and number of seeds in the capsule were investigated. In terms of the characteristics examined in the study, statistically significant differences were found between the genotypes and according to the results obtained from the study, the genotypes were; 46.95-62.75 cm in terms of plant height, 5.40-10.45 in terms of the number of side branches per plant, 16.85-36.40 cm in terms of first branching height, the number of empty capsules per plant 18.90-33 .35, the number of filled capsules per plant was 35.97-86.72, and the number of seeds per capsule was between 7.37-12.57. As a result of the findings obtained as a result of the research; It was concluded that camelina genotypes numbered Ames 2, PI 258367 and PI 650153 can be evaluated as more promising than other genotypes in terms of the investigated characteristics.

Keywords: False Flax, *Camelina sativa*, Capsule, Diyarbakır

ORGANİK MALÇ MATERYALLERİNİN HIYAR (*CUCUMIS SATIVUS L.*) YETİŞTİRİCİLİĞİNDE YABANCI OT KONTROLÜ ÜZERİNE ETKİSİ

THE EFFECT OF ORGANIC MULCH MATERIALS ON WEED CONTROL IN CUCUMBER
(*CUCUMIS SATIVUS L.*) CULTIVATION

Ramazan GÜRBÜZ¹

¹*Iğdır Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Iğdır, Türkiye*

¹ORCID ID: <https://orcid.org/0000-0003-3558-9823>

Harun ALPTEKİN²

²*Iğdır Üniversitesi, Lisansüstü Eğitim Enstitüsü, Tarım Bilimleri Anabilim Dalı, Iğdır, Türkiye*

²ORCID ID: <https://orcid.org/0000-0001-9319-311X>

ÖZET

Bu çalışma 2020 ve 2021 yıllarında farklı malç materyallerinin salatalıkta yabancı otlanmaya ve salatalık verimine olan etkilerinin araştırılması amacıyla Iğdır Üniversitesi Şehit Bülent Yurtseven Kampüs yerleşkesinde yürütülmüştür. Çalışmada organik farklı malç materyallerin toprak sıcaklıkları üzerine etkileri belirlenmiştir. Araştırmada altı malç materyali (keten, keçe, torf, doğranmış kağıt, saman ve taze çim (*Festuca arundinacea* %50, *Lolium perenne* %35, *Poa pratensis* %15 karışımı) kullanılmıştır. Araştırma tesadüf blokları deneme desenine göre 7 karakterli ve 4 tekerrürlü olacak şekilde kurulmuştur. Çalışmanın yürütüldüğü yıllarda malç uygulamaların yabancı ot kuru ağırlıkları ve salatalık verimi ve bazı verim unsurlarına olan etkileri belirlenmiştir. Çalışma sonucunda deneme alanında 12 adet yabancı ot türü tespit edilmiştir. Bu yabancı ot türleri arasında her iki yılda da deneme alanında yoğunluğu en fazla olan ilk 4 yabancı ot türü: sirken (*Chenopodium album* L.), kırmızı köklü tilki kuyruğu (*Amaranthus retroflexus* L.), boz ot (*Heliotropium europeum* L.), kızılback (*Chenopodium botrys* L.) ve köpek dişi ayırığı (*Cynodon dactylon* (L.) Pers) olarak bulunmuştur. Yapılan analizler sonucunda her iki yılda da malçlamanın yabancı ot kuru ağırlığı ve salatalık verimi üzerine olan etkileri ($P=0,00<0,01$) %1 düzeyinde önemli bulunmuştur. Malç uygulamaların yabancı otlanma üzerindeki etkilerinde çalışma sonucunda her iki yılda da en düşük yabancı ot kuru ağırlıkları yabancı otları %100 kontrol altına alan keten ile keçe (0,00 gr/m²) parsellerinde, en yüksek yabancı ot kuru ağırlıkları ise yabancı otları kontrol parsellerinde, ilk yıl 285,25 gr/m² ve ikinci yıl 248,14 gr/m² olarak elde edilmiştir. Çalışmada en yüksek salatalık verimi her iki yılda da keten parsellerinde ilk yıl 4.685 kg/da, 4.520 kg/da olarak elde edilmiştir. Çalışmada en düşük salatalık verimi her iki yılda da yabancı otları kontrol parsellerinde elde edilmiştir.

Anahtar Kelimeler: Malçlama, Keçe, Salatalık, Çim atıkları, Yabancı ot

ABSTRACT

This study was carried out in Iğdır University Şehit Bülent Yurtseven Campus to investigate the effects of different mulch materials on weed control in cucumber and cucumber yield in 2020 and 2021. In the study, the effects of different organic mulch materials on soil temperatures were also determined. Six mulch materials (flax, felt, peat, chopped paper, straw and fresh clipping turfgrass (*Festuca arundinacea* 50%, *Lolium perenne* 35%, *Poa pratensis* 15% mixture) wastes were used in the research. The layout of the experiment was a completely randomized block design with four replications and with seven characters. The effects of mulch applications on weed dry weight and cucumber yield and some yield factors were determined in the years the study was carried out. As a result of the study, 12 weed species were determined in the trial area. 4 weed species: fethen (*Chenopodium album* L.), red-root pigweed (*Amaranthus retroflexus* L.), common heliotrope (*Heliotropium europaeum* L.), Jerusalem oak goosefoot (*Chenopodium botrys* L.) and bermudagrass (*Cynodon dactylon* (L.) Pers.). As a result of the analysis, the effects of mulching on weed dry weight and cucumber yield in both years ($P=0.00<0.01$)

were found to be above the 1% level. was also found statistically significant. As a result of the study on the effects of mulch applications for suppressing weeds, the lowest weed dry weights in both years were in flax and felt (0.00 gr/m²) parcels, which completely controlled weeds, and the highest weed dry weights were found in weedy check plots, 285.25 gr/m² in the first year and 248.14 gr/m² in the second year. In the study, the highest cucumber yield was obtained as 4.685 kg/da and 4.520 kg/da in the first year in flax plots in both years. In the study, the lowest cucumber yield was obtained in weedy check plots in both years.

Keywords: Mulching, Felt, Cucumber, Turfgrass wastes, Weed

VİRAL ORJİNLİ NEONATAL İSHALLİ BUZAĞILARDA BAZI KAN GAZ PARAMETRELERİNİN MORTALİTE İLE İLİŞKİSİ

THE RELATIONSHIP OF SOME BLOOD GAS PARAMETERS WITH MORTALITY IN CALVES
WITH VIRAL ORIGIN NEONATAL DIARRHEA

Merve İDER

Arş. Gör. Dr., Selçuk Üniversitesi Veteriner Fakültesi İç Hastalıkları Anabilim Dalı,

ORCID NO: 0000-0003-2928-5452

ÖZET

Mevcut çalışmada, viral etiyojjiye sahip neonatal ishalleri buzağılarda bazı kan gaz parametrelerinin mortalite ile ilişkisinin belirlenmesi amaçlanmıştır. Çalışmanın hayvan materyalini farklı ırk ve cinsiyette, 5-20 günlük yaş aralığında bulunan, S. Ü. Veteriner Fakültesi İç Hastalıkları Anabilim Dalı Büyük Hayvan Kliniklerine tanı ve tedavi amacıyla getirilen toplam 24 ishalleri neonatal buzağı oluşturdu.

Çalışmaya dahil edilen tüm buzağların rutin klinik muayeneleri yapılarak, kan gazları analizi için *vena jugularis* yoluyla 2 mL kan örnekleri ve etiyojjik etkenin belirlenmesi amacıyla dışkı örnekleri alındı. *Rotavirus* ve *Coronavirus* teşhisi, dışkı hızlı antijen testi kullanılarak kondu. İshalleri buzağılar yoğun bakım ünitesinde 72 saat süreyle hospitalize edilerek ölme veya hayatta kalma durumlarına göre ölen (n=9) ve hayatta kalan (n=15) buzağılar olarak 2 gruba ayrıldı.

Ölen buzağların pH ve kalsiyum düzeyleri hayatta kalanlara göre önemli oranda düşük iken klor ve laktat düzeyleri yüksek bulundu ($p < 0,05$). Ölen ve hayatta kalan buzağı grupları arasında yapılan kan gazları parametrelerinin ROC analizinde % 95 güven aralığı (CI) ile; pH (sensitivite: 77, spesifite: 74), kalsiyum (sensitivite: 77, spesifite: 80), klor (sensitivite: 100, spesifite: 56) ve laktat (sensitivite: 80, spesifite: 78) düzeylerinin mortalite tahmininde yararlı olabileceği belirlendi. Ayrıca ROC analizi sonucunda; eğri altında kalan alan (AUC) 0,793 (CI: 0.576-1.000; $p = 0,019$) ile laktat düzeyinin 5,05 mmol/L cut-off düzeyi mortalite tahmini açısından en iyi prognostik gösterge olduğu tespit edildi.

Sonuç olarak; viral etiyojjiye sahip neonatal ishalleri buzağılarda kan gaz parametrelerinde önemli değişiklikler olduğu ve bu parametrelerden mortalite tahmininde yararlanılabileceği sonucuna varıldı. Bu nedenle viral etiyojjiye sahip neonatal ishalleri buzağların prognozunda bu kan parametrelerinin değerlendirilmesinin yararlı olabileceği kanısına varıldı.

Anahtar Kelimeler: Buzağı, Kan Gazları, Mortalite, Viral İshal

ABSTRACT

The aim of the present study was to determine the relationship between some blood gas parameters and mortality in neonatal calf diarrhea of viral origin. The animal material of the study consisted of total 24 neonatal calves with diarrhea, of different races and sexes, between the ages of 5-20 days old, brought to for diagnosis and treatment of the S. U. Veterinary Faculty, Department of Internal Medicine Large Animal Clinics.

Routine clinical examinations of all calves included in the study were performed, and 2 mL blood samples via *vena jugularis* were taken for blood gas analysis and stool samples were taken to determine the etiological factor. *Rotavirus* and *Coronavirus* were diagnosed using the stool rapid antigen test. Calves with diarrhea were hospitalized in the intensive care unit for 72 hours and were divided into 2 groups as non-survivor (n:9) and survivor (n:15) calves according to their death or survival status.

While pH and calcium levels were significantly lower in the non-survivor calves than in survivor calves, chlorine and lactate levels were found to be higher ($p < 0.05$). In the ROC analysis of blood gas parameters between the non-survivor and survivor calf groups, with a 95 % confidence interval (CI); it

was determined that pH (sensitivity: 77, specificity: 74), calcium (sensitivity: 77, specificity: 80), chlorine (sensitivity: 100, specificity: 56) and lactate (sensitivity: 80, specificity: 78) levels could be useful in estimating mortality. In addition, as a result of the ROC analysis; the area under the curve (AUC) was found to be 0.793 (CI: 0.576-1.000; $p = 0.019$), and the lactate level 5.05 mmol/L cut-off level was found to be the best prognostic indicator in the prediction of mortality.

As a result, it was concluded that there were significant changes in blood gas parameters in calves with viral origin neonatal diarrhea and these parameters could be used in the estimation of mortality. Therefore, it was concluded that the evaluation of these blood parameters may be useful in the prognosis of neonatal diarrheal calves with viral etiology.

Keywords: Calf, Blood Gases, Mortality, Viral Diarrhea

KÜLTÜR MERCİMEĞİNDE (*Lens Culinaris Medik.*) GELİŞTİRİLEN GENOMİK SSR MARKÖRLERİN YABANI MERCİMEK TÜRLERİNE TRANSFER EDİLEBİLİRLİĞİNİN BELİRLENMESİ

DETERMINATION OF TRANSFERABILITY OF GENOMIC SSR MARKERS DEVELOPED IN CULTIVATED LENTIL (*Lens culinaris Medik.*) TO WILD LENTIL SPECIES

Merve KEKLİK¹

¹Erciyes Üniversitesi, Ziraat Fakültesi, Tarımsal Biyoteknoloji Bölümü, Kayseri, Türkiye

¹ ORCID ID: <https://orcid.org/0000-0002-4082-6144>

Melike BAKIR²

²Erciyes Üniversitesi, Ziraat Fakültesi, Tarımsal Biyoteknoloji Bölümü, Kayseri, Türkiye

² ORCID ID: <https://orcid.org/0000-0003-3465-1453>

ÖZET

Simple sequence repeats (SSRs) markörler, bitki genetik ve genomik araştırmaları için yaygın olarak geliştirilen ve kullanılan önemli moleküler gereçlerdir. Ancak mikrosatellitlerin geliştirilmesi yüksek maliyeti ve iş gücü nedeniyle, bitkilerde yaygın olarak kullanımını sınırlamaktadır. Bu nedenle bir türde geliştirilen SSR markörünün, tür içi ve türler arası aktarılabilişliğinin tespiti, genetik ve genomik çalışmalara kolaylık sağlamaktadır. Bu çalışmanın amacı, kültür mercimeğinde geliştirilen SSR markörünün yabani mercimek türleri *L. nigricans*, *L. lamottei*, *L. ervoides*, *L. culinaris* subsp. *tomentosus*, *L. culinaris* subsp. *orientalis*, *L. culinaris* subsp. *odemensis*'e transfer edilebilirliğini belirlemektir. Bunun için kültür mercimeğinde geliştirilen 100 SSR markörü test edilmiştir. Test edilen bu markörlerin yabani mercimek türlerindeki polimorfizm oranları sırasıyla %41 (*L. nigricans*), %40 (*L. culinaris* subsp. *tomentosus*), %39 (*L. culinaris* subsp. *orientalis*), %34 (*L. culinaris* subsp. *odemensis*), %34 (*L. ervoides*) ve %31 (*L. lamottei*) olarak belirlenmiştir. Polimorfizm gözlemlenen markörlerin ise %51 (21)'inin tüm türlerde ortak çalıştığı tespit edilmiştir. Ortak polimorfizm gösteren bu markörlerin beklenen heterozigotluk (*He*) oranının ortalama 0.657 olduğu, gözlenen heterozigotluk (*Ho*) ortalama 0.14 olduğu, polimorfik bilgi içeriği (PIC) değerinin ise, ortalama 0.61 olduğu tespit edilmiştir. Genetik benzerlik analizleri sonucu en yüksek benzerliğin *L. culinaris* subsp. *orientalis* ile *L. nigricans* (%81) türleri arasında olduğu, en düşük benzerliğin ise *L. ervoides* ile *L. nigricans* (%10) türleri arasında olduğu görülmüştür. Belirlenen aktarılabiliş SSR markörlerinin tür içi veya türler arası çalışmalara, genetik çeşitlilik, popülasyon yapısı, gen akışı, filogenetik ve evrimsel ilişkileri araştırmak için yapılan çalışmalara katkı sağlayabileceği düşünülmektedir.

Anahtar kelimeler: SSR, Mercimek, Transfer edilebilirlik, Lens, Polimorfizm

ABSTRACT

Simple sequence repeats (SSRs) markers are important molecular tools that are widely developed and used for plant genetics and genomics research. However, the development of microsatellites limits their widespread use in plants due to their high cost and labor force. For this reason, the determination of intra- and inter-species transferability of an SSR marker developed in a species facilitates genetic and genomic studies. The aim of this study was to determine the transferability of the SSR marker developed in cultivated lentils to wild lentil species such as *L. nigricans*, *L. lamottei*, *L. ervoides*, *L. culinaris* subsp. *tomentosus*, *L. culinaris* subsp. *orientalis*, *L. culinaris* subsp. *odemensis*. For this, 100 SSR markers developed in cultured lentils were tested. The polymorphism rates of these tested markers in wild lentil species were 41% (*L. nigricans*), 40% (*L. culinaris* subsp. *tomentosus*), 39% (*L. culinaris* subsp. *orientalis*), 34% (*L. culinaris* subsp. *odemensis*), 34% (*L. ervoides*) and 31% (*L. lamottei*), respectively. It was determined that 51% (21) of the markers with polymorphism were found to work in all species.

It was determined that the expected heterozygosity (H_e) ratio of these markers with joint polymorphism was 0.657 on average, the observed heterozygosity (H_o) was 0.14 on average, and the polymorphic information content (PIC) value was 0.61 on average. As a result of genetic similarity analysis, it was found that *L. culinaris* subsp. *orientalis* and *L. nigricans* (81%) display the highest similarity; the lowest similarity was observed between *L. ervoides* and *L. nigricans* (10%). It is thought that the identified transferable SSR markers can contribute to studies conducted to investigate genetic diversity, population structure, gene flow, phylogenetic and evolutionary relationships, within or between species.

Keywords: SSR, Lentil, Transferability, Lens, Polymorphism

YERFISTIĞINDA (*Arachis hypogaea* L.) FARKLI BİTKİ BÜYÜME DÜZENLEYİCİLERİN BAZI VERİM VE KALİTE ÖZELLİKLERİ ÜZERİNE ETKİSİ

THE EFFECT OF DIFFERENT PLANT GROWTH REGULATORS ON SOME YIELD AND
QUALITY CHARACTERISTICS OF PEANUT (*Arachis hypogaea* L.)

Mustafa YILMAZ¹

¹ Oil Seed Research Institute, Cevdetiye-Osmaniye/TURKEY

¹ ORCID ID: <https://orcid.org/0000-0002-1816-0729>

Cenk Burak ŞAHİN²

² Department of Field Crops, Faculty of Agriculture, Hatay Mustafa Kemal University, Antakya-
Hatay/TURKEY

² ORCID ID: <https://orcid.org/0000-0001-6270-8184>

ÖZET

Bitki hormonu veya bitki büyüme düzenleyiciler, doğal olarak bitki bünyesinde sentezlenen, büyüme ile buna bağlı diğer fizyolojik olayları kontrol eden, oluştukları yerden bitkilerin diğer kısımlarına taşınabilen, çok düşük konsantrasyonlarda bile etkisini gösterebilen organik maddelerdir. Bu çalışmanın amacı, farklı büyüme aşamalarında farklı dozlarda uygulanan hormonların yerbistığında (*Arachis hypogaea* L. cv NC-7) bazı agronomik özellikleri üzerine etkileri incelenmiştir. Bu çalışma, 2019 ve 2020 yıllarında ana ürün koşullarında Türkiye'nin Doğu Akdeniz bölgesinde yer alan Osmaniye ilinde yapılmıştır. Tesadüf blokları deneme desenine göre üç tekerrürlü olarak yürütülmüştür. On iki farklı uygulama (%50 Mepiquat chloride çiçeklenme başlangıcı 150 ppm, %50 Mepiquat chloride çiçeklenme başlangıcı 200 ppm, %50 Mepiquat chloride tam çiçeklenme 150 ppm, %50 Mepiquat chloride tam çiçeklenme 200 ppm, GA₃ çiçeklenme başlangıcı 10 ppm, GA₃ çiçeklenme başlangıcı 20 ppm, GA₃ tam çiçeklenme 10 ppm, GA₃ tam çiçeklenme 20 ppm, maxi crop çiçeklenme başlangıcı 40 ppm, maxi crop tam çiçeklenme 60 ppm, maxi crop çiçeklenme başlangıcı + tam çiçeklenme 100 ppm) yapılmıştır. Denemede; bitki başına meyve sayısı ve ağırlığı, 100 meyve ve tohum ağırlığı, bitki boyu, meyve verimi ve protein oranı gibi bazı agronomik özellikler incelenmiştir. En yüksek bitki başına meyve ağırlığı (2019 yılında 69.98 g ve 2020 yılında 71.42 g) ve meyve verimi (2019 yılında 664.49 kg da⁻¹ ve 2020 yılında 675.04 kg da⁻¹) tam çiçeklenme 20 ppm GA₃ uygulamasından elde edilmiştir. Çalışma sonucunda en yüksek bitki başına meyve ağırlığı ve meyve verimi için tam çiçeklenme GA₃ 20 ppm uygulamalı bulunurken bunu sırasıyla, tam çiçeklenme GA₃ 10 ppm ve %50 Mepiquat chloriride uygulamaları takip etmiştir.

Anahtar Kelimeler: Yerbistığı, GA₃, Osmaniye, meyve verimi protein oranı.

ABSTRACT

Plant hormones or plant growth regulators are organic substances that are synthesized naturally within the plant, control growth and other related physiological processes, can be transported from where they are formed to other parts of the plants, and can show their effects even at very low concentrations. The aim of this study was to investigate the effects of hormones applied at different doses at different growth stages on some agronomic properties of peanut (*Arachis hypogaea* L. cv NC-7). This study was carried out in the province of Osmaniye, located in the Eastern Mediterranean region of Turkey, under main crop conditions in 2019 and 2020. Randomized Complete Block Design (RCBD) was used for experimental design with three replications. Twelve treatments (50% Mepiquat chloride beginning bloom 150 ppm, 50% Mepiquat chloride beginning bloom 200 ppm, 50% Mepiquat chloride full bloom 150 ppm, 50% Mepiquat chloride full bloom 200 ppm, GA₃ beginning bloom 10 ppm, GA₃ beginning bloom 20 ppm, GA₃ full bloom 10 ppm, GA₃ full bloom 20 ppm maxi crop beginning bloom 40 ppm, maxi crop

full bloom 60 ppm, maxi crop beginning bloom + full bloom beginning bloom + full bloom 100 ppm) were applied. Some agronomic traits like number of pods per plant, pod weight per plant, 100-seed and pod weight, plant height, pod yield and protein content were observed. The highest pod weight per plant (69.98 g in 2019 and 71.42 g in 2020) and pod yield (664.49 kg da⁻¹ in 2019 and 675.04 kg da⁻¹ in 2020) were obtained from 20 ppm GA₃ application in full bloom. As a result of the study, full bloom GA₃ 20 ppm application was found for the highest fruit weight and fruit yield per plant, followed by full bloom GA₃ 10 ppm and 50% Mepiquat chloriride applications, respectively.

Keywords: Peanut, GA₃, Osmaniye, pod yield, protein.

USE OF PROPOLIS AS FUNCTIONAL INGREDIENT IN FOODS

Ceyda DADALI

Ege University, Engineering Faculty, Food Engineering Department, İzmir, Turkey

ORCID ID: 0000-0001-7164-838X

Yeşim ELMACI

Ege University, Engineering Faculty, Food Engineering Department, İzmir, Turkey,

ORCID ID: 0000-0003-2102-8582

ABSTRACT

Propolis is a natural and sticky material with variable color (green, red, yellow, and brown) that honeybees (*Apis mellifera*) produce from saps, resins, and mucilages collected from various parts of the plants namely leaves, flower buds, and tree barks, then mixing these plant parts with beeswax and bee enzymes. Propolis contains aromatic acids (cinnamic acid, caffeic acid, ferulic acid), aromatic esters (cinnamic and caffeic acid ether esters), volatile compounds (geraniol, nerol, farnesol, β -eudesmol), hydrocarbons (eicosane, tricosane, pentacosane), steroids (cholinasterol, fucosterol, stigmasterol), enzymes (α -amylase, β -amylase), flavonoids (tectochrysin, pinobanksin, pinocembrin, chrysin, galangin, apigenin, kaempferol), acids (palmitic acid, melissic acid, cerotic acids), micro and macronutrients (Ca, K, Mg, Na, Zn, Fe, Mn, Al, Ba, Cl), vitamins (B₁, B₂, B₆, C, E), and essential oils. Due to the bioactive compounds of propolis, it is used as diet supplement to enhance health and prevent diseases. Propolis has antiviral, antimicrobial, antioxidant, hepatoprotective, anticancer, anti-inflammatory, cytostatic, immunostimulatory and anti-allergenic properties. Propolis has been used as a functional ingredient in meat, meat products, beverages, fruits, vegetables, milk, dairy products, and oils. Propolis is applied to food products in three main ways such as; mixing with food, using in packaging film, and soaking or washing foods. Propolis has been shown to prolong the shelf life of the foods, improve the physical, chemical, and sensory properties of the product during storage, increase phenolic substances, antimicrobial, and antioxidant effects. In this study, it is aimed to give information about the foods in which propolis is used and the physical, chemical, and sensory changes in the foods where propolis is used.

Key words: propolis, functional ingredient, foods

ENDÜSTRİYEL KENEVİR (*Cannabis sativa* L.) UÇUCU YAĞININ KİMYASAL BİLEŞİMİ VE BİYO-YARARLILIĞININ DEĞERLENDİRİLMESİ

EVALUATION OF CHEMICAL COMPOSITION AND BIOAVAILABILITY OF INDUSTRIAL HEMP (*Cannabis sativa* L.) ESSENTIAL OIL

Belgin COŞGE ŞENKAL

Prof. Dr., Yozgat Bozok Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölümü

ORCID ID:0000-0001-7330-8098

Tansu USKUTOĞLU

Arş. Gör., Yozgat Bozok Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölümü

ORCID ID: 0000-0001-6631-1723

ÖZET

Cannabis sativa L. (Cannaceae) tarih öncesi çağlardan beri lif, tohum yağı, gıda ve ilaç başta olmak üzere farklı amaçlarla yetiştirilen bir bitkidir. Millattan öncesinde ülkemizde kenevir liflerinin kullanıldığına dair bilgiler bulunmaktadır. Dünyada kenevir üretimi geniş bir coğrafi bölgeye yayılmıştır. En önemli endüstriyel kenevir üretici ülkelerin başında Çin, Kanada, Fransa olmak üzere Polonya, İsveç, İngiltere, Avusturya, Finlandiya, Romanya, İsviçre ve Hollanda gelmektedir. Kenevirin ekonomik olarak kullanılan kısımları sapları, yaprakları ve tohumlarıdır. Yaprakları keyif verici olarak, sapları lif tohumları ise yağ kaynağı olarak kullanılır. Ülkemizde lif, tohum veya her iki amaca yönelik olarak kenevir yetiştiriciliği üretim izni olan 20 ilde yapılmaktadır.

Kenevir tek yıllık, otsu yapıda ve dioik bir bitki olmasına rağmen, monoik tipleri de vardır. Bu nedenle, kullanım amacına bağlı olarak bitkilerin morfolojileri, tarımsal özellikleri ve fitokimyasal içeriklerinde genotiplere göre önemli ölçüde farklılıklar gözlenmektedir. Kenevirin içerdiği fitokimyasallar yapı bakımından primer ve sekonder metabolitler olmak üzere ikiye ayrılmaktadır. Fitokimyasal içerik kenevir üretiminde en önemli faktörlerden biridir. Kenevirin fitokimyasalları oldukça karmaşık olup, farklı kimyasal sınıflardan oluşan yüzlerce bileşik tanımlanmıştır. Kenevirin dişi çiçek salkımlarından elde edilen uçucu yağlar da önemli fitokimyasalları içerdiğinden, son yıllarda katma değeri yüksek bir ürün olarak büyük ilgi çekmektedir.

Kenevir uçucu yağı çok sayıda terpen ve terpenoidden oluşan uçucu bileşiklerin karmaşık bir karışımıdır. Monoterpenler ve seskiterpenler hem hidrokarbon hem de oksijenli formda kenevir uçucu yağının en büyük kısmını oluşturmaktadır. Terpenler sanayide, parfümeride, gıda katkı maddesi olarak ve geleneksel ilaçlarda yaygın olarak kullanılmaktadır. Kenevirin dişi salkımlarından elde edilen uçucu yağda monoterpenlerden myrcene, alpha-pinene ve trans-beta-ocimene, seskiterpenlerden ise caryophyllene ve humlone ana bileşenler olarak tespit edilmiştir. Uçucu yağın sergilemiş olduğu anti-inflamatuar, anti-tümör, antidepresan, analjezik, antimikrobial, kas gevşetici ve iştah uyarıcı vb farmakolojik aktiviteler uçucu yağın kimyasal kompozisyonunun bir sonucudur. Kenevir uçucu yağı içerdiği terpenlerden dolayı aynı zamanda gıda katkı maddesi ve kozmetik ürünlerde de kullanılmaktadır. Öte yandan, uçucu yağın allelopatik ve insektisit etkilere sahip olduğu bilimsel çalışmalarla kanıtlanmıştır.

Bu çalışmada, kenevir bitkisinden elde edilen uçucu yağın kimyasal kompozisyonu ve biyoyararlılığı güncel bilimsel çalışmalardan elde edilen bulgularla değerlendirilecektir.

Anahtar Kelimeler: Kenevir, Uçucu Yağ, Fitokimyasal, Terpenler, Biyolojik Aktivite

ABSTRACT

Cannabis sativa L. (Cannaceae) is a plant that has been grown for different purposes such as fiber, seed oil, food, and medicine since prehistoric times. There is information about the use of hemp fibers in our country before the millennium. Cannabis production in the world is spread over a wide geographical area. China, Canada, France, Poland, Sweden, England, Austria, Finland, Romania, Switzerland, and the Netherlands are the leading industrial hemp-producing countries. The economically used parts of cannabis are the stems, leaves, and seeds. Its leaves are used as a source of pleasure, and its stems and seeds are used as a source of oil.

In our country, cannabis cultivation for fiber, seed, or both purposes is carried out in 20 provinces with production permits.

Although hemp is an annual, herbaceous and dioecious plant, there are also monoic types. For this reason, significant differences are observed in the morphology, agricultural characteristics, and phytochemical contents of plants according to the genotypes, depending on the purpose of use. The phytochemicals contained in cannabis are divided into two primary and secondary metabolites in terms of structure. Phytochemical content is one of the most important factors in hemp production. The phytochemicals of cannabis are quite complex and hundreds of compounds from different chemical classes have been identified. Since the essential oils obtained from the female inflorescences of cannabis also contain important phytochemicals, it has attracted great interest as a product with high added value in recent years.

Cannabis essential oil is a complex mixture of volatile compounds consisting of numerous terpenes and terpenoids. Monoterpenes and sesquiterpenes make up the largest portion of hemp essential oil, both in hydrocarbon and oxygenated form. Terpenes are widely used in industry, perfumery, food additives, and traditional medicines. Monoterpenes myrcene, alpha-pinene and trans-beta-ocimene, and sesquiterpenes caryophyllene and humulene were determined as the main components in the essential oil obtained from the female bunches of cannabis. Pharmacological activities such as anti-inflammatory, anti-tumor, antidepressant, analgesic, antimicrobial, muscle relaxant, and appetite stimulant exhibited by the essential oil are the results of the chemical composition of the essential oil. Cannabis essential oil is also used in food additives and cosmetic products due to the terpenes it contains. On the other hand, scientific studies have proven that essential oil has allelopathic and insecticidal effects.

In this study, the chemical composition and bioavailability of the essential oil obtained from the cannabis plant will be evaluated with the findings obtained from current scientific studies.

Keywords: Cannabis, Essential Oil, Phytochemical, Terpenes, Biological Activities

***Origanum acutidens* (Hand.-Mazz.) Ietswaart'IN IN VITRO KOŞULLARDA ÇOĞALTILMASI VE BAZI BİTKİSEL ÖZELLİKLERİNİN BELİRLENMESİ**

MICROPROPAGATION OF *Origanum acutidens* (Hand.-Mazz.) Ietswaart UNDER IN VITRO
CONDITIONS AND DETERMINATION OF SOME AGRONOMIC PROPERTIES

Tansu USKUTOĞLU

Arş. Gör., Yozgat Bozok Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölümü

ORCID ID: 0000-0001-6631-1723

Belgin COŞGE ŞENKAL

Prof. Dr., Yozgat Bozok Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölümü

ORCID ID:0000-0001-7330-8098

ÖZET

Üç farklı fitocoğrafik bölge (Avrupa – Sibiryaya, Akdeniz ve İran -Turan) içerisinde bulunan Türkiye florası bitki çeşitliliği açısından son derece zengindir. Farklı flora bölgeleri, bölgesel yükselti farklılıkları, denizlerin etkisi ve oluşan mikroklima iklim bölgeleri sebebiyle yetişen bitki çeşitliliğinin fazla olmasının yanında endemizm oranı da yüksektir. Lamiaceae familyası Türkiye’de yer alan en büyük üçüncü familya durumundadır. Türkiye florasında Lamiaceae familyası toplamda 782 taksonda 603 tür ve 179 alttür ile temsil edilirken, endemizm oranı ise %44’tür. Lamiaceae familyasının ekonomik önemi olan en önemli üyelerinden biri *Origanum* cinsi olup, Türkiye florasında 31 tür ve 27 taksonu bulunmaktadır. Bunlardan 18 tanesi ise endemik olarak yetişmektedir. Bu türlerden biri de *Origanum acutidens* (Hand.-Mazz.) Ietswaart’dır. Türkiye’de endemik olarak (Doğu Anadolu) çok yıllık otsu yapıda yetişmektedir. Bitkinin toprak üstü aksamından elde edilen uçucu yağın ana bileşenleri karvakrol ve p-cymene olup, yüksek oranda antimikrobiyal etki göstermekte ve gösterdiği biyolojik aktiviteler sebebiyle bitkinin toprak üstü aksamından elde edilen uçucu yağın önemini arttırmaktadır.

Bu çalışmada *Origanum acutidens* (Yer: Ankara Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölümü koleksiyon parselleri- Yıl: 2007) tohumdan çoğaltılmaya çalışılmış olup, aradan geçen sürede tohumların canlılığını yitirmesinden dolayı in vitro koşullarda çimlendirilip boğum arası eksplantlar ile çoğaltılmış ve tarlaya şaşırtılmıştır. Bitkiler tarla koşullarına uyum sağlayana kadar sulama yapılmış daha sonra sulama yapılmamıştır. İlk yılın sonunda tarlada yetiştirilen bitkilerden bitki boyu (15-23 cm/bitki), kanopi çapı (23-37 cm/bitki), dal sayısı (44-121 adet/bitki), yaş herba ağırlığı (23.57-66.32 g/bitki), kuru herba ağırlığı (5.13- 14.60 g/bitki) ve toprak üstü aksamından uçucu yağ oranı (%3.55) belirlenmiştir. In vitro koşullarda çoğaltılıp tarla koşullarına adaptasyonu sağlanan bitkilerin Yozgat ekolojik koşullarına uyum sağladığı ve canlılıklarını sonraki yıllarda devam ettirdiği görülmüştür.

Anahtar Kelimeler: karvakrol, *Origanum acutidens*, p-cymene, uçucu yağ

ABSTRACT

The flora of Turkey, located in three different phytogeographic regions (Europe - Siberia, Mediterranean, and Iran - Turan), is extremely rich in terms of plant diversity. Due to the different flora regions, regional elevation differences, the effect of the seas, and the microclimate climate zones, the endemism rate is high as well as the diversity of plant species. Lamiaceae family is the third-largest family in Turkey. The family is represented by 782 taxa, 603 species, and 179 subspecies in the flora of Turkey, and the endemism rate is 44%. One of the most important economically important members of the Lamiaceae family is the *Origanum* genus. The genus has 27 taxa, and 31 species in the flora of Turkey, and of these, 18 are grown endemic. One of these species is *Origanum acutidens* (Hand.-Mazz.) Ietswaart. It grows endemic, perennial herbaceous in Turkey (Eastern Anatolia). The main components of the essential oil obtained from the aerial parts of the plant are carvacrol and p-cymene, which show a

high antimicrobial effect and increase the importance of the essential oil obtained from the plant due to its biological activities.

In this study, *Origanum acutidens* (Location: Ankara University, Faculty of Agriculture, Field Crops Department collection plots- Year: 2007) was tried to be propagated from seed, and due to the loss of viability of the seeds (a long time since it was collected), it was germinated in vitro, propagated with internode explants, and transferred in the field. Irrigation was done until the plants adapted to the field conditions, then no irrigation was applied. Plant height (15-23 cm/plant), canopy diameter (23-37 cm/plant), the number of branches (44-121 plant), fresh herbage yield (23.57-66.32 g/plant), dry herbage (5.13-14.60 g/plant) yield, and essential oil content (3.55%) from aerial parts were determined in the field at the end of the first year. It has been observed that the plants, which were reproduced in vitro and adapted to the field conditions, adapted to the ecological conditions of Yozgat and continued their vitality in the following years.

Keywords: Carvacrol, essential oil, *Origanum acutidens*, p-cymene

BAZI PAMUK (*Gossypium hirsutum* L.) ÇEŞİTLERİNİN FARKLI SIRA ÜZERİ MESAFELERDE VERİM VE VERİM PARAMETRELERİNİN İNCELENMESİ

INVESTIGATION OF YIELD AND YIELD PARAMETERS OF SOME COTTON (*Gossypium
hirsutum* L.) VARIETIES AT DIFFERENT İNTRA-ROW SPACİNG

Prof. Dr. Sema BAŞBAĞ¹

¹ Dicle Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü, Diyarbakır, Türkiye

¹ORCID ID: <https://orcid.org/0000-0002-9324-5175>

Ziraat Yüksek Müh. Şilan ÇİÇEK²

²Dicle Üniversitesi, Ziraat Fakültesi, Fen Bilimleri Enstitüsü, Diyarbakır, Türkiye

²ORCID ID: <https://orcid.org/0000-0002-4486-7322>

Öğr. Gör. Nazlı AYBAR YALINKILIÇ³

³Muş Alparslan Üniversitesi, Uygulamalı Bilimler Fakültesi, Bitkisel Üretim ve Teknolojileri Bölümü,
Muş, Türkiye

²ORCID ID: <https://orcid.org/0000-0002-7462-775X>

ÖZET

Dünyada ve ülkemizde önemli bir endüstri bitkisi olan pamuk, gıda ve tekstil olmak üzere birçok sektörün ana hammaddesi durumundadır. Geniş kullanım alanları, oluşturduğu katma değer ve istihdam imkânları ile yetiştiriciliği yapılan ülkelerin ekonomisine büyük yararlar sağlamaktadır. Pamuk, işlenmesi yönünden çırçır endüstrisinin, lifi ile tekstil endüstrisinin, çiğiti ile yem ve yağ endüstrisinin, linteri ile kağıt endüstrisinin hammaddesini oluşturmaktadır. Bu çalışma 2020 yılı pamuk yetiştirme sezonunda Diyarbakır ekolojik koşulları Dicle Üniversitesi Araştırma ve Deneme arazisinde yürütülmüştür. Denemede sıra arası mesafe 70 cm olacak şekilde sabit tutulmuş, sıra üzeri mesafeler ise 6, 12, 18 ve 24 cm olacak şekilde ayarlanmıştır. Bölgeye adapte olmuş ve yetiştiriciliği yapılan üç farklı pamuk çeşidinde (Gloria, Berke, BA 440) farklı sıra üzeri mesafelerin (6, 12, 18 ve 24 cm) pamukta kütlü veriminin ve bazı bitkisel parametrelerin incelenmesi çalışmanın amacını oluşturmaktadır. Araştırma sonucunda elde edilen verilere göre bitki boyunun en yüksek 18 cm sıra üzeri mesafede Berke çeşidinde, boğum sayısının en fazla 24 cm sıra üzeri mesafe ile BA440 çeşidinde, en yüksek meyve dalının 12 cm sıra üzeri mesafede, kütlü veriminin ise en yüksek BA440 çeşidinde ve 6 cm sıra üzeri mesafede olduğu gözlemlenmiştir. Ayrıca sıra üzeri mesafenin; bitki boyu, boğum sayısı, meyve dalı sayısı ve dekara kütlü verimi özellikleri üzerinde istatistiksel olarak önemli düzeyde etkisinin olduğu sonucuna varılmıştır.

Anahtar Kelimeler: Pamuk, Verim, Sıra Üzeri Mesafe, *Gossypium hirsutum* L.

ABSTRACT

Cotton, which is a very important industrial plant in the world and in our country, is the main raw material of many sectors, including food and textile. It provides great benefits to the country's economy with its wide usage area, added value and employment opportunities. Cotton is the raw material of the gin industry in terms of processing, the textile industry with its fiber, the feed and oil industry with its seed, and the paper industry with its linter. The study was conducted at the Field Crops Department experiment area, Faculty of Agriculture, Dicle University in 2020. This research was conducted in order to determine the effects of different plant densities on yield and some yield components on some cotton cultivars. The research was carried out in 3 replications according to the design of Split plot in Random Blocks, 70 cm row spacing and 6,12,18 and 24 cm intra-row spacing. The main parcels were cotton varieties (Gloria, Berke, BA 440) and sub-parcels were divided into 4 different intra-row spaces (6, 12,



18 and 24 cm), the highest plant height is 18 cm intra-row spacing in Berke variety, the highest number of nodes is 24 cm intra-row spacing in BA440 variety, The highest fruiting branch is 12 cm intra-row spacing, the highest cotton yield is Berke variety and the earliest boll opening is 6 cm intra-row spacing in Berke variety. It was concluded that different intra-row spaces had a significant effect on plant height, number of nodes and cotton yield per decare, and had an insignificant effect on boll formation.

Key Words: Cotton, Cotton Yield, intra-row space, *Gossypium hirsutum* L.

PHYTOCHEMICAL STUDY AND ANTIOXIDANT ACTIVITY OF LEAVES ESSENTIAL OIL OF LAURUS NOBILIS

Nour El Houda tahiri^{1,3*}, Najoua SOULO³ hamza Saghrouchni², Lyoussi badiaa³ Lrhorfi Lalla Aicha¹

¹Laboratory of Botany, Biotechnology and Plant Protection, Faculty of Sciences, Ibn Tofail University, Kenetra, Morocco

² Department of Biotechnology, Institute of natural and applied sciences, Çukurova University, Adana, Turkey

³ Laboratory of Physiology, Pharmacology and Environmental Health, Faculty of Sciences Dhar El Mahraz, P.O.Box 1796 Atlas, Sidi Mohamad Ben Abdellah University, Fez 30000, Morocco

ABSTRACT

Oxidative stress is an imbalance between the generation of reactive oxygen species (ROS) and the body's antioxidant defenses, there is a very strong relationship between increased oxidative stress and the onset of diseases such as cancer and diabetes.

In this work our objective is exploration *In vitro* of the antioxidant activity of essential oils: *laurus nobilis*.

the essential oils were obtained by the hydro distillation method, the chemical composition was analyzed by GC-MS, and the antioxidant activity was explored *in vitro*.

As Results *laurus nobilis* essential oil leaves has been reported in previous studies as one of the strongest antioxidants, even higher than some synthetic antioxidants like BHT or butylated hydroxyanisole, the high activity of the leaves of *Laurus nobilis* essential oil. may be due to the presence of 1,8 cineole the main constituent of this essential oil, which is known to have antioxidant activity's: *In vitro* exploration of the antioxidant activity of essential oils (*Laurus nobilis*)

Essential oils can be an incredible source of bioactive antioxidant and antibacterial molecules that can replace synthetic antimicrobials as they are readily available and with no possible side effects imposed by synthetics if used in non-toxic doses.

Keywords: *Laurus nobilis*; essential oil; antioxidant activity; *in vitro*; chemical composition

EXPLORATION OF PHYSICO-CHEMICAL PROPERTIES OF ORGANIC TRADITIONAL LEATHER WASTE

K. D. Ahire¹, A. M. Datir²

¹*Ph.D. Student, Department of Environmental Science,*

K.R.T. Arts, B.H. Commerce & A.M. Science (KTHM) College, Nashik, (MS), India

²*Professor, Department of Physics,*

Agasti Arts, Commerce and Dadasaheb Rupwate Science College, Akole, (MS), India

ABSTRACT

The Organic Traditional Leather Waste is a byproduct of the initial few steps of leather processing operations carried out by the rural cobbler community. Local cobblers remove the skin of deceased animals, particularly cows, buffalos, and bullocks, after they have died. It rinsed in water, then lime treatment was applied to the animals' inner skin for about 15 days; in the interim, if necessary, salt treatment was applied to the skin if they wished to keep it that way for more than 2 days before lime treatment. Approximately 15 days later, all hairs and the thin exterior layer of the skin will be removed, and they will dispose of it at their local waste storage facility, where it will decompose for months or years. This degraded trash can be used as agricultural fertiliser.

Present work tried to explore all major physico-chemical properties of this unexplored traditional leather waste which is potentially used as a fertilizer in agriculture. Following parameters of organic traditional leather waste has been studied with the help of sophisticated instruments. Moisture content, bulk density, electrical conductivity has determined in the laboratory while, N (%), C (%), H (%), S (%), analysed on CHNS Analyzer, as soon as SiO₂, Al₂O₃, MgO, Fe₂O₃, CaO, TiO₂, MnO, Na₂O, K₂O, P₂O₅, Cr₂O₃, NiO, Zr, Rb, Co, Zn, Ba, Pb, Sr, determined on XRF analyzers. Surface morphology and C K, O K, Mg K, Al K, Si K, K K, Ca K, Fe K, Sn L, Sb L content has been studied on FE-SEM & EDX. As per the results of Physico-chemical properties, it shows that organic traditional leather waste contains all types of essential nutrients, minerals and components at optimum level which recommends Organic Traditional Leather Waste as an organic fertilizer in agriculture.

Keywords: Organic Traditional Leather Waste, Physico-chemical Properties, Cobbler Community, Organic Fertilizer, Nutrients, Minerals.

ОЦЕНКА ИММУНОГЕННОСТИ ВАКЦИН ПРОТИВ ИНФЕКЦИОННОГО БРОНХИТА КУР

ASSESSMENT OF THE IMMUNOGENICITY OF VACCINES AGAINST INFECTIOUS BRONCHITIS OF CHICKEN

Рустам КАСУМОВ

*Азербайджанский Аграрный Университет, Ветеринарный факультет, Кафедра
Эпизоотологии, Микробиологии и Паразитологии, г.Гянджа*

АННОТАЦИЯ

Инфекционный бронхит кур (ИБК) является одним из главных экономически значимых заболеваний в птицеводстве.

Болезнь характеризуется поражением респираторных органов, что отражается в его номенклатуре. Однако при этой патологии поражаются и органы размножения, мочевого выделения и пищеварения.

По всему миру выделено и идентифицировано множество серотипов и генотипов вируса, из которых многие в последнее время не выявляются в птицеводческих хозяйствах, а другие часто регистрируются в некоторых странах с развитым птицеводством.

В некоторых регионах Азербайджана нами изучен серотиповой состав вируса ИБК. В ПЦР установлена циркуляция следующих основных штаммов вируса (QX, IB4/91, H-120, Ma5, 1/96 и др.). Наиболее часто распространены штаммы Massachusetts (M41 Ma5, HRO и IB4/91). Вакцины, применяемые в птицеводческих хозяйствах Азербайджана из этих штаммов, являются наиболее эффективными. Нами проведено исследование по установлению перекрестной иммуногенности вакцин, применяемых против ИБК, которые могут обеспечить широкую защиту против различных типов вируса. Напряженность иммунитета определяли по цилиостазу – повреждение реснитчатого эпителия верхних дыхательных путей. Тест проводили для оценки степени защитного эффекта после вакцинации и последующего заражения вирулентным штаммом.

С этой целью изучена цилиарная активность мерцательного эпителия трахеальных эксплантатов и установлено, что в группах, не вакцинированных и зараженных цыплят, этот показатель, в сравнении с вакцинированными сильно угнетен.

Разработана программа вакцинации птиц от инфекционного бронхита кур: первый день – ново вылупленные цыплята вакцинировались аэрозольным методом с применением ассоциированной вакцины против ИБК и болезни Ньюкасла (БН) – Ma5+Clon30 – 100% доза и комплексно вводили IBird 100% спрей методом. На 15-й день вводили вакцину IB-4/91 25% доза + Clon30 50% доза – аэрозольным методом.

Установлено, что вакцинация цыплят по разработанной схеме защищает их от искусственного заражения полевыми штаммами вируса.

В бройлерном хозяйстве комплексное применение вакцин обеспечивает широкий спектр перекрестной защиты от коронавирусов.

Ключевые слова: инфекционный бронхит кур, иммуногенность, вакцины, цилиарный тест, перекрестная защита птиц от вируса ИБК, Массачусетский серотип, IB4/91.

ABSTRACT

Infectious bronchitis of chickens (IBK) is one of the main economically significant diseases in the poultry industry.

The disease is characterized by a lesion of the respiratory organs, which is reflected in its nomenclature. However, with this pathology, the reproductive organs, urinary and digestive organs are also affected.

Many serotypes and genotypes of the virus have been isolated and identified around the world, many of which have not recently been detected in poultry farms, while others are often recorded in some countries with developed poultry farming.

In some regions of Azerbaijan, we have studied the serotype composition of the IBV virus. PCR established circulation of the following main strains of the virus (QX, IB4/91, H-120, Ma5, 1/96, etc.). The most common strains are Massachusetts (M41 Ma5, HRO and IB4/91). Vaccines used in the poultry farms of Azerbaijan from these strains are the most effective. We have conducted a study to establish the cross-immunogenicity of vaccines used against IBV, which can provide broad protection against different types of the virus. The intensity of immunity was determined by ciliostasis - damage to the ciliated epithelium of the upper respiratory tract. The test was performed to assess the degree of protective effect after vaccination and subsequent infection with a virulent strain.

For this purpose, was studied the ciliary activity of the ciliated epithelium of tracheal explants and it was found that in groups of non-vaccinated and infected chickens, this indicator, in comparison with vaccinated ones, is strongly suppressed.

Was developed a program for vaccinating birds against chicken infectious bronchitis: on the first day, newly hatched chickens were vaccinated by the aerosol method using the associated vaccine against IB and Newcastle disease (ND) - Ma5 + Clon30 - 100% dose and complexly injected with IBird 100% spray method. On the 15th day, the vaccine IB-4/91 25% dose + Clon30 50% dose was administered by aerosol method.

It has been established that vaccination of chickens according to the developed scheme protects them from artificial infection with field strains of the virus.

In broiler farming, the integrated use of vaccines provides a wide range of cross-protection against coronaviruses.

Keywords: infectious bronchitis of chickens, immunogenicity, vaccines, ciliary test, cross-protection of birds against IBV, Massachusetts serotype, IB4/91.

ACUTE TOXICITY OF *Senna occidentalis* LEAF DUST ON *Clarias gariepinus* FINGERLING

**Mohammed Chado Isah¹, Kabir Mohammed Adamu¹, Zainab Mustapha¹, Hamzat Aliyu¹,
Christopher Didigu Nwani²**

¹ Department of Biological Sciences, Ibrahim Badamasi Babangida University, Lapai, Nigeria

² Department of Zoology and Environmental Biology, University of Nigeria Nsukka, Nigeria

ABSTRACT

Senna occidentalis is a common tropical plant whose leaf is identified for its medicinal values. The leaves can be incorporated into fish feed or used in aquaculture water treatment. Likewise, some *Senna* species, mainly their seeds, are reported to cause various forms of toxicities regardless of their numerous potential medicinal values. *Senna occidentalis* find their ways into aquatic environments thus the need to study their toxic effects on aquatic organisms. This study is centered on the acute toxicity of *S. occidentalis* leaf dust on the fingerling of African Catfish. Five static bioassays were set up in triplicates for 96 hours with 0g/l, 0.15g/l, 0.30g/l, 0.45g/l and 0.6g/l *S. occidentalis* leaf dust. The physicochemical parameters of media and the mortality of *C. gariepinus* fingerlings exposed to *S. occidentalis* leaf dust were monitored, 96h LC₅₀ of *C. gariepinus* fingerlings exposed to *S. occidentalis* leaf dust were calculated. The physicochemical parameters of the test water were monitored. The mortality of the *C. gariepinus* fingerlings were monitored and the cumulative mortality of fingerling *C. gariepinus* exposed to *S. occidentalis* leaf dust were used to calculate the 96h LC₅₀ of *C. gariepinus* fingerlings exposed to *S. occidentalis* leaf dust. The 96 hour LC₅₀ (95% confidence intervals) of *S. occidentalis* leaf dust on *C. gariepinus* fingerlings was calculated to be 0.34g/l (0.24 – 0.47), while 0.16g/l was the calculated toxic unit. The observed mortality were greater than expected mortality of *Clarias gariepinus* exposed to 0.15g/l and 0.6g/l and the observed mortality were less than the expected mortality for those exposed to 0.3g/l and 0.45g/l. The safe levels were estimated on 0.34g/l 96 hours LC₅₀ of *S. occidentalis* to be from $8.20 \times 10^{-2} \text{g/l} - 3.40 \times 10^{-6} \text{g/l}$. thus it can be used for pre-stocking aquatic water treatment and substantive quantity of it can be incorporated into the fish feed for its medicinal effects.

FACTORS INFLUENCING ADOPTION OF SUSTAINABLE AGRICULTURAL PRACTICES AMONG MAIZE FARMERS IN AKINYELE LOCAL GOVERNMENT AREA OF OYO STATE

¹ADENIRAN Adebayo Adeniyi, ¹AGBAJE, IyanuOluwa, ¹OLADIRAN Sunday and ¹OGUNTADE Mariam Iyabode

¹Department of Agricultural Extension and Management, Federal College of Agriculture, Ibadan, Oyo State, Nigeria

ABSTRACT

The study was conducted to investigate the adoption of sustainable agricultural practices among maize farmers in Akinyele Local Government Area of Oyo State. Simple random sampling procedure was used to select one hundred and twenty (120) respondent. Well-structured questionnaire were used to collect data and analyzed using descriptive statistics. Inferential statistics was used to test the hypothesis. The result indicates that 32.5% of the respondent were within the age bracket of 41-50 years. Majority (79.2%) of the respondent were male, practicing Islam (55.8%), married(63.3%) with household size of between 1-5 members (61.7%). Less than haf (48.3%) had between 1-6years of education. Most (65.0%) of the respondent had no contact with extension agent. Nearly all (98.3%) of the respondent were aware of sustainable agricultural practices mostly through friends/family (87.5%). Farmers were trained on crop management practices (98.3%) and postharvets technology (94.2%). Animal manure and crop rotation (98.3%) were common sustainable agricultural practices among the farmers. Sustainable agricultural practices was highly beneficial to farmers in terms of yield increase (86.7%) and improvement of soil condition (75.8%). However, incidence of pest and disease (97.5%) and high cost of quality seed (95.0%) were very severe factors that influenced adoption decision of farmers on sustainable agricultural practices. The result of the hypothesis shows that sex, religion, marital status, mode of farming were not significantly related with adoption of sustainable agricultural practices. It is therefore recommended that incentives such as credit facilities should be made available to farmers to enhance and sustain adoption of sustainable agricultural practices among farmers. Also extension should be should be giving priory in the country agricultural system through provision of adequate funding to ensure effective information delivery of sustainable agricultural practices.

Keywords: adoption, sustainable agricultural practices, maize, farmers.

KNOWLEDGE AND PREVENTIVE MEASURES OF COVID-19 AMONG ARABLE CROP FARMERS' IN IDO LOCAL GOVERNMENT AREA OF OYO STATE, NIGERIA

¹Adeniran A. A., ¹Akinpelu O. A. ¹Omoyajowo A. O. and ²Oyediran W. O.

¹Department of Agricultural Extension and Management, Federal College of Agriculture, Ibadan, Oyo State, Nigeria

²Federal Ministry of Agriculture, Abeokuta, Ogun State, Nigeria

ABSTRACT

The study was conducted to access arable crop farmers knowledge of COVID-19 in Ido Local Government Area of Oyo State. Multistage sampling procedure was used to select one hundred and twenty (120) respondents, Well-structured questionnaire were used to collect data and the data were analyzed using descriptive statistics and inferential statistics. The descriptive statistics (frequency, mean and percentage) was used to analyzed the objectives while inferential statistics (chi-square) was used to test the hypothesis. The results indicated that 25.9% of the respondents were within the age range of 31-40years, 50.8% were male, 58.3% of the respondents are practicing Christianity, 67.5% were married and 42.5% had between 1-10 years of farming experience. Majority (83.3%) of the respondents cultivated between 1-5 acres of farmland with 18.3% having access to credit. The results further reveal that majority (72.5%) were highly knowledgeable of COVID-19. Radio ($\bar{x} = 1.74$) was the major source of information on COVID-19. Moreover, loss of income (90.0%) was the major effect of COVID-19 on production activities of arable crop farmers. Regular washing of hands was the most used preventive measure by the respondents. The result of the hypothesis shows that age ($r = - 0.196$) and household size ($- 0.091$) had significant relationship with farmers' knowledge on COVID-19. It is recommended that arable crop farmers should adopt safe preventive measure on COVID-19 to spread of the virus among folks. Also, preventives like soap, sanitizers, facemask should be made available for usage by the household members.

Keywords: Arable crop farmers, Knowledge, Covid-19.

DRONE USAGE IN AGRICULTURE

VEERAPAKURAJA .T

Department of aeronautical engineering, Bannari Amman Institute of Technology, India

BALA KANNAN .T

Department of aeronautical engineering, Bannari Amman Institute of Technology, India

BHARATHI .P

Department of aeronautical engineering, Bannari Amman Institute of Technology, India

ABSTRACT

One of the main sources of income in India is Agriculture. The production rate of crops in agriculture is based on various parameters like temperature, humidity, rain, etc. Which are natural factors and not in farmers control. The field of agriculture also depends on some factors like pests, disease, fertilizers, etc which can be controlled by giving proper treatment to crops. Pesticides may increase the productivity of crops but it also affects human health. So the main aim of this paper is to design agriculture drones for spraying pesticides. In this paper, we are going to discuss different architecture based on unmanned aerial vehicles (UAVs). The use of pesticides in agriculture is very important to agriculture and it will be so easy if we use intelligent machines such as robots using new technologies. This paper gives the idea about various technologies used to reduce human efforts in various operations of agriculture like detection of presence of pests, spraying of UREA, spraying of fertilizers, etc. This paper describes the development of quad copter UAV and the spraying mechanism. In this paper we also discuss integration of the sprayer module to quad copter systems. The discussed system involves designing a prototype which uses simple cost effective equipment like BLDC motor, Arduino, ESC wires, etc.

EFFECTS OF NATIONAL YOUTH SERVICE CORPS COMMUNITY DEVELOPMENT SERVICE (NYSC CDS) ON COMMUNITIES IN ABIA STATE, NIGERIA

Arigbo Precious Obinna

Department of Agricultural Extension

University of Nigeria Nsukka

ABSTRACT

The study was carried out in Abia State Nigeria. Specifically, the study sought to ascertain effects of the NYSC CDS on the beneficiaries, the level of NYSC goal accomplishments, involvement of benefiting communities in NYSC CDS projects; ascertain the relationship between peoples' involvement in NYSC CDS projects and the effects on them and perceived constraints to effective implementation of the NYSC CDS. Multistage sampling procedure was used in the selection of 180 respondents. Data were collected with the aid of a questionnaire and were analyzed using frequency, percentage, mean and correlation. The results show that the NYSC CDS had positive effects which includes sense of belonging among the rural people ($\bar{x} = 3.13$), high level of enlightenment through educational campaign ($\bar{x} = 3.04$), and high level of sensitization on hygiene and health issues ($\bar{x} = 3.02$). There is also high level of NYSC CDS goal accomplishment in the area ($\bar{x} = 3.03$). Community members were involved in the NYSC CDS activities but not always = 1.33). Effects of the NYSC CDS on the people had a significant and positive relationship with community involvement ($r = 0.156$, $P \leq 0.05$). The perceived constraints to effective implementation of the NYSC CDS includes, mismanagement and embezzlement of funds ($\bar{x} = 3.8$), lack of funds for the implementation of projects ($\bar{x} = 3.15$) and cultural and language barriers ($\bar{x} = 3.11$). The study recommended that more awareness and sensitization campaigns need to be done to get people involved in the NYSC CDS development projects, corps members should be used as agents of community development, government and public spirited individuals should help in financing the NYSC CDS projects.

Keyword: National Youth Service Corps, and Community Development Service

THE INCIDENCE OF MALARIA AMONG PATIENTS WITH DIFFERENT BLOOD GROUPS ATTENDING SPECIALIST HOSPITAL DAMATURU, YOBE STATE

Sabina Khanam

Department of Biological Sciences

Yobe State University, Nigeria

ABSTRACT

This study was carried out to investigate ABO blood groups association with malaria parasite among patients attending specialist hospital Yobe State Damaturu. Two milliliters (2ml) of venous blood was collected by venipuncture using 5ml syringes from asymptomatic malaria patients. Blood samples were immediately dispense into Ethylene Diamine Tetra-acid (EDTA) anti coagulated containers and mixed appropriately. ABO blood type using Antisera A, B, D was carried out on samples. The malaria plasmodium falciparum Rapid Test Device (whole blood) package insert kit was used to test for the presence of malaria parasites in the specimens. The 182 samples were analyzed made up of 71(39.01%) males and 111(60.98%) females. Most of the 89(48.90%) patients having O+ blood group. Out of 182 respondents 161(88.46%) were malaria positive and 21(11.53%) were negative. Out of 161 malaria positive patients 82(50.93%having O+ blood group , 40(24.84%) B+, 19(11.80%) AB+, 07(4.34%) O-, 06(3.72%) A+ blood group respectively.

Key words: malaria, blood group, patients

KARASU NEHRİ (VAN, TÜRKİYE)'NDE SİRAZ BALIĞI (*Capoeta kosswigi* KARAMAN, 1969)'NİN MAKSİMUM BÜYÜKLÜĞÜ ÜZERİNE BİR ARAŞTIRMA

A STUDY ON THE MAXIMUM SIZE OF SIRAZ FISH (*Capoeta kosswigi* KARAMAN, 1969) IN THE KARASU RIVER (VAN, TURKEY)

Ataman Altuğ ATICI¹

¹Van Yüzüncü Yıl Üniversitesi, Su Ürünleri Fakültesi, Su Ürünleri Temel Bilimler Bölümü, Van, Türkiye

¹ORCID ID: <https://orcid.org/0000-0001-8700-8969>

Ertuğrul KANKAYA²

²Van Yüzüncü Yıl Üniversitesi, Su Ürünleri Fakültesi, Su Ürünleri Temel Bilimler Bölümü, Van, Türkiye

²ORCID ID: <https://orcid.org/0000-0002-3032-3041>

ÖZET

Van Gölü Havzası içerisinde yer alan Karasu Nehri, gölü besleyen önemli akarsulardan olup, nehirde endemik balık türlerinden olan siraz balığı (*Capoeta kosswigi* Karaman, 1969) yaşamaktadır. Cyprinidae familyasına ait alan siraz balığı endemik olmasının yanı sıra ekonomik öneme de sahip bir balık türüdür. Siraz balığı en son 2013 yılında Uluslararası Doğayı Koruma Birliği tarafından Tehdit Altındaki Türlerin Kırmızı Listesi için değerlendirilmiş ve bu balık türü eksik veri olarak rapor edilmiştir. Bu çalışmanın amacı, siraz balığının Karasu Nehri için maksimum boy ve ağırlık kaydını sunmaktır. Maksimum boy ve ağırlık verileri populasyon dinamiği ve stok değerlendirme gibi çalışmalarda yaygın olarak kullanılmaktadır. Bu nedenle, bu tür verilerin kayıt altına alınması önemlidir. Bu çalışmada, Karasu Nehri'ndeki başka bir araştırma esnasında serpmeye ağ ile tesadüfen yakalanan siraz balıkları arasında 37.9 cm çatal boy ve 779.4 g toplam ağırlıkta maksimum ölçülere sahip bir adet siraz balığı 28.05.2021 tarihinde ile avlanmıştır. Bildirilen bu çatal boy ve toplam ağırlık değerleri, bu türün Karasu Nehri için kanıtlanmış şu ana kadarki en büyük çatal boy ve ağırlık değerleridir. Tüm örnekler (n = 43) için çatal boy uzunluğu 9.2-37.9 (17.6±6.9) cm arasında iken, toplam ağırlık 11.3-779.4 (130.9±164.7) g arasında belirlenmiştir. En yoğun avcılık, tüm bireyler için 11.0-12.9 (%23.3) cm ve 0-24.9 (%23.3) g'lık gruplarda gerçekleşmiştir. Populasyon genelinde boy-ağırlık ilişkisi $TA = 0.0137 \times \text{ÇB}^{3.056}$ ($r^2 = 0.994$) olarak hesaplanmıştır. Erkek:dişi oranı 1:0.27 olarak tespit edilmiştir. Karasu Nehri için bildirilen bu çalışmadaki ve önceki çalışmalardaki maksimum çatal boy ve toplam ağırlık değerlerinin aynı havza içerisindeki diğer su kaynaklarında elde edilen değerlerden küçük olmasının nedeni, Karasu Nehri'nde balıkçılık baskısı olmamasına rağmen aşırı kirletici ve nehri tahrip edici faaliyetlerin yoğun olması ile ilişkilendirilmiştir.

Anahtar Kelimeler: Karasu Nehri, Maksimum boy ve ağırlık, *Capoeta kosswigi*, Boy-ağırlık ilişkileri

ABSTRACT

Karasu River, which is located in the Lake Van Basin, is one of the important streams feeding the lake, and the endemic fish species, siraz fish (*Capoeta kosswigi* Karaman, 1969) lives in the river. Belonging to the Cyprinidae family, the siraz fish is a species of fish that has economic importance as well as being endemic. It was last evaluated for the Red List of Threatened Species by IUCN (International Union for Conservation of Nature) in 2013 and this species was reported as Data Deficient. The aim of this study is to present the maximum length and weight record of siraz fish for the Karasu River. Maximum length and weight data are widely used in studies such as population dynamics and stock evaluation. Therefore, it is important to record such data. In this study, one siraz fish with a maximum size of 37.9 cm fork length and 779.4 g total weight was caught on 28.05.2021 among the siraz fishes sampled by chance

with a hand net during another research in the Karasu River. These reported fork length and total weight values are the largest proven fork length and weight values for this species in the Karasu River so far. Fork length was between 9.2-37.9 (17.6±6.9) cm for all samples (n = 43), while total weight was between 11.3-779.4 (130.9±164.7) g. The most intense catching was in the 11.0-12.9 (23.3%) cm and 0-24.9 (23.3%) g groups for all populations. The length-weight relationships in all samples were calculated as $W = 0.0137 \times FL^{3.056}$ ($r^2 = 0.994$). The Male:Female ratio was calculated as 1:0.27. The reason why the maximum fork length and total weight values reported for the Karasu River in this study and in previous studies are smaller than the values obtained in other water resources in the same basin, although there is no fisheries pressure in the Karasu River, excessive polluting and destructive activities are intense.

Keywords: Karasu River, Maximum length and weight, *Capoeta kosswigi*, The length-weight relationships.

SUMAK (*Rhus coriaria*) BİTKİSİNİN BESLENME VE FİTOTERAPİDE KULLANIMI USE OF SUMAK (*Rhus coriaria*) PLANT IN NUTRITION AND PHYTOTHERAPY

Zeynep Nisa Karaduman

Bezmialem Vakıf Üniversitesi Sağlık Bilimleri Enstitüsü, İstanbul, Türkiye

Murat KARTAL

Bezmialem Vakıf Üniversitesi Fitoterapi Eğitim, Araştırma ve Uygulama Merkezi, İstanbul, Türkiye

Murat TUNÇTÜRK

Prof. Dr. Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölümü

ÖZET

Sumak (*Rhus coriaria*) Anacardiaceae familyasından *Rhus* cinsi, 150 civarında türüyle dünyanın değişik bölgelerinde yetişen bir bitkidir. Sumak meyvesinin tozu, tebliğde, meyvelerinin tekniğine uygun kurutulduktan sonra belirli oranda sofru tuzu katılarak öğütülmüş hali olarak tanımlanır. Ülkemizde ekşi tadı nedeniyle suda bekletilen meyveleri süzülerek “sumak ekşisi” olarak soslarda, kurutulmuş toz hali yemeklerde, salatalarda ve etlerde limonlu bir tat vermek amacı ile kullanılan bir meyvedir. Yapılan araştırmalarda sumak meyveleri tanence zengin olup yüksek miktarda fenolik maddeler, organik asitler, yağ asitleri, vitamin ve mineraller gibi birçok bileşiği içerdiği görülmüştür. Bu bilgiler ışığında bu araştırmada Gaziantep-Oğuzeli bölgesinde yetişen sumak bitkisi araştırma materyali olarak seçilmiştir. Bitkinin meyvelerinden hareketle su, alkol ve sulu-alkol ekstralarının fenolik, flavonoid, antosiyanin miktarları ve antioksidan aktivite özellikleri incelenmiştir. Soxhlet cihazı kullanılarak n-hekzan ile ekstrakte edilen meyvelerde ise yağ asidi kompozisyonu analiz edilmiştir. Elde edilen sonuçlara göre optimum çözücünün tespiti yapılmıştır. Topladığımız sumak meyveleri ve aktardan alınan toz sumak numune olarak kullanılmıştır. Antioksidan aktivite tayininde DPPH ile ölçülen antioksidan aktivitesi (IC₅₀) sumak meyvesi 16,22 (µg/mL) ve toz sumakta 17,36 (µg/mL) olarak bulunmuştur. Topladığımız Sumak meyvelerinden ve aktardan alınan toz sumak numunesinde; fenolik-flavonoid madde miktarı tayini için; su, etil alkol ve sulu-etilalkol (50:50) çözücü sistemleri kullanılarak ekstratlar hazırlanmıştır. Fenolik madde miktarı en çok sumak numunelerinin sulu-etilalkol çözeltilerinde tespit edilmiştir. 1 gram kuru bitkideki fenolik madde, toz sumakta 55,50 mg, meyve sumakta 54,02 mg olarak bulunmuştur. Flavonoid madde miktarı en çok sumak numunelerinin etil alkol çözeltilerinde tespit edilmiştir. 1 gram kuru bitkideki flavonoid madde, meyve sumakta 5,00 mg, toz sumakta 3,87 mg olarak bulunmuştur. Sumak meyvesindeki yağ asidi kimyasal kompozisyonu gaz kromatografisi kütle spektrometresi ve alev iyonlaşma detektörü (GS-MS/FID) ile analiz edilmiş ve 10 adet bileşen tespit edilerek miktarları belirlenmiştir. Yağ asidi ana bileşenleri oleik asit (%27.34), palmitik asit (%21.06) ve/ linoleik asit (%17.65) olarak bulunmuştur. Toplam antosiyanin miktarı ise toz sumakta %0,069 bulunurken meyve sumakta tespit edilememiştir.

Anahtar Kelimeler: Sumak, beslenme, kimyasal kompozisyon, fenolik bileşik

ABSTRACT

Sumac (*Rhus coriaria*) The genus *Rhus* from the Anacardiaceae family is a plant that grows in different parts of the world with around 150 species. The powder of the sumac fruit is defined in the communicate as the ground state of the fruit after drying in accordance with the technique, by adding a certain amount of table salt. Due to its sour taste, its fruits, which are kept in water, are filtered and used as “sumac sour” in sauces, dried powdered meals, salads and meats with the aim of giving a lemony taste. Studies have shown that sumac fruits are rich in tannins and contain many compounds such as high amounts of phenolic substances, organic acids, fatty acids, vitamins and minerals. In the light of this information,

the sumac plant grown in Gaziantep-Oğuzeli region was chosen as the research material in this study. Based on the fruits of the plant, phenolic, flavonoid, anthocyanin amounts and antioxidant activity properties of water, alcohol and aqueous-alcohol extracts were investigated. Fatty acid composition was analyzed in fruits extracted with n-hexane using the Soxhlet device. According to the results obtained, the optimum solvent was determined. The sumac fruits we collected and the powdered sumac taken from the herbalist were used as pattern. In the antioxidant activity determination, the antioxidant activity (IC₅₀) measured by DPPH was found to be 16.22 (µg/mL) in sumac fruit and 17.36 (µg/mL) in powdered sumac. In the powdered sumac pattern taken from the sumac fruits we collected and from the herbalist; for the determination of the amount of phenolic-flavonoid substance; Extracts were prepared using water, ethyl alcohol and water-ethyl alcohol (50:50) dissolvent systems. The amount of phenolic substance was determined mostly in water-ethyl alcohol solutions of sumac samples. The phenolic substance in 1 gram of dry plant was found to be 55.50 mg in powdered sumac and 54.02 mg in fruit sumac. The amount of flavonoid substance was determined mostly in ethyl alcohol solutions of sumac patterns. The flavonoid substance in 1 gram of dry plant was found to be 5.00 mg in fruit sumac and 3.87 mg in powdered sumac. The chemical composition of fatty acids in sumac fruit was analyzed by gas chromatography mass spectrometry and flame ionization detector (GS-MS/FID), and 10 components were identified and their amounts were determined. The main fatty acid components has been detected oleic acid (27.34%), palmitic acid (21.06%) and/linoleic acid (17.65%). While the total amount of anthocyanin was 0.069% in powdered sumac, it could not be detected in fruit sumac.

Keywords: Sumac, nutrition, chemical composition, phenolic compound

***Marasmius oreades* MANTARINDAN KATALAZIN KISMİ SAFLAŞTIRILMASI VE KARAKTERİZASYONU**

PARTIAL PURIFICATION AND CHARACTERIZATION OF CATALASE FROM *Marasmius oreades*

Ayşe TÜRKHAN

Dr. Öğr. Üyesi, Iğdır Üniversitesi, Iğdır Teknik Bilimler Meslek Yüksekokulu Kimya ve Kimyasal İşleme Teknolojileri Bölümü, Kimya Teknolojisi Programı

ORCID ID: 0000-0002-2195-9435

Elif Duygu KAYA

Dr. Öğr. Üyesi, Iğdır Üniversitesi, Mühendislik Fakültesi Gıda Mühendisliği Bölümü

ORCID ID: 0000-0003-1203-979X

ÖZET

Katalaz (H_2O_2 : H_2O_2 oksidoredüktaz, E.C. 1.11.1.6), hidrojen peroksitin su ve oksijene parçalanmasını sağlayan ve yapısında *hem* grubu içeren oksidoredüktaz sınıfına ait bir enzimdir. Katalaz enzimi, farklı canlı organizmalarda (hayvan, mikroorganizmalar ve bitki gibi) yaygın şekilde bulunmaktadır [1]. Günümüzde birçok endüstri kolunda klasik kimyasal yöntemlerin yerine enzim içeren biyolojik sistemler kullanılmaktadır. Biyoteknolojinin de katkısıyla bu işlemler hem daha ılımlı şartlarda gerçekleştirilmekte, hem de oluşan yan ürünlerin çevreye verdikleri zararlar en aza indirgenmektedir [2]. Endüstrinin farklı kollarında hidrojen peroksit, oksitleyici, ağartıcı veya sterilizasyon amaçlı kullanılmakta ve hidrojen peroksidin fazlasının uzaklaştırılmasında katalaz enziminden etkin bir şekilde faydalanılmaktadır [3].

Bu çalışmada, *Marasmius oreades*'dan katalaz enzimi aseton çöktürmesi yöntemiyle % 41,4 verimle 2,5 kat kısmi olarak saflaştırılmış ve karakterize edilmiştir. *Marasmius oreades*'dan elde edilen katalazın optimum pH ve optimum sıcaklığı sırasıyla 7.0 ve 30 °C olarak bulunmuştur. Substrat olarak hidrojen peroksit varlığında enzimin K_m ve V_{maks} değerleri sırasıyla 7,46 mM ve 109,89 U/mg protein olarak bulunmuştur. Ayrıca pH kararlılığı ve ısıl kararlılığı çalışılmıştır. Katalaz, gıda, süt, tekstil, kağıt gibi endüstrinin değişik kollarında kullanılan ticari bir enzim olması nedeniyle yeni kaynaklardan elde edilmesi önem arz etmektedir.

Anahtar Kelimeler: Katalaz, Kısmi Saflaştırma, Karakterizasyon

[1] Aydemir, T. ve Kuru, K. 2003. Turkish Journal of Chemistry, 27, 85-97.

[2] Dinçer, B., 2005. Doktora Tezi, Trabzon.

[3] Çimen, Ç., Öter, Ç., Demir, H. ve Savran, A. 2005. Van YYÜ Veteriner Fakültesi Dergisi, 16,15-20

ABSTRACT

Catalase (H_2O_2 : H_2O_2 oxidoreductase, E.C. 1.11.1.6) is an enzyme belonging to the oxidoreductase class, which provides the breakdown of hydrogen peroxide into water and oxygen and contains heme groups in its structure. Catalase enzyme is widely found in different living organisms (such as animals, microorganisms and plants)[1]. Today, biological systems containing enzymes are used instead of classical chemical methods in many industries. With the contribution of biotechnology, these processes are carried out under more moderate conditions, and the damage caused by the by-products to the environment is minimized [2]. In different branches of the industry, hydrogen peroxide is used for

oxidizing, bleaching or sterilization purposes, and the enzyme catalase is effectively used to remove excess hydrogen peroxide [3].

In this study, catalase enzyme was 2.5 fold partially purified from *Marasmius oreades*, by using acetone precipitation method with a yield of 41.4% and characterized. Optimum pH and optimum temperature of catalase obtained from *Marasmius oreades* were found to be 7.0 and 30 °C, respectively. In the presence of hydrogen peroxide as a substrate, the Km and Vmax values of the enzyme were found to be 7.46 mM and 109.89 U/mg protein, respectively. In addition, pH stability and thermal stability were studied. Since catalase is a commercial enzyme used in different branches of industry such as food, milk, textile and paper, it is important to obtain it from new sources.

Keywords: Catalase, Partial Purification, Characterization

[1] Aydemir, T. ve Kuru, K. 2003. Turkish Journal of Chemistry, 27, 85-97.

[2] Dinçer, B., 2005. Doktora Tezi, Trabzon.

[3] Çimen, Ç., Öter, Ç., Demir, H. ve Savran, A. 2005. Van YYÜ Veteriner Fakültesi Dergisi, 16,15-20.

FARKLI AGROEKOLOJİLERDEKİ BUĞDAY EKİM ALANLARINDAN İZOLE EDİLEN *Fusarium poae* ve *Fusarium equiseti* İZOLATLARININ PATOJENİTESİ

PATHOGENICITY OF *Fusarium poae* and *Fusarium equiseti* ISOLATES ISOLATED FROM
WHEAT CULTURES IN DIFFERENT AGROECOLOGIES

Abdullah Esat ALTINIŞIK¹

¹Ondokuz mayıs üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Samsun, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0002-1435-6142>

Berna TUNALI²

²Ondokuz Mayıs Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Samsun, Türkiye

ÖZET

Bu çalışmada kullanılan izolatlar, 2010-2018 yıllarında Türkiye'nin farklı agro-ekolojik alanlarındaki buğday bitkilerinden izole edilmiştir. Çalışmamızda 19 farklı lokasyondan elde edilen *Fusarium equiseti* ile 17 farklı lokasyondan elde edilen *Fusarium poae* izolatları kullanılmıştır. *F. equiseti* ve *F. poae* izolatları Altındane çeşidine ait buğday tohumlarına ve başakçıklarına bulaştırılmış, başak yanıklığı ve kök boğazı çürüklüğü yönünden incelenmiştir. Denemelerde *Fusarium* izolatlarının 1×10^6 konidi/ml⁻¹ spor konsantrasyonu kullanılmıştır. Çalışma serada saksı denemeleri şeklinde yürütülmüştür. Kök boğazı çürüklüğü denemesi için spor süspansiyonu içinde tohumlar beş dakika bekletildikten sonra kurutularak toprağa ekilmiştir. *F. poae* ve *F. equiseti* izolatlarının inokulasyonunu takip eden 60. günde buğday bitkileri kök boğazı çürüklüğü hastalığı yönüyle incelenmiştir. Bu çalışma sonucunda hastalık şiddetinin; *F. poae*'da Amasya/Göynücek, Samsun/Merkez izolatlarında en yüksek, Amasya/Suluova, Amasya/Merkez, Edirne/Meriç, Yozgat/Sorgun'dan alınan izolatlarda en düşük şiddete sahip olduğu tespit edilmiştir. *F. equiseti*'de Amasya/Karaköy ve Konya/Cihanbeyli lokasyonlarından izole edilen izolatların en yüksek, Amasya/Merkez, Sivas/Çermik, Tekirdağ, Tekirdağ/Ahievren'in en düşük şiddete sahip olduğu belirlenmiştir. Başak yanıklığı hastalığı denemesinde *F. poae* ve *F. equiseti* izolatlarının inokulasyonu başaklar sarı çiçek dönemindeyken [Zadoks 65] inokulumun başakçıklara bir enjektör vasıtasıyla inokule edilmesi şeklinde yapılmıştır. İnokule edilen başaklar kağıt zarflarla hasat zamanına kadar kapatılmıştır. Hastalık şiddetinin; *F. poae* izolatlarında Amasya/Göynücek'te en yüksek, Amasya/Suluova, Zonguldak/Beycuma lokasyonlarında en az şiddette olduğu tespit edilmiştir. *F. equiseti*'de Edirne/İpsala bölgesinden izole edilen izolatlarda en yüksek, Çorum/Sungurlu, Tekirdağ/Ergene'de hastalık şiddetinin en az olduğu belirlenmiştir. Elde edilen sonuçlar *F. poae* ve *F. equiseti* izolatlarının zayıf patojen olduklarını ancak lokasyonlar arasında istatistiksel olarak farklılıklar olduğunu göstermektedir. Ayrıca morfolojik teşhisleri yapıp daha önce moleküler teşhisleri yapılmayan izolatların da türe özgü primerlerle tür teşhisleri yapılmıştır. Bu çalışma ile *F. poae* ve *F. equiseti*'nin buğday da kök boğazı çürüklük ve başak yanıklığı hastalığı yapma potansiyeli ortaya konulmuş olup, bundan sonraki çalışmalara temel teşkil edecektir.

Anahtar kelimeler: *Fusarium poae*, *Fusarium equiseti*, tohum, başak, patojenite

ABSTRACT

The isolates used in this study were isolated from wheat plants in different agro-ecological areas of Turkey between 2010-2018. In our study, *Fusarium equiseti* obtained from 19 different locations and *Fusarium poae* isolates obtained from 17 different locations were used. *F. equiseti* and *F. poae* isolates were infected with wheat seeds and spikelets of Altındane cultivar, and were examined for head blight and crown root rot. 1×10^6 conidia/ml⁻¹ spore concentration of *Fusarium* isolates was used in the experiments. The study was carried out as pot experiments in the greenhouse. For the crown root rot test, the seeds were kept in the spore suspension for five minutes, then dried and planted in the soil. On the 60th day following the inoculation of *F. poae* and *F. equiseti* isolates, wheat plants were examined

for crown root rot disease. As a result of this study, the severity of the disease; It was determined that *F. poae* had the highest intensity in Amasya/Göynücek, Samsun/Center isolates, and lowest in Amasya/Suluova, Amasya/Merkez, Edirne/Meriç, Yozgat/Sorgun isolates. In *F. equiseti*, it was determined that the isolates isolated from Amasya/Karaköy and Konya/Cihanbeyli locations had the highest intensity, while Amasya/Merkez, Sivas/Çermik, Tekirdağ, Tekirdağ/Ahievren had the lowest intensity. In the head blight disease trial, the inoculation of *F. poae* and *F. equiseti* isolates was done by inoculating the inoculum into the spikelets with an injector when the spikes were in the yellow flower stage [Zadoks 65]. Inoculated ears were closed with paper envelopes until harvest time. Disease severity; It was determined that *F. poae* isolates were highest in Amasya/Göynücek and lowest in Amasya/Suluova, Zonguldak/Beycuma locations. It was determined that the disease severity was highest in *F. equiseti* isolates isolated from Edirne/İpsala location, and the disease severity was lowest in Çorum/Sungurlu, Tekirdağ/Ergene. The results show that *F. poae* and *F. equiseti* isolates are weak pathogens, but there are statistical differences between locations. In addition, the isolates that were morphologically identified but not molecularly before, were identified with species-specific primers. With this study, the potential of *F. poae* and *F. equiseti* to cause crown root rot and head blight disease in wheat has been revealed and will form the basis for future studies.

Keywords: *Fusarium poae*, *Fusarium equiseti*, seed, ear, pathogenicity

VAN İLİNDE YETİŞEN *ROSA* × *DAMASCENA* MİLLER BİTKİSİNDE ANTOSİYANİN EKSTRAKSİYONU

ANTHOCYANIN EXTRACTION FROM *ROSA* × *DAMASCENA* MILLER PLANT GROWING IN VAN PROVINCE

Gülşen Berat TORUSDAĞ

Van Yüzüncü Yıl Üniversitesi, Turizm Fakültesi, Gastronomi ve Mutfak Sanatları Bölümü, Van, Türkiye

ORCID ID: <https://orcid.org/0000-0002-0934-5115>

Emre BAKKALBAŞI

Van Yüzüncü Yıl Üniversitesi, Mühendislik Fakültesi, Gıda Mühendisliği Bölümü, Van, Türkiye

ORCID ID: <https://orcid.org/0000-0001-9913-1091>

ÖZET

Antik çağlardan beri geleneksel mutfak ve alternatif tıp uygulamalarının önemli bir parçası olarak bilinen yenilebilir çiçekler, gıda hazırlamada lezzet ve estetik değer katmak amacıyla kullanılmaktadır. Yenilebilir çiçekler, antioksidan özelliğe sahip zengin biyoaktif bileşen içerikleri sayesinde besleyici ve sağlıklı bir diyetin oluşumunda doğrudan rol oynayabilmektedirler. Yenilebilir çiçekler arasında bulunan ve antosiyaninler başta olmak üzere çeşitli biyoaktif maddelerce zengin *Rosa* × *damascena*, fonksiyonel gıda için doğal, yeni, güvenli ve ucuz bir kaynak olarak gösterilebilir. Meyve, çiçek ve yaprak gibi bitki organlarının kırmızı ve mavi renginden sorumlu olan antosiyaninler, güllerin içerdiği en önemli polifenol gruplarından birisidir. Antosiyaninler, yiyecek ve içeceklerin estetik değerini belirlemenin yanı sıra biyoaktif özellikleri ile beslenme açısından da önemli bir rol oynamaktadırlar. Potansiyel sağlık yararları olan antosiyaninlerin kanser ve obezite gibi ciddi hastalık risklerini azalttığı, antioksidan, anti-viral, anti-kanserojenik, anti-enflamatuar ve anti-aging etkileri olduğu bilinmektedir.

Bu çalışmada, Van ilinde yetişen *Rosa* × *damascena* Miller bitkisinin taç yapraklarının toplam antosiyanin içeriği belirlenmiştir. Ayrıca taç yapraklar konvansiyonel ekstraksiyona (20, 40 ve 60°C sıcaklık; %0.75, %1 ve %1.25 asitlik düzeyi) ve ultrasonik ekstraksiyona (%50, 75, 100 ultrason genliği) tabii tutulmuşlardır. Ultrasonik ekstraksiyon yöntemi geleneksel yöntemlerle karşılaştırıldığında ekstraksiyon süresini kısaltarak üretimi etkin bir şekilde artırır, enerji, su ve solvent kullanımını azaltır. Bu nedenlerle çevre dostudur. Bu çalışmada klasik ekstraksiyon ile 60°C'de 210 dakika süren toplam monomerik antosiyanin ekstraksiyonunun, ultrasonik ekstraksiyon ile %100 ultrason genliğinde 18 dakikaya kadar kısaltılabileceği tespit edilmiştir. Sonuç olarak, ultrasonik ekstraksiyon ile antosiyaninlerin konvansiyonel ekstraksiyona göre daha hızlı ve daha yüksek verimle elde edilebileceği tespit edilmiştir. **Teşekkür:** Bu çalışma Van YYÜ BAP Kordinasyon Birimi tarafından desteklenmiştir (FYL-2020-8831).

Anahtar Kelimeler: Antosiyanin, Ekstraksiyon, Fonksiyonel Gıda, *Rosa damascena* Miller., Ultrasonikasyon

ABSTRACT

Edible flowers, known as an important part of traditional cuisine and alternative medicine practices since ancient times, are used in food preparation to add flavor and aesthetic value. Edible flowers can play a direct role in the formation of a nutritious and healthy diet, thanks to their rich bioactive component content with antioxidant properties. *Rosa* × *damascena*, which is among the edible flowers and rich in various bioactive substances, especially anthocyanins, can be shown as a natural, new, safe, and inexpensive source for functional food. Anthocyanin pigments are responsible for the red and blue color of plant organs such as fruits, flowers, and petals, and they are one of the most important polyphenol

groups in roses. Anthocyanins play an important role in nutrition with their bioactive properties as well as determining the aesthetic value of food and beverages. It is known that anthocyanins, which have potential health benefits, reduce the risks of serious diseases such as cancer and obesity, and have antioxidant, anti-viral, anti-carcinogenic, anti-inflammatory, and anti-aging effects.

In this study, the total anthocyanin content of the petals of *Rosa × damascena* Miller plant grown in Van province was determined. In addition, petals were subjected to conventional extraction (20, 40 and 60°C temperature; 0.75%, 1% and 1.25% acidity level) and ultrasonic extraction (50, 75, 100 ultrasound amplitude). Ultrasonic extraction may provide several advantages like lower energy, water and solvent consumption, shorter time requirement and higher yield. Therefore, it is environmentally friendly process. In this study, it has been determined that the total monomeric anthocyanin extraction, which takes 210 minutes at 60°C with conventional extraction, can be shortened to 18 minutes at 100% ultrasound amplitude by ultrasonic extraction. As a result, it has been determined that anthocyanins by ultrasonic extraction can be extracted faster and more efficient than conventional extraction.

Acknowledgments: This study was supported by Van YYU Research Fund (FYL-2020-8831).

Keywords: Anthocyanin, Extraction, Functional Food, *Rosa damascena* Miller., Ultrasound

PEYNİR İZOLATI ÇEŞİTLİ LAKTOBASİLLERİN PROTEOLİTİK AKTİVİTELERİNİN, PROTEAZ GENLERİNİN BELİRLENMESİ VE PROTEOLİTİK AKTİVİTESİ EN YÜKSEK SUŞ İLE FERMENTE SÜT ÜRETİMİ VE TAKİBİ

DETERMINATION OF PROTEOLYTIC ACTIVITIES AND PROTEASE GENES OF VARIOUS
LACTOBACILLI, AND FERMENTED MILK PRODUCTION AND FOLLOW-UP WITH THE
STRAIN WITH THE HIGHEST PROTEOLYTIC ACTIVITY

Gıda Müh. Meryem Kübra SATILMIŞ¹

¹Selçuk Üniversitesi, Ziraat Fakültesi, Fen Bilimleri Enstitüsü Gıda Mühendisliği Anabilim Dalı,
Konya, TÜRKİYE.

¹ORCID ID: <https://orcid.org/0000-0001-8601-8524>

Prof. Dr. Nihat AKIN¹

¹Selçuk Üniversitesi, Ziraat Fakültesi, Gıda Mühendisliği Bölümü, Konya, TÜRKİYE.

¹ORCID ID: <https://orcid.org/0000-0002-0966-1126>

Dr. Arş. Gör. Talha DEMİRCİ¹

¹Selçuk Üniversitesi, Ziraat Fakültesi, Gıda Mühendisliği Bölümü, Konya, TÜRKİYE.

¹ORCID ID: <https://orcid.org/0000-0003-3664-3502>

Dr. Öğr. Üyesi Hale İnci ÖZTÜRK²

²Konya Gıda ve Tarım Üniversitesi, Mühendislik ve Mimarlık Fakültesi, Gıda Mühendisliği Bölümü,
Konya, TÜRKİYE.

²ORCID ID: <https://orcid.org/0000-0001-8334-0403>

ÖZET

Peynir ve diğer süt ve süt ürünlerinde laktik asit bakterileri baskın mikroflora olarak kabul edilmektedir. Peynir gibi olgunlaşması uzun süren süt ürünlerinin olgunlaşma süreci çok komplekstir ve bazı mikrobiyolojik ve biyokimyasal değişiklikleri içerir. Bu biyokimyasal değişikliklerden biri olan proteoliz, bu mikroorganizmaların başta peynir olmak üzere birçok süt ürününün üretimi ve olgunlaşmasında yapı ve doku gibi reolojik bir önemin yanında süt ürünlerinin tekstür ve aroma gelişiminden sorumlu proteolitik enzimlerin salınmasında temel organoleptik özellikler taşımaktadır. Buradan hareketle Orta Toroslar yöresinde geleneksel yöntemlerle üretilen deri tulum peynirlerinden izole edilen *Lactobacillus helveticus* 147 (%99), *Lactobacillus paracasei* RCM2 (%99), *Lactobacillus plantarum* AAHED-10 (%99), *Lactobacillus plantarum* CSCWL 6-9 (%99), *Lactobacillus plantarum* L14 (%99), *Lactobacillus plantarum* L21 (%99), *Lactobacillus plantarum* L795 (%99), *Lactobacillus rhamnosus* LRB (%99), olmak üzere 8 adet laktik asit bakterisinin hem kantitatif hem de kalitatif olarak proteolitik aktiviteleri araştırılmıştır. Süt endüstrisinde yerli kültür kullanımı konusunda yapılan çalışmalarda uygun starter veya ek kültür seçme konusunda fayda sağlaması amaçlanmıştır. İzolatların kalitatif olarak ekstraselüler proteolitik aktiviteleri petri üzerinde zon görünümüne bakılarak var-yok testi ile tespit edilmiştir. % 0.1 ve % 1 yağsız süt tozu içeren agarda 30 ila 37 °C sıcaklıklarda denemeler yapılmıştır. Elde edilen verilere göre; suşlar % 1 Skim Milk Agar (SMA) 37 °C'ta inkübasyona tabi tutulduğunda en iyi proteolitik aktivite sonuçlarına ulaşılmıştır. Bütün izolatların proteolitik aktiviteye sahip olduğu görülmüş fakat *L. helveticus* 147 suşu diğer izolatlara nazaran daha az zon görünümü vermiştir. *L. plantarum*'un CSCWL 6-9 ve L21 suşları kalitatif açıdan en yüksek proteolitik aktiviteye sahip olduğu bulunmuştur. Spektrofotometrik yöntemle laktobasillerin 3 farklı pH koşulu altında (pH 5.0, 6.5 ve 8.0) kantitatif analizi gerçekleştirilmiştir ve *L. plantarum* L14 cinsi pH 5 ve pH 6.5' ta sırasıyla 5,01 ve 4,83 U/mg değerlerinde olmak üzere en yüksek ekstraselüler proteolitik aktiviteyi göstermiştir. pH 8.0' de ise *L. paracasei* RCM2 suşu diğer izolatlara göre daha yüksek ekstraselüler

proteolitik aktivite göstermiştir. Ek olarak en yüksek proteolitik aktivite gösteren suş veya suşlarda polimeraz zincir reaksiyonu ile suşların proteaz enzim genlerinin tespiti yoluna gidilmiştir. Endüstriye katkısı açısından yağsız UHT süte % 2 aşılama yapıp fermente süt üretilerek depolama boyunca 1 ve 21. günlerdeki protein fraksiyon/parçalama derecelerine poliakrilamid jel elektroforezinde inceleme yapıp hangi protein üzerinde etkisi olduğuna bakılmıştır. *L. plantarum*'un CSCWL 6-9, L21 ve L795 suşlarının peynir teknolojisinde diğer starterlerle veya tek başına kültür olarak kullanımı planlanacaktır.

Anahtar Kelimeler: Laktik Asit Bakterisi, Proteolitik, PZR, Proteaz, SDS-Page, Starter Kültür.

ABSTRACT

Lactic acid bacteria are considered as the dominant microflora in cheese and other milk and dairy products. The maturation process of dairy products such as cheese, which takes a long time to mature, is very complex and includes some microbiological and biochemical changes. Proteolysis, one of these biochemical changes, has a rheological importance such as structure and texture in the production and maturation of many dairy products, especially cheese, of these microorganisms, as well as basic organoleptic properties in the release of proteolytic enzymes responsible for the texture and aroma development of cheese. From this point of view, the proteolytic activities of 8 lactic acid bacteria, namely *Lactobacillus helveticus* 147 (99%), *Lactobacillus paracasei* RCM2 (99%), *Lactobacillus plantarum* AAHED-10 (99%), *Lactobacillus plantarum* CSCWL 6-9 (99%), *Lactobacillus plantarum* L14 (99%), *Lactobacillus plantarum* L21 (99%), *Lactobacillus plantarum* L795 (99%), *Lactobacillus rhamnosus* LRB (99%) isolated from leather tulum cheeses produced with traditional methods in the Central Taurus region, were investigated both quantitatively and qualitatively. In the studies on the use of indigenous cultures in the dairy industry, it is aimed to provide benefit in choosing the appropriate starter or additional culture. Qualitative extracellular proteolytic activities of the isolates were determined by the presence-absent test by looking at the zone appearances on the petri dish. Trials were made on agar containing 0.1% and 1% skimmed milk powder at temperatures between 30 and 37 °C. According to the data obtained; the best proteolytic activity results were obtained when the strains were incubated with 1% Skim Milk Agar (SMA) at 37 °C. All isolates were found to have proteolytic activity, but *L. helveticus* 147 strain gave less zone appearance compared to other isolates. CSCWL 6-9 and L21 strains of *L. plantarum* were found to have the highest qualitative proteolytic activity. Quantitative analysis of lactobacilli under 3 different pH conditions (pH 5.0, 6.5 and 8.0) was performed by spectrophotometric method. *L. plantarum* L14 strain exhibited the highest extracellular proteolytic activity at pH 5 and pH 6.5 at 5.01 and 4.83 U/mg, respectively. At pH 8.0, *L. paracasei* RCM2 strain showed higher extracellular proteolytic activity with 4.70 values compared to other isolates. In addition, the protease enzyme genes of the strains were determined by polymerase chain reaction in the strain or strains with the highest proteolytic activity. In terms of its contribution to the industry, 2% inoculation is made to skimmed UHT milk and fermented milk is produced, and the protein fraction/fragmentation degrees on the 1st and 21st days during storage were examined in polyacrylamide gel electrophoresis and the effect on which protein was examined. CSCWL 6-9, L21 and L795 strains of *L. plantarum* will be planned to be used in cheese technology with other starters or as a alone culture.

Keywords: Lactic Acid Bacteria, Proteolytic, PCR, Protease, SDS-Page, Starter Culture

**TREATMENT WITH IVERMECTIN AND VITAMINS OF RABBITS INFESTED WITH
*Sarcoptes scabiei***

**SARCOPTES SCABEI İLE ENFESTE TAVŞANLARIN İVERMEKTİN VE VİTAMİNLERLE
TEDAVİSİ**

Nergis ULAŞ

*Assistant Professor, Atatürk University, Faculty of Veterinary Medicine, Department of Internal
Medicine, Yakutiye, Erzurum*

ORCID ID: 0000-0003-2340-6882

Hüseyin ALTIN

Undergraduate Student, Faculty of Veterinary Medicine, Yakutiye, Erzurum

Başak HANEDAN

*Associate Professor, Atatürk University, Faculty of Veterinary Medicine, Department of Internal
Medicine, Yakutiye, Erzurum*

ORCID ID: 0000-0003-3873-0124

Rıdvan KİRMAN

*Assistant Professor, Atatürk University, Faculty of Veterinary Medicine, Department of Parasitology,
Yakutiye, Erzurum*

ORCID ID: 0000-0001-5437-089X

ABSTRACT

Two crossbred rabbits housed in Atatürk University Botanical Parks and Gardens were brought to Atatürk University Veterinary Faculty Animal Hospital for examination due to skin problems. In the anamnesis, it was learned that 34 rabbits were housed together and 14 of them had skin lesions. Keratinized rashes and sores due to irritation were detected on the lateral and medial parts of the face and feet of 2 infested rabbits. It was determined that the rabbits had itching, weight loss, and hair loss on most of their faces. Skin scraping samples were taken from the lesioned areas of the rabbits with a scalpel in petri dishes and sent to the laboratory of the Department of Parasitology, Faculty of Veterinary Medicine. The scraping samples were treated with 10% KOH solution and examined under a light microscope for the presence of mange. As a result of the parasitic examination, it was determined that the rabbits were infested with *Sarcoptes scabiei*. For the treatment of rabbits diagnosed with scabies, ivermectin was administered as an antiparasitic drug at a dose of 0.2 mg/kg by subcutaneous injection biweekly, in total two times. In order to ensure skin integrity and body resistance, vitamins A, D3, E were administered once by subcutaneous injection at a dose of 0.1 mg/kg. After two weeks, it was determined that the lesions regressed, the wounds were closed, the shed hairs were replaced and their appetite improved. After three weeks, there was a full recovery. The efficacy of the treatment was evaluated by taking the scraping samples again with a scalpel, examining them under the microscope and checking whether the clinical findings continued. As a result, it has been observed that ivermectin application as an antiparasitic in the treatment of rabbits with scabies, and vitamins A, D3, E can be effective for ensuring skin integrity and hair growth.

Key words: ivermectin, *Sarcoptes scabiei*, rabbit.

ÖZET

Atatürk Üniversitesi Botanik Park ve Bahçeleri'nde barındırılan melez iki adet tavşan, deri problemleri nedeniyle Atatürk Üniversitesi Veteriner Fakültesi Hayvan Hastanesi'ne muayene için getirildi.

Anamnezde 34 adet tavşanın birlikte barındırıldığı ve bunların 14 tanesinde deri lezyonlarının var olduğu öğrenildi. Enfeste 2 tavşanın yüzünün lateral ve medial kısımlarında, ayaklarında keratinize döküntüler ve irritasyona bağlı yaraların varlığı saptandı, tavşanlarda kaşıntı, kilo kaybı olduğu ve yüzlerinin büyük bir kısmında kıl dökülmesi olduğu belirlendi. Tavşanların lezyonlu bölgelerinden bistüri ile derin deri kazıntısı örneği alınarak petri kabı içerisinde Veteriner Fakültesi Parazitoloji Anabilim Dalı laboratuvarında gönderildi. Kazıntı örnekleri %10'luk KOH solüsyonu ile muamele edilerek paraziter etkenlerin varlığı yönünden ışık mikroskobu altında incelendi. Paraziter muayene sonucunda tavşanların *Sarcoptes scabiei* ile infeste oldukları tespit edildi. Uyuz teşhisi konulan tavşanların tedavisi için antiparaziter ilaç olarak ivermektin 0.2 mg/kg dozda derialtı enjeksiyon ile iki haftada bir olacak şekilde iki kez uygulandı. Deri bütünlüğünün ve vücut direncinin sağlanması için A, D3, E vitamini 0.1 mg/kg dozda derialtı enjeksiyon ile bir kez olacak şekilde yapıldı. İki hafta sonrasında lezyonların gerilediği, yaraların kapandığı, dökülen tüylerin yerine geldiği ve iştahlarının düzeldiği, üç hafta sonrasında ise tam iyileşme olduğu belirlendi. Tedavinin etkinliği kazıntı örneklerinin bistüri ile tekrar alınarak mikroskop altında incelenmesi ve klinik bulguların devam edip etmediği kontrol edilerek değerlendirildi. Sonuç olarak uyuz hastalığı olan tavşanların tedavisinde antiparaziter olarak ivermektin uygulamasının, deri bütünlüğünün ve kıl gelişiminin sağlanması için ise A, D3, E vitamininin etkili olabileceği gözlemlenmiştir.

Anahtar kelimeler: ivermektin, *Sarcoptes scabiei*, tavşan

FARKLI YÖNTEMLERLE YETİŞTİRİLEN NATUREL, KAVRULMUŞ FINDIK VE ZARLARININ KLOROFİL DÜZEYLERİNİN BELİRLENMESİ

DETERMINATION OF CHLOROPHYLL LEVELS OF NATURAL, ROASTED HAZELNUTS AND THEIR SKINS GROWN BY DIFFERENT METHODS

Hasan KARAOSMANOĞLU

Giresun Üniversitesi Teknik Bilimler Meslek Yüksekokulu Fındık Ekspertiği Bölümü

ORCID NO: 0000-0002-4652-9861

ÖZET

Tüketicilerin, organik gıdaların daha sağlıklı, besleyici olduğunu düşünmeleri ve beslenme-sağlık ilişkisindeki farkındalığın artmasına bağlı olarak tüm organik gıdalarda olduğu gibi organik fındığa olan talepte son yıllarda artış trendindedir. Ancak organik fındıkların besin kompozisyonuyla ilgili sınırlı bilgiler vardır. Bu çalışmanın amacı organik ve konvansiyonel yöntemlerle yetiştirilen Prime Kalite (Giresun Kalite- Tömbül) natürel, kavrulmuş fındık ve zarlarının klorofil a, klorofil b ve toplam klorofil miktarlarını belirlemektir. Çalışma materyali olan organik fındıklar Giresun ili Keşap ilçesindeki (Türkiye) organik tarım sertifikasına sahip üreticilerden, konvansiyonel örnekler ise yakın bahçelerden temin edilmiştir. Natürel fındıkların yanı sıra altı farklı proses koşulunda (130 °C- 15 dk., 130 °C- 30 dk., 145 °C- 15 dk., 145 °C- 30 dk., 160 °C- 15 dk., 160 °C- 30dk.) kavrulmuş fındıklar incelenmiştir. Fındık zarları, endüstride sıklıkla kullanılan proses koşullarında (145 °C 30 dk) elde edilmiştir. Çalışma sonuçlarına göre organik ve konvansiyonel natürel fındıkların klorofil a (9.20, 12.27 mg/kg, organik ve konvansiyonel sırasıyla) klorofil b (15.94, 21.25 mg/kg, organik ve konvansiyonel sırasıyla) ve toplam klorofil miktarları (25.14, 33.52 mg/kg, organik ve konvansiyonel sırasıyla) arasında istatistiksel olarak farklılık görülmemiştir. Benzer şekilde farklı proses koşullarında fındıkların klorofil miktarlarında geniş bir varyasyon gözlenmesine rağmen anlamlı bir farklılık tespit edilmemiştir. Ancak organik fındık zarlarının (169.95 mg/kg) konvansiyonellere (78.79 mg/kg) kıyasla iki kattan fazla toplam klorofile sahip olduğu tespit edilmiştir. Ayrıca üretim sisteminden bağımsız olarak zarda meyveye göre yaklaşık dört kat fazla klorofil belirlenmiştir. Sonuç olarak üretim yöntemi ve proses koşullarının fındıkların klorofil miktarları üzerine etkisinin olmadığı ve zarın fındık içine göre çok daha zengin klorofil kaynağı olduğu görülmüştür. İşlenmiş organik gıda formülasyonlarına katılacak bileşenlerin de organik olması gerektiği düşünüldüğünde organik fındık zarlarının organik gıda katkı maddesi olarak yüksek kullanım potansiyeli vardır.

Anahtar Kelimeler: Organik Gıda, Organik Fındık, Konvansiyonel Tarım, Klorofil, Giresun Kalite

ABSTRACT

As with all organic foods, the demand for organic hazelnuts has been on the rise in recent years due to consumers' thinking that organic foods are healthier and more nutritious and the awareness of the nutrition-health relationship has increased. However, there is limited information about the nutritional composition of organic hazelnuts. The aim of this study is to determine the chlorophyll a, chlorophyll b and total chlorophyll amounts of Prime Quality (Giresun Quality-Tömbül) natural, roasted hazelnuts and their skins grown by organic and conventional methods. Organic hazelnuts, which are the study material, were obtained from producers with organic agriculture certificate in the Keşap district of Giresun province (Turkey), and conventional samples were obtained from nearby gardens. In addition to natural hazelnuts, in six different process conditions (130 °C - 15 min., 130 °C - 30 min., 145 °C - 15 min., 145 °C - 30 min., 160 °C - 15 min., 160 °C-30 min.) roasted hazelnuts were examined. Hazelnut skins were obtained under the process conditions frequently used in industry (145 °C 30 min). According to the results of the study, there was no statistical difference between the chlorophyll a (9.20, 12.27 mg/kg, organic and conventional, respectively), chlorophyll b (15.94, 21.25 mg/kg, organic and conventional, respectively) and total chlorophyll (25.14, 33.52 mg/kg, organic and conventional,

respectively) amounts of organic and conventional natural hazelnuts. Similarly, although a wide variation was observed in the amount of chlorophyll in hazelnuts under different processing conditions, no significant difference was detected. However, organic hazelnut skins (169.95 mg/kg) were found to have more than twice the total chlorophyll compared to conventional ones (78.79 mg/kg). In addition, regardless of the production system, approximately four times more chlorophyll was determined in the skin than in the fruit. As a result, it has been observed that the production method and process conditions have no effect on the chlorophyll amounts of hazelnuts and the skin is a much richer source of chlorophyll than the hazelnut kernel. Considering that the ingredients to be added to processed organic food formulations should also be organic, organic hazelnut skins have a high potential for use as organic food additives.

Key Words: Organic Food, Organic Hazelnut, Conventional Agriculture, Chlorophyll, Giresun Quality

SALİSİLİK ASİT ÖN UYGULAMALARINA TABİ TUTULMUŞ ÇEMEN (*TRIGONELLA FOENUM-GRAECUM* L.) TOHUMLARINDA BOR DOZLARININ ÇİMLENME ÖZELLİKLERİ ÜZERİNE ETKİSİ

THE EFFECT OF BORON DOSES ON GERMINATION PROPERTIES IN FENUGREEK (*TRIGONELLA FOENUM-GRAECUM* L.) SEEDS SUBJECTED TO SALICYLIC ACID PRETREATMENTS

Tülay TOPRAK

Doktora Öğrencisi, Van Yüzüncü Yıl Üniversitesi Fen Bilimleri Enstitüsü Tarla Bitkileri Anabilim Dalı

ORCID ID: <https://orcid.org/0000-0002-5576-2526>

Rüveyde TUNÇTÜRK

Prof. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: <https://orcid.org/0000-0002-3759-8232>

Murat TUNÇTÜRK

Prof. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: <https://orcid.org/0000-0002-7995-0599>

Lütfi NOHUTÇU

Araş Gör., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: <https://orcid.org/0000-0003-2250-2645>

Ezelhan ŞELEM

Öğr. Gör., Van Yüzüncü Yıl Üniversitesi, Muradiye Meslek Yüksekokulu, Park ve Bahçe Bitkileri Bölümü

ORCID ID: <https://orcid.org/0000-0003-4227-5013>

ÖZET

Çemen (*Trigonella foenum-graecum* L.), Leguminosae familyasına ait, 30-60 cm arasında boylanan tek yıllık bir baklagil bitkisidir. Eski çağlardan beri insanlar arasında; yiyecek, ilaç ve hayvan yemi olarak kullanılan çemenin anavatanı Güney Avrupa ve Batı Asya'dır. En önemli endüstri ve ihracat ürünlerinden bir tanesi olan çemen (*Trigonella foenum-graecum* L.), baharat ve pastırma üretiminde çeşni olarak kullanılmaktadır. Bor (B), vejetatif ve generatif bitki gelişimi üzerinde etkili olan bitkinin metabolik faaliyetlerinin devamlılığını sağlayan mikro besin elementi sınıfında yer almaktadır. Ancak bor elementinin bitki metabolizması üzerindeki rolü tam olarak ortaya konulamamasına rağmen yeterli seviyede alınmaması veya bitkinin aşırı doza maruz kalması sonucu çeşitli metabolik bozukluklar ortaya çıkmaktadır. Bu çalışma salisilik asit ön uygulamalarına tabi tutulmuş çemen (*Trigonella foenum-graecum* L.), tohumlarında bor dozlarının çimlenme özellikleri üzerine etkisini belirlemek amacıyla 2021 yılında yürütülmüştür. Tarımsal üretimde tohumun çimlenme özelliklerini sınırlandıran önemli faktörlerden biri bor toksisitesidir. Salisilik asit gibi büyüme düzenleyicileri bor (B) stresinin olumsuz etkilerini azaltmada büyük önem taşımaktadır. Bu araştırma, Tesadüf Parselleri Deneme Deseni' ne göre, faktöriyel düzende 4 tekrarlamalı olarak kurulmuştur. Çalışmada, 4 farklı salisilik asit (0, 0.1, 0.2 ve 0.4 mM) ve 4 farklı bor dozu (0, 1.0, 2.0 ve 4.0 mg/L) kullanılarak 4 tekerrürlü olarak yürütülmüştür. Çalışmada tohumların çimlenme gücü (%), çimlenme hızı (%), ortalama çimlenme süresi (gün), hassaslık indeksi (%), tohum vigor indeksi I ve II, kök uzunluğu (cm), gövde uzunluğu (cm), kök yaş ağırlığı (g), gövde yaş ağırlığı (g), kök kuru ağırlığı (g) ve gövde kuru ağırlığı (g) incelenmiştir. Çalışmada, salisilik asit uygulamaları kontrol ile kıyaslandığında; gövde uzunluğu, gövde yaş ve kuru

ağırlığı, hassaslık indeksi ve tohum vigor indeksi-I gibi parametreler üzerinde artışlar sağlarken, çimlenme gücü, hızı ve ortalama çimlenme gücü üzerinde önemli bir etkisi olmamıştır. Bor uygulamalarının etkisi, büyüme özellikleri ve ortalama çimlenme süresi, hassaslık indeksi ve tohum vigor indeksi I-II gibi parametreler üzerinde kontrole kıyasla arttırıcı yönde olmuştur. Salisilik asit uygulamalarının çimlenme özellikleri üzerinde olumlu etkide bulunduğu, artan seviyelerde bor uygulamalarının ise toksik sınıra ulaşmadığı ve kontrol ile kıyaslandığında genel olarak artışlara neden olduğu tespit edilmiştir.

Anahtar Kelimeler: Bor, çimlenme, salisilik asit, *Trigonella foenum-graecum* L.

ABSTRACT

Fenugreek (*Trigonella foenum-graecum* L.) is an annual legume plant belonging to the Leguminosae family, growing between 30-60 cm. Among people since ancient times; The homeland of fenugreek, which is used as food, medicine and animal feed, is Southern Europe and Western Asia. Fenugreek (*Trigonella foenum-graecum* L.), one of the most important industrial and export products, is used as a condiment in the production of spices and pastrami. Boron (B) is in the class of micronutrients that ensure the continuity of the metabolic activities of the plant, which is effective on vegetative and generative plant growth. However, although the role of boron element on plant metabolism has not been fully revealed, various metabolic disorders occur as a result of insufficient intake or exposure of the plant to excessive doses. This study was carried out in 2021 to determine the effects of boron doses on germination properties of fenugreek (*Trigonella foenum-graecum* L.) seeds that were pretreated with salicylic acid. Boron toxicity is one of the important factors limiting the germination properties of seeds in agricultural production. Growth regulators such as salicylic acid are of great importance in reducing the negative effects of boron (B) stress. This research was established according to the Randomized Plots Trial Design, in factorial order with 4 replications. The study was carried out in 4 replications using 4 different salicylic acids (0, 0.1, 0.2 and 0.4 mM) and 4 different boron doses (0, 1.0, 2.0 and 4.0 mg/L). In the study, germination power (%), germination rate (%), average germination time (days), sensitivity index (%), seed vigor index I and II, root length (cm), stem length (cm), root fresh weight (g), stem wet weight (g), root dry weight (g) and stem dry weight (g) were examined. In the study, when salicylic acid applications were compared with the control; while it increased on parameters such as stem length, stem fresh and dry weight, tenderness index and seed vigor index-I, it did not have a significant effect on germination power, speed and average germination power. The effect of boron applications was enhanced on parameters such as growth characteristics and mean germination time, susceptibility index and seed vigor index I-II compared to control. It has been determined that salicylic acid applications have a positive effect on germination properties, while boron applications at increasing levels do not reach the toxic limit and cause increases in general when compared to control.

Keywords: Boron, germination, salicylic acid, *Trigonella foenum-graecum* L.

**SALİSİLİK ASİT ÖN UYGULAMALARINA TABİ TUTULMUŞ *GALEGA OFFİCİNALİS* L.
(KEÇİSEDEFİ) TOHURLARINDA BOR DOZLARININ ÇİMLENME ÖZELLİKLERİ
ÜZERİNE ETKİSİ**

THE EFFECT OF BORON DOSES ON GERMINATION PROPERTIES OF *GALEGA
OFFİCİNALİS* L. (GOAT SEED) SEEDS SUBJECTED TO SALICYLIC ACID PRE-
APPLICATION

Rüveyde TUNÇTÜRK

Prof. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: <https://orcid.org/0000-0002-3759-8232>

Tülay TOPRAK

Doktora Öğrencisi, Van Yüzüncü Yıl Üniversitesi Fen Bilimleri Enstitüsü Tarla Bitkileri Anabilim
Dalı

ORCID ID: <https://orcid.org/0000-0002-5576-2526>

Murat TUNÇTÜRK

Prof. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: <https://orcid.org/0000-0002-7995-0599>

Ezelhan ŞELEM

Öğr. Gör., Van Yüzüncü Yıl Üniversitesi, Muradiye Meslek Yüksekokulu, Park ve Bahçe Bitkileri
Bölümü

ORCID ID: <https://orcid.org/0000-0003-4227-5013>

Lütfi NOHUTÇU

Araş Gör., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü,

ORCID ID: <https://orcid.org/0000-0003-2250-2645>

ÖZET

Yaygın olarak kullanılan tıbbi ve aromatik bir bitki olan *Galega officinalis*, Fabaceae familyasına ait bir bitkidir. Anavatanı Güney Avrupa ve Batı Asya' dır. *Galega officinalis* böbrek hastalıklarında ve diyabet tedavisinde kullanılmaktadır. Ayrıca güçlü bir antioksidan kaynağı olarak bilinmektedir. Bor; bitkiler için mutlak gerekli mikro elementlerden bir tanesidir. Bor, bitkiler tarafından borik asit (H_3BO_3) veya borat anyonu $B(OH)_4^-$ formunda alınarak, ksilemden yapraklara doğru taşınır. Bor (B) elementi özellikle, kurak ve yarı kurak alanlarda toksik seviyelerde bulunur. Bor miktarının yüksek olduğu topraklarda yetişen bitkiler de bor toksisitesinden kaynaklanan bitki köklerinin, sürgünlerin ve stoma iletkenliğinin azalması, klorofil içeriği ve fotosentez aktivitesinin azalması, hücre zarının geçirgenliğinin azalması ve bitki savunma sisteminde değişikliklerin oluşması gibi durumlar görülmektedir. Bu çalışma salisilik asit ön uygulamalarına tabi tutulmuş *Galega officinalis* (Keçisedefi), tohumlarında bor dozlarının çimlenme özellikleri üzerine etkisini belirlemek amacıyla 2021 yılında yürütülmüştür. Tarımsal üretimde tohumun çimlenme özelliklerini sınırlandıran önemli faktörlerden biri bor toksisitesidir. Salisilik asit gibi büyüme düzenleyicileri bor (B) stresinin olumsuz etkilerini azaltmada büyük önem taşımaktadır. Bu araştırma, Tesadüf Parselleri Deneme Deseni' ne göre, faktöriyel düzende 4 tekrarlamalı olarak kurulmuş ve 4 farklı Salisilik Asit (0, 0.1, 0.2 ve 0.4 mM) ve Bor dozu (0, 1.0, 2.0 ve 4.0 mg/L) kullanılmıştır. Çalışmada tohumların çimlenme gücü (%), çimlenme hızı (%), ortalama çimlenme süresi (gün), hassaslık indeksi (%), tohum vigor indeksi I ve II, kök uzunluğu (cm), gövde uzunluğu (cm), kök yaş ağırlığı (g), gövde yaş ağırlığı (g), kök kuru ağırlığı (g) ve gövde kuru ağırlığı (g) incelenmiştir. Çalışma sonucunda; BxSA interaksiyonunun çimlenme

özellikleri üzerinde istatistiksel olarak önemli etkide bulunduğu, salisilik asit uygulamaları kontrol ile karşılaştırıldığında *Galega officinalis*' in çoğu çimlenme parametreleri üzerinde olumlu ve önemli etkisinin olduğu belirlenirken, bor dozlarının toksik sınıra ulaşmadığı ve artan dozlar ile çimlenme özelliklerinin genel olarak iyileşme eğiliminde olduğu tespit edilmiştir.

Anahtar Kelimeler: Bor, Çimlenme, *Galega officinalis*, Salisilik asit

ABSTRACT

Galega officinalis, a widely used medicinal and aromatic plant, is a plant belonging to the Fabaceae family. Its homeland is Southern Europe and Western Asia. *Galega officinalis* is used in kidney diseases and in the treatment of diabetes. It is also known as a powerful source of antioxidants. Boron; It is one of the essential microelements for plants. Boron is taken by plants in the form of boric acid (H_3BO_3) or the borate anion $B(OH)_4^-$ and is transported from the xylem to the leaves. Boron (B) element is found at toxic levels especially in arid and semi-arid areas. In plants grown in soils with high boron content, conditions such as decreased conductivity of roots, shoots and stomata caused by boron toxicity, decreased chlorophyll content and photosynthesis activity, decreased cell membrane permeability and changes in the plant defense system are observed. This study was carried out in 2021 to determine the effect of boron doses on germination properties of seeds of *Galega officinalis* (Goat Seed) which were subjected to salicylic acid pretreatments. Boron toxicity is one of the important factors limiting the germination properties of seeds in agricultural production. Growth regulators such as salicylic acid are of great importance in reducing the negative effects of boron (B) stress. The experiment was set up in factorial order with 4 replications according to the Randomized Plots Trial Design. In the study where 4 different Salicylic Acid (0, 0.1, 0.2 and 0.4 mM) and Boron dose (0, 1.0, 2.0 and 4.0 mg/L) were used, germination power (%), germination rate (%), average germination time (days) of seeds were determined.), tenderness index (%), seed vigor index I and II, root length (cm), stem length (cm), root fresh weight (g), stem fresh weight (g), root dry weight (g) and stem dry weight (g) was examined. As a result; It was determined that the BxSA interaction had a statistically significant effect on the germination properties, when salicylic acid applications were compared with the control, it was determined that *Galega officinalis* had a positive and significant effect on most germination parameters, while boron doses did not reach the toxic limit and the germination properties tended to improve with increasing doses.

Keywords: Boron, *Galega officinalis*, Germination, Salicylic acid

ÇEŞİTLİ TAHİL BİTKİLERİNDEN İZOLE EDİLEN ENDOFİT BAKTERİLERİN, BİTKİ PATOJENİ OLAN *ERWINIA AMYLOVORA* (EA) VE *CLAVIBACTER MICHIGANENSIS* SUBSP. *MICHIGANENSIS* (CMM) BAKTERİLERİNE KARŞI ANTİBAKTERİYEL ETKİLERİNİN *IN VİTRO* KOŞULLARDA İNCELENMESİ

IN VITRO ANTIBACTERIAL EFFECT OF SEVERAL ENDOPHYTIC BACTERIA ISOLATED FROM VARIOUS CEREAL PLANTS AGAINST *ERWINIA AMYLOVORA* (EA) AND *CLAVIBACTER MICHIGANENSIS* SUBSP. *MICHIGANENSIS* (CMM) PLANT PATHOGENS

Dilek Özcan YARDIM¹

^{1,2} Van Yüzüncü Yıl University, Faculty of Agriculture, Agricultural Biotechnology Department, 65080, Van/TURKEY

¹ORCID ID: <https://orcid.org/0000-0002-0356-2936>

Bilgin TAŞKIN²

² Van Yüzüncü Yıl University, Faculty of Agriculture, Agricultural Biotechnology Department, 65080, Van/TURKEY

²ORCID ID: <https://orcid.org/0000-0002-9772-7438>

ÖZET

Sağlıklı bitkilerin dokularında yaşam döngülerinin tamamını veya bir kısmını geçiren mikroorganizmalar olarak tanımlanan endofitler, antibiyotikler, antifungaller gibi antimikrobiyal bileşikler dahil olmak üzere biyoteknolojik öneme sahip ikincil metabolitler için yeni ve değerli birer kaynaktırlar. Bu çalışmada; Van ili sınırları içerisinde toplanan bazı kültüre alınmış ve yabancı tahıl bitkilerinin (Poaceae familyası) sağlıklı kök, gövde ve yaprak örneklerinden tritürasyon tekniği kullanılarak izole edilmiş endofit bakteri izolatlarının, bitki patojeni bakterilerden *Erwinia amylovora* (Ea) ve *Clavibacter michiganensis* subsp. *michiganensis* (Cmm)'e karşı *in vitro* koşullardaki antimikrobiyal etkileri araştırılmıştır. Endofitik izolatların antibakteriyel etkisinin değerlendirilmesi için, spektrofotometrik yöntemle hücre konsantrasyonları belirlenen patojen bakteri süspansiyonları agar yüzeyine 10^6 cfu olacak şekilde yayılmıştır. Daha sonra endofit bakteri izolatların saf kültürleri, birbirine eşit uzaklıkta, nokta ekim yöntemiyle bu katı ortam üzerine inoküle edilmiştir. Petriler 72 saat 25 °C'de inkübe edilerek inhibisyon zonları ölçülmüştür. Tüm deneyler üç tekerrür olarak yapılmıştır. Endofit kolonilerin etrafındaki şeffaf bir zonun varlığı, test edilen izolatın ilgili patojen üzerinde antibakteriyel etkiye sahip olduğu şeklinde yorumlanmıştır. Test edilen 24 endofit izolat Ea'ya karşı herhangi bir antibakteriyel etki göstermezken, G119Y2T, G56Y1, G33Y3, G6Y2 ve G15S1 kodlu izolatların Cmm'ye karşı önemli inhibitör etkilere sahip olduğu görülmüştür.

Anahtar Kelimeler: Endofitik Bakteriler, Antibakteriyel Etki, Bitki Patojenleri

ABSTRACT

Endophytes, the microorganisms that live the whole or part of their life cycle in the tissues of healthy plants, provide a new and valuable source for biotechnologically important secondary metabolites including antimicrobial compounds such as antibiotics and antifungals. In this study, the ability of several endophyte bacterial isolates, which had been previously isolated from healthy root, stem and leaf samples using the trituration technique to ensure effective surface sterilization of the plant tissues from some cultivated and wild grain plants (Poaceae family) in Van, were investigated in terms of their inhibitory potential on growing of plant pathogenic bacteria *Erwinia amylovora* (Ea) and *Clavibacter michiganensis* subsp. *michiganensis* (Cmm) in vitro conditions. For evaluation of antibacterial effect of endophytic isolates, pathogenic cell suspensions were prepared with the spectrophotometric method and the final bacterial cell concentration applied on the agar surface was approximated to 10^6 CFU. Then,



the pure cultures of the endophytic isolates were inoculated onto solid media by three isolated droplets. The plates were incubated for 72 h at 25 °C, and the inhibition zones were measured. All experiments were done in three replicates. The presence of a clear zone around the endophyte colonies was considered as inhibition of pathogens by these isolates. While no effect was observed against Ea among the 24 tested endophyte isolates, significant inhibitory effects of G119Y2T, G56Y1, G33Y3, G6Y2 and G15S1 coded isolates against Cmm were demonstrated.

Keywords: Endophytic Bacteria, Antibacterial Effect, Plant Patogens

MİKROBİYAL NANOPARTİKÜLLER VE GIDA UYGULAMALARI MICROBIAL NANOPARTICLES AND FOOD APPLICATIONS

Özgül YAZAR¹

¹*Tokat Gaziosmanpaşa Üniversitesi Mühendislik ve Mimarlık Fakültesi Gıda Mühendisliği Bölümü,
Tokat, Türkiye*

ORCID ID: <https://orcid.org/0000-0001-5154-3193>

Ahmet AÇIK²

²*Başak Ekolojik Ürünler Kontrol ve Sertifikasyon Hizmetleri Limited Şirketi, İzmir, Türkiye*

ORCID ID: <https://orcid.org/0000-0002-5140-5230>

Mehmet TOKATLI³

³*Tokat Gaziosmanpaşa Üniversitesi Mühendislik ve Mimarlık Fakültesi Gıda Mühendisliği Bölümü,
Tokat, Türkiye*

ORCID ID: <https://orcid.org/0000-0001-6264-9102>

ÖZET

Nanoteknoloji, boyut olarak yaklaşık 1-100 nm arasındaki parçacıkların yapısal sentezi, üretim stratejisi ve manipülasyonu ile ilgilenen bir araştırma alanıdır. Nanopartikül ise doğal ya da sentetik yapıdaki polimerlerle hazırlanan, boyutları 10-100 nm arasında değişen, hazırlama yöntemine göre nanoküre veya nanokapsül olarak adlandırılan ve etkin maddenin partikül içinde çözündürüldüğü, hapsedildiği veya yüzeye absorbe edildiği ya da bağlandığı matriks sistemlerdir. Nanopartiküller; karbon bazlı, metal bazlı ve yarı iletken bazlı nanopartiküller olmak üzere sınıflandırılmaktadır. Nanoteknoloji ve nanopartiküller; sağlık, kozmetik, biyomedikal, gıda ve tarım, çevre, mekanik gibi birçok alanda uygulanmaktadır. Nanopartiküller; kimyasal, fiziksel ve biyolojik yöntemler ile sentezlenebilmektedir. Fiziksel ve kimyasal yöntemler; daha yüksek üretim oranı ve daha iyi kontrol mekanizmasına sahip olmasına rağmen, yüksek maliyet ve enerji gereklilikleri ve tehlikeli atıkların üretiminden dolayı elverişsiz olarak görülmektedir. Bu nedenle, nanopartiküllerin sentezi için çevresel açıdan güvenli, ekonomik ve biyolojik olarak uyumlu olan biyolojik yöntemlere ilgi artmıştır. Nanofabrikalar olarak adlandırılan mikroorganizmalar; hızlı büyüme oranları, pH, basınç ve metal içeren ortamlara uyum yeteneklerinin yüksek olması vb. sebeplerden dolayı hücre içi veya hücre dışı olmak üzere nanopartikül sentezinde sıklıkla tercih edilmektedir. Günümüzde özellikle gıda alanında uygulamaları olan nanoteknoloji; mikroorganizmaların enzimatik aktiviteleri aracılığıyla metal iyonlarını temel forma dönüştürülerek nanopartikül üretmekte ve nanogıdalar elde edilmektedir. Nanopartiküller gıda endüstrisinde temel olarak; gıda işleme ve fonksiyonlarının geliştirilmesinde, patojen tespitinde ve gıda güvenliğinin artırılmasında, ürün kalitesi ve raf ömrünün artırılması gibi amaçlar için kullanılmaktadır. Gıda endüstrisinde; biyolojik bozulma karşıtı (antimikrobiyaller vb.), koruyucu kimyasal bileşenler (antioksidanlar vb.), nanosensörler (patojen tespiti vb.), fiziksel özelliklerin geliştirilmesi (renk korunması vb.), paketleme (yenilebilir ambalajlar vb.) ve nanokapsülleme gibi birçok alanda tercih edilmekte ve kullanımı ile avantaj sağlamaktadır. Bu kullanımlar birçok avantaj sağlamanın yanı sıra, nanoteknoloji ile üretilen gıda ürünlerinin güvenilirliğine dair bilgi birikiminin eksikliği, uzun süreli etkisinin tahmin edilememesi ve paketleme malzemelerinde kullanılan nanomalzemelerin oluşturabileceği sağlık problemleri gibi etmenler dezavantaj oluşturmaktadır.

Anahtar Kelimeler: Nanoteknoloji, Nanopartikül Sentezi, Mikrobiyal Nanoteknoloji, Gıda Uygulamaları

ABSTRACT

Nanotechnology is the field of research that deals with the synthesis, strategy and manipulation of the structure of particles between about 1-100 nm in size. Nanoparticles are matrix systems prepared with polymers of natural or synthetic nature, whose sizes vary between 10-100 nm, called nanospheres or nanocapsules according to the preparation method, and where the active substance is dissolved in the particle, trapped or absorbed or attached to the surface. Nanoparticles; it is classified as carbon-based, metal-based and semiconductor-based nanoparticles. Nanotechnology and nanoparticles; it is applied in many fields such as health, cosmetics, biomedical, food and agriculture, environment, mechanics. Nanoparticles; it can be synthesized by chemical, physical and biological methods. Although physical and chemical methods which has a higher production rate and better control mechanism, it is seen as unfavourable due to its high cost and energy requirements and the generation of hazardous wastes. Therefore, there has been increased interest in biological methods for the synthesis of nanoparticles that are environmentally safe, economical, and biocompatible. Microorganisms called nanofactories; rapid growth rates, high ability to adapt to pH, pressure and metal-containing environments, etc. It is often preferred in nanoparticle synthesis, either intracellular or extracellular, for many reasons. Today, this nanotechnology, which has applications especially in food fields; It produces nanoparticles by converting metal ions into basic form through the enzymatic activities of microorganisms and nanofoods are obtained. Nanoparticles are basically in the food industry; it is used for purposes such as improving food processing and functions, detecting pathogens and increasing food safety, increasing product quality and shelf life. In the food industry; it is preferred in many areas such as anti-biological degradation (antimicrobials, etc.), protective chemical components (antioxidants, etc.), nanosensors (pathogen detection, etc.), improvement of physical properties (colour preservation, etc.), packaging (edible packaging, etc.) and nanoencapsulation. While these uses provide many advantages, factors such as the lack of knowledge about the safety of food products produced with nanotechnology, the long-term effects of unpredictability and the health problems that may be caused by nanomaterials used in packaging materials are disadvantages.

Keywords: Nanotechnology, Nanoparticle Synthesis, Microbial Nanotechnology, Food Applications

THE IMPACT OF HEAD OF INTERNAL AUDIT GENDER, INTERNAL AUDIT RESOURCES AND INTERNAL AUDIT SPENDING ON INTERNAL AUDIT EFFECTIVENESS: EVIDENCE FROM MALAYSIA

YEOH ZHI YEE, HERMAN SHAH ANUAR

*School of Technology Management & Logistics, College of Business, Universiti Utara Malaysia
06010 UUM Sintok, Kedah Darul Aman, Malaysia*

ABSTRACT

The purpose of this study is to examine the impact of head of internal audit gender, internal audit resources and internal audit spending on internal audit effectiveness in the public listed food producer companies in Bursa Malaysia. Data were gathered from 70 companies through the companies' annual report, statement of corporate governance, statement of risk management and internal control and audit committee report that are published on Bursa Malaysia. Collected data were then analysed using the ordinary least square regression and multivariate logistic regression via SPSS. The results of the study indicated that amount of internal audit costs that a company has spent have a significant positive impact on the effectiveness of internal audit, while the gender of head of internal audit and internal audit resources arrangement do not exert any significant influence on internal audit effectiveness. As the population involved in this study only includes public listed companies in the food producer sectors in Bursa Malaysia and the data gathered only covers for the period of 2019, hence the results might not generalizable and applicable for companies across different sectors and time frame. Hence, it is suggested that future research could be done by expanding the population to involve listed companies from different sectors in Bursa Malaysia. In addition, we discovered that CIA qualifications among the head of internal audit possess certain level of influence on the effectiveness of internal audit which could be included in future study as one of the independent variables in influencing internal audit effectiveness.

Keywords: Head of internal audit gender, internal audit resources, internal audit spending, internal audit effectiveness

ROLE OF 3-BROMOPYRUVATE AS A NEUROPROTECTOR THROUGH AUTOPHAGY ACTIVATION IN AGED RATS

Jitendra Kumar Arya

Department of Biochemistry, University of Allahabad, Allahabad-211002, Uttar Pradesh, India

ORCID NO: 0000-0002-3735-3454

Prof. Syed Ibrahim Rizvi

Department of Biochemistry, University of Allahabad, Allahabad-211002, Uttar Pradesh, India

ORCID NO: 0000-0001-8978-825X

ABSTRACT

Aging is a physiological condition marked by the steady accumulation of oxidized molecules and damaged cell organelles, which results in a loss of functional viability and higher mortality risk. The brain is an extremely sensitive organ to oxidative alterations due to high amounts of polyunsaturated fatty acids and the higher oxygen demand for glucose metabolism. 3-BP, a glycolytic inhibitor, has been shown to affect energy metabolism and is being investigated as a potential Calorie restriction mimetic (CRM) compound with the potential to provide neuroprotection against aging-induced oxidative stress and age-related illnesses via autophagy activation. The recurrent activation of enhanced autophagy by calorie restriction, which induces mild stress, is anticipated to occur in more efficient recycling of disrupted cellular proteins and organelles before major oxidative damage.

Young male rats (4 months) and naturally aged male rats (22 months) were administered 3-BP (30 mg/kg b.w., orally) for 28 days. Prooxidants, antioxidants, and electron transport chain complexes were measured in brain tissues. Reverse transcriptase-polymerase chain reaction (RT-PCR) was used to assess the expression of autophagy, neuroprotective, and aging marker genes. There was a significant increase in reactive oxygen species in 3-BP-treated rats (ROS). Our findings revealed a decrease in pro-oxidants and an increase in antioxidants following 3-BP treatment. Furthermore, the supplementation of 3-BP increased the activity of electron transport chain complexes in the aged brain. In the aged brain, 3-BP enhanced the expression of autophagy genes (Beclin-1 and LC3), sirtuin-1, and neurodegenerative marker (NSE) genes, according to RT-PCR data. According to the findings, 3-BP has a mitohormetic effect by elevating ROS levels, which improves defense systems through autophagy modulation.

Keywords: 3-Bromopyruvate; Calorie restriction mimetic; Autophagy; Mitohormesis; Neuroprotection

ANTIOXIDANT ACTIVITY, AND DIURETIC EFFECT OF *Moringa oleifera* IN RATS

Najoua. SOULO¹, Nor el houda. TAHIRI¹, Abderrazak. ABOULGHAZI¹, Badiiaa. LYOUSSEI¹,
Zineb. BENZIANE-OUARITINI¹

¹Laboratory of Natural Substances, Pharmacology, Environment, Modeling Health and Quality of Life, Faculty of Sciences, Sidi Mohamed Ben Abdellah University (USMBA)-Fez, Morocco

ABSTRACT

This study investigated the antioxidant activity, and diuretic effect of aqueous extract of *Moringa oleifera* in normal rats.

2,2-diphenyl-1-picrylhydrazyl and the reducing power were used to assess the antioxidant properties of the extract, together with the determination of total phenols and flavonoids. To assess the diuretic effect, 20 normal rats were divided into four groups: The first was a control group administered by distilled water (10 mL/kg body weight), the second group received furosemide (10 mg/kg body weight), the third group received 250 mg/kg body weight of *Moringa oleifera*, the fourth group received 500 mg/kg body weight of *Moringa oleifera* for 30 days. Toward the end of this experiment, urine output was measured, and plasma and urine were sampled to analyze creatinine, potassium, chloride, and sodium levels.

Gavage with *Moringa oleifera* induced a significant increase in urine output and urinary electrolyte levels with a dose-dependent effect without modification of plasma electrolytes, while furosemide decreased plasma potassium.

Moringa oleifera extract contains potential antioxidant activity related to significant diuretic effect without changes in plasma composition.

Keywords: antioxidant activity, diuresis, *Moringa oleifera*

THE MICROWAVE EFFECT ON GERMINATION AND SEEDLING GROWTH OF WHEAT (*TRITICUM AESTIVUM*)

Mahdi GHIYASI

Department of Plant Production and Genetics, Faculty of Agriculture, Urmia University, Urmia, Iran

Soheyla MOHAMMADI ALAGOZ

Department of Plant Production and Genetics, Faculty of Agriculture, Urmia University, Urmia, Iran

Reza AMIRNIA

Department of Plant Production and Genetics, Faculty of Agriculture, Urmia University, Urmia, Iran.

ABSTRACT

In order to investigate the microwave effects on some germination traits and seedling growth of wheat (*Triticum aestivum*), an experiment using a factorial based on a completely randomized design (CRD) with four replications was conducted at the seed physiology laboratory of the Agricultural Faculty, Urmia University in 2020. The first factor included three power levels (100, 200 and 300 Watts) of the microwave and the second factor included five exposure times (zero, 30, 60, 90 and 120 Sec). Analysis of variance indicated the significant interplay effects of power levels and exposure times on germination percentage, root and stem length, fresh and dry weight, coefficient of velocity of germination (CV) and time to reach 50% germination (T50). According to the result, the greatest germination percentage, root length and dry weight refer to 200 Watts and 90 seconds. The lowest germination percentage, root and stem length, fresh and dry weight and time to reach 50% germination (T50) refer to 300 Watts and the highest time (120 Sec).

Keywords: microwave, germination percentage, coefficient of velocity of germination, wheat.

QUANTIFYING OF BIO-PRIMING WITH TRICHODERMA ON DRY MATTER OF WHEAT SEEDLING STEM UNDER SALINITY STRESS

Soheyla MOHAMMADI ALAGOZ

Department of Plant Production and Genetics, Faculty of Agriculture, Urmia University, Urmia, Iran.

Mahdi GHIYASI

Department of Plant Production and Genetics, Faculty of Agriculture, Urmia University, Urmia, Iran.

Reza AMIRNIA

Department of Plant Production and Genetics, Faculty of Agriculture, Urmia University, Urmia, Iran.

ABSTRACT

Salinity is a common problem in many agricultural lands. Many crops are very sensitive to salinity during the germination, early growth and establishment stages. To Quantifying bio-priming with Trichoderma (*T. harzianum*) on shoot dry matter (SDM) of wheat seedling under salinity stress an experiment was conducted with five levels of NaCl salinity 0 (control), -2, -4, -8, -12 and -16 dS/m. Shoot accumulation of dry matter was evaluated in primed and not-primed seed lots. Regression models were used for quantifying. The results showed that the dry matter accumulation of wheat shoot in the seedling stage follows linear and polynomial models. The most accurate equation obtained in this relation were $SDW = -0.0161S^2 - 2.9022S + 93.28$ ($R^2=0.98$) for control and $SDW = -0.0041S^3 + 0.0812S^2 - 3.4262S + 99.681$ ($R^2=0.98$) for bio-priming. The results showed that bio-priming in all levels of salinity significantly improved seedling shoot growth compared to control.

Keywords: Wheat, NaCl, Dry mater, Shoot Dry mater.

TÜRKİYE'NİN DOĞU ANADOLU BÖLGESİNDE DOĞAL OLARAK YETİŞEN *Cardaria draba* (L.) DESV. Subsp. *draba* TÜRÜNÜN MİNERAL İÇERİĞİ ÜZERİNE BİR ARAŞTIRMA

A STUDY ON MINERAL CONTENT OF *Cardaria draba* (L.) DESV. Subsp. *draba* SPECIES
NATURALLY GROWN IN EASTERN ANATOLIA OF TURKEY

Ezelhan ŞELEM

Öğr. Gör., Van Yüzüncü Yıl Üniversitesi, Muradiye Meslek Yüksekokulu, Park ve Bahçe Bitkileri
Bölümü

ORCID ID: <https://orcid.org/0000-0003-4227-5013>

Murat TUNÇTÜRK

Prof. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: <https://orcid.org/0000-0002-7995-0599>

Rüveyde TUNÇTÜRK

Prof. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: <https://orcid.org/0000-0002-3759-8232>

Lütfi NOHUTÇU

Araş Gör., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: <https://orcid.org/0000-0003-2250-2645>

Tülay TOPRAK

Doktora Öğrencisi, Van Yüzüncü Yıl Üniversitesi Fen Bilimleri Enstitüsü Tarla Bitkileri Anabilim
Dah

ORCID ID: <https://orcid.org/0000-0002-5576-2526>

ÖZET

Brassicaceae familyasından olan *Cardaria draba* (L.) Desv. subsp. *draba* türü ‘kır teresi’ olarak bilinmektedir. Gerek tarım dışı gerekse de tarım alanlarında bulunan kır teresi bulunduğu alanlarda yabancı ot olarak verdiği zararların yanında tıbbi bitki olarak da kullanılmaktadır. *Cardaria draba* (L.) Desv. subsp. *draba* bitkisi geleneksel olarak farklı kültürlerde çeşitli rahatsızlıkların tedavisinde kullanılmaktadır. Çalışma materyalini oluşturan *Cardaria draba* (L.) Desv. subsp. *draba* türü David’in grid kareleme sistemine göre B9 karesindeki Bitlis iline bağlı Tatvan ilçesinde 2400 m rakımdan toplanmıştır. Türün teşhisi yapıldıktan sonra mineral içerik analizleri yapılmıştır. Çalışma sonucunda elde edilen bulgulara göre toplam kül oranı % 9.00, toplam azot içeriği % 2.23, ham protein oranı % 13.91, pH 5.62 ve ham selüloz oranı % 25.30 olarak tespit edilmiştir. Ayrıca, *Cardaria draba* (L.) Desv. subsp. *draba* türünde makro (Ca, K, Mg, Na, P, S) ve mikro (Fe, Mn, Zn, Cu) besin elementi ile bazı ağır metal (Cd, Co, Cr ve Pb) içerikleri belirlenmiştir. Besin elementi içeriğine bakıldığında makro besin elementleri içeriğinin K (16.98g/kg) > Ca (9.90 g/kg) > P (3.35 g/kg) > S (2.25 g/kg) > Mg (1.77 g/kg) > Na (0.52 g/kg); mikro besin elementi içeriğinin Fe (285.94 mg/kg) > Zn (39.84mg/kg) > Cu (11.71 mg/kg); ağırmetal içeriğinin Co (1.00 mg/kg) > Cr (0.52 mg/kg) > Pb (0.17 mg/kg) > Cd (0.09 mg/kg) şeklinde tespit edilmiştir. Tıbbi olarak değerlendirilen türün besin elementlerince zengin olduğu ve ağırmetal içeriklerinin Türk Gıda Kodeksindeki tolere edilebilir maksimum ağırmetal limitlerinin çok altında olduğu belirlenmiştir.

Anahtar kelimeler: Ağır metal, Besin elementi, Brassicaceae, Tıbbi bitki

ABSTRACT

Cardaria draba(L.) Desv. subsp.*draba*, which is from the Brassicaceae family, is known as ‘country cress’. It is used as a medicinal plant as well as the damage it causes as a weed to the country cress, which grows both in agricultural and non-agricultural areas. The *Cardaria draba*(L.) Desv. subsp.*draba* plant has traditionally been used in different cultures to treat various ailments. The *Cardaria draba*(L.) Desv. subsp.*draba* species, which constitutes the study material, was collected from an altitude of 2400 m in Tatvan district of Bitlis province in B9 square according to David's grid squaring system. After the identification of the species, chemical content analyzes were made. As a result of the research; it has been determined as the total ash content 9.00 %, nitrogen content 2.23 %, crude protein 13.91 %, pH 5.62 and crude fibre content 25.30 %, respectively. In addition, macro (Ca, K, Mg, Na, P, S) and micro (Fe, Mn, Zn, Cu) nutrients elements and some heavy metal (Cd, Co, Cr ve Pb) contents were determined in *Cardaria draba* (L.) Desv. subsp.*draba* species. The highest element contents were for macroelement K (16.98 g/kg) > Ca (9.90g/kg) > P (3.35 g/kg) > S (2.25g/kg) >Mg (1.77 g/kg) >Na (0.52 g/kg); for microelement Fe (285.94 mg/kg) > Zn (39.84 mg/kg) > Cu (11.71 mg/kg), for heavy metal Co (1.00 mg/kg) > Cr (0.52 mg/kg) > Pb (0.17 mg/kg) > Cd (0.09 mg/kg), respectively. It has been determined that the medicinally evaluated species is rich in nutrients and its heavy metal contents are well below the tolerable maximum heavy metal limits in the Turkish Food Codex.

Key words: Heavy metal, Nutrient element, Brassicaceae, Medicinal plant.

**VAN YÖRESİNE DOĞAL OLARAK YAYILIŞ GÖSTEREN *Plantago atrata* HOPPE
TÜRÜNÜN MİNERAL İÇERİĞİNİN BELİRLENMESİ**

DETERMINATION OF MINERAL CONTENT OF *Plantago atrata* HOPPE SPECIES
NATURALLY DISTRIBUTED IN VAN REGION

Lütfi NOHUTÇU

Araş Gör., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: <https://orcid.org/0000-0003-2250-2645>

Murat TUNÇTÜRK

Prof. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: <https://orcid.org/0000-0002-7995-0599>

Ezelhan ŞELEM

*Öğr. Gör., Van Yüzüncü Yıl Üniversitesi, Muradiye Meslek Yüksekokulu, Park ve Bahçe Bitkileri
Bölümü*

ORCID ID: <https://orcid.org/0000-0003-4227-5013>

Rüveyde TUNÇTÜRK

Prof. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü

ORCID ID: <https://orcid.org/0000-0002-3759-8232>

Tülay TOPRAK

*Doktora Öğrencisi, Van Yüzüncü Yıl Üniversitesi Fen Bilimleri Enstitüsü Tarla Bitkileri Anabilim
Dah*

ORCID ID: <https://orcid.org/0000-0002-5576-2526>

ÖZET

Plantaginaceae familyasının ılıman ve tropik bölgelerin yüksek dağlık bölgelerinde yayılış gösteren üç cinsine (*Plantago*, *Litorela*, *Bougueria*) ait 250-340 kadar türü mevcuttur. Familyaya ait cinslerden sadece *Plantago* (plantain-sinir otu/sinirli ot) cinsi Türkiye'de yayılış göstermektedir. *Plantago* kozmopolit bir cins olup, yaklaşık 250-300 tür içermektedir. Ülkemizde ise *Plantago* cinsine ait 24 takson kumsallar, tarım arazileri, çayırlar, çam ormanları, boş araziler, yol kenarları, dere kenarları, deniz kıyıları, park ve bahçeler gibi birçok alanda doğal yayılış göstermektedir. *Plantago* cinsinin bazı taksonları ilaç ve gıda maddesi olarak, antienflamatuar, antiseptik, antibakteriyel ve siğillerin büyümesini önlemede kullanıldığı belirlenmiştir. Cinsin önemli türlerinden olan *Plantago atrata* Hoppe türü yaraların iyileştirilmesinde kullanılmaktadır. *P. atrata* Hoppe türü Kuzey, Güney ve Güneydoğu Anadolu bölgelerinde yayılış göstermektedir. Bu tür "kara sinir otu" olarak da bilinmektedir. Yapılan çalışmada Van yöresinden toplanan yabancı *Plantago atrata* Hoppe türünün kullanılan kısımlarının besin değerleri ve mineral bileşimleri belirlenmiştir. Besin değeri olarak toplam kül, % N, % ham protein, % ham lif ve pH değerleri sırasıyla % 9.67, % 1.84, % 11.52, % 32.74 ve 5.64 olarak belirlenmiştir. Ayrıca bitki örneklerinde makro ve mikro besin elementleri ile ağır metal içerikleri incelenmiştir. Elde edilen sonuçlara göre Na (0.54 g/kg), Mg (1.76 g/kg), K (21.53 g/kg), Ca (9.42 g/kg), P (4.75 g/kg), S (2.76 g/kg), Mn (24.27 mg/kg), Fe (198.96 mg/kg), Cu (16.19 mg/kg), Zn (20.29 mg/kg), Cr (0.37 mg/kg), Cd (0.05 mg/kg), Co (0.95 mg/kg) ve Pb (0.04 mg/kg) değerleri belirlenmiştir. Çalışmanın sonucunda tıbbi olarak da değerlendirilen türün alternatif besin olarak da tüketilebileceği sonucuna varılmıştır.

Anahtar kelimeler: Besin elementi, Plantaginaceae, Sinir otu, Tıbbi bitki.

ABSTRACT

There are about 250-340 species of Plantaginaceae family belonging to three genera (Plantago, Litorela, Bougueria) that are distributed in the high mountain regions of temperate and tropical regions. Among the genera belonging to the family, only Plantago (plantain-black plantago) genus is distributed in Turkey. Plantago is a cosmopolitan genus, containing about 250-300 species. In our country, 24 taxa belonging to the genus Plantago show natural distribution in many areas such as beaches, agricultural lands, meadows, pine forests, empty lands, roadsides, stream edges, sea shores, parks and gardens. It has been determined that some taxa of the genus Plantago are used as medicine and food, anti-inflammatory, antiseptic, antibacterial and to prevent the growth of warts. One of the important species of the genus, *Plantago atrata* Hoppe, is used for healing wounds. *P. atrata* Hoppe species is distributed in Northern, Southern and Southeastern Anatolia regions. This species is also known as "black plantain". In this study were determined the nutritional values and mineral compositions of the used parts of the wild *Plantago atrata* Hoppe species collected from the Van region. As nutritional value, total ash, N %, crude protein%, crude fibre% and pH values were determined as 9.67 ± 0.57 , 1.84 ± 0.051 , 11.52 ± 0.25 , 32.74 ± 1.82 ve 5.64 ± 0.06 , respectively. In addition, macro and micro nutrients and heavy metal contents of plant samples were investigated. According to the results obtained, Na (0.54 ± 0.001 g/kg), Mg (1.76 ± 0.217 g/kg), K (21.53 ± 0.95 g/kg), Ca (9.42 ± 0.38 g/kg), P (4.75 ± 0.14 g/kg), S (2.76 ± 0.08 g/kg), Mn (24.27 ± 0.27 mg/kg), Fe (198.96 ± 14.32 mg/kg), Cu (16.19 ± 0.96 mg/kg), Zn (20.29 ± 0.82 mg/kg), Cr (0.37 ± 0.07 mg/kg), Cd (0.05 ± 0.004 mg/kg), Co (0.95 ± 0.21 mg/kg) and Pb (0.04 ± 0.01 mg/kg) values were determined in plant samples. As a result of the study, it was concluded that the species, which is also considered medicinally, can also be consumed as an alternative food.

Key words: Nutrient element, Plantaginaceae, Black Plantago, Medicinal plant.

SULAMA SUYU KISINTISININ KİNOA (*CHENOPODIUM QUİNOA WİLLD.*)'NİN PROTEİN İÇERİĞİNE ETKİSİ

EFFECT OF IRRIGATION WATER DEFICIT ON PROTEIN CONTENT OF QUİNOA
(*CHENOPODIUM QUİNOA WİLLD.*)

Prof. Dr. Şefik TÜFENKÇİ

Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Biyosistem Mühendisliği Bölümü

Dr. Öğr. Üyesi Cüneyt UYAK

Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü,

ÖZET

Dünyada yarı kurak ve kurak alanlarda tarımsal üretimi kısıtlayan başlıca faktörler su kıtlığı ve kuraklıktır. Su kaynaklarının kıt olduğu bölgelerde kısıntılı sulama uygulamaları ön plana çıkmaktadır. Kısıntılı sulama, daha iyi verim elde etmek için gelecek vaat eden sulama stratejilerinden birisi olarak kabul görmektedir. Bu çalışmada farklı su kısıntısı uygulamalarının kinoa bitkisi protein içeriğine etkisinin belirlenmesi amaçlanmıştır. Bu amaçla 5 farklı sulama suyu miktarı uygulamasının (I100:%100-kontrol, I75:%25 kısıntılı, I50:%50 kısıntılı, I25:%75 kısıntılı, ve I0: sulanmayan) kinoa bitkisinin protein içeriğine etkisi araştırılmıştır. Çalışmada sulama suyu kısıntısına bağlı olarak protein içerikleri arasındaki fark istatistiksel olarak önemli bulunmuştur ($p<0.001$). En yüksek protein içeriği değeri tam sulama uygulamasında (I100) %18.8, en düşük ise sulama suyu uygulanmayan (I0) uygulamada %8.6 oranında belirlenmiştir. Su kısıntısının artmasıyla protein içeriği azalış görülmüştür. Sonuç olarak özellikle kurak ve yarı kurak alanlarda protein içeriğinin yüksek belirlenmesi için sulamanın yapılması gerektiği, zorunlu hallerde %25 su kısıntısına izin verilebilir olduğu sonucuna varılmıştır.

Anahtar kelimeler: kuraklık, kinoa, sulama

ABSTRACT

In regions where water resources are scarce, limited irrigation practices come to the fore. Restricted irrigation is recognized as one of the promising irrigation strategies to achieve better yields. In this study, it was aimed to determine the effect of different water restriction applications on the protein content of quinoa plant. For this purpose, the effect of 5 different irrigation water applications (I100: full irrigation-control, I75: 25% deficit, I50: 50% deficit, I25: 75% deficit, and I0: non-irrigated) on the protein content of the quinoa plant was investigated. In the study, the difference between protein contents due to irrigation water deficit was found to be statistically significant ($p<0.001$). The highest protein content value was determined as 18.8% in the full irrigation application (I100), and the lowest was determined as 8.6% in the application non irrigation water (I0). Protein content decreased with increasing water deficit. As a result, it was concluded that irrigation should be done in order to determine the protein content especially in arid and semi-arid areas, and 25% water deficit is permissible in mandatory cases.

Keywords: drought, quinoa, irrigation

GÜNEYDOĞU ANADOLU BÖLGESİ KOŞULLARINDA KAVUZLU VE KAVUZSUZ ARPA ÇEŞİTLERİNİN BAZI VERİM VE KALİTE KARAKTERLERİNİN KARŞILAŞTIRILMASI

COMPARISON OF SOME YIELD AND QUALITY CHARACTERISTICS OF HULLED AND HULL-LESS BARLEY CULTIVARS IN SOUTHEASTERN ANATOLIA REGION CONDITIONS

Eren ATEŞ¹

¹Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Tarımsal Biyoteknoloji Bölümü,
VAN, TÜRKİYE

¹ORCID ID: <https://orcid.org/0000-0001-9565-8910>

M. Alp FURAN²

²Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Tarımsal Biyoteknoloji Bölümü,
VAN, TÜRKİYE

²ORCID ID: <https://orcid.org/0000-0002-0171-0405>

Merve Dilek KARATAŞ³

³Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Tarımsal Biyoteknoloji Bölümü,
VAN, TÜRKİYE

³ORCID ID: <https://orcid.org/0000-0002-1076-3648>

Gülistan GENLİ⁴

⁴Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Tarımsal Biyoteknoloji Bölümü,
VAN, TÜRKİYE

⁴ORCID ID: <https://orcid.org/0000-0002-1271-4479>

ÖZET

Yıllık bir bitki olan kavuzlu ve kavuzsuz arpanın kullanımı Türkiye ve diğer ülkelerde benzerlik göstermektedir. Kavuzsuz arpalar genelde insan gıdası temininde kullanılırken, kavuzlu arpa hayvan yemi olarak kullanılmaktadır. Kabuklu ve kabuksuz arpa çeşitleri besin içeriği, uygulama bölgeleri, bulunabilirlik ve fiziksel özellikler açısından farklılık göstermektedir. Küresel ısınma, nüfus artışı vb. çevresel kaygıların bir sonucu olarak gıda talebi son yıllarda istikrarlı bir şekilde artmaktadır. Gerçekten de, arpanın gıda arzındaki önemi göz ardı edilemez. Bu çalışmada materyal olarak 6 kavuzlu arpa ve 2 kavuzsuz arpa çeşidi kullanılmıştır. Saksı denemesi olarak açık sera koşullarında yetiştirilen arpa bitkilerinde verim ve verim unsurları ile kalite analizleri yürütülmüştür. Denemede bitki boyu, başak uzunluğu, başakta tane sayısı, başakta tane ağırlığı, bitki tane verimi, bin tane ağırlığı, saksı tane verimi gibi tarımsal karakterler ve protein oranı, selüloz oranı gibi kalite karakterleri incelenmiştir.

2018 - 2019 yılı iklim koşullarında Diyarbakır' da yapılan çalışmada incelenen parametrelerdeki ölçümler sonucunda ortalamalara göre kavuzlu arpada bitki tane verimi ve başaktaki tane sayısının kavuzsuz arpaya oranla belirgin olarak daha yüksek olduğu gözlenmiştir. Ancak protein oranları bakımından kavuzsuz arpaların protein oranının kavuzlu arpaya oranla daha fazla olduğu gözlenmiştir.

Anahtar Kelimeler: Kavuzlu Arpa, Kavuzsuz Arpa, Verim, Kalite.

ABSTRACT

Turkey and other nations make comparable usage of hulled and hullless barley, an annual plant. Generally, hulled barley is utilized for human consumption, while hullless barley is used for animal

feed. Hulled and unshelled barley cultivars vary in terms of nutritional content, application regions, availability, and physical characteristics. Food demand has been steadily growing in recent years as a result of environmental concerns such as global warming, population growth, and so on. Indeed, the importance of barley in the food supply cannot be overstated. Six varieties of hulled barley and two varieties of hull-less barley were utilized as materials in this research. The yield, yield components, and quality of barley plants cultivated in an open greenhouse environment were analyzed in a pot experiment. In the experiment, agricultural characters such as plant height, spike length, number of grains per spike, grain weight per spike, plant grain yield, thousand grain weight, pot seed yield, and quality characters such as protein ratio and cellulose ratio were examined.

As a result of the parameters studied in the research performed in Diyarbakır during the 2018–19 growing season, it was determined that the plant grain yield and number of grains per spike in hulled barley were much greater than in hull-less barley. Additionally, it was discovered that hull-less barley had more protein than hulled barley.

Keywords: Hulled Barley, Hull-less Barley, Yield, Quality.

ERZURUM İLİ SÜT SIĞIRCILIĞI İŞLETMELERİNDE BUZAĞI KAYIPLARI VE EKONOMİK ETKİLERİ

CALF LOSSES AND ECONOMIC EFFECTS IN ERZURUM DAIRY FARMS

Ümit AVCIOĞLU¹

Atatürk Üniversitesi, Narman Meslek Yüksekokulu, Erzurum, Türkiye

¹ORCID ID: <https://orcid.org/0000-0002-9823-3173>

Adem AKSOY²

Atatürk Üniversitesi, Ziraat Fakültesi, Erzurum, Türkiye

²ORCID ID: <https://orcid.org/0000-0003-4342-9272>

Abdülbaki BİLGİÇ³

Bilecik Şeyh Edebali Üniversitesi, İ.İ.B.F., Bilecik, Türkiye

³ORCID ID: <https://orcid.org/0000-0001-5946-0915>

M. Sinan AKTAŞ⁴

Atatürk Üniversitesi, Veteriner Fakültesi, Erzurum, Türkiye

⁴ORCID ID: <https://orcid.org/0000-0002-7206-5757>

M. Ali TUNÇ⁵

Atatürk Üniversitesi, Narman Meslek Yüksekokulu, Erzurum, Türkiye

⁵ORCID ID: <https://orcid.org/0000-0002-6631-7700>

ÖZET

Bu çalışma ile Erzurum ili süt sığircılığı işletmelerinde buzağı kayıpları ve il ekonomisi üzerine etkilerinin ortaya konması amaçlanmıştır. Çalışma 01-31 Mayıs 2021 tarihleri arasında yürütülmüştür. Çalışma materyalini, il genelini temsil edebilecek süt sığircılığı yapan işletmelerle yüz yüze yapılan anketler oluşturmuştur. Araştırmada popülasyondaki farklı kapasitelere sahip işletmelerin yeterince temsil edilmesini sağlamak amacıyla tabakalı örnekleme metodu kullanılarak 135 işletme çalışmaya dâhil edilmiştir. Çalışmada, buzağı kaybına neden olan faktörler dört ana başlık (gebe kalamama, atık, güç doğum, 0-6 aylık buzağılarda ölüm) altında incelenmiştir. Çalışma sonuçlarına göre Erzurum ili süt sığircılığı işletmelerinde buzağı kayıplarının %25,79 olduğu belirlenmiştir. Bu kayıpların %11,8 gebe kalamama (fertilite sorunları)'ya bağlı olduğu, 0-6 aylık buzağılarda ölüme bağlı kayıpların %9,1 olduğu, atıklara bağlı kaybın %3,54 ve güç doğuma bağlı buzağı kayıplarının ise %1,13 olduğu ortaya konmuştur. Buzağı kayıplarına neden olan 4 ana faktör arasında en etkili olarak; gebe kalamamanın olduğu (%11,8) tespit edilmiştir.

Çalışma sonuçlarına göre; Erzurum ilinde 2021 TÜİK verilerine göre doğurma kabiliyetine sahip iki yaş ve üzeri dişi sığır varlığı 378.381 adettir. İl genelinde buzağı kaybının %25,79 olduğu düşünüldüğünde yaklaşık 97.584 baş buzağının yukarıda belirtilen nedenlerden dolayı kaybedildiği söylenebilir. 2022 yılı piyasa koşulları dikkate alındığında ortalama bir buzağının 6.000 TL olduğu değerlendirildiğinde il genelinde yıllık buzağı kaybı kaynaklı ekonomik kaybın yaklaşık 585.504.000 TL (39.830.204 USD Doları) olduğu belirlenmiştir.

Erzurum ili süt sığircılığı işletmelerindeki buzağı kayıp oranının bilinenin bir hayli üstünde olduğu tespit edilmiştir. Gerek bölge gerekse ülke ekonomisi açısından büyük kayba neden olan buzağı kayıplarının önüne geçilmesi için işletme sahiplerinin bilinçlendirilmesi, bununla birlikte yerel ve merkezi yönetimlerin gerekli önlemleri ivedi olarak alması önerilmektedir.

Anahtar Kelimeler: Buzağı kaybı, Erzurum, Ekonomik etki

ABSTRACT

It is aimed to reveal the calf losses and their effects on the provincial economy in dairy cattle farms in Erzurum. The study was carried out between 01-31 May 2021. The study material consisted of face-to-face surveys with dairy cattle farms that could represent the entire province. In order to ensure adequate representation of dairy farms with different capacities in the population, 135 dairy farms were included in the study by using the stratified sampling method. In the study, the factors causing calf loss were examined under four main headings (infertility, abortus, calving difficulty, early calf mortality). The results showed that calf losses in dairy farms in Erzurum was 25.79%. More specifically, 11.8% was due to infertility, 9.1% was due to early calf mortality, 3.54% was due to abortus, and 1.13% was due to calving difficulty. Among these four main causes, infertility was the predominant factor.

According to the results of study; According to 2021 TUIK data, there are 378,381 heads of female cattle aged two years and over in the province, it can be said that approximately 97,584 calves have been lost due to the above-mentioned reasons. Considering that an average calf cost is 6,000 TL in market conditions, it has been determined that the annual economic loss due to calf loss is approximately 585,504,000 TL (39,830,204 USD Doları) in the province.

It was revealed that the calf loss rate in dairy cattle farms in Erzurum is much higher than known. It is recommended to raise awareness of farmers in order to prevent calf losses, which cause great loss in terms of both the region and the country's economy, and that local and central governments should be taken the necessary measures immediately.

Keywords: Calf loses, Erzurum province, Economic effect

YARI KURAK ŞARTLARINDA YETİŞTİRİLEN BAZI İKİ SIRALI ARPA (*Hordeum vulgare* conv. *distichon*) ÇEŞİTLERİNİN VERİM VE VERİM UNSURLARININ BELİRLENMESİ

DETERMINATION OF YIELD AND YIELD COMPONENTS OF SOME TWO-ROWED BARLEY (*Hordeum vulgare* conv. *distichon*) CULTIVARS CULTIVATED IN SEMI-ARID CONDITIONS

Abdulveli SİRAT

Gümüşhane Üniversitesi Şiran Mustafa Beyaz MYO, Şiran, Gümüşhane, Türkiye

ORCID ID: <https://orcid.org/0000-0002-5193-7608>

ÖZET

Arpa malt sanayinde, hayvan yemi olarak ve azda olsa insan beslenmesinde kullanılan önemli bir tahıldır. Bu çalışma, Şiran (Gümüşhane) yarı kurak koşullarında bazı iki sıralı arpa (Akar, Burakbey, Tarm-92, Aydanhanım, Zeynelağa, Keser, Balkan-96, Hilal, Sur 93, Şahin 91, Çumra-2001, Erciyes, Efes-98, Anadolu 98) çeşitlerinin tane verimi ve verim unsurlarını belirlemek amacıyla 2016-2018 yetiştirme sezonlarında iki yıl süreyle tesadüf blokları deneme desenine göre 3 tekrarlamalı olarak yürütülmüştür. İki yıllık ortalama sonuçlarına göre çeşitlerin başaklanma süresi 143.80-158.06 gün, bitki boyu 93.30-111.60 cm, metrekaredeki başak sayısı 250.17-358.63 adet, başak uzunluğu 6.62-8.20 cm, başakta tane sayısı 21.74-26.88 adet, başakta tane ağırlığı 1.08-1.19 g, hasat indeksi %33.97-41.82 ve tane verimi 249.81-363.95 kg da⁻¹ arasında değişmiştir. Tane verimi ile bitki boyu, metrekare başak sayısı, başak uzunluğu, başakta tane sayısı, başakta tane ağırlığı, hasat indeksi arasında olumlu ve önemli ilişki belirlenmiştir. Çalışmada, Akar, Aydanhanım ve Çumra-2001 en yüksek tane verimine sahip çeşitler olmuştur. Akar, Aydanhanım ve Çumra-2001 çeşitleri yüksek tane verimi yanında bitki boyu, metrekarede başak sayısı, başak uzunluğu, başakta tane sayısı, başakta tane ağırlığı, hasat indeksi bakımından da öne çıkan çeşitler olmuştur.

Anahtar Kelimeler: İki Sıralı Arpa, Çeşitler, Verim ve Verim Unsurları

ABSTRACT

Barley is an important grain used in the malt industry, animal feed and, to a lesser extent, human nutrition. This study was conducted to determine the yield and yield components of some two-row barley cultivars (Akar, Burakbey, Tarm-92, Aydanhanım, Zeynelaga, Keser, Balkan-96, Hilal, Sur 93, Sahin 91, Cumra-2001, Erciyes, Efes-98, Anadolu 98) in Siran (Gumushane) semi-arid conditions were carried out with 3 replications according to the randomized complete blocks experimental design for two years in the 2016-2018 growing seasons. According to the two-year average results, the heading date of the cultivars is 143.80-158.06 days, the plant height is 93.30-111.60 cm, the number of spikes per square meter is 250.17-358.63, the spike length is 6.62-8.20 cm, the number of grains per spike is 21.74-26.88, the grain weight per spike is 1.08-1.19 g. , harvest index 33.97-41.82% and grain yield varied between 249.81-363.95 kg da⁻¹. A positive and significant relationship was determined between grain yield and plant height, number of spikes per square meter, spike length, number of grains per spike, grain weight per spike, and harvest index. In the study, Akar, Aydanhanım and Çumra-2001 were the cultivars with the highest grain yield. Akar, Aydanhanım and Çumra-2001 cultivars stood out in terms of plant height, square meter spike number, spike length, number of grains per spike, grain weight per spike, harvest index as well as high grain yield.

Keywords: Two-Rowed Barley, Cultivars, Yield and Yield Components

THE COMPARISON STUDY OF EXTRACTION PROCESSES OF ESSENTIAL OIL OBTAINED FROM BLACK PEPPER

*Afifa Baig, Radhey Mohan Yadav, Kapil Pandey and Saimah Khan**

ORCID ID* : 0000-0002-6483-4325

Department of Chemistry, Integral University, India

ABSTRACT

Black Pepper (*Piper nigrum*) also called pepper perennial climbing vine of the family Piperaceae. Black pepper is a native to the Malabar coast of India and is one of the earliest species known. Pepper also has a limited usage in medicine as a carminative and as a stimulant of gastric secretions. Black pepper essential oil has been used by Chinese herbalist for thousands of years to treat cholera, malaria and even dysentery. It is also used as analgesic (Pain Relieving) medicinal use. Used internally to help soothe and support nervous system and also used in soothing of muscular pain due to its warming and energizing property, apart from this it is also used as anticancer, antimicrobial and antioxidant. Due to its various applications, extraction of black pepper essential oil become an important topic. In this study the black pepper seeds were collected from local market of Lucknow, India. The extraction was done by using two extraction process - Steam distillation process and Soxhlet extraction process by optimizing conditions that affect the extraction process. Result demonstrated that in steam distillation process 50 gram of black pepper dissolved in 300 ml distilled water undergo double distillation process for 3 hours the obtained essential oil yield is 9.2% whereas from soxhlet process the extracted oil yield for 3 hours is 12.03%. From the result it was conducted that the % yield of essential oil (EO) obtained using both the extraction follows the order :

% yield EO using soxhlet extraction (12.03%) > % yield of EO using steam distillation (9.2%).

From the result it was also conducted that by increasing the temperature (70°C and 90°C for steam distillation and 50°C and 70°C for soxhlet extraction) and keeping time constant (3 hours), the yield of essential oil increases. In steam distillation at 70°C, the % yield of EO was found to be 4.4% and at 90°C, the % yield of EO was found to be 9.2%, whereas in soxhlet extraction at 70°C, the % yield of EO was found to be 6.23% and at 90°C %, the yield of EO was found to be 12.03%.

Similar results were also obtained by increasing the time (2 hours and 3 hours for both the extraction) and keeping temperature constant (90°C for steam distillation and 70°C for soxhlet extraction), the yield of essential oil also increases. In steam distillation process at 90°C for 2 hour, the % yield of EO was found to be 5.32% and for 3 hour, the % yield of EO was found to be 9.2%, whereas in soxhlet extraction at 70°C for 2 hour, the % yield of EO was found to be 6.65% and for 3 hours, the % yield of EO was found to be 12.03%. In comparison to steam distillation extraction, soxhlet extraction provide more % yield of essential oil

Keywords: Black pepper, Essential oil, Steam distillation, Soxhlet extraction, Ethanol, Hexane.

GENERALIZED FINANCIAL STRESS INDEX AND REGIMES IN CASE OF PAKISTAN

Muhammad Tahir

Department of Economics, COMSATS University Islamabad

Mumtaz Ahmed, Ph.D.

Department of Economics, COMSATS University Islamabad

ABSTRACT

The global financial crises in the year 2007-08 adversely affected the stability of financial systems in both developed, and developing countries. Exceptional levels of financial stress sparked a discussion about how to quantify system-wide risk as a measure for assessing the strength of a financial system. During the initial period of depression, the financial crisis in developed countries had a significant impact on both advanced and emerging markets. After the depression, the stock markets in all developing nations collapsed, while government debt spreads expanded, and exchange markets were pressurized (Balakrishnan et al., 2011). As a result of the great depression, several central banks and financial authorities across the globe have developed a set of indicators to assist them in monitoring and assessing the present degree of stress or "instability" in the financial system, and taking the necessary regulatory action as needed. The construction of the financial stress index (FSI) in emerging and developing economies like Pakistan has become compulsory because of the repeated numbers of financial crises. A limited number of studies are available for Pakistan with a prime focus on the construction of financial stress index (FSI) by including roughly the same set of indicators and employing principal component analysis (PCA) to construct FSI on available time-series data at the time of conduct of the study. In this study, we constructed a comprehensive financial stress index in the case of Pakistan. We used those indicators which are already used by Sadia et al., (2019) from 1993 to 2016 but that study did not consider the pre-and-post COVID-19 eras (before and after Dec 2019). Therefore, the data of the study needs to be updated. This will be able to measure the financial stress of the COVID-19 era. Moreover, that study did not consider thresholds levels of the crises we used the Markov regime model to find the stressful regime of the economy. Finally, conventional PCA was used in that paper, it does not capture the dynamic nature and non-stationarity of time series data. Thus, the newly proposed index will be superior to the existing PCA-based indices. Specifically, the present study makes use of the generalized dynamic principal component (GDPC) proposed by Peña and Yohai (2016). This will capture both dynamic and also considered nonstationary data too. This study on the financial stress index for Pakistan will provide a valuable perception for the policymakers of Pakistan.

Key Words: financial stress, financial stress index, principal component analysis, generalized dynamic principal component analysis, Markov regime model.

GREEN SYNTHESIS OF SILVER NANO PARTICLES FROM TERMINALIA CHEBULA FRUIT AND ITS BACTERICIDAL ACTIVITY AGAINST DIABETES WOUND PATHOGENS

*Neethu Sudarsan*¹

¹Research scholar, Department of Microbiology, Malankara Catholic College, Affiliated to Manonmaniam Sundaranar University, Tirunelveli

*Dr. Hema T. A*²

²Assistant Professor, Department of Microbiology, Malankara Catholic College, Affiliated to Manonmaniam Sundaranar University, Tirunelveli

ABSTRACT

The antibacterial activity of eight medicinal plants (*Biophytum sensitivum*, *Senna auriculata*, *Centella asiatica urban*, *Aegle marmelos*, *Terminalia chebula*, *Cinnamomum*, *Azadirachta indica*, *Ficus benghalensis*) were checked against the diabetes wound pathogens such as *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Klebsiella pneumoniae*. Antimicrobial activity of aqueous extract and solvent extracts of selected medicinal plants were determined by Well diffusion method on Muller - Hinton agar medium. 100 µl of all aqueous and solvent extracts of medicinal plants were added in the wells, control was also maintained. Based on the observation, highly significant antimicrobial activity was noted in aqueous extract of *Terminalia chebula* (20 mm) against the pathogenic microorganisms such as *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Klebsiella pneumonia*. Phytochemical analysis revealed the presence of secondary metabolites such as saponins, tannins, flavanoids, quinones, terpanoids, glycosides. The dried fruit extract of *Terminalia chebula* was used for the synthesis of silver nanoparticles and confirmed by colour change from pale yellow to dark brown indicates reduction of silver ions in presence of plant extract. Charecterization of silver nano particles can be confirmed by UV-Vis spectroscopy FT-IR analysis XRD analysis SEM analysis. Antimicrobial activity of silver nanoparticles prepared from dried fruit extract of *Terminalia chebula* showed a highest zone of inhibition around 27mm in *Staphylococcus aureus* followed by 17mm in *Klebsiella pneumonia* and 14mm in *Pseudomonas*. In this work the invitro antibacterial activity of silver nanoparticles produced from *Terminalia chebula* fruit showed highest activity against *staphylococcus aureus* When compared with, *klebsiella pneumonia* and *Pseudomonas sp*. On the basis of the result obtained, it could be concluded that the silver nano particles synthesized from fruit extract of *Terminalia chebula* showed highest antimicrobial activity against diabetes wound pathogens.

Keywords: Terminalia chebulla, Antibacterial activity, silver nano particles

DİYARBAKIR İLİNDE MISIR YETİŞTİRİCİLİĞİNDE YABANCI OT SORUNU WEED PROBLEM IN CORN PRODUCTION IN DİYARBAKIR, TURKEY

Azat BALI

Yüksek Lisans Öğrencisi, Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Van, Türkiye

Reyyan YERGİN ÖZKAN

Doç. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye

ORCID ID: 0000-0003-2319-404X

ÖZET

Diyarbakır'da son yıllarda sulama imkanlarının artmasıyla tarımsal üretimde büyük artış olmuştur. Son yıllarda bölgede mısır yetiştiriciliği artmış ve bununla beraber yabancı otlar daha fazla sorun olmaya başlamıştır. Yapılan bu anket çalışması ile Diyarbakır ili ve ilçelerinde mısır yetiştiricilerinin yetiştiricilikle ilgili bilgi seviyeleri, yabancı ot sorununun hangi boyutta olduğu ve yabancı otlarla mücadelede bölge üreticisinin bilgi, donanım, deneyim ve sorunları çözümedeki yaklaşımları araştırılmıştır. Bu amaçla 2021 yılında Diyarbakır'da mısır yetiştiriciliği yapan 170 çiftçi ile yüz yüze görüşülerek anket yapılmış ve çiftçilere toplam 30 soru yöneltilmiştir. Elde edilen anket sonuçlarına göre mısır çiftçilerinin tarımla ilgili eğitim durumlarının orta seviyede olduğu, genel anlamda mısır yetiştiriciliğinden memnun oldukları, ancak en önemli sorunlarından birinin zirai mücadele sorunları olduğu, bunların içinde de böcekler ve yabancı otlar ilgili problemlerinin fazla olduğu anlaşılmıştır. Çiftçiler bu yabancı otlardan en çok kanyaş (*Sorghum halepense* (L.) Pers.), pıtrak (*Xanthium strumarium* L.) ve semiz otu (*Portulaca oleraceae* L.) sorun olduğunu belirtmişlerdir. Yabancı otlarla ilgili sorunlarını çözmek için çiftçilerin zirai ilaç bayilerinden yararlanmayı tercih ettikleri, yabancı ot mücadelesinde kimyasal ve fiziksel mücadele yöntemlerini kullandıkları, bu herbisitleri ise çoğunlukla zirai ilaç bayilerinin tavsiyelerine göre aldıklarını ve sorunlarını büyük oranda çözdüklerini belirtmişlerdir. Bunun yanı sıra özellikle zararlılar ile mücadelede alet-ekipman eksikliğinden kaynaklı sıkıntı yaşadıkları ve T.C. Tarım ve Orman Bakanlığının çiftçilerin hasat sonrası ürünlerini daha kolay pazarlayabilecekleri DİTAP uygulamasından haberdar olmadıkları çalışmadan elde edilen önemli sonuçlar arasındadır. Ayrıca bölgede mısır yetiştiriciliğinde halen büyük oranda salma sulama yöntemi tercih edilmektedir. Bu durum ilerleyen yıllarda mevcut olan kuraklığın yanı sıra tuzluluğun artması açısından da büyük risk teşkil etmektedir. Sonuç olarak, Diyarbakır'da çiftçilerin mısır yetiştiriciliği ile ilgili bazı eksiklikleri ve sorunları olmakla beraber mısır yetiştiriciliğinden genel anlamda memnun oldukları görülmektedir.

Anahtar kelimeler: Anket, Mısır, Mücadele, Yabancı ot.

ABSTRACT

In recent years, there has been a great increase in agricultural production in Diyarbakır with the increase in irrigation opportunities. However, maize cultivation has increased and as a result weeds have become more of a problem. With the survey study, the knowledge levels of corn farmers about farming, the extent of the weed problem and the knowledge, experience and approaches of the producer in solving the problems in management weeds in Diyarbakır and districts were investigated. For this purpose, a face-to-face survey was conducted with 170 farmers engaged in corn cultivation in Diyarbakır in 2021, and a total of 30 questions were asked to the farmers. According to the results obtained, it has been understood that the education level of corn farmers is at a medium level, one of the most important problems is agricultural control problems, among which there are many problems related to insects and weeds. Farmers stated that among these weeds, Johnsongrass (*Sorghum halepense* (L.) Pers.), cocklebur (*Xanthium strumarium* L.) and purslane (*Portulaca oleraceae* L.) are the most problematic. They stated that for solve their problems related to weeds, farmers use chemical and physical control methods in



weed control, and that they mostly buy these herbicides according to the recommendations of pesticide dealers and they solve their problems to a large extent. In addition to this, it is among the important results obtained from the study that they have difficulties due to the lack of tools and equipment, especially in the fight against pests, and that the T.R. Ministry of Agriculture and Forestry is not aware of the DİTAP application, where the farmers can market their products more easily after the harvest. In addition, in the region, still the flooding irrigation method is mostly preferred in corn cultivation. It is predicted that this situation will increase the risk of drought and especially salinity in the coming years. As a result, it is seen that the farmers in Diyarbakir are generally satisfied with corn cultivation, although they have some deficiencies and problems.

Keywords: Corn, Survey, Weeds, Weed control.

TÜRKİYE’NİN DOMATES ÜRETİMİ VE REKABET GÜCÜ

TURKEY’S TOMATO PRODUCTION AND ANALYSIS OF COMPETITIVENESS

Eylem DURMUŞ

Arş. Gör., Çanakkale Onsekiz Mart Üniversitesi Ziraat Fakültesi Tarım Ekonomisi Bölümü

ORCID ID: 0000-0002-5749-0317

Arif SEMERCİ

Prof. Dr., Çanakkale Onsekiz Mart Üniversitesi Ziraat Fakültesi Tarım Ekonomisi Bölümü

ORCID ID: 0000-0003-0893-3748

ÖZET

Türkiye, iklim koşullarının uygunluğu sebebiyle pek çok sebzenin üretiminde önemli bir paya sahiptir. Domates bu ürünlerden biri olmaktadır. Nitekim dünya domates üretimi yaklaşık 187 milyon ton olup, dünya domates üretiminin %7,07’si Türkiye tarafından karşılanmaktadır. Türkiye, domates üretimi açısından ülkeler sıralamasında 3. sırada yer almaktadır. Dünya domates ihracatı ise yaklaşık 8 milyon ton olup, ihracatın %6,61’i Türkiye tarafından gerçekleştirilmektedir. Domates ihracatından yaklaşık 10 milyar dolarlık bir değer elde edilmektedir ve Türkiye bu değerlerin %31,41’lik kısmına sahip olmaktadır. Üretim ve ihracat potansiyelinin yanı sıra yüksek iç tüketime sahip (97,61 kg/kişi/yıl) domates, taze tüketiminin yanı sıra gıda sanayinde de hammadde olarak kullanılmaktadır. Gerek üretim, tüketim gerekse dış olan katkısı ile domates, ülke ekonomisi açısından stratejik önem arz etmektedir. Çalışmada, önemli ihraç ürünlerinden olan domatesin üretimi ve rekabet gücünün analizi amaçlanmıştır. Bu amaçla, dünya domates ihracatında önde gelen ülkeler seçilmiş ve rekabet gücünün analizinde yaygın olarak kullanılan Açıklanmış Karşılaştırmalı Üstünlükler ile Vollrath indeksleri kullanılmıştır. Elde edilen sonuçlara göre, Avrupa pazarındaki payını arttırması ve ihracatta karşılaştırmalı üstünlüğe sahip olmasına karşılık Türkiye’nin son yıllarda indeks değerlerinde gerilemeler söz konusudur. Pandemi koşulları, pandemi sebebiyle ticarete korumacı politikaların izlenmesi, ülkeler arası ilişkiler, Türkiye tarım sektörünün bazı yapısal sorunları gibi nedenler indeks değerlerindeki gerilemelere gerekçe olarak gösterilebilir.

Anahtar Kelimeler: Domates, Rekabet Gücü, Açıklanmış Karşılaştırmalı Üstünlükler İndeksi, Vollrath İndeksi

ABSTRACT

Turkey has an important share in the production of many vegetables due to the suitability of climatic conditions. Tomato is one of these products. As a matter of fact, world tomato production is approximately 187 million tons and 7.07% of world tomato production is met by Turkey. Turkey ranks 3rd among countries in terms of tomato production. World tomato export is about 8 million tons and 6.61% of the export is realized by Turkey. A value of approximately 10 billion dollars is obtained from tomato exports and Turkey has 31.41% of this value. In addition to its production and export potential, tomatoes with high domestic consumption (97.61 kg/capita/year) are used as raw materials in the food industry as well as fresh consumption. In the study, it is aimed to analyze the production and competitiveness of tomato, which is one of the important export products. For this purpose, the leading countries in world tomato exports were selected and the Revealed Comparative Advantage index and Vollrath index, which are widely used in the analysis of competitiveness, were used. According to the results obtained, despite the fact that Turkey has increased its share in the European market and has a comparative advantage in exports, there has been a decline in index values in recent years. The reasons such as pandemic conditions, following protectionist policies in trade due to the pandemic, relations



between countries, and some structural problems of the Turkish agricultural sector can be cited as reasons for the decline in index values.

Keywords: Tomato, Competitiveness, Revealed Comparative Advantage index, Vollrath index.

COĞRAFI İŞARET TESCİLİNİN YARATACAĞI EKONOMİK KATKILARIN PAZARA AKTARILMASI ÜZERİNE BİR İNCELEME VE ÖNERİLER

AN ANALYSIS AND SUGGESTIONS ON TRANSFERRING THE ECONOMIC CONTRIBUTIONS OF GEOGRAPHICAL INDICATION TO THE MARKET

Eylem DURMUŞ

Arş. Gör., Çanakkale Onsekiz Mart Üniversitesi Ziraat Fakültesi Tarım Ekonomisi Bölümü

ORCID ID: 0000-0002-5749-0317

Arif SEMERCİ

Prof. Dr., Çanakkale Onsekiz Mart Üniversitesi Ziraat Fakültesi Tarım Ekonomisi Bölümü

ORCID ID: 0000-0003-0893-3748

ÖZET

Yerel ürünlerin küresel düzeyde önem kazanmaya başlaması, coğrafi işaret tescili konusunu dünyada ve Türkiye’de giderek önemli hale getirmiştir. Türkiye sahip olduğu iklim koşulları neticesinde pek çok ürünün yetiştiriciliğine olanak vermekte ve derin tarihi kökenleri ile yöresel ürünlerin önemli bir kaynağıdır. Bu sebeple Türkiye, coğrafi işaretler pazarından bugün ve gelecekte alacağı pay açısından büyük bir potansiyel taşımaktadır. Türkiye, 1092 adet tescile sahipken işlemlerine devam eden toplam başvuru sayısı 747 adettir. Mevcut tescillerin, %70’i Mahreç İşareti, %29,5’si Menşe Adı ve %0,5’i Geleneksel Ürün Adı’na sahiptir. Tescilli coğrafi işaretlerin ürün gruplarına göre dağılımı incelendiğinde ise dörtte birinden fazlası (%29,4) işlenmiş veya işlenmemiş tarım ürünleridir. Sahip olduğu potansiyele karşın tescile sahip tarım ürünlerinin sayısı az olmakla birlikte yapılan incelemeler göstermektedir ki coğrafi işaret tescili alındıktan sonra ortaya çıkacak olası etkilerin piyasa yansıtılmasında ciddi sıkıntılar bulunmaktadır. Coğrafi işaret tescili alındıktan sonra izlenebilirliğin sağlanamaması ve tescilin ürüne katma değer olarak yansıtılamaması, coğrafi işaret tescilinin yaratacağı ekonomik katkıların pazara aktarılamaması önündeki en büyük engeller olarak tespit edilmiştir. Coğrafi işaret tescilinin yaratacağı ekonomik etkilerin pazara başarılı bir şekilde aktarılması için izlenebilirliğe yönelik bir sistemin geliştirilmesinin, üretici birlikleri ve kooperatifler aracılığı ile ortak bir pazarlama ağının kurulması ve ürünün ayırt ediciliğini vurgulayan pazarlama stratejilerinin geliştirilmesi önerilmektedir.

Anahtar Kelimeler: Coğrafi İşaret Tescili, Ekonomik Katkı, Pazarlama Stratejisi

ABSTRACT

The fact that local products are gaining importance at the global level has made the registration of geographical indications increasingly important in the world and in Turkey. As a result of its climatic conditions, Turkey allows the cultivation of many products and is an important source of local products with its deep historical roots. For this reason, Turkey has a great potential in terms of its share in the geographical indications market today and in the future. While Turkey has 1092 registrations, the total number of applications in progress is 747. Of the existing registrations, 70% have the Protected Geographical Indication, 29.5% have the Protected Designation of Origin and 0.5% have the Traditional Speciality Guaranteed. When the distribution of registered geographical indications by product groups is analyzed, more than one fourth (29.4%) is processed or unprocessed agricultural products. Despite the potential it has, the number of registered agricultural products is low, and the examinations show that there are serious problems in reflecting the possible effects that will arise after the geographical indication registration is obtained. The failure to ensure traceability after the registration of geographical indications and the inability to reflect the registration as added value to the product have been identified as the biggest obstacles to the inability to transfer the economic contributions of geographical indication



registration to the market. In order to successfully transfer the economic effects of geographical indication registration to the market, it is recommended to develop a system for traceability, to establish a common marketing network through producer unions and cooperatives, and to develop marketing strategies that emphasize the distinctiveness of the product.

Keywords: Geographical Indication Registration, Economic Contribution, Marketing Strategy.

FARKLI TUZ KONSANTRASYONLARININ MERCİMEK (*Lens culinaris Medic.*) ÇEŞİTLERİNDEKİ İLK GELİŞME DÖNEMİNDE BAZI BÜYÜME PARAMETRELERİ ÜZERİNE ETKİLERİ

THE EFFECTS OF DIFFERENT SALT CONCENTRATIONS ON SOME GROWTH PARAMETERS OF LENTIL (*Lens culinaris Medic.*) VARIETIES IN THE EARLY GROWTH PERIOD

Haluk KULAZ¹

¹Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü, Van, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0003-3044-5046>

İshak BARAN²

²Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü, Van, Türkiye.

²ORCID ID: <https://orcid.org/0000-0002-6299-8043>

ÖZET

Ortam koşullarının bitkinin normal gelişimini negatif bir şekilde etkilemesiyle bitkide oluşan duruma stres adı verilir. Bitkilerde başlıca stres çeşitleri, su (kuraklık), tuz, sıcaklık, soğuk, don, ışık, hastalık, su taşkını (fazla su), hava kirliliği, metal ve oksidatif strestir. Tüm dünyada sulanabilir tarım alanlarının yaklaşık %33'nün tuzdan etkilendiği ve bu bölgelerde yetiştirilen bitkilerde tuz stresi olduğu bilinmektedir. Bitkisel üretimde verim ve kaliteyi etkileyen en önemli abiyotik stress faktörü hiç kuşkusuz topraktaki tuzluluk seviyesidir.

Bu araştırmada üç mercimek çeşidine (Özbek, Kafkas ve Fırat) uygulanan NaCl (Kontrol (0)-75-150-225 mM) dozlarının bitkideki büyüme parametreleri üzerine etkileri incelenmiştir. Çalışma 2019 yılında Van Yüzüncü Yıl Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölüm Laboratuvarında Faktöriyel düzende Tesadüf Parselleri Deneme Deseni'ne göre 3 tekerrürlü olarak saksılarda yürütülmüştür. Fideler çıkıştan 25 gün sonra tuz uygulamasına tabi tutulmuş; kök ve gövde uzunluğu, kök ve gövde yaş ve kuru ağırlığı ölçümleri yapılmıştır. Artan tuz dozlarının bütün parametreler üzerine olumsuz etki yaptığı gözlenmiştir. İncelenen özellikler yönünden Kafkas çeşidi tuza daha dayanıklı bir performans gösterirken bunu Fırat çeşidi takip etmiştir.

AnahtarKelimeler: Mercimek, Tuz Stresi, Büyüme Parametreleri

ABSTRACT

The situation that occurs in the plant when the environmental conditions affect the normal development of the plant in a negative way is called stress. The main types of stress in plants are water (drought), salt, heat, cold, frost, light, disease, flooding (excess water), air pollution, metal and oxidative stress. It is known that around 33% of irrigable agricultural lands all over the world are affected by salt and salt stress occurs in plants grown in these regions. The most important abiotic stress factor affecting yield and quality in crop production is undoubtedly the salinity level in the soil.

In this study, the effects of NaCl (Control (0)-75-150-225 mM) doses applied to three lentil cultivars (Özbek, Kafkas and Fırat) on the growth parameters of the plant were investigated. The study was carried out in pots with 3 replications according to the Factorial Random Plots Trial Design in Van Yüzüncü Yıl University, Faculty of Agriculture, Department of Field Crops Laboratory in 2019. The seedlings were treated with salt 25 days after emergence; root and stem length, root and stem fresh and dry weight measurements were made. It was observed that increasing salt doses had a negative effect on all parameters. In terms of the examined characteristics, the Kafkas variety showed a more resistant performance to salt, followed by the Fırat variety.

Keywords: Lentils, Salt Stress, Growth Parameters

SİYAH FASÜLYE YAPRAKBİTİ (*Aphis fabae*)'NİN BAKLA (*Vicia fabae*) ÜSTÜNDE BAZI DEMOGRAFİK ÖZELLİKLERİ

SOME DEMOGRAPHIC CHARACTERISTICS OF BLACK BEAN APHID (*Aphis fabae*) ON BROAD BEAN (*Vicia fabae*)

Mehmet Salih ÖZGÖKÇE¹

¹ Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0002-6777-9149>

Furkan Harun BAŞI²

² Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye.

²ORCID ID: <https://orcid.org/0000-0002-4764-9742>

Esra KINA³

³ Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye.

³ORCID ID: <https://orcid.org/0000-0001-6728-3453>

Hilmi KARA⁴

⁴ Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye.

⁴ORCID ID: <https://orcid.org/0000-0003-0580-0464>

ÖZET

Siyah fasulye yaprakbiti, *Aphis fabae* yüzden fazla otsu ve odunsu bitki üstünde beslenen ve otuzdan fazla bitki virus hastalığını taşıyan önemli bir zararlıdır. Çalışmada bu zararlının “Filiz” bakla (*Vicia fabae*) çeşidi üstünde laboratuvar koşullarında yaş ve döneme özgü yaşam çizelgesi ve popülasyon büyüklüğü belirlenmiştir. Yaşam çizelgeleri bir türün belli koşullar altında gelişme, üreme ve canlılık oranı ham verilerine dayalı olarak biyolojisine ait özet bilgiler sunan ve o türün popülasyon dinamiğini anlamamıza yardımcı olan çalışmalardır. Çalışmalar 25±1 °C sabit sıcaklık, %50-60 orantılı nem ve 16:8 saat aydınlık koşullarına ayarlanmış iklim odasında yürütülmüştür. Çalışma sonunda zararlının 8.5±2.121 günde geliştiği ve toplam yaşam uzunluğunun 17.5 gün olduğu saptanmıştır. Yaşam çizelgesi parametreleri ise sırayla kalıtsal üreme yeteneği (r) 0.07 g⁻¹, artış oranı sınırı (λ) 1.077 g⁻¹, ortalama döl süresi (T) 13.89 gün, net üreme gücü (R_0) 2.8 nimf/dişi olduğu belirlenmiştir. Zararlının popülasyon büyüklüğünün ise başlangıç popülasyonu 10 nimf alındığında 60. günde 463.1 bireye ulaşabileceği tahmin edilmiştir. Zararlının yaşam çizelgesi parametrelerinin aynı konukçunun farklı çeşitleri ile yürütülmüş çalışmalar ile karşılaştırıldığında genel olarak düşük olduğu saptanmıştır.

Anahtar Kelimeler: *Aphis fabae*, *Vicia fabae*, yaş ve döneme özgü iki eşeyli yaşam çizelgesi, gelişme süresi, canlılık oranı, üreme oranı

ABSTRACT

Black bean aphid, *Aphis fabae*, is an important pest that feeds on more than a hundred herbaceous and woody plants and carries more than thirty plant virus diseases. In the study, age and stage-specific life table and population size were determined on the “Filiz” broad bean (*Vicia fabae*) cultivar of this pest under laboratory conditions. Life tables are studies that provide summary information about the biology of a species based on the raw data of development, reproduction and survival rate under certain conditions and help us understand the population dynamics of that species. The studies were carried out in a climate room adjusted to 25±1 °C constant temperature, 50-60% relative humidity and 16:8 hours of light. At the end of the study, it was determined that the pest developed in 8.5±2.121 days and the



total lifespan was 17.5 days. Life table parameters were determined as the intrinsic rate of increase (r) 0.07 g^{-1} , the finite rate of increase (λ) 1.077 g^{-1} , mean generation time (T) 13.89 days, net reproductive rate (R_0) 2.8 nymphs/female. It has been estimated that the population size of the pest can reach 463.1 individuals on the 60th day when the initial population of 10 nymphs is taken. It was determined that the life table parameters of the pest were generally low when compared with the studies carried out with different varieties of the same host.

Key words: *Aphis fabae*, *Vicia fabae*, age stage-specific two sex life table, development times, survival rate, fecundity

BOR STRESİ KOŞULLARINDA TREHALOZ UYGULAMASININ EKMEKLİK BUĞDAY ÇEŞİDİ KÖKLERİNİN ANTiOKSİDAN SAVUNMA MEKANİZMASI ÜZERİNE ETKİSİ

THE EFFECT OF TREHALOSE APPLICATION UNDER BORON STRESS ON THE ANTIOXIDANT DEFENSE MECHANISM OF BREAD WHEAT ROOTS

Zuhal Zeynep AVŞAROĞLU¹

¹Selçuk Üniversitesi, Ziraat Fakültesi, Toprak Bilimi ve Bitki Besleme, Konya, Türkiye

¹ORCID NO: <https://orcid.org/0000-0002-8078-2772>

Aidana SUGİRBEKOVA²

²Selçuk Üniversitesi, Ziraat Fakültesi, Toprak Bilimi ve Bitki Besleme, Konya, Türkiye

²ORCID ID: <https://orcid.org/0000-0001-7637-316X>

Prof. Dr. Mehmet HAMURCU³

³Selçuk Üniversitesi, Ziraat Fakültesi, Toprak Bilimi ve Bitki Besleme, Konya, Türkiye

³ORCID ID: <https://orcid.org/0000-0001-7378-4406>

Prof. Dr. Sait GEZGİN⁴

⁴Selçuk Üniversitesi, Ziraat Fakültesi, Toprak Bilimi ve Bitki Besleme, Konya, Türkiye

⁴ORCID ID: <https://orcid.org/0000-0002-3795-4575>

ÖZET

İnsanlığın var olduğu günden beri en çok tüketilen besin maddesi olan buğday, günümüzde önemini korumakta olup, gelecek dönemlerde de bu önemini artırarak devam ettirecek bir kültür bitkisidir. Türkiye’de hızlı bir biçimde artan nüfusun gıda ihtiyacının karşılanabilmesi birim alandan alınan verimin artırılmasıyla mümkündür. Ancak dünyada olduğu gibi ülkemizin kurak ve yarı kurak bölgelerinde B stresi büyük bir sorun oluşturmaktadır. Daha önce yapılan araştırma sonuçlarına göre, bor stresinde bitki kök ucunun gövdeye oranla gelişiminin azaldığı, dolayısıyla gövde/kök oranının artması nedeniyle bitkinin stres koşullarına hassasiyetinin önemli ölçüde arttığı bildirilmiştir. Borun bitkilerde vejetatif gelişmeye göre generatif gelişmede daha büyük önem taşıdığı, bor stresi ortamında bitki kök ucunda hücre büyüme-bölünmesinin engellendiği, kök uzamasının gerilediği, kök sisteminin bodur ve çalılaşmış bir görünüm aldığı bilinmektedir. Bu nedenle, bor stresi bitkinin büyüme ve gelişmesini olumsuz yönde etkileyen abiyotik stres faktörlerindedir. Abiyotik stres koşulları altında trehaloz birikimi antioksidanların (SOD, CAT, APOX, POX) aktivitelerini artırarak reaktif oksijen türlerini süpüren bir antioksidan moleküldür. Bu araştırma Karahan 99 ekmeklik buğday çeşidinde, bor stresi koşullarında trehaloz uygulamalarının bitki kökleri üzerinde antioksidan savunma mekanizmasının etkilerini ortaya koymak amacıyla yapılmıştır. Bu amaç doğrultusunda, Karahan 99 ekmeklik buğday çeşidine kontrollü koşullarda yeterli B (Hoagland), yetersiz B (0 mM B) ve toksik B (1 mM B) seviyesinde 100 µM trehaloz uygulanmasıyla bitkinin temel büyüme parametrelerinde (gövde, kök boyu, yaş, kuru ağırlıkları), antioksidan savunma mekanizmasında (SOD, CAT ve APOX) meydana getirdiği değişimler incelenmiştir. Bor stresi koşullarında buğday çeşidinin köklerinde SOD ve CAT enzim aktiviteleri kontrole göre artış gösterirken, APOX enzim aktiviteleri azalış gösterdiği belirlenmiştir. Bor stresi koşullarında trehaloz uygulamalarına bağlı olarak bitki köklerindeki SOD, CAT ve APOX enzim aktiviteleri kontrole göre daha fazla artış gösterdiği tespit edilmiştir. Bor stresi koşullarında Karahan 99 ekmeklik buğday çeşidine 100 µM trehaloz uygulamasıyla köklerdeki antioksidan enzim aktivitelerine artırıcı yönde etki yaptığı belirlenmiştir. Ayrıca bor stresi koşullarında trehaloz uygulaması borun bitkide meydana getirdiği olumsuz etkileri azaltarak stres tolerans mekanizmasının gelişmesini sağlamıştır.

Anahtar Kelimeler: Buğday, bor stresi, trehaloz.

ABSTRACT

Wheat, which has been the most consumed nutrient since the existence of mankind, retains its importance today and is a cultural plant that will continue to increase its importance in the coming periods. It is possible to meet the food needs of the rapidly growing population in Turkey by increasing the yield received from the unit area. However, as in the world, B stress is a major problem in the arid and semi-arid regions of our country. According to the results of previous research, it has been reported that the development of the plant root tip in boron stress is reduced compared to the stem, so the sensitivity of the plant to stress conditions is significantly increased due to the increase in the stem/root ratio. It is known that boron is more important for generative development in plants than vegetative development, cell growth and division at the plant root end is blocked in the environment of boron stress, stem elongation is reduced, and the root system takes on a stunted and shrubby appearance. Therefore, boron stress is one of the abiotic stress factors that negatively affect the growth and development of the plant. The accumulation of trehalose under abiotic stress conditions is an antioxidant molecule that scavenges reactive oxygen species by increasing the activities of antioxidants (SOD, CAT, APOX, POX). This research was conducted in order to reveal the effects of trehalose applications on antioxidant defense mechanism on plant roots in Karahan 99 bread wheat cultivars grown in Turkish agriculture under conditions of boron stress. For this purpose, adequate Karahan 99 on the type of bread wheat under controlled conditions B (Hoagland), insufficient B (B 0 mm) and toxic B (B 1 mm) in the implementation of the plant level 100 μM trehaloz basic growth parameters (stem and Root Length, fresh and dry weights), in the mechanism of antioxidant defense (SOD, CAT and APOX) caused by the changes were investigated. It has been determined that SOD and CAT enzyme activities increased in the roots of wheat variety under boron stress conditions compared to control, while APOX enzyme activities decreased. It has been found that SOD, CAT and APOX enzyme activities in plant roots show a greater increase in boron stress conditions due to trehalose applications than in control. It has been determined that the application of 100 μM trehalose to 99 bread wheat varieties of Karahan in conditions of boron stress has an increasing effect on antioxidant enzyme activities in the roots. In addition, the application of trehalose in conditions of boron stress has enabled the development of stress tolerance mechanism by reducing the negative effects of boron on the plant.

Keywords: Wheat, boron stress, trehalose.

PROBİYOTİK MİKROORGANİZMALARIN MİKROKAPSÜLENMESİ - FARKLI NİŞ ÜRÜNLERDE KULLANIMI

MICROENCAPSULATION OF PROBIOTIC MICROORGANISMS - USE IN DIFFERENT NICH
PRODUCTS

Aysun KULUÇLU

*Yüksek Lisans Öğrencisi, Süleyman Demirel Üniversitesi, Mühendislik Fakültesi, Gıda Mühendisliği
Bölümü*

ORCID ID: 0000-0002-8161-704X

Tuğba KÖK TAŞ

*Doç. Dr. Öğr. Üyesi, Süleyman Demirel Üniversitesi, Mühendislik Fakültesi, Gıda Mühendisliği
Bölümü*

ORCID ID: 0000-0001-8813-6479

ÖZET

Son zamanlarda artan sağlık problemlerine bağlı olarak tüketicilerin fonksiyonel gıdalara olan yönelimleri artmıştır. Fonksiyonel gıda ürünlerinin en büyük oranın probiyotik mikroorganizmaların kullanıldığı ürünler kapsamaktadır. Probiyotik mikroorganizmaların konakçıya yararlı etkisi olabilmesi için, tüketilen ürünlerde probiyotik mikroorganizma içeriği en az 10^6 kob/g olması gerekmektedir. Probiyotik mikroorganizmalar insan vücudu için sağlık açısından oldukça önemlidir ancak gıda ortamında çevresel koşullardan (nem, ışık, oksijen vb.) olumsuz etkilenmeleri ve canlılıklarını uzun süre koruyamamaları en önemli dezavantajlarıdır. Probiyotik mikroorganizmaların olumsuz çevre koşullarına karşı koymaları için fiziksel bir bariyer oluşturulması ile ilgili araştırmaların en başında mikroenkapsülasyon uygulama yöntemi gelmektedir. Mikroenkapsülasyon (ME) katı, sıvı veya gaz halindeki gıda bileşenlerinin, enzimlerin, hücre ve diğer maddelerin, mikroorganizmaların protein veya karbonhidrat esaslı bir kaplama materyaliyle kaplanması şeklinde tanımlanmaktadır. Uygulanan mikroenkapsülasyon yöntemleri ile fonksiyonel ürün geliştirme araştırmaları hem bilimsel hem endüstriyel boyutlarda hız kazanmaktadır. Araştırmalar büyük ölçüde *in vitro* ve *in vivo* çalışmalarla probiyotik mikroorganizmaların canlı kalma oranlarını artırmaya yöneliktir. Mikroenkapsülasyon yöntemi ile probiyotik mikroorganizmaların istenilen zamanda ve bölgede kontrollü salınımı sağlanarak konakçıya gerekli düzeyde canlı mikroorganizma geçişi sağlanmış olur. Probiyotik mikroorganizmalarda kullanılan kaplama materyali ve kaplama yöntemi açısından farklılık gösteren çok fazla mikroenkapsülasyon yöntemleri geliştirilmektedir. Probiyotik bakterilerin kaplanmasında aljinatlar, peynir altı suyu proteinleri, nişasta, karregenan, selüloz asetat fitalat (CAP), kitosan, jellan ve ksantan gam, jelatin ve nohut proteinleri kaplama materyali olarak yaygın bir şekilde kullanılmaktadır. Probiyotik bakterilere, bakterinin özelliğine göre bu kaplama materyalleri, uygun kaplama yöntemleri (ekstrüzyon, emülsiyon, akışkan yatak, rennet ile jelleştirilmiş protein, dondurarak kurutma, püskürtmeli kurutma, hibridizasyon, çarpışmalı aerosol teknolojisi ve elektrodöndürme) kullanılarak kaplama işlemi gerçekleştirilir. Bu çalışmada probiyotik mikroorganizmaların mikroenkapsülasyonunda kullanılan kaplama materyalleri, kaplama yöntemleri ve hangi tür gıdalarda kullanımı ile ilgili araştırmalar derlenmiştir.

Anahtar Kelimeler: Probiyotik, Mikroenkapsülasyon Yöntemleri, Kaplama Materyelleri

ABSTRACT

Recently, consumers' orientation towards functional foods has increased due to increasing health problems. The largest proportion of functional food products includes products using probiotic microorganisms. In order for probiotic microorganisms to have a beneficial effect on the host, the

content of probiotic microorganisms in the consumed products must be at least 10^6 cfu/g. Probiotic microorganisms are very important for the human body in terms of health, but the most important disadvantages are that they are adversely affected by environmental conditions (humidity, light, oxygen, etc.) in the food environment and cannot maintain their vitality for a long time. Microencapsulation application method is at the forefront of research on creating a physical barrier for probiotic microorganisms to resist adverse environmental conditions. Microencapsulation (ME) which it is defined as the coating of solid, liquid or gaseous food components, enzymes, cells and other substances, microorganisms with a protein or carbohydrate-based coating material. With the applied microencapsulation methods, functional product development researches are gaining momentum in both scientific and industrial dimensions. Research is largely aimed at increasing the survival rates of probiotic microorganisms with *in vitro* and *in vivo* studies. With the microencapsulation method, the controlled release of probiotic microorganisms at the desired time and in the region is ensured, and the necessary level of live microorganisms is transmitted to the host. Many microencapsulation methods are being developed, which differ in terms of the coating material and coating method used in probiotic microorganisms. Alginates, whey proteins, starch, carrageenan, cellulose acetate phthalate (CAP), chitosan, gellan and xanthan gum, gelatin and chickpea proteins are widely used as coating materials in the coating of probiotic bacteria. The coating process is carried out by using these coating materials, with appropriate coating methods (extrusion, emulsion, fluid bed, rennet-gelled protein, freeze drying, spray drying, hybridization, collision aerosol technology and electrospinning) according to the properties of probiotic bacteria. In this study, researches on coating materials used in microencapsulation of probiotic microorganisms, coating methods and their use in which foods were compiled.

Keywords: Probiotic, Microencapsulation Methods, Coating Materials

TÜRKİYE PROPOLİSLERİNİN ANTIÖKSİDAN AKTİVİTELERİ VE UÇUCU BİLEŞEN PROFİLLERİ

ANTIOXIDANT ACTIVITIES AND VOLATILE COMPONENT PROFILES OF TÜRKİYE PROPOLIES

Ayhan BAŞTÜRK¹

¹ Van Yüzüncü Yıl Üniversitesi, Mühendislik Fakültesi, Gıda Mühendisliği Bölümü, Van, Türkiye

¹ORCID ID: <https://orcid.org/0000-0001-7701-9306> (Sorumlu Yazar)

Berfin YAVAŞ²

² Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Gıda Mühendisliği Anabilim Van, Türkiye

²ORCID ID: <https://orcid.org/0000-0003-4799-4244>

ÖZET

Bu çalışmada Anadolu'nun farklı 16 ilinden Mayıs-Ekim 2019 döneminde temin edilen propolislerin antioksidan aktiviteleri (DPPH, ABTS), toplam fenolik madde içerikleri (TFM) ve uçucu bileşen profilleri belirlenmiştir. 13 propolis örneği (%28.1-92.5) BHT'den (%24.5) daha yüksek DPPH radikal temizleme aktivitesi göstermiştir. Propolis ekstraktlarında ABTS değerleri 193.8-1369.6 µMol Trol./g aralığında belirlenmiştir. Biri dışında tüm Propolislerde ABTS değerleri BHT'den yüksek bulunmuştur. TFM 5333.3-36966.7 mg GAE/100g aralığında değişim göstermiştir. DPPH, ABTS ve TFM sonuçları arasında güçlü pozitif korelasyon tespit edilmiştir. Propolis örneklerinde 34 terpen, 10 asit, 7aldehit, 7 keton, 6 hidrokarbon ve 1 alkol olmak üzere, toplamda 65 farklı uçucu bileşik belirlenmiştir. Terpen grubunda öne çıkanlar; α-pinen, β-pinen, limonen, karyofilen, α-kopan, longifolen ve kamfen olmuştur. Hidrokarbonlardan örneklerde en çok bulunanlar ise m-simen, stiren ve hekzan olmuştur.

Sonuç olarak, Ülkemizin farklı fitocoğrafik bölgelerinden elde edilen propolisler, farklı uçucu bileşik profilleri ve toplam fenolik madde içerikleri sergilemiştir. Buna bağlı olarak antioksidan aktiviteleri de farklılık göstermiştir. Propolis ekstraktlarının büyük kısmı BHT'den daha yüksek antioksidan aktivite göstermiştir. Propolis örneklerinin güçlü antioksidan aktiviteye sahip olmaları, propolislerin gıda, ilaç ve kozmetik gibi farklı endüstri kollarında kullanımına dair çalışmalar için yol gösterici olacaktır. Bu çalışma sonuçları, ulusal propolis örneklerinin kalite kontrolü, propolis profilinin belirlenmesi için tanımlama ve sınıflandırma için kriterler oluşturmaya yardımcı olabilir. Propolis bileşiminin evrensel bir standardizasyonu imkânsız olduğundan, propolis bileşimlerini sistematik olarak karşılaştırmak mümkün olmasa da propolisin biyolojik özellikleri kimyasal bileşimine ve botanik kaynaklarına bağlanabilir. Propolisler için standart bir tanımlamanın yapılamadığı, bitkiye göre tiplendirmeye dayalı yaklaşım, kaynak propolis standardizasyonu alanında iyi sonuçlar verebilir. Ayrıca alınan bu sonuçlar ve yapılan bu çalışmalar daha ileri düzeyde özellikle bireysel fenolik bileşikler yönünden ve her bir propolisin toplandığı bölgenin florasının incelenmesi ile genişletilmelidir.

Anahtar Kelimeler: Antioksidan Aktivite, Propolis, Toplam Fenolik Madde, Uçucu Bileşen.

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ABSTRACT

In this study, antioxidant activities (DPPH, ABTS), total phenolic content (TPC) and volatile component profiles of propolis obtained from 16 different provinces of Anatolia between May-October 2019 were determined. Thirteen propolis samples (28.1-92.5%) showed higher DPPH radical scavenging activity than BHT (24.5%). ABTS values were determined in the range of 193.8-1369.6 µMol Trol./g in propolis

extract. ABTS values were found to be higher than BHT in all propolis except one. TPC varied between 5333.3-36966.7 mg GAE/100g. A strong positive correlation was found between DPPH, ABTS and TPC results. A total of 65 different volatile compounds were determined in propolis samples, including 34 terpenes, 10 acids, 7 aldehydes, 7 ketones, 6 hydrocarbons and 1 alcohol. Prominent ones in the terpene group; α -pinene, β -pinene, limonene, caryophyllene, α -copane, longifolene and camphene. The most abundant hydrocarbons in the samples were m-cemene, styrene and hexane.

As a result, propolis obtained from different phytogeographic regions of our country exhibited different volatile compound profiles and total phenolic content. Accordingly, their antioxidant activities also differed. Most of the propolis extracts showed higher antioxidant activity than BHT. The strong antioxidant activity of propolis samples will guide the studies on the use of propolis in different industries such as food, medicine and cosmetics. The results of these studies can help to establish criteria for quality control of national propolis samples, identification and classification for determination of propolis profile. Since a universal standardization of propolis composition is impossible, it is not possible to systematically compare propolis compositions, but the biological properties of propolis can be attributed to its chemical composition and botanical sources. The approach based on typing according to the plant, where a standard definition cannot be made for propolises, can give good results in the field of source propolis standardization. In addition, these results and these studies should be further expanded, especially in terms of individual phenolic compounds and by examining the flora of the region where each propolis is collected.

Keywords: Antioxidant Activity, Propolis, Total Phenolic Substance, Volatile Component.

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YARIŞ ATLARINDA KARACİĞER HASTALIKLARIYLA İLGİLİ BAZI BİYOKİMYASAL PARAMETRELERİN DEĞERLENDİRİLMESİ

EVALUATION OF SOME BIOCHEMICAL PARAMETERS RELATED TO LİVER DİSEASES İN RACE HORSES

Halil YAVUZ¹

¹*Necmettin Erbakan Üniversitesi, Veteriner Fakültesi, Biyokimya Anabilim Dalı, Konya, Türkiye.*

¹ORCID ID: <https://orcid.org/0000-0001-9226-2937>

Muhammet Hanifi SELVİ²

²*Necmettin Erbakan Üniversitesi, Veteriner Fakültesi, Zootekni ve Hayvan Besleme Bölümü, Konya, Türkiye.*

²ORCID ID: <https://orcid.org/0000-0002-9785-9174>

Yavuzkan PAKSOY³

³*Necmettin Erbakan Üniversitesi, Konya Ereğli Kemal Akman Meslek Yüksekokulu, Bitkisel ve Hayvansal Üretim Bölümü, Konya, Türkiye.*

³ORCID ID: <https://orcid.org/0000-0002-0935-7693>

ÖZET

Bu çalışma Eylül 2021 ile Şubat 2022 dönemleri arasında Türkiye Jokey Kulübü Adana Yeşiloba Hipodromu At Hastanesine rutin analizler için muayeneye getirilen 121 yarış atının karaciğer hastalıkları ile ilgili bazı biyokimyasal parametrelerinin değerlendirilmesi amacıyla yapılmıştır. Bu amaçla yarış atlarından kan örnekleri alınarak biyokimyasal analizler yapıldı. Numunesi alınan 121 yarış atı; cinsiyet, yaş, ırk, klinik şikâyet yönünden sınıflandırılmıştır. 121 yarış atının cinsiyete göre dağılımı; 52 tanesi dişi, 69 tanesi erkek ve ırklara göre dağılımı; 50 tanesi Arap atı, 71 tanesi İngiliz atı idi. Yaşlara göre dağılımı ise 0-3 yaş aralığında 60 at, 3-6 yaş aralığında 55 at ve 6 yaş ve üzeri 6 at idi. Çalışmada serum karaciğer enzimleri ile karaciğer hastalıkları arasındaki ilişki araştırıldı. Çalışma sonunda numune alınan yarış atlarının 121 tanesinden 17 tanesine Karaciğer Hastalığı teşhisi konmuştur. Karaciğer hastalığı teşhisinde faydalanmak üzere kan örneklerinde laktat dehidrogenaz (LDH), aspartat amino transferaz (AST), gama glutamil transferaz (GGT), kreatin kinaz (CK) ve total bilirubin (TBI) değerlerine bakılmıştır.

Tüm atlarda cinsiyet yönünden kan parametrelerinde AST değeri dişilerde yüksek bulunmuştur ($p<0,05$). GGT, LDH, CK, TBI değerleri istatistiki olarak anlamlı fark göstermemiştir ($p>0,05$). Yaş yönünden bakıldığında karaciğer enzimleri arasında LDH değeri istatistiki olarak anlamlı bulunmuştur ($p<0,05$). Özellikle 3,4,5 ve 6 yaş gruplarındaki atlarda anlamlı fark göstermiştir. AST, GGT, CK, TBI değerleri istatistiki olarak anlamlı fark göstermemiştir ($p>0,05$). Tüm atlarda ırklar arasında bakıldığında LDH, AST ve CK parametreleri yönünden İngiliz ve Arap atları arasında anlamlı fark bulunmuştur ($p<0,05$). Irk yönünden GGT ve TBI değerleri istatistiki olarak anlamlı fark göstermemiştir ($p>0,05$).

Anahtar Kelimeler: Karaciğer Enzimi, yarış atı, biyokimyasal parametreler.

ABSTRACT

This study was carried out to evaluate some biochemical parameters related to liver diseases of 121 racehorses brought to Turkey Jockey Club Adana Yeşiloba Hippodrome Horse Hospital for routine analysis between September 2021 and February 2022. For this purpose, blood samples were taken from race horses and biochemical analyzes were performed. 121 racehorses sampled; were classified in terms of gender, age, race, clinical complaint. Distribution of 121 racehorses by gender; 52 females, 69 males

and their distribution by race; 50 of them were Arabian horses and 71 of them were English horses. The age distribution was 60 horses in the 0-3 age range, 55 horses in the 3-6 age range, and 6 horses aged 6 and over. In this study, the relationship between serum liver enzymes and liver diseases was investigated. At the end of the study, 17 of the 121 race horses sampled were diagnosed with Liver Disease. Blood samples for use in the diagnosis of liver disease, lactate dehydrogenase (LDH), aspartate amino transferase (AST), gamma glutamyl transferase (GGT), creatine kinase (CK) and total bilirubin (TBI) values were examined.

In all horses, AST value was found to be higher in females in terms of sex in blood parameters ($p < 0.05$). GGT, LDH, CK, TBI values did not show a statistically significant difference ($p > 0.05$). In terms of age, LDH value among liver enzymes was found to be statistically significant ($p < 0.05$). It showed a significant difference especially in horses in the 3,4,5 and 6 age groups. AST, GGT, CK, TBI values did not show any statistically significant difference ($p > 0.05$). When all horses were examined between breeds, a significant difference was found between British and Arabian horses in terms of LDH, AST and CK parameters ($p < 0.05$). GGT and TBI values in terms of race did not show a statistically significant difference ($p > 0.05$).

Keywords: Liver enzyme, race horse, biochemical parameters.

VAKKAS ÜZÜM ÇEŞİDİNİN KALLUS KÜLTÜRÜNDE UV-C UYGULAMASI SONRASINDA ANTOŞİYANİN ÜRETİMİNİN ARTIRILMASI

INCREASING ANTHOCYANIN PRODUCTION IN CALLUS CULTURE OF VAKKAS GRAPE CULTIVAR AFTER UV-C TREATMENT

Nurhan KESKİN¹

¹Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri, Van, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0003-2332-1459>

Sena YILDIZ²

²Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri, Van, Türkiye.

²ORCID ID: <https://orcid.org/0000-0003-3824-3967>

ÖZET

Yüksek antioksidan aktiviteye sahip bileşikler olan antosiyaninler, bu özellikleri nedeniyle serbest radikallerle ilişkili olan kardiovasküler hastalıklar, eklem iltihabı, kanser gibi çeşitli hastalıklara karşı olumlu yönde etkide bulunmaktadır. Ayrıca nörolojik hastalıklar, obezite ve diyabet tedavisine de olumlu etki yaptığı bilinmektedir.

Bu çalışmada, değerli bir sekonder metabolit olan antosiyanini üretebilen Asma (*Vitis vinifera* L.)'larda, kallus kültürü yöntemi ile ultraviyole (UV) ışığın açığa çıkarıcı etkisinden yararlanarak, antosiyanin üretiminin uyarılması ve belirlenmesi, ayrıca Vakkas üzüm çeşidinin antosiyanin üretim potansiyelinin saptanması amaçlanmıştır. Kültür ortamı olarak, %3 sükröz ve %0.8 agar içeren Gamborg B-5 ortamına 0.1 mg/l Naftalen asetik asit (NAA) ve 0.2 mg/l Kinetin eklenmiştir. Eksplant kaynağı olarak *in vitro* bitkiciklerin yaprak ayaları kullanılmıştır. Kalluslar, 21 gün ara ile iki defa alt kültüre alınmıştır. İkinci alt kültürden sonra, 12 ve 15 gün yaşlı kalluslara, steril kabin içerisinde petri kutularının kapakları açılarak, 10 cm uzaklıktan 10 ve 15 dk süreyle 254 nm dalga boyuna sahip UV-C ışını uygulanmıştır. Uygulamanın ardından kalluslar karanlık koşullarda inkübe edilmiştir. Antosiyanin ölçümleri 0, 24, 48 ve 72. saatlerde spektrofotometre ile yapılmıştır.

Çalışma sonucunda UV ışınının Vakkas üzüm çeşidine ait kallus dokularında antosiyanin üretimini uyardırmada etkili olduğu belirlenmiştir. En yüksek antosiyanin üretimi (255.18 µmol/g Yaş ağırlık (YA)) 15 gün yaşlı kalluslara 15 dk UV ışını uygulaması sonrası 48 saatlik bir inkübasyon sonunda elde edilmiştir.

Anahtar Kelimeler: *Vitis vinifera* L., elisitör, bitki doku kültürü, fenolik bileşik

ABSTRACT

Anthocyanins, which are compounds with high antioxidant activity, have a positive effect on various diseases such as cardiovascular diseases, and joint inflammation, and cancer-associated with free radicals due to these properties. It is also known to have a positive effect on the treatment of neurological diseases, obesity, and diabetes.

In this study, it was aimed to stimulate and determine anthocyanin production by using the callus culture method and the revealing effect of ultraviolet (UV) light. It was also aimed to determine the anthocyanin production potential of the Vakkas grape variety in grapevines (*Vitis vinifera* L.), which can produce anthocyanin, a valuable secondary metabolite. As a culture medium, 0.1 mg/L Naphthalene acetic acid (NAA) and 0.2 mg/L Kinetin were added to Gamborg B-5 medium containing 3% sucrose and 0.8% agar. Leaf blades of *in vitro* plantlets were used as explant sources. Calli were sub cultured two times with 21 days interval. After the second subculture, 12 and 15 day-old calli were exposed to UV-C rays with a wavelength of 254 nm for 10 and 15 minutes from a distance of 10 cm by opening the lids of

Petri dishes in a sterile cabinet. After the treatment, the calli were incubated under dark conditions. Anthocyanin measurements were performed with a spectrophotometer at 0, 24, 48, and 72 hours.

As a result of the study, it was determined that UV light was effective in stimulating anthocyanin production in callus tissues of the 'Vakkas' grape cultivar. The highest anthocyanin production (255.18 $\mu\text{mol/g}$ fresh weight (FW)) was obtained at the end of a 48-hour incubation after 15 minutes of UV irradiation on calli aged 15 days.

Keywords: *Vitis vinifera* L., elicitor, plant tissue culture, phenolic compound

BAZI ÜZÜM ÇEŞİTLERİNE AİT BİR YAŞLI DALLARIN TOPLAM FENOLİK BİLEŞİK İÇERİĞİ

TOTAL PHENOLIC COMPOUNDS CONTENT IN CANES OF SOME GRAPE CULTIVARS

Nurhan KESKİN¹

¹Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri, Van, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0003-2332-1459>

Sena YILDIZ²

²Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri, Van, Türkiye

²ORCID ID: <https://orcid.org/0000-0003-3824-3967>

ÖZET

Tarımsal-endüstriyel atıkların yüksek katma değerli bileşiklerin üretimi için doğal kaynaklar olarak kullanılmasına olan ilgi gün geçtikçe artmaktadır. Döngüsel ekonomi modeli, geleneksel anlamda atık olarak kabul edilen malzemelerin kaynak olarak kullanılmasını önermektedir. Çünkü bu atıklar, çeşitli sektörlerde çeşitli amaçlarla kullanılabilen değerli biyoaktif moleküller içermelerine rağmen, ya yakılmakta ya da kompost yapımında kullanılmaktadır.

Asmalar her yıl dinlenmeye girdiğinde budanır ve budama işlemi sırasında kesilen bir yaşlı dallar katı atık olarak ortaya çıkar. Asma (*Vitis vinifera* L.)'nın bir yaşlı dalları önemli bir sekonder metabolit olan ve geniş sağlık yararı yelpazesine sahip fenolik bileşiklerce zengin bir bağcılık endüstrisi yan ürünüdür. Dolayısıyla, bir yaşlı dallar, yüksek fitokimyasal kaynağı olarak önemli ekonomik potansiyele sahiptir.

Fenolik bileşikler bitkilerde yaygın olarak bulunan en önemli sekonder metabolitlerdir. Basit yapıdaki fenolik asitlerden, karmaşık yapıdaki flavonoidlere kadar çok sayıda fenolik bileşik bulunmaktadır. Bitkilerin sesil doğasında onları biyotik ve abiyotik stress faktörlerine karşı koruyan bu bileşilerin nitelik ve niceliği bitkiden bitkiye farklılık göstermektedir. Biyolojik açıdan başta antioksidan aktivite olmak üzere antimikrobiyal, antiviral ve antiinflamatuvar gibi birçok aktiviteye sahip olmalarının yanı sıra bu bileşikler kardiyovasküler hastalıklar, kanser, diyabet, katarakt ve Alzheimer gibi birçok hastalığa karşı da koruyucudur.

Bu çalışmada, sırasıyla Van, Muş ve Erzincan illerinin asma gen kaynaklarından Erciş üzümü, Vakkas ve Karaerik üzüm çeşitlerine ait bir yaşlı dalların toplam fenolik bileşik içerikleri spektrofotometrik yöntemle analiz edilmiştir. Çalışma sonucunda bir yaşlı dalların toplam fenolik bileşik içerikleri çeşitlere göre önemli ölçüde farklılık göstermiş ve bu farklılık istatistik olarak önemli bulunmuştur ($p<0.05$). Toplam fenolik bileşik içeriği bakımından en yüksek değer Erciş üzümüne ait bir yaşlı dallardan elde edilirken (42.14 mgGAE/g) bunu sırasıyla Vakkas (38.36 mgGAE/g) ve Karaerik (30.75 mgGAE/g) çeşitleri izlemiştir.

Anahtar Kelimeler: *Vitis vinifera* L., geridönüşüm, fitokimyasallar, sağlık

ABSTRACT

The interest in using agro-industrial wastes as natural resources for the production of high value-added compounds is increasing more and more. The circular economy model suggests using materials traditionally considered waste as resources. Although these wastes possess valuable bioactive molecules that can be used for various purposes in diverse sectors, they are either burned or used for composting.

The grapevines are pruned each year when they are in resting season, and canes that are cut during the pruning process come out as solid waste. Canes of grapevine (*Vitis vinifera* L.) is a secondary product of viticulture industry. These products are rich of phenolic compounds which is an important secondary

metabolite and has a wide health benefits. Furthermore, canes have significant economic potential as a source of high phytochemicals.

Phenolic compounds are the most important secondary metabolites commonly found in plants. There are many phenolic compounds ranging from simple phenolic acids to complex flavonoids. In the sessile nature of plants, the quality and quantity of these compounds, which protect them against biotic and abiotic stress factors, differ from plant to plant. In addition to having many biological activities such as antioxidant activity, antimicrobial, antiviral and antiinflammatory, these compounds are also protective against many diseases such as cardiovascular diseases, cancer, diabetes, cataracts and Alzheimer's.

In this study, total phenolic compound contents of canes of 'Erciş grape', 'Vakkas', and 'Karaerik' grape varieties, which are grapevine gene sources of Van, Muş, and Erzincan provinces, were analyzed by spectrophotometric method, respectively. As a result of the study, the total phenolic compound contents of canes differed significantly according to the cultivars, and this difference was found statistically significant ($p < 0.05$). The highest value for total phenolic compound content was obtained from the canes of Erciş grape (42.14 mgGAE/g), followed by Vakkas (38.36 mgGAE/g) and Karaerik (30.75 mgGAE/g) cultivars, respectively.

Keywords: *Vitis vinifera* L., recycling, phytochemicals, health

TÜRKİYE’DE UYGULANAN HALK ELİNDE ANADOLU MANDASI ISLAH PROJESİ’NİN DESTEKLEME MODELİ VE TARİHİ GELİŞİMİ

HISTORICAL DEVELOPMENT AND SUPPORT MODEL OF THE ANATOLIAN WATER
BUFFALO BREEDING PROJECT IMPLEMENTED IN TÜRKİYE

Özden SARIKAYA¹

¹T.C. Tarım ve Orman Bakanlığı, Tarımsal Araştırmalar ve Politikalar Genel Müdürlüğü,
¹Hayvancılık ve Su Ürünleri Araştırma Daire Başkanlığı Ankara, Türkiye,

¹ORCID ID: <https://orcid.org/0000-0002-7071-4741>

Kürşat ALKOYAK¹

¹T.C. Tarım ve Orman Bakanlığı, Tarımsal Araştırmalar ve Politikalar Genel Müdürlüğü,
¹Hayvancılık ve Su Ürünleri Araştırma Daire Başkanlığı Ankara, Türkiye,

¹ORCID ID: <https://orcid.org/0000-0001-6621-6136>

Yusuf KAPLAN¹

¹T.C. Tarım ve Orman Bakanlığı, Tarımsal Araştırmalar ve Politikalar Genel Müdürlüğü,
¹Hayvancılık ve Su Ürünleri Araştırma Daire Başkanlığı Ankara, Türkiye,

¹ORCID ID: <https://orcid.org/0000-0001-8853-7686>

Şerife SERTKAYA¹

¹T.C. Tarım ve Orman Bakanlığı, Tarımsal Araştırmalar ve Politikalar Genel Müdürlüğü,
¹Hayvancılık ve Su Ürünleri Araştırma Daire Başkanlığı Ankara, Türkiye,

¹ORCID ID: <https://orcid.org/0000-0002-2016-7129>

Süleyman ASLAN¹

¹T.C. Tarım ve Orman Bakanlığı, Tarımsal Araştırmalar ve Politikalar Genel Müdürlüğü,
¹Hayvancılık ve Su Ürünleri Araştırma Daire Başkanlığı Ankara, Türkiye,

¹ORCID ID: <https://orcid.org/0000-0001-8558-3265>

ÖZET

Dünya üzerinde bulunan evcil mandalar “Nehir ve Bataklık mandası” olarak iki alt gruba ayrılmaktadır. Türkiye’de yetiştirilen mandalar ise nehir mandalarının bir alt grubu olan Akdeniz mandalarından köken almakta ve ‘Anadolu mandası’ olarak adlandırılmaktadır. Türkiye’de manda yetiştiriciliği süt (kaymak, yoğurt, peynir, dondurma) ve et (sucuk, salam, pastırma) üretimi amacıyla yapılmaktadır. Ülkenin batısında entansif çiftlikler olmasına rağmen üretim sistemleri genel olarak geleneksel aile tipi işletmelerdir. Ülkemizde manda sayısı 1970’ li yıllarda 1.178.000 iken 2010 yılında 80.000 başa düşerek dramatik bir azalma olmuştur. Mandacılıkla uğraşan çiftçilerin gelirlerini daha da artırmak, 2011 yılına kadar azalma eğilimi gösteren manda sayısını artırmak ve damızlık manda boğası üretmek amacıyla Tarım ve Orman Bakanlığı (TOB) tarafından ‘Halk Elinde Anadolu Mandasının Islahı Projesi’ başlatılmıştır. İlk olarak 2011 yılında 8 ilde 11246 manda ile başlatılan proje, görülen yaygın etkisi üzerine genişletilmiştir. Şu anda, 18 farklı ilde uygulanan proje 2.881 yetiştirici ve yaklaşık 28.000 baş Anadolu mandası ile devam etmektedir. Projenin de katkısıyla 2021 yılında yaklaşık 185 bin baş Anadolu mandası ile Türkiye Avrupa’da İtalya’dan sonra 2. sırada yer almıştır.

Bu projede damızlık değeri en iyi olan Anadolu mandalarının belirlenmesi için malakların doğum, 6 ve 1 yaş canlı ağırlıkları ve anaç mandaların süt verimleri alınmaktadır. TOB tarafından, tüm bu verim kayıtlarını tutan ve diğer proje gerekliliklerini yerine getiren yetiştiricilere bir destekleme modeli geliştirilmiştir. Bu modelde öncelikle yetiştiricilerin mandalarına verilecek birim destek miktarının

belirlendiği Cumhurbaşkanlığı kararı yayınlanmakta sonrasında ise desteklemelerin usul ve esaslarını belirten tebliğ yayınlanmaktadır. 2011 ile 2021 yılları arasında bu destekleme modeline göre anaç mandalara, damızlık boğalara ve yavrularına destekleme ödemesi yapılmıştır. Bu dönemde damızlık manda birlikleri kurulmuş, yetiştiriciler kayıt tutmayı öğrenmiş ve proje belli bir aşamaya gelmiştir. 10 yıl sonra 2021 yılında Anadolu Mandalarında döl verimini arttırmaya ve proje yürütülen iller arası performansı belirlemeye yönelik olarak destekleme modelinde değişiklik yapılmıştır. Bu amaçla anaç mandaya verilen destekleme, yılı içinde doğuran ve doğurmayan anaç manda olmak üzere ikiye ayrılmış ve destekleme birim fiyatları da doğuranın lehine değiştirilmiştir. Böylece mandaların döl veriminin artırılması teşvik edilmiş iller arası farklar gözlenebilmiştir. Bu çalışmanın amacı, yetiştirici koşullarında uygulanan projenin destekleme modeli ve tarihi gelişimini hakkında bilgi paylaşmaktır.

Anahtar Kelimeler: Anadolu mandası, Islah projesi, Destekleme modeli, Türkiye

ABSTRACT

Domestic buffaloes in the world are divided into two subgroups "River and Swamp Buffalo". The buffaloes raised in Türkiye originate from the Mediterranean water buffalo, which is a subgroup of the river buffalo, and are called the "Anatolian Buffalo". In Turkey, buffalo breeding is carried out for the production of milk (kaymak, yoghurt, cheese, ice cream) and meat (sucuk, salami, pastırma). Production systems are generally traditional family type farms, although there are intensive farms in the west of the country. While the number of buffaloes in the country was 1.178.000 in the 1970s, it decreased dramatically to 80.000 in the 2010s. "The Community Based Anatolian Buffalo Breeding Project" was initiated by the Ministry of Agriculture and Forestry (MoAF) in order to improve the income of the farmers dealing with buffalo breeding, to increase the number of buffaloes and to produce breeding buffalo bulls. The project, which was first launched in 2011 with 11246 heads of buffalo in 8 provinces, was expanded upon its widespread impact. Currently, the project implemented in 18 different provinces continues with 2881 breeders and approximately 28.000 head of Anatolian water buffalo. Turkey, whose number of buffaloes was 185 thousand in 2021 with the contribution of the project, ranked 2nd in Europe after Italy.

In this project, to select Anatolian buffaloes has the best breeding value, birth, 6 and 1-year-old live weights of calves and milk yields of mature buffaloes are taken. A support model has been developed by MoAF for breeders who keep all these yield records and do the other project requirements. First of all the Presidential executive order, which is determined the amount of unit support to be given to the buffaloes of the breeders, is released in this model. Then a communiqué stating the procedures and principles of the supports is published in the official gazette. According to this model, support payments had been made to buffalo, breeding bulls and calves which are selected for breeding between 2011 and 2021. During this period, breeding buffalo associations were established, breeders learned to keep records and the project reached a certain stage. After 10 years a change was made in this model in order to increase the fertility of Anatolian Buffaloes and to determine differences in the provincial performance in 2021. For this purpose, the support given to the female buffalo was divided into two the buffalo that gave birth and did not give birth and the support unit price was boosted in favour of the first one. Thus, increasing the fertility of buffaloes was encouraged and differences between provinces could be observed. The aim of this study is to share information about the support model and historical development of the project carried out in community-based.

Keywords: Anatolian buffalo, Breeding project, Support model, Türkiye

MUŞ KOŞULLARINDA BAZI EKMEKLİK BUĞDAY (*Triticum aestivum L.*) ÇEŞİTLERİNİN VERİM VE KALİTE ÖZELLİKLERİ

BAKIMINDAN İNCELENMESİ

INVESTIGATION OF SOME BREAD WHEAT (*Triticum aestivum L.*) CULTIVARS IN TERMS OF YIELD AND QUALITY IN MUŞ PROVINCE CONDITIONS

Mehmet KARAMAN

*Muş Alparslan Üniversitesi, Uygulamalı Bilimler Fakültesi, Bitkisel Üretim ve Teknolojileri Bölümü.
Muş, Türkiye*

ORCID ID: 0000-0002-6176-9580

ÖZET

Ekmeklik buğday, insanoğlunun beslenmesinde temel besin maddelerinden biridir. Bazen ham olarak bazen de işlenerek tüketicilerin hizmetine sunulmaktadır. Son yıllarda küresel ısınma, salgın hastalıklar ve savaşlar nedeniyle ekmeklik buğdaya olan ihtiyaç dünyada ve ülkemizde daha da artmıştır. Yüksek talep ve azalan arz ekmeklik buğdayın stratejik önemini geçmiş yıllara nazaran daha önemli hale getirmiştir. Yıllar arasında dalgalanmalar görülmekle beraber genel olarak Muş ilinde kış mevsimi sert, uzun olmakta ve kar örtüsü bazen 2-3 ay yerde kalmaktadır. Bu durum, bazen kar küfü zararına yol açtığından dolayı buğday yetiştiriciliğinde yüksek tane verimi elde etmeyi sınırlandırmaktadır. Fakat, küresel ısınma sebebiyle son yıllarda yağışların aylar bazında dağılımında ve miktarında farklılıklar oluşmuştur. Bu bağlamda Muş ili koşullarında kışlık çeşitlerin yanı sıra alternatif karakterli çeşitlerin de tane veriminde öne çıktığı gözlenmiştir.

Araştırma, Muş ilinde 2019-2020 üretim sezonunda yağışa dayalı şartlarda yapılmıştır. Materyal olarak, Türkiye'nin farklı bölgelerine uyum sağlamış tescilli ve ticarete mal olmuş 13 adet ekmeklik buğday çeşidi kullanılmıştır. Deneme, Tesadüf Blokları Deneme Desenine göre 3 tekrarlamalı olarak kurulmuştur. Araştırmada; tane verimi, metrekarede başak sayısı, normalize edilmiş vejetasyon farklılık indeksi, sedimantasyon, yaş glüten ve rutubet özellikleri incelenmiştir. Rutubet oranı hariç, araştırılan tüm özelliklerde $p < 0.01$ seviyesinde çeşitler arasında farklılıklar olduğu belirlenmiştir. Tane veriminde; Müfitbey, Tanya ve Pehlivan, Metrekarede başak sayısında; Tanya, Metin ve Bayraktar 2000, Normalize edilmiş vejetasyon farklılık indeksinde; Syrena odes'ka, Tanya, Müfitbey ve Pehlivan, sedimantasyon ve yaş glutende; Tanya, Kate A-1, Yıldırım ve Syrena odes'ka ekmeklik buğday çeşitleri öne çıkmıştır.

Sonuç olarak; Müfitbey, Tanya ve Syrena odes'ka ekmeklik buğday çeşitlerinin Muş koşullarına uygun çeşitler olabileceği, tek yıllık çalışma sonuçlarının yeterli olmadığı ön görüşü ile başka çalışmaların da yapılmasının kesin kanaat için ihtiyaç olduğu belirlenmiştir.

Anahtar Kelimeler: Metrekarede başak, NDVI, sedimantasyon

ABSTRACT

Bread wheat is one of the basic nutrients in human nutrition. Sometimes raw and sometimes processed, it is offered to consumers. In recent years, the need for bread wheat has increased in the world and in our country due to global warming, pandemics and wars. High demand and decreasing supply have made the strategic importance of bread wheat more important than in previous years. Although there are fluctuations between years, the winter season in Muş is generally harsh and long, and the snow cover sometimes stays on the ground for 2-3 months. This situation limits the achievement of high grain yield in wheat cultivation as it sometimes causes snow mold damage. However, due to global warming, there have been differences in the distribution and amount of precipitation basis of months in recent years. In

this context, it has been observed that varieties with alternative characteristics, as well as winter varieties, stand out in grain yield in Muş province conditions.

The research was carried out in Muş province, in the 2019-2020 production season, under rainfall conditions. As material, 13 bread wheat cultivars, which have registered and traded, adapted to different regions of Turkey, were used. The experiment was set up according to the Random Blocks Trial Design with 3 replications. In the research; grain yield, number of spike per square meter, normalized difference vegetation index, sedimentation, wet gluten and moisture features were investigated. It was determined that there were differences between cultivars at the $p < 0.01$ level in all investigated properties, except for the humidity ratio. In grain yield; Müfitbey, Tanya and Pehlivan, In the number of spikes per square meter; Tanya, Metin and Bayraktar 2000, In the normalized difference vegetation index; Syrena odes'ka, Tanya, Müfitbey and Pehlivan, in sedimentation and wet gluten; Tanya, Kate A-1, Yıldırım and Syrena odes'ka bread wheat varieties stood out.

As a result; with the foresight that Müfitbey, Tanya and Syrena odes'ka bread wheat cultivars may be suitable for Muş conditions and that the results of the one-year study are not sufficient, it has been determined that more studies are needed for a definitive conclusion.

Keywords: Spike per square meter, NDVI, sedimentation

FERMENTE SÜT ÜRÜNLERİNDE DOĞAL YOLLA BENZOİK ASİT OLUŞUMU
PRODUCING BENZOIC ACID BY NATURAL WAY IN FERMENTED DAIRY PRODUCTS

Zeynep GÜRBÜZ¹

Arş. Gör., Atatürk Üniversitesi Ziraat Fakültesi Gıda Mühendisliği Bölümü, Erzurum, Türkiye

¹ORCID ID: <https://orcid.org/0000-0003-4066-0241>

Mustafa ŞENGÜL¹

Prof. Dr., Atatürk Üniversitesi Ziraat Fakültesi Gıda Mühendisliği Bölümü, Erzurum, Türkiye

¹ORCID ID: <https://orcid.org/0000-0001-8447-2256>

Elif DAĞDEMİR¹

Prof. Dr., Atatürk Üniversitesi Ziraat Fakültesi Gıda Mühendisliği Bölümü, Erzurum, Türkiye

¹ORCID ID: <https://orcid.org/0000-0002-5610-0188>

Tuba ERKAYA KOTAN²

Doç.Dr., Atatürk Üniversitesi Teknik Bilimler Meslek Yüksekokulu Gıda İşleme Bölümü Gıda teknolojisi Programı, Erzurum, Türkiye

²ORCID ID: <https://orcid.org/0000-0003-4571-3090>

ÖZET

Süt ve süt ürünleri besleyici özellikleri nedeniyle temel gıda kaynağı olarak yaygın bir şekilde tüketilmektedir. Süt ve süt ürünlerinin bu besleyici özellikleri temel olarak makro ve mikro gıda bileşenleri ile ilişkilendirilmektedir. Bu bileşenler proteinler, karbonhidratlar, lipidler, vitaminler, organik asitler, mineraller gibi bir dizi kimyasal yapıları içermektedir.

Organik bir asit olan hippurik asit gibi düşük molekül ağırlıklı asitler süt metabolomu olarak adlandırılmakta ve biyolojik sistemlerde anahtar rol oynayan organik asitler olarak bilinmektedirler. Bir süt metabolomu hippurik asit, süt hayvanlarında bağırsak mikroflorasından üretilen, fermantasyon sırasında benzoik aside dönüştürülebilen doğal bir organik asittir.

Fermente süt ürünleri insan beslenmesinde elzem bir değere sahip olup, üretiminde laktik asit bakterileri (LAB) önemli rol oynar. LAB, fermantasyon sırasında organikler asit üreterek gıdaların korunmasında önem arz etmektedirler. Sütte düşük konsantrasyonlarda bulunabilen hippurik asitten LAB tarafından fermantasyon yoluyla benzoik asit doğal bir bileşen olarak meydana gelebilmektedir. Süt ve süt ürünlerinde az miktarlarda bulunan benzoik asit antibakteriyel özelliği nedeniyle büyük öneme sahiptir.

Fermente süt ürünlerinde benzoik asit oluşumunda öngörülen ikinci metabolik yol ise olgunlaşma ya da depolama sırasında β -fenil-propionik (hidrosinamik) asit ve sinamik asit ara ürünlerinin oluşturduğu fenilalaninin bozunma reaksiyonudur. Olası üçüncü yol ise, laktik asit bakterilerinin belirli suşları tarafından üretilen benzaldehidin oto-oksidasyonudur. Özetle hippurik asidin dönüşümüne ek olarak bahsedilen bu iki yol (fenilalaninin degradasyonu ve benzaldehidin oto-oksidasyonu) fermente süt ürünlerinde benzoik asidin oluşumunda etkili olabilmektedir. Sonuç olarak, fermente süt ürünlerinde benzoik asidin doğal yolla birikmesi, ürün mevzuata uygunluk bakımından incelenirken dikkate alınması gereken önemli bir husus olarak değerlendirilmelidir.

Anahtar Kelimeler: Hippurik Asit, Benzoik Asit, Fermente Süt Ürünleri

ABSTRACT

Milk and dairy products are generally consumed as a basic food source due to their nutritious properties. These nutritional properties of milk and dairy products are mainly associated with macro and micro food components. These components include a number of chemical structures such as proteins, carbohydrates, lipids, vitamins, organic acids, minerals.

Low molecular weight acids such as hippuric acid is an organic acid, are called the milk metabolome and are known as organic acids that play a key role in biological systems. Hippuric acid, a milk metabolome, is a natural organic acid produced from the intestinal microflora of dairy animals that can be converted to benzoic acid during fermentation.

Fermented dairy products have an essential value in human nutrition and lactic acid bacteria (LAB) play an important role in their production. LAB is important in the preservation of food by producing organic acids during fermentation. Benzoic acid can be formed as a natural component by fermentation by LAB from hippuric acid, which can be found in low concentrations in milk. Benzoic acid, which is found in small amounts in milk and dairy products, is of great importance due to its antibacterial properties.

The second metabolic pathway predicted for the formation of benzoic acid in fermented milk products is the degradation reaction of phenylalanine, which is formed by β -phenyl propionic (hydrocinnamic) acid and cinnamic acid intermediates during ripening or storage. A third possible pathway is the auto-oxidation of benzaldehyde produced by certain strains of lactic acid bacteria. In summary, these two ways (degradation of phenylalanine and auto-oxidation of benzaldehyde) in addition to the conversion of hippuric acid can be effective in the formation of benzoic acid in fermented milk products. As a result, the natural accumulation of benzoic acid in fermented milk products should be considered as an important issue to be considered when examining the product for regulatory conformity.

Keywords: Hippuric Acid, Benzoic Acid, Fermented Dairy Products

EFFECT OF DRIED JUJUBE FRUIT AT DIFFERENT TEMPERATURES ON VARIOUS PHYSICAL PROPERTIES OF COOKIES

Tekmile CANKURTARAN KÖMÜRCÜ¹

¹*Necmettin Erbakan Üniversitesi, Mühendislik Fakültesi, Gıda Mühendisliği Bölümü, Konya, Türkiye*

ORCID ID: 0000-0001-7281-209X

ABSTRACT

Jujube belongs to the Rhamnaceae family and is a popular fruit around the world. Jujube has a long history of usage as vital food and/or traditional medicine. However, jujube fruits have a short shelf life and cannot be stored for more than ten days under uncontrolled conditions. The processing jujube into product is one of the best options for long-term storage. Therefore, jujube fruit could be a promising food ingredient for the development of functional food products to achieve high consumer acceptance, health benefits and commercial profits. In this study, the effects of dried jujube fruits (60°C and 80°C) on the color, diameter, thickness, spread ratio and textural properties of cookies samples were investigated. Jujube fruit powder (JFP) (0, 5, 10, 15 and 20%) was partially replaced with wheat flour in the cookie recipe. The inclusion of jujube fruits dried at 80°C resulted in lower L* and b* values of cookie samples than those prepared with JFP dried at 60°C. The increase in the JFP ratio decreased the L* and b* values while increasing the a* value of the cookie samples. The use of JFP dried at 80 °C generally decreased the hardness and fracturability values of the samples. It was found that increasing Jujube fruit powder content resulted in increased diameter, spread values, hardness and fracturability value of cookies. According to the overall acceptability scores, it was concluded that biscuits can be produced with satisfactory results by adding up to 15% and 10% of JFP at 60 °C and 80 °C, respectively.

Keywords: Jujube fruit, Cookie, Drying, Physical properties.

INSECTICIDAL ACTIVITIES OF TOTAL CRUDE EXTRACTS OF CITRUS PEELS ON *Dermestes maculatus* (DEGEER, 1774) PEST OF SMOKED FISH

Chado, Z. M.^{1*}, Azare, B. A.,¹ Isah, M. C.², Gimba U. N.², Mohammed M. A.³ and Aliyu H.²

¹Department of Biological Sciences, University of Abuja, Nigeria

²Department of Biology, Ibrahim Badamasi Babangida University, Lapai, Nigeria

³Agricultural Department, FCT College of Education, Zuba-Abuja, Nigeria

ABSTRACT

Insect pests often cause extensive damage to smoked fish which may lead to lost of value. The protection of smoked fish and agricultural products against insect infestation is of urgent need. Synthetic insecticides and fumigant are the main compounds and methods used for stored products which have detrimental effect on human and environment. The insecticidal activities of different Total crude extracts of citrus (*Citrus sinensis*, *C. limon*, *C. aurantifolia* and *C. reticulata*) peels was carried out onlarvals of *D. maculatus* to explore for alternative control measures to synthetic insecticides. The insect larvae were reared in a 1000ml bottle capped with a piece of 0.1cm mesh net to allowed aeration and prevent escape of the larvae and entry of other insects. The fresh citrus peels were collected, dried under shade and grinded into fine powder using mortal and pestle. The Total crude extracts were obtained at 10g/ml, 20g/ml, 30g/ml, 40g/ml, 50g/ml, 60g/ml, 70g/ml and 80g/ml concentrations respectively. Each treatment was replicated and left on a laboratory bench for 24 hours observation. The efficacy of the extracts increase with increase in concentration. The lemon Total Crude extract show the most significant mortality with 24h LC₅₀ (55.26), this was closely followed bytangerine24h LC₅₀(41.19) while the least effective extract was that of sweet orange 24h LC₅₀(40.36)and Lime 24h LC₅₀ (13.14). This result indicated that extracts formulations oflemon,tangerine,sweet orange and lime peels can effectively control fish pest. The use of total crude extract of citrus peels is considered effectiveas an agent in Integrated Pest Management (IPM) strategy with little or no health risk to humans and other living fauna in the environment.

Keywords: Insecticidal activities, Total crude extracts, Citrus peels, *Dermestes maculatus*

SCREENING FOR THE INSECTICIDAL PROPERTIES OF TOTAL CRUDE AQUEOUS EXTRACTS OF CITRUS PEELS ON *Dermestes maculatus* (DEGEER, 1774) PEST OF SMOKED FISH

Azare B. A., Idowu, R. T. and Chado, Z. M.

Department of Biological Sciences, University of Abuja, Nigeria

ABSTRACT

Insect pest of stored product reduce the economic and nutritional value of the dried fish. The Studies on the insecticidal properties of different aqueous extracts of citrus peels was carried out on larval of *Dermestes maculatus* to explore for alternative control measures to synthetic insecticides from January, 2020 to July 2020. The result show the efficacy of citrus peels aqueous extracts against *Dermestes maculatus*. This was determined using four citrus species (*Citrus reticulata*, *Citrus sinensis*, *Citrus limon* and *Citrus aurantifolia*) peels. The insect were reared in a 1000ml bottle jars capped with a piece of net 0.1cm mesh was used to allowed aeration and prevent escape of the larvea and entry of other insects. The fresh citrus (lemon, lime, sweet orange and tangerine) peels were collected and dried under shade. The powdered products were obtained by grinding the dried peels into a fine powder using mortal and pestle. The aqueous extraction was achieved in distilled water. The 10g/ml, 20g/ml, 30g/ml, 40g/ml, 50g/ml, 60g/ml, 70g/ml and 80g/ml concentrations were used for the experiment, respectively set up for a 24hr LC₅₀ static bioassay. Each treatment were replicated twice and left on a laboratory bench for observation. The efficacy of the extracts increase with increase in concentration. The lemon peel aqueous extract show significantly higher ($P < 0.05$) mortality with LC₅₀ 55.258, closely followed by tangerine peels with LC₅₀ 41.191 and sweet orange peels with LC₅₀ 40.355, while the least effective extract was that of lime LC₅₀ 13.143, this result indicated that extracts formulations of sweet orange, lemon, lime and tangerine peels can effectively control postharvest fish pest. The use of citrus peels extracts might be considered an Integrated Pest Management (IPM) strategy with little or no risk to humans and other living fauna in the environment.

APPLICATION OF MACHINE LEARNING AND ARTIFICIAL NEURAL NETWORK MODELS FOR IN VITRO REGENERATION OF BLACK MULBERRY (*Morus nigra* L.)

Alpaslan Şevket Acar

*Department of Agricultural Sciences, Institute of Graduate Studies, Sivas University of Science and
Technology, Sivas, Turkey*

ORCID NO: 0000-0002-1193-0380

Seyid Amjad Ali

Department of Information Systems and Technologies, Bilkent University, Ankara, Turkey

ORCID NO: 0000-0001-9250-9020

Muhammad Aasim

**Department of Plant Protection, Faculty of Agricultural Sciences, Sivas University of Science and
Technology, Sivas, Turkey*

ORCID NO: 0000-0002-8524-9029

ABSTRACT

Machine learning (ML) algorithms models containing artificial neural network (ANN) model have been employed in plant biotechnology for data validation or optimizing the input variables. In this study, in vitro regeneration of black mulberry (*Morus nigra*) was established followed by validation of data by ML (Random Forest - RF), and ANN (Multilayer Perceptron - MLP) models. Three different performance metrics regression coefficient (R^2), mean squared error (MSE), and mean absolute error (MAE) were used. For in vitro regeneration studies, nodal segment explants were inoculated on MS medium enriched with 0.50, 1.0 and 2.0 mg/L BAP and KIN used singly. The output variables used in this study were regeneration coefficient, shoot length (cm) and leaf numbers per explant. Results revealed regeneration coefficient of 1.33-1.60, shoot length range of 1.53-6.81 cm, and 4.87-9.86 leaf numbers per explant. Supplementation of BAP exerted positive impact on all output variables compared to KIN hormone. The results on ML and ANN models revealed the better performance of MLP model for regeneration coefficient and leaf number. Whereas, RF predicted the results more precisely for shoot length. The data validation using ML and ANN algorithms opens new window of using these models in plant tissue culture and other fields of plant biotechnology.

Key Words: Artificial neural network, In vitro, Machine Learning, Mulberry, Regeneration

EFFECT OF DROUGHT ON YIELD AND BIOCHEMICAL PARAMETERS OF DURUM WHEAT (*Triticum durum* Desf.) IN SEMI-ARID REGIONS

SAGHOURI EL IDRISSE Imane^{1,2}; KETTANI Rajae¹; FERRAHI Moha³; BRHADDA Najiba²; ZIRI Rabea²

¹ Research Unit of Agronomy and Plant Physiology, National Institute of Agricultural Research, Regional Agricultural Research Center of Meknes, P.O. Box 578, Meknes 50000, Morocco.

² Department of Biology, Laboratory of Plant, Animal and Agro-Industry Productions, Faculty of Sciences, University of Ibn Tofail, University campus, P.O. Box 133, Kenitra, Morocco.

³ Research Unit of Plant Breeding and Plant Genetic Resources Conservation, National Institute of Agricultural Research, Regional Agricultural Research Center of Meknes, P.O. Box 578, Meknes 50000, Morocco.

ABSTRACT

Water deficit is one of the main limiting factors in agricultural production. It is therefore important to optimize water supply according to the real needs of the crop, taking into account the environmental conditions. The objective of this study was to evaluate the effect of water stress on the yields parameters of thirteen durum wheat (*Triticum durum* Desf.) genotypes. The experiment was conducted in pots during year (2019-2020) to the open field in the Fes Sais region and in the greenhouse (INRA-Meknes-Morocco). The experimentation took place at the Experimental field of the National Institute of Agronomic Research of Douyet Fez (34°2N, 5°W, 416m) started in 10/12/ 2019. The soil is clayey-silt type, low in organic matter and has alkaline Ph. The experimental setup was a strip-plot with 2 replications. This year's crop year was characterized by low rainfall. Physiological, biochemical and yield parameters were measured. Drought caused an increase in proline, soluble sugars and glycine betaine content with a reduction in relative water content in all varieties. Genotypes differed greatly in their responses to different levels of water stress, especially with respect to the resistance mechanisms developed. The results concerning the yield in terms of grains reveal that lines V1, V4, V9 and V12 in front of the control variety V16 are the best performing lines with the highest yields compared to the other lines tested. Statistical analysis reveals the presence of a highly significant correlation between stomatal conductance (Cs) and relative water content RWC ($r=0,819^{**}$), stomatal conductance and yield ($r=0,737^{**}$). However, a highly significant negative correlation was found between proline and Cs ($r=-0.880^{**}$), and between proline and RWC ($r=-0.770^{**}$).

Keywords: Water deficit, tolerance, proline, glycine betaine, relative water content, stomatal conductance.

AUTOMATED IRRIGATION SYSTEM

Rakesh M

Bannari Amman Insituteof Technology, Department of Aeronautical Engineering, Erode, India

ORCID ID: <https://orcid.org/0000-0003-0063-6116>

Rajesh M

Bannari Amman Insituteof Technology, Department of Aeronautical Engineering, Erode, India

ORCID ID: <https://orcid.org/0000-0002-6564-9041>

Mohamed Shaikna Lebbai A M

Bannari Amman Insituteof Technology, Department of Aeronautical Engineering, Erode, India

ORCID ID: <https://orcid.org/0000-0003-4515-9616>

Sanjay V Y

Bannari Amman Insituteof Technology, Department of Aeronautical Engineering, Erode, India

ORCID ID: <https://orcid.org/0000-0002-8653-1587>

ABSTRACT

India is the leading country in the production of agricultural products especially Rice , Wheat and Cereals. In this situation irrigation is necessary to compensate the critical parts of the season to overcome with increasing productivity of crops. Current irrigation systems cannot determine when plants get enough water during and after irrigation, they are not easy to use, they require user input, manual connection to water supply and a certain level of technology before it can be used successfully, too they do not happen. This presents the automated irrigation system that does not have any limitation .The automated irrigation system runs with constant speed in monitoring ground moisture and wireless opening of pipe valves is used to open when the humidity level drops below the limit of the planted crop, which compensate the field to for irrigation. When the level of humidity increases above the upper limit, the system closes the irrigation system plumbing, causing them to close and stop irrigating the ground. The automated irrigation system automatically and continuously measures the moisture level by using monitoring system to sense the soil. The types of sensors used here are Arduino Mega , XBee Shield and Pro module. It also measures the temperature and humidity of the soil.

Keywords: Monitoring ground moisture, sensors, wireless pipe valves opening.

BRUSELLOZİSİN ENDEMİK OLDUĞU KARS YÖRESİNDE (TÜRKİYE) HAYVANLARDA HASTALIĞIN SEYRİ, GÜNCEL DURUM VE MÜCADELECİ YAKLAŞIMLAR

THE COURSE OF DISEASE, CURRENT SITUATION, AND CONTROL AND ERADICATION
APPROACHES TO BRUCELLOSIS IN ANIMALS IN KARS REGION (TURKEY)

Elif ÇELİK¹

¹Dr. Öğr. Üyesi, Kafkas Üniversitesi, Veteriner Fakültesi, Mikrobiyoloji Anabilim Dalı, Kars, Türkiye

¹ORCID ID: <https://orcid.org/0000-0003-4531-3863>

Doğan AKÇA²

²Dr. Öğr. Üyesi, Kafkas Üniversitesi, Sağlık Bilimleri Fakültesi, Ebelik Bölümü, Kars, Türkiye

²ORCID ID: <https://orcid.org/0000-0002-3986-8769>

ÖZET

Bruselozis, sığırlarda *Brucella abortus* ve koyunlarda *Brucella melitensis* tarafından oluşturulan zoonotik karakterli infeksiyöz bir hastalıktır. Bruselozis, bu tür hayvanlarda başta abort ve infertilite olmak üzere, artrit, mastitis ve çeşitli organlarda kronik yangılara neden olduğu için hayvan yetiştiriciliğinde yüksek ekonomik kayıplara yol açmaktadır. Bu çalışmada, özellikle büyükbaş hayvan yetiştiriciliği açısından ülkemizin lokomotif illerinden birisi olan Kars yöresinde Bruselozisin son 30 yılını kapsayan durumuna ait retrospektif bir bakış sunmak amaçlanmıştır. Kars yöresinde sığır ve koyunlarda son 30 yılda yürütülen kültürel, serolojik ve moleküler çalışmalar ile bruselozisin yaygınlığı; 1990'lı yıllarda %45-60; 2000'li yıllarda %20-25; 2010 yılı ve sonrasında ise %10-17 aralığında belirlenmiştir. *Brucella* etkenleri içerisinde tür dominantlığı önceki yıllarda sığırlarda yüksek oranda *B. abortus* ve koyunlarda *B. melitensis* iken, son yıllarda bu dominantlık değişkenlik göstermeye başlamış ve düşük oranlarda da olsa türler arası çapraz enfeksiyonlar gözlenmiştir. Yöremizdeki bruselozis olgularından belirlenen yaygın biyotipler *B. abortus* biyotip 1 ve *B. melitensis* biyotip 3 olup, ülke genelindeki profil ile benzerlik göstermektedir. Ülkemizde, Ulusal yönetmeliklerle belirlenen ve yöremizde de düzenli bir şekilde uygulanan aşılama (sığırlarda yıllık 160.000 ve koyunlarda 106.000 aşı uygulaması) ve eradikasyon (Bruseloz ile Mücadele Yönetmeliği (27189) ve Brusellanın Konjunktival Aşı ile Kontrol ve Eradikasyonu Genelgesi (2021/40)) programlarının, hastalığın mevcut yaygınlığının azalmasında etkili olduğu düşünülmektedir. Hiç şüphesiz bruselozisle mücadelede aşılama, infekte hayvanların belirlenmesi ve eliminasyonu, hayvan hareketlerinin kontrolü ve sınır güvenliği önemli basamaklardır. Ayrıca, coğrafyaya özgü olan etken davranışlarının (ekolojik, epidemiyolojik, genomik) belirlenmesi ve riskli meslek gruplarının eğitim seminerleri ile bilinç ve farkındalık düzeylerinin artırılmasına yönelik uygulamamızın da bu düşüğe katkı sağladığı düşünülmektedir. Mücadele yöntemlerinde sürekliliğin sağlanması ve güncelle ışık tutacak bilimsel çalışmaların devamlılığının, bruselozisin kontrol ve eradikasyonu açısından önemini yanı sıra insan ve hayvan refahına da fayda sağlayacağı düşünülmektedir.

Anahtar Kelimeler: *Brucella*, Koyun, Sığır, Kars, Türkiye

ABSTRACT

Brucellosis is a zoonotic infectious disease caused by *Brucella abortus* in cattle and *Brucella melitensis* in sheep. Brucellosis causes high economic losses in animal husbandry because it causes abortion, infertility and mastitis in farm animals. In this study, it was aimed to present a retrospective view of the situation of brucellosis covering the last 30 years in Kars region, which is one of the locomotive provinces of our country in terms of cattle breeding. The results of cultural, serological and molecular researches on brucellosis on cattle and sheep in Kars region in the last 30 years put forth a prevalence of Brucellosis in the range of 45-60% in the 1990s, 20-25% in the 2000s, and around 10-17% after 2010

and to the present. While a species dominance was observed as *B. abortus* in cattle and *B. melitensis* in sheep in previous years, this has started to show variability in recent years and cross infections have begun to be observed among the hosts, albeit at a low rate. *B. abortus* biotype 1 and *B. melitensis* biotype 3 were the most common biotypes circulating in our region in parallel with the country-wide. It is thought that the vaccination and eradication programs, which were regulated by the national rules in Turkey (Control and Eradication of Brucella with Conjunctive Vaccine (2021/40) and The Regulation on Combating Brucellosis (27189)) and implemented strictly in our region (ie, an average of 106 thousand vaccine for sheep and 160 thousand for cattle, per year), are effective in the decrease of the disease incidence. Undoubtedly, test and elimination of the infected animals, vaccination, control of animal movements and strict border security are important steps in the fight against brucellosis. In addition, it is thought that our studies to determine some geographical-specific behaviors (such as ecological, epidemiological, genomic characteristics) of the causative agent and to increase the awareness and awareness of risky occupational groups also contribute positively to this decrease. It is thought that the continuity of control methods and scientific studies undertaken that will shed light on the current will benefit human and animal welfare, as well as its importance in terms of control and eradication of brucellosis.

Keywords: *Brucella*, Sheep, Cattle, Kars, Turkey

MISIR VE SOYA FASULYESİNİN BİRLİKTE EKİMİNİN YEM VERİMİ VE KÖK ÖZELLİKLERİNE ETKİSİ

EFFECT OF INTERCROPPING OF CORN AND SOYBEAN ON FORAGE YIELD AND ROOT
PROPERTIES

Elhan R. ALLAHVERDIYEV¹

¹*Azərbaycan Devlet Tarım Universiteti, Agronomi Fakültesi, Gence, Azərbaycan*

¹*ORCID ID: <https://orcid.org/0000-0003-3776-8235>*

Medine Hasan ABIŞOVA²

²*Azərbaycan Devlet Tarım Universiteti, Agronomi Fakültesi, Gence, Azərbaycan*

²*ORCID ID: <https://orcid.org/0000-0003-0234-4731>*

ÖZET

Bu araştırma, Azerbaycan'ın Karabağ - Ağcebedi bölgesinde Hındarhi belediyesinin arazilerinde 2021 yılında, arpa hasadı yapıldıktan sonra ikinci ürün olarak ekilen mısır – soya birlikte ekiminde farklı ekim yöntemlerinin yem verimi ile bazı toprak özelliklerine etkisinin araştırılması amacıyla yürütülmüştür. Araştırma sonucunda iki sıra mısır ve iki sıra soya ekilen parsellere göre dört sıra mısır ve dört sıra soya ekilen parsellerin verimi 0,9 t/ha ve % 1,59 artış gösterirken, aynı sıraya ekilen mısır ve soya ekimlerinin verimi 5,2 t/ha ve % 9,20 daha fazla bulunmuştur. Birlikte ekimlerin kök verimlerine bakıldığında ise, iki sıra mısır ve iki sıra soya ekilen parsellere göre dört sıra mısır ve dört sıra soya ekimlerinde gerek kök verimleri bakımından ve gerekse de kökteki bitki besin maddelerinin oranları bakımından önemli farklılıklar bulunmamasına rağmen, aynı sıraya ekilen mısır ve soya karışık ekimlerinde hem kök kitlesi veriminde hem de kök besin maddeleri oranlarında önemli derecede artışlar elde edilmiştir.

Anahtar Kelimeler: mısır, soya, birlikte ekim, verim, kök verimi

ABSTRACT

This research was carried out in order to investigate the effects of different sowing methods on feed yield and some soil properties in corn - soybean co-sowing, which was planted as a second crop after barley harvest, in Hındarhi municipality in Karabakh - Ağcebedi region of Azerbaijan in 2021. As a result of the research, the yields of the plants planted in four rows of corn and four rows of soybean and in the same row increased by 0.9 and 5.2 t/ha, respectively compared to the yields of plants planted with two rows of corn and two rows of soybean. There were no significant differences in terms of root yields and nutrient rates of roots in the plants planted as four row maize and soybean compared to the plants planted as two rows corn and soybean whereas the yields and nutrient rates of roots increased in same row-planted plants.

Keywords: maize, soybean, alternate rows, yield, root yield

**YUMURTACI TAVUK DİYETİNE AYÇİÇEK YAĞI VE SELENYUM İLAVESİNİN
YUMURTA SARISI YAĞ ASİDİ KOMPOZİSYONU, YUMURTA SELENYUM
KONSANTRASYONU VE BAZI KAN PARAMETRELERİ ÜZERİNE ETKİLERİ***

**THE EFFECTS OF SUNFLOWER OIL AND SELENIUM SUPPLEMENTATION TO LAYING
HEN DIET ON EGG YOLK FATTY ACID COMPOSITION, EGG SELENIUM
CONCENTRATION AND SOME BLOOD PARAMETERS***

Çağrı KALE¹

¹*Van Yüzüncü Yıl Üniversitesi, Veteriner Fakültesi, Zootekni ve Hayvan Bölümü, Van, Türkiye.*

¹*ORCID ID: <https://orcid.org/0000-0003-1918-6346>*

Nuriye Tuğba BİNGÖL²

²*Van Yüzüncü Yıl Üniversitesi, Veteriner Fakültesi, Zootekni ve Hayvan Bölümü, Van, Türkiye.*

²*ORCID ID: <https://orcid.org/0000-0002-6894-8418>*

ÖZET

Yapılan bu çalışmada; yumurtacı tavuk diyetine ayçiçek yağı ve/veya inorganik (sodyum selenit) ve organik selenyum (selenyum bakımından zenginleştirilmiş maya) ilavelerinin; yumurta sarısı yağ asidi kompozisyonu, yumurta selenyum konsantrasyonu ve bazı kan parametrelerine etkileri araştırıldı. Çalışmada yumurta sarısı yağ asidi kompozisyonunun, diyet yağ asidi kompozisyonundan ne derece etkilendiği ve selenyum ilavesinin buna katkısının olup olmadığı, kullanılan selenyum kaynaklarının yumurtaya geçişte ne kadar etkili oldukları hedeflenmiştir. Çalışmanın hayvan materyalini oluşturan 252 adet 42 haftalık yaşta Lohmann beyaz yumurtacı tavuk, 7 tekrarlı (her bir tekrar 6 tavuk) 6 deneme grubuna rastgele dağıtıldı. Çalışma 2×3 tesadüf parsellerine göre dizayn edilmiş faktöriyel deneme planında yürütüldü. Ayçiçek yağlı (%3) ve yağsız olarak hazırlanan her iki ayrı diyetle, iki farklı selenyum ilavesi (0.3 mg/kg) yapılarak 6 deneme diyeti oluşturuldu. 12 hafta devam eden çalışma boyunca hayvanlara yem ve su ad libitum olarak sunuldu. Çalışmadan elde edilen verilere göre; selenyum ilave edilen diyetlerle beslenen gruplara ait yumurta selenyum konsantrasyonu, selenyum ilave edilmeyen gruplardan daha yüksekti (p<0.05). Organik selenyum ilave edilen diyetlerle beslenen gruplara ait yumurta selenyum konsantrasyonu, inorganik selenyum ilave edilen diyetlerle beslenen gruplara kıyasla daha yüksek tespit edildi (p<0.05). Yumurta sarısı yağ asidi kompozisyonu bakımından özellikle çoklu doymamış yağ asitleri; ayçiçek yağı ilave edilen diyetle beslenen gruplarda, yağsız diyetle beslenen gruplara kıyasla daha yüksekti (p<0.05). Muamelelerin kan parametrelerinden katalaz (CAT), süperoksit dismutaz (SOD), glutatyon peroksidaz (GSH-Px) ve malondialdehit (MDA) üzerine etkileri ve interaksyonları da önemli olarak belirlendi (p<0.01). Sonuç olarak; yumurtacı tavuk diyetine ayçiçek yağı ilavesinin yumurta sarısındaki n-6 yağ asitlerinden linoleik asit oranını artırdığı tespit edildi. Ayrıca yağlı ve yağsız diyetlere her iki selenyum ilavesinin, özellikle de organik selenyum ilavesinin, yumurta Se konsantrasyonunu artırdığı kaydedildi.

Anahtar Kelimeler: Ayçiçek yağı, Kan parametreleri, Selenyum, Yağ asidi, Yumurtacı tavuk.

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ABSTRACT

In this study carried out; the effects of additions sunflower oil and/or inorganic (sodium selenite) and organic selenyum (selenium-enriched yeast) to laying hen diet on egg yolk fatty acid composition, egg selenyum concentration and some blood parameters were researched. In this study, it was aimed to

determine to what extent the fatty acid composition of the egg yolk is affected by the dietary fatty acid composition, whether the addition of selenium contributes to this, and how effective the selenium sources used are in the transition to eggs. 252 42-wk-old Lohmann LSL white laying hens, which constituting the animal material of the study, were randomly assigned to 6 experimental groups with 7 replications (6 chickens per repeat). The study was conducted in a factorial experimental plan designed according to 2×3 random plots. Six experiment diets were created by adding two different selenium (0.3 mg/kg) to both diets prepared with/without sunflower oil (%3). Animals were provided with feed and water ad libitum throughout the 12-week study. According to the data obtained from the study the egg selenium concentration of the groups fed the selenium-supplemented diets was higher than the non-selenium-supplemented groups ($p<0.05$). The egg selenium concentration of the groups fed with diets supplemented with organic selenium was higher than the groups fed with diets supplemented with inorganic selenium ($p<0.05$). In terms of egg yolk fatty acid composition, especially polyunsaturated fatty acids; were higher in the groups fed the sunflower oil supplemented diet compared to the groups fed the fat-free diet ($p<0.05$). The effects and interactions of the treatments on blood parameters catalase (CAT), superoxide dismutase (SOD), glutathione peroxidase (GSH-Px) and malondialdehyde (MDA) were also found to be statistically significant ($p<0.01$). As a result; It was determined that the addition of sunflower oil to the laying hen diet increased the ratio of linoleic acid, one of the n-6 fatty acids in the egg yolk. It was also noted that the addition of both selenium, especially organic selenium, to fatty and fat-free diets increased egg Se concentration.

Key Words: Blood parameters, Fatty acid, Laying hen, Selenium, Sunflower oil.

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**İNEKLERDE SUBKLİNİK MASTİTİS PREVALANSININ BELİRLENMESİ VE
ETİYOLOJİSİ ÜZERİNE ARAŞTIRMALAR İLE MEME SAĞLIĞININ KORUNMASI**
RESEARCHES ON ETIOLOGY AND PREVALENCE OF SUBCLINICAL MASTITIS IN
CATTLE, AND PROTECTION OF UDDER HEALTH

Aliye GÜLMEZ SAĞLAM¹

¹Doç. Dr., Kafkas Üniversitesi, Veteriner Fakültesi, Mikrobiyoloji Anabilim Dalı, Kars, Türkiye

¹ORCID ID: <https://orcid.org/0000-0002-7639-5075>

Semra KAYA²

²Doç. Dr., Kafkas Üniversitesi, Veteriner Fakültesi, Doğum ve Jinekoloji Anabilim Dalı, Kars Türkiye

²ORCID ID: <https://orcid.org/0000-0002-7520-6631>

ÖZET

Güncel verilere göre Kars yöresi, 705 bin sığır varlığı ile Türkiye'nin büyükbaş hayvan popülasyonunun %3,9'unu barındırmakta ve bu hayvanlardan yıllık 600 bin tona yakın inek sütü elde edilmektedir. Sığır yetiştiriciliği büyük oranda aile tipi işletmeler şeklinde ve küçük ölçekli olup, süt sağımı elle yapılmaktadır. Mastitis, süte fiziksel ve kimyasal değişikliklere yol açan meme dokusunun patolojik değişiklikleri ile karakterize yangıdır. Özellikle subklinik mastitisler, klinik mastitis olgularına göre tüm ülkelerde daha yaygın görülmekte ve süt verimini %3-26 oranında düşürerek büyük ekonomik kayıplara yol açmaktadır. Kafkas Üniversitesi Veteriner Fakültesi Mikrobiyoloji Anabilim Dalı tarafından yöre ineklerinde 30 yıllık bir süre zarfında subklinik mastitislerin prevalansı ve etiyolojisini belirlemeye yönelik birçok araştırma yapılmıştır. Farklı zamanlarda yürütülen dört araştırmada çeşitli sayıda sağmal ineklerin California Mastitis Testi (CMT) ile taranması sonucu subklinik mastitis prevalansı, %15,35, %15,78, %23,82 ve %24 olarak belirlenmiştir. Bu çalışmalarda, alınan subklinik mastitisli süt örneklerinin kültürel yoklamaları sonucu ise ağırlıklı olarak *Staphylococcus aureus*, Koagülaz negatif Stafilokoklar, *Streptococcus* spp., ve düşük oranlarda ise *Micrococcus* spp., *Klebsiella pneumoniae*, *Corynebacterium* spp., *Acinetobacter* spp., *Escherichia coli* ve *Mycoplasma* spp. gibi bakteriler izole edilmiştir. Göreceli olarak yüksek bulunan bu prevalans oranları yöremizde yapılan aile tipi işletmelerdeki ahır koşullarının uygunsuzluğu ve sağım hijyeninin yetersizliği ile ilişkilendirilebilir. Ayrıca subklinik mastitisin hayvan sahipleri tarafından fark edilememesi, patojenlerin hayvanlar arasında daha kolay yayılmasına ve tedavi edilmedikleri için daha sık görülmesine neden olmaktadır. Meme sağlığının korunması için temel faktörler; sağım hijyeninin sağlanması, uygun sağım tekniğinin kullanılması, sağım ekipmanlarının bakımı, kuru dönem tedavisi, klinik veya subklinik mastitisler yönünden sürünün taranması, tank sütü somatik hücre sayısının aylık kontrolü, kayıt sistemi ve arşivleme olarak sayılabilir. Etken ve çevreye bağlı faktörlerin yanı sıra anatomik ve genetik yatkınlık ve bakım-besleme gibi konağa ait birçok faktör mastitis için temel belirleyiciler olduklarından, meme sağlığının korunması açısından tüm bu faktörleri gözetecek çok yönlü bir kontrol programı oluşturulmalıdır.

Anahtar Kelimeler: Mastitis, Prevalans, Bakteriyel etken, Kars, Türkiye

ABSTRACT

According to current data, Kars region hosts 705 thousand cattle with representing the 3.9% of the cattle population in Turkey, and they yield approximately 600 thousand tons of milk is produced annually. Cattle breeding is mostly family-type and small-scale, and milking is done manually. Mastitis is an inflammation of the mammary gland characterized by pathological changes that cause physical and chemical changes in milk. Particularly, subclinical mastitis is more prevalent compared to clinical mastitis cases in all countries and causes a great economic loss by reducing milk yield of 3-26%. Many

scientific studies have been conducted by the Department of Microbiology of the Faculty of Veterinary Medicine of Kafkas University to determine the prevalence and etiology of subclinical mastitis in the local cattle population over a 30-year period. In four studies conducted at different time periods, the prevalence of subclinical mastitis was determined as 15.35%, 15.78%, 23.82%, and 24% by the California Mastitis Test (CMT). In cultural studies, mainly *Staphylococcus aureus*, Coagulase-negative Staphylococci and *Streptococcus* spp. were determined, while bacteria such as *Micrococcus* spp., *Klebsiella pneumonia*, *Corynebacterium* spp., *Acinetobacter* spp., *Escherichia coli* and *Mycoplasma* spp. were encountered at low rates. These relatively high prevalence rates can be associated with the inconvenience of barn conditions and inadequate milking hygiene in family-type enterprises in our region. In addition, the fact that subclinical mastitis is not noticed by animal owners causes the pathogens to spread more easily among animals and to be seen more frequently because they are not treated. The main approaches for the protection of the udder health are milking hygiene, use of appropriate milking technique, maintenance of milking equipment, dry period treatment, screening of the herd for clinical or subclinical mastitis, monthly controls of somatic cell count in bulk tank milk, recording system and archiving. In addition to the causative agent and environmental factors, many host factors such as anatomical and genetic predisposition and care-feeding are the main determinants of mastitis, so a multi-faceted control program should be established to consider all these factors in order to protect udder health.

Keywords: Mastitis, Prevalence, Bacterial agent, Kars, Turkey

KİRAZDA MEYVE KALİTESİ ÜZERİNE AMİNOETHOXY VINYL GLYCİNE (AVG) ETKİSİ

THE EFFECT OF AMİNOETHOXY VINYL GLYCİNE (AVG) APPLICATION ON FRUIT QUALITY IN SWEET CHERRY

Emine KUCUKER

Assoc. Prof. Dr. Siirt University, Faculty of Agriculture, Department of Horticulture

Erdal AGLAR

Assoc. Prof. Dr. Van Yuzuncu Yil University Faculty of Agriculture, Department of Horticulture

ÖZET

Kiraz meyvelerinde meyve iriliği en önemli kalite parametrelerinden birisidir. İhraç pazarlarında değer gören en önemli unsurdur. Bu çalışmada kiraz ağaçlarına yapraktan yapılan farklı uygulama programlarının meyve iriliği ve meyve kalitesine etkilerinin belirlenmesi amaçlanmıştır. Bu amaçla Starks Gold kiraz çeşidinde, tahmini hasat tarihinden 4 hafta önce 250 mg L⁻¹ aminoetoksivinilglisin deneme ağaçlarına püskürtülmüştür. Çalışmada, meyve ve meyve sap ağırlığı, meyve ve meyve sapı boyutları, bazı meyve kalite özellikleri [suda çözünebilir kuru madde (SÇKM, %), pH, meyve eti sertliği (kg), titre edilebilir asitlik (TA, g malik asit 100 mL⁻¹), meyve rengi özellikleri (L*, a, b) belirlenmiştir. Tahmini hasat tarihinde AVG uygulaması meyve ağırlığını önemli oranda artırmıştır. AVG uygulamaları ile ortalama meyve ağırlığı 3.20 g iken kontrolde ortalama meyve ağırlığı 2.32 g olarak tespit edilmiştir. AVG uygulaması meyve boyutları ve meyve sapı değerleri bakımından kontrol uygulaması ile benzer etkiye sahip olurken önemli bir kalite parametresi olan SÇKM içeriğini pozitif yönde etkilemiştir. Meyve eti sertliği AVG uygulaması ile artış göstermiş ancak bu artışın etkisi önemsiz bulunmuştur. AVG uygulaması hem TA hem pH değerlerini önemli seviyede artırmıştır. AVG uygulamasında TA değeri 1.92, pH değeri ise 4.08 olarak tespit edilmiştir. Meyvede renklenme parametreleri L, a ve b değerleri ile tespit edilmiştir. Meyvenin parlaklığını belirleyen L* değeri AVG uygulaması ile önemli oranda artış göstermiştir. Starks Gold kiraz çeşidi sarı renkli kiraz çeşididir. Bu nedenle b değeri renklenmenin belirlenmesinde önemli bir kriterdir. Çalışmamızda +b sarıya, -b maviliğe gidişi ifade eden b değeri ise AVG uygulaması ile önemli oranda azalmıştır. Bu değer AVG uygulamasında 36.77 iken kontrol uygulamasında 49.20 olarak tespit edilmiştir. AVG uygulaması olgunlaşmayı geciktirici özelliğine bağlı olarak kirazda renklenmeyi geciktirmiştir.

Anahtar Kelimeler: *Prunus avium*, AVG, retain, meyve iriliği, renk

ABSTRACT

Fruit size is one of the most important quality parameters in sweet cherry fruits. It is the most important element that is valued in export markets. In this study, it was aimed to determine the effects of different application programs treated from leaves on sweet cherry trees on fruit size and fruit quality. For this aim, on Starks Gold sweet cherry cultivar, 250 mg L⁻¹ aminoethoxy vinyl glycine (AVG) was sprayed on the trial trees 4 weeks before the estimated harvest date. In the study, fruit and stalk weight, fruit and stalk stem dimensions, the fruit quality characteristics such as soluble solids content (%), pH, fruit firmness (kg), titratable acidity (TA, g malic acid 100 mL⁻¹), fruit color (L*, a, b) were determined. At the estimated harvest date, AVG applications significantly increased fruit weight. The average fruit weight was 3.20 g with AVG applications while the average fruit weight was determined as 2.32 g in the control. The AVG application had a similar effect with the control application in terms of fruit sizes and fruit stalk values, and it positively affected the soluble solids content., which is an important quality parameter. Fruit firmness increased with AVG application, but the effect of this increase was found to be insignificant. AVG application significantly increased both TA and pH values. In AVG application, the TA value was 1.92 and the pH value was 4.08. Color parameters in fruit were determined by L, a

and b values. The L* value, which determines the brightness of the fruit, increased with AVG application. Starks Gold is a yellow sweet cherry cultivar. Therefore, the b value is an important criterion in determining coloration. In our study, the b value, which represents +b going to yellow and -b to blue, decreased significantly with AVG application. This value was 36.77 in the AVG application whereas it was determined as 49.20 in the control application. AVG application delayed the coloration of sweet cherry due to its ripening retardant properties. As a result, it was revealed in the study that AVG application can be used as a tool to increase fruit quality and delay the harvest time in sweet cherry.

Anahtar kelime: *Prunus avium*, AVG, retain, fruit size, fruit color

**0900 ZİRAAT VE REGİNA KİRAZ ÇEŞİTLERİNİN VEJETATİF GELİŞİMİ VE MEYVE
KALİTE ÖZELLİKLERİ ÜZERİNE ANAÇ VE TERBİYE SİSTEMLERİNİN ETKİSİ**
EFFECTS OF ROOTSTOCKS AND TRAINING SYSTEMS ON VEGETATIVE GROWTH AND
FRUIT QUALITY PROPERTIES OF 0900 ZİRAAT AND REGINA SWEET CHERRY
CULTIVARS

Erdal AGLAR¹

Assoc. Prof. Dr. Van Yuzuncu Yil University Faculty of Agriculture, Department of Horticulture

Burhan OZTURK²

Assoc. Prof. Dr. Ordu University, Faculty of Agriculture, Department of Horticulture

Onur SARACOGLU³

Assoc. Prof. Dr. Tokat Gaziosmanpaşa University, Faculty of Agriculture, Department of Horticulture

ÖZET

Bu çalışma Krymsk 5 ve Piku 1 anaçları üzerine aşılanan 0900 Ziraat ve Regina kiraz çeşitlerinin performansları ve ağaçların vejetatif gelişimi ve meyve kalitesi üzerine iki terbiye sistemi (UFO: Upright Fruiting Offshoots ve SSA: Super Slender Axe) ve anaç kombinasyonlarının etkisini belirlemek amacıyla yapıldı.

Çalışma, Sivas ili Suşehri ilçesinde yer alan Sezai Karakoç Mesleki ve Teknik Anadolu Lisesi'ne ait uygulama bahçesinde (40° 10' 21.77" Kuzey, 38° 06' 02.34" Doğu ve rakım 972 m) 2017-2020 yılları arasında yürütüldü. Çalışmada Krymsk 5, Gisela 6 ve Piku 1 anaçları üzerine aşılı 099 Ziraat kiraz çeşidine ait fidanların 4x2 ve 4x1 dikim sıklığı ile dikilen ve Super Slender Axe (SSA) ve Upright Fruiting Offshoots (UFO) terbiye istemleri uygulanmış kiraz ağaçları bitkisel materyal olarak kullanıldı.

Çalışmada, ağaç boyu, sürgün çapı ve sürgün gelişimi gibi özellikler dikkate alınarak belirlenen ağaçta vejetatif gelişim, kullanılan çeşide ve anaca ve uygulanan terbiye sistemine bağlı olarak değişiklik gösterdi. Çeşitlerin Krymsk 5 kombinasyonu ile ağaçlarda vejetatif gelişim daha fazla iken, Piku 1 anacı üzerinde çeşitler daha düşük vejetatif gelişim gösterdi. Ağaçlarda sürgün uzunluğu yıla bağlı olarak değişiklik gösterirken, SSA terbiye sistemi ile daha uzun sürgünler oluşurken ve UFO sistemi ile daha kalın sürgünler meydana geldi. Meyve eni ve boyu ölçülerek belirlenen meyve büyüklüğünde anacın etkisinin genellikle önemli olmadığı, sadece çalışmanın ilk yılında SSA terbiye sisteminde Piku 1 anacı ile daha büyük meyveler elde edildi. Bununla birlikte meyve büyüklüğü üzerine terbiye sisteminin etkisi yoktu. Meyve renklenmesinde anaç etkisi bulunmazken, UFO terbiye sisteminde daha kırmızı renkli meyveler elde edildi.

Anahtar kelimeler: Piku 1, Krymsk 5, UFO, SSA

ABSTRACT

The study was conducted to determine the performance of 0900 Ziraat and Regina cultivars grafted on Krymsk 5 and Piku 1 rootstocks, and the effects of the combinations of these rootstocks with two training systems (UFO: Upright Fruiting Offshoots ve SSA: Super Slender Axe) on vegetative growth and fruit quality of sweet cherry.

The study was carried out in the orchard of Sezai Karakoç Vocational and Technical Anatolian High School (40° 10' 21.77 "North, 38° 06' 02.34" East and altitude 972 m) in Susehri district of Sivas province between 2017-2019. Scion wood of 0900 Ziraat and Regina sweet cherry cultivar, was grafted onto Krymsk 5 or Piku 1 rootstocks and were trained to SSA or UFO training systems.

In the study, the vegetative growth of the tree, which was determined taking into account characteristics such as tree height, shoot length and shoot diameter, varied depending on the cultivar, rootstock and the training system. The vegetative growth was higher in the combination Krymsk 5 of cultivars, whereas the growth was lower the cultivar grafted on Piku 1. The shoot length varied depending on year. The longer shoot occurred with SSA training system, but the thicker shoot was in UFO training system. The rootstock generally have not affected the fruit size, which was determined by measuring fruit length and width, only in the first year of the study, the bigger fruit were harvested by Piku 1 rootstock in SSA training system. However, there was no the effect of the training system on fruit size. The rootstock did not affect the fruit color, but the darker fruit was obtained with UFO training system.

Keywords: Piku 1, Krymsk 5, UFO, SSA

UTILIZATION OF TURMERIC AND GINGER PRODUCTS IN NOODLE FORMULATION

Öznur EYMİR¹

¹*Necmettin Erbakan Üniversitesi, Meram Meslek Yüksekokulu, Gıda İşleme Bölümü, Konya, Türkiye*

¹ORCID ID: 0000-0001-8023-4250

Nermin BİLGİÇLİ²

²*Necmettin Erbakan Üniversitesi, Mühendislik Fakültesi, Gıda Mühendisliği Bölümü, Konya,
Türkiye*

²ORCID ID: 0000-0001-5490-9824

ABSTRACT

Turmeric (*Curcuma longa* Linn) and ginger (*Zingiber officinale* Roscoe) are good sources of antioxidants. In this study, the effect of turmeric and ginger products (powder and extract) on color (L*, a*, b*, SI and Hue), cooking properties (water uptake, volume increase and cooking loss) and sensory attributes (taste, odor, appearance, texture and overall acceptability) of noodle were researched. The substitution ratios of turmeric and ginger powder in noodle formulation were used as 2% and 4%, turmeric and ginger extract as 0.05 and 0.1%, respectively. Some quality characteristics of noodle containing turmeric and ginger product compared with control noodle prepared with refined wheat flour. Lightness, redness and yellowness values ranged between 56.72-64.18, 0.69-3.81 and 29.41-54.34 on the noodles containing turmeric and ginger powder, on the other hand same color properties changed between 61.22-65.13, 0.23-1.61 and 32.32-49.62 on the noodle prepared turmeric and ginger extract. Color properties (L*, a*, b*, SI and Hue) of the noodles were significantly affected by the use of turmeric and ginger powder/extract. All utilization levels of turmeric or ginger powder and turmeric extract decreased the lightness of the noodle samples. Both powder and extract form of turmeric gave the most yellowish color on noodle samples. Utilization of turmeric and ginger powder in noodle formulation did not change water uptake values significantly. Volume increase and cooking loss values of the noodle samples prepared with 4% turmeric or ginger powder increased significantly ($p < 0.05$) compared to control noodle. Both usage ratios (0.05% and 0.1%) of turmeric extract resulted in the lowest scores in terms of taste and overall acceptability.

Keywords: Noodle, Turmeric, Ginger, Powder, Extract

TÜRKİYE YERLİ TAVUK IRKLARINDA ENDOJEN VİRÜSLERİN ARAŞTIRILMASI* INVESTIGATION OF ENDOGENOUS VIRUSES IN TURKISH DOMESTIC CHICKEN BREEDS

Muhammet Kaya¹

¹ *Eskişehir Osmangazi Üni., Ziraat Fak. Tarımsal Biyoteknoloji Böl., Eskişehir, Türkiye.*

¹ORCID ID: <https://orcid.org/0000-0001-6474-121X>

Esra Gül²

² *Eskişehir Osmangazi Üni., Ziraat Fak. Tarımsal Biyoteknoloji Böl., Eskişehir, Türkiye.*

²ORCID ID: <https://orcid.org/0000-0002-5709-4904>

ÖZET

Yerli hayvan ırkları, asırlar boyu buldukları bölgenin her türlü çevre koşuluna uyum sağlamış, birçok hastalığa karşı direnç kazanarak günümüze kadar varlıklarını sürdürmüşlerdir. Denizli ve Gerze (Hacı Kadın) Türkiye'nin önemli yerli tavuk ırklarıdır.

ALV, galliform kuşları enfekte eden bir alfaretrovirüstür ve hem eksojen hem de endojen aktiviteye sahip olarak bilinen tek tavuk (*Gallus gallus*) retrovirüsüdür. ALV, konakçı aralığı, antikor nötralizasyonu ve reseptör müdahalesi çalışmalarına dayalı olarak, altı alt grupta (A– E ve J) sınıflandırılmıştır. Bu alt gruplardan beşi eksojen (ALVA'dan ALVD' ya kadar ve ALVJ), diğer alt grup olan ALVE ise endojen kuş virüsüdür. Tam endojen retrovirüsler (ERV), konakçı genomundaki entegrasyon noktasında özdeş olan iki uzun terminal tekrarı (LTR) ile çevrelenmiş retroviral proteinlerin (gag, pol ve env) korunmuş bir yapısını oluşturur.

Türkiye yerli tavuk ırkları olan Denizli ve Gerze popülasyonlarından 175 örnek kullanılarak yapılan çalışmada örneklerin ALVE (1, 9, 12, 15, 21, B5, TYR ve NSCA) lokuslarını taşımadıkları, ALVE3 ve ALVE6 lokuslarını ise taşıdıkları belirlenmiştir. ALVE6 lokusu sadece Gerze popülasyonunda gözükürken ALVE6 taşıyan Gerze tavuklarının frekansı 0,6154 olarak hesaplanmıştır. ALVE3 lokusu taşıyan tavukların frekansı Denizli popülasyonunda 0,9799 iken Gerze popülasyonunda 0,5577 olarak hesaplanmıştır.

Anahtar Kelimeler: ALVE, PCR, Türkiye Yerli Tavuk Irkları.

* Bu çalışma, Eskişehir Osmangazi Üniversitesi BAP tarafından 202023020 (Proje Koordinatörü: M. Kaya) numaralı araştırma projesi olarak desteklenmiştir. Bu çalışma Esra Gül'ün yüksek lisans tezinden üretilmiştir.

ABSTRACT

Native animal breeds have adapted to all kinds of environmental conditions of the region they are in for centuries, and have survived until today by gaining resistance against many diseases. Denizli and Gerze (Hacı Kadın) are important native chicken breeds of Turkey.

ALV is an alpharetrovirus that infects galliform birds and is the only chicken (*Gallus gallus*) retrovirus known to have both exogenous and endogenous activity. ALV has been classified into six subgroups (A – E and J) based on studies of host range, antibody neutralization and receptor interference. Five of these subgroups are exogenous (ALVA to ALVD and ALVJ), while the other subgroup, ALVE, is endogenous avian virus. Intact endogenous retroviruses (ERV) form a conserved structure of retroviral proteins (gag, pol and env) flanked by two long terminal repeats (LTRs) that are identical at the point of integration in the host genome.



The study was conducted by using 175 chickens from Denizli and Gerze populations, which are domestic chicken breeds of Turkey. The domestic breeds did not carry ALVE (1, 9, 12, 15, 21, B5, TYR and NSCA) loci, but they carried ALVE3 and ALVE6 loci. While the ALVE6 locus was only seen in the Gerze population, the frequency of Gerze chickens carrying ALVE6 was calculated as 0.6154. While the frequency of chickens carrying ALVE3 locus was 0.9799 in Denizli population, in Gerze population it was calculated as 0.5577.

Keywords: ALVE, PCR, Turkey native chicken.

TARIM-GIDA TİCARET SİSTEMLERİNİN SINIR ÖTESİ İKLİM KIRILGANLIKLARI: TÜRKİYE-AVRUPA-AFRİKA

CROSS-BORDER CLIMATE VULNERABILITIES OF AGRI-FOOD TRADE SYSTEMS: TURKEY-EUROPE-AFRICA

Gökşen ÇAPAR¹

¹Ankara Üniversitesi, Su Yönetimi Enstitüsü, Su Yönetimi ABD, Ankara, Türkiye

¹ORCID ID: <https://orcid.org/0000-0002-4636-9343>

Özlem TAŞKIN²

²Ankara Üniversitesi, Sosyal Bilimler Enstitüsü, Beşeri ve İktisadi Coğrafya ABD, Ankara, Türkiye

²ORCID ID: <https://orcid.org/0000-0003-3478-0650>

Buse UÇAR³

³Ankara Üniversitesi, Sosyal Bilimler Enstitüsü, Su Politikaları ve Güvenliği ABD, Ankara, Türkiye

³ORCID ID: <https://orcid.org/0000-0002-1492-4605>

Tolga PİLEVNELİ⁴

⁴Ankara Üniversitesi, Su Yönetimi Enstitüsü, Su Yönetimi ABD, Ankara, Türkiye

⁴ORCID ID: <https://orcid.org/0000-0003-3590-6120>

Ertuğ ERÇİN⁵

⁵R2Water Research and Consultancy, Amsterdam, the Netherlands

⁵ORCID ID: <https://orcid.org/0000-0001-7044-107X>

ÖZET

İklim değişikliği doğrudan tarım sektörünü etkileyen su döngüsü ve su kaynakları üzerinde büyük olumsuz etkilere sahiptir. Tarımsal su talebi, ortalama %69 küresel su çekim oranı ile tüm sektörler arasında en yüksek seviyededir (AQUASTAT, 2022). Bu durum, kuraklık gibi herhangi bir aşırı hava olayının mahsul üretiminin azalmasına yol açacağını ve bunun da ülkeler arasındaki gıda ticaretini olumsuz etkileyeceğini açıkça göstermektedir.

Akdeniz iklimine sahip olan Türkiye, iklim değişikliği karşısında yüksek risk altında olan ülkeler arasında yer almaktadır (Türkiye İklim Değişikliği Stratejisi, 2012). Türkiye'den 2020 yılında ihracatı yapılan 37 milyon tondan fazla ürünün 4 milyon tonu Avrupa'ya gerçekleştirilmiştir. Bu ürünlere karşılık gelen 35 milyar dolar gelirin ise 6,2 milyar doları Avrupa'ya yapılan ihracattan elde edilmiştir. İklim değişikliğine bağlı kırılmalıkların Türkiye'nin tarımsal ihracatına olumsuz yansımaları beklenmektedir (UN Comtrade, 2020).

Bu çalışma, H2020 ERANET FOSC programı (TÜBİTAK 220N242) tarafından finanse edilen CREATE Projesinin bir bölümünü temsil etmekte ve Türkiye, Avrupa ve Afrika gıda ticaret sistemlerinin sınır ötesi iklim kırılmalığını araştırmaktadır. Bu projenin amacı, iklim değişikliğinin sınır ötesi ticaret sistemleri üzerindeki uzun vadeli etkilerini detaylı ve niteliksel veri setleri üretmekle belirlenen temel ürünler açısından araştırmak ve bu konuda politika önerileri geliştirmektir.

Çalışmanın ilk aşaması, partner ülkelerin su kaynakları ve tarımsal üretimi hakkında veri toplanmasını içermektedir. Türkiye örneği için verilerin değerlendirilmesinden sonra tarım ticaretinde önemi yüksek dört ana ürün seçilmiştir: fındık, üzüm, kayısı ve incir (Ercin, 2022). Bu ana ürünlerin seçiminde üretim miktarı, mahsulün iklim değişikliğine karşı kırılmalığı, ekonomiye katkısı, karbon ve su ayak izleri, gıda güvenliği, paydaş girdisi ve tedarik zincirindeki yeri gibi çeşitli faktörler göz önünde

bulundurulmaktadır. Daha sonra, seçilen bu ana ürünler hakkında paydaşların görüş ve önerileri dikkate alınacaktır.

Anahtar Kelimeler: tarım, ihracat, iklim değişikliği

ABSTRACT

Climate change has severely negative impacts on hydrologic cycle and water resources, which directly affects agriculture sector. Agricultural water demand is the highest among all sectors with an average global water withdrawal ratio of 69% (AQUASTAT, 2022). This clearly indicates that any extreme weather event such as drought would lead to reduced crop production, which in turn, would negatively affect food trade between countries.

Having Mediterranean climate, Turkey is among the countries that are under high risk related to climate change (Turkey Climate Change Strategy, 2012). Turkey has exported 37 million tonnes of agricultural products in 2020, of which 4 million tonnes were exported to Europe. The revenue corresponding to total export was \$35 billion, of which \$6.2 billion was from Europe. It is expected that climate change related vulnerabilities will be negatively reflected in Turkey's agricultural export (UN Comtrade, 2020).

This study represents part of CREATE Project, which is funded by H2020 ERANET FOSC program (TUBITAK 220N242) and it investigates the cross-border climate vulnerability of Turkish, European and African food trade systems. The aim of this project is to investigate the long-term impacts of climate change on cross-border trade systems in terms of identified key crops by producing detailed and qualitative data sets and to develop policy recommendations on this issue.

The first stage of the study includes gathering data on the water resources and agricultural production of the partner countries. For the Turkish case, after the evaluation of the data, four key crops which have high importance on the agricultural trade were selected: hazelnuts, grapes, apricots and figs (Ercin, 2022). There are a variety of factors considered for the selection of these key crops such as production quantity, vulnerability of the crop on climate change, contribution to the economy, carbon and water footprints, food security, stakeholder input and their place in the supply chain. Next, opinions and recommendations of the stakeholders will be considered on these selected key crops.

Keywords: agriculture, export, climate change

PIRASAYI KURUTMA ÖZELLİKLERİNİN İYİLEŞTİRİLMESİ İÇİN ORTA-YÜKSEK GÜÇLÜ MİKRODALGA HAŞLAMA ÖN İŞLEMİ KULLANIMI: KURUTMA KİNETİK, TAŞIMA VE TERMOFİZİK ÖZELLİKLERİ

USAGE OF MEDIUM TO HIGH- POWER MICROWAVE-BLANCHING PRETREATMENT TO IMPROVE DRYING CHARACTERISTICS OF LEEK: DRYING KINETICS, TRANSPORT, AND THERMOPHYSICAL PROPERTIES

Nasim KIAN-POUR¹

¹*Istanbul Aydin University, School of Applied Sciences, Food Technology, Istanbul, Turkey.*

¹*ORCID ID: <https://orcid.org/0000-0001-9558-4077>*

ÖZET

Bu çalışma, mikrodalga gücü ve haşlama süresinin kombinasyonunun pırasanın kurutma, taşıma ve termofiziksel özellikleri üzerindeki etkisini araştırmayı amaçlamıştır. Mikrodalga-haşlama (MWBL) ön işlemi, pırasa dilimlerinin kuruma davranışını değiştirmek için kullanıldı. Taze pırasalar yıkanır, soyulur ve 2 mm kalınlığında dilimlenir. Daha sonra numuneler mikrodalgada iki mikrodalga gücü (600, 800 W) ve haşlama süresi (2, 4 dakika) kombinasyonu ile haşlanmıştır. Ayrıca, haşlanmamış numune, kontrol numunesi olarak kullanılmıştır. Daha sonra pırasa örnekleri 110°C sıcaklıkta, 1.75 m/s sabit hava hızında ve 25°C doyma nemi olan sıcak havada kurutuldu. Numunelerin nem içeriği kuruma süresinin artmasıyla azalmıştır. Ayrıca, mikrodalga gücü ve haşlama süresindeki artış, MWBL numunelerinin kuruma süresinde kontrol numunelerine kıyasla önemli bir azalmaya neden olmuştur. 4 dakika boyunca 800 W'da haşlayan numuneler, kuruma süresinde maksimum azalma (%58) gösterdi. Fick'in ikinci difüzyon yasasına göre, haşlanmamış ve MWBL numunelerinin 600W-2dk, 600W-4dk, 800W-2dk ve 800W-4dk'daki difüzyon katsayısı sırasıyla 0.695 ± 0.025^a , 1.385 ± 0.053^b , 1.508 ± 0.019^b , 1.801 ± 0.007^c ve 1.902 ± 0.081^c belirlendi. Mikrodalga gücü arttıkça, difüzyon katsayısı önemli ölçüde arttı. Haşlama süresinin 2 dakikadan 4 dakikaya artmasının difüzyon katsayısı üzerinde önemli bir etkisi olmamıştır. Sürüklenme kuvveti, ısı aktarım katsayısı ve kütle aktarım katsayısı sırasıyla 1.05×10^{-5} N, 44.51 W/m² K ve 0.037 m/s olarak belirlenmiştir. Numunelerin termal iletkenliği, özgül ısısı ve yoğunluğu sırasıyla 0,5272 ila 0,5820 W/m.K, 3545 ila 3869 J/kg.K ve 824 ila 886 kg/m³ olarak hesaplanmıştır. Sonuçlar, pırasanın 800W'de 4 dakika mikrodalgada haşlanmasının, pırasanın kuruma süresini mükemmel bir şekilde azaltabileceğini göstermiştir.

Anahtar Kelimeler: Mikrodalga-Haşlama, Pırasa, Kurutma Kinetiği.

ABSTRACT

This study aimed to investigate the impact of the combination of microwave power and blanching time on the kinetics of drying, transport, and thermophysical properties of leek. The microwave- blanching (MWBL) pretreatment was used to modify the drying behavior of leek slices. The fresh leeks were washed, peeled, and sliced to 2 mm thickness. Then the samples were blanched in the microwave with two combinations of microwave power (600, 800 W) and blanching time (2, 4 min). Also, the non-blanching sample was used as a control sample. Afterward, the leek samples were dried in the hot air with a temperature of 110°C, constant air velocity of 1.75 m/s, and saturation humidity of 25°C. The moisture content of samples decreased with an increase in drying time. Furthermore, an increase in the microwave power and blanching time caused a significant decrease in the drying time of MWBL samples compared with control samples. Samples blanched at 800 W for 4 min showed maximum decreases in drying time (58%). According to the Fick's second law of diffusion, diffusion coefficient of non-blanching and MWBL samples at 600W-2min, 600W-4min, 800 W-2min, and 800W-4min, were determined as 0.695 ± 0.025^a , 1.385 ± 0.053^b , 1.508 ± 0.019^b , 1.801 ± 0.007^c , and 1.902 ± 0.081^c , respectively. As microwave power increased, the diffusion coefficient significantly increased. The increase in the blanching time from 2 min to 4 min had no significant impact on the diffusion coefficient.



The drag force, heat transfer coefficient, and mass transfer coefficient were determined as 1.05×10^{-5} N, 44.51 W/m² K, and 0.037 m/s, respectively. Thermal conductivity, specific heat, and density of samples ranged from 0.5272 to 0.5820 W/m.K, 3545 to 3869 J/kg.K, and 824 to 886 kg/m³, respectively. The results showed that microwave-blanching of leek at 800W for 4 min can excellently reduce the drying time of leek.

Keywords: Microwave-Blanching, Leek, Drying Kinetics.

YAŞAR KEMAL'İN ORMANCILIK SORUNLARINA BAKIŞI YAŞAR KEMAL'S VIEW ON FORESTRY PROBLEMS

Seyit Battal UĞURLU

Van Yüzüncü Yıl Üniversitesi Edebiyat Fakültesi, Türk Dili ve Edebiyatı Bölümü, Van, TÜRKİYE

ORCID ID: <https://orcid.org/0000-0002-5814-8820>.

ÖZET

Türk romanının güçlü ismi Yaşar Kemal'in, yarım asrı aşkın bir sürede toplumcu duyarlılıkla yazdığı birçok eserinde, önemli bir öge olarak yer alan doğa, 'binbir çiçekli bahçe' olarak zengin çeşitlendirmeleriyle yer alır. Doğa insan ilişkisinin farklı boyutları da bu motto ile uyarlı olarak oldukça zengin bir etkileşim halinde ele alınır. Doğa, sınırsız bir kaynak olarak insanla uyum içindeki kurgusal ve kurgusal olmayan eserlerinde insanın doğaya verdiği her tür zarar bunun önemli bir yönünü oluşturur. Doğal kaynakların kişisel kazanç için talan edilmesinin farklı veçhelerine odaklanan Kemal'in metinleri, ülke ve dünya geleceği adına bu sınırlı kaynağa bilinçli ve erdemli şekilde yaklaşılması, barındırdığı her tür varlık ile doğaya saygılı bir duruş sergilenmesi gerektiği tezini işler. Bu yaklaşımda insanoğlunun toprak, hava ve suya; barındırdığı her türden canlı ve cansız varlık karşısında erdemli bir tutum sergilenmesinin mecburiyeti öne çıkar. Yaşar Kemal'i evrensel bir yazar yapan bu perspektif, onu doğup büyüdüğü memleketinden, bütün dünyanın geleceği adına düşünen, kaygılanan, harekete geçen bir düşünce insanı olmasının payı büyüktür.

Yaşar Kemal'in, Türkiye'nin farklı bölgelerinde ormancılık sorunları üzerine yaptığı, öncesinde gazetede yayınlanmış röportaj serisinden ibaret metinlerden oluşan *Yanan Ormanlarda 50 Gün* (1954) adıyla kitaplaştırdığı eseri, ormancılığın karşı karşıya olduğu tehlike, farklı orman bölgelerinden köy ve kasabalardaki insanlarla doğrudan görüşmeler yaparak sorunlar tespitinde bulunur: Ormanların yakılması, boğulması, keçi yetiştiriciliğinin buna etkisi, tapulu kesimlerin genişletilmesi, yasaların kişisel ihtiras adına ve iltimasla ihlal edilmesi gibi sorunların yaşanmış hikâyeler üzerinden ortaya konduğu eserde, kamu kaynaklarının doğru kullanılarak iş ve istihdam olanaklarının yaratılması, orman koruma kanunlarının sıkı uygulanması ve Türkiye'nin çölleşmesinin önüne geçilmesi noktasında öneriler öne çıkarılır. Kemal, erozyon ve çölleşmeye neden olan orman tahribinin, çok kısa getirisine karşın kalıcı hasara sıklıkla vurgulayarak, bunun, geçimini sağlamaya çalışan köylünün ekonomik sorununa çözüm olamayacağını, yöneticilerin orman köylülerine istihdam için kaynak yaratması gerektiğini söyler. Bu bildiri, yazarın doğaya bakışını, anılan eser özelinde, ormancılık sorunları bağlamında eleştirel bir yaklaşımla çözümlemeyi amaçlamaktadır.

Anahtar Kelimeler: Yaşar Kemal, edebiyat ve doğa, doğa etiği, doğa tahribi, ormancılık.

ABSTRACT

Nature, which is an important element in many of the works of Yaşar Kemal, the prominent author of the Turkish novel, written with social sensitivity over more than half a century, takes place in its rich variations as the 'garden with a thousand and one flowers'. Following this motto, different dimensions of the nature-human relationship are handled in a very rich interaction. Nature, as an unlimited resource, is an important aspect of this, in his fictional and non-fictional works that are in harmony with humans, and all kinds of damage done by humans to nature. Focusing on different aspects of the plundering of natural resources for personal gain, Kemal's texts deal with the thesis that this limited resource should be approached consciously and virtuously for the sake of the future of the country and the world, and a respectful stance should be displayed with all kinds of assets it contains. In this approach, human beings' land, air, and water; The necessity of displaying a virtuous attitude in the face of all kinds of living and non-living beings comes to the fore. This perspective, which made Yaşar Kemal a universal writer, has



a great share in his being a thinker who thinks, worries, and takes action for the future of the whole world from his hometown where he was born and grew up.

Yaşar Kemal's book, *50 Days in the Burning Forests* (1954), which consists of texts consisting of a series of interviews on forestry problems in different regions of Turkey, is based on direct interviews with people in villages and towns from different forest regions. It identifies problems: The burning of forests, suffocating, the effect of goat breeding on this, the expansion of land-titled sections, the violation of laws in the name of personal passion and favor, creating job and employment opportunities by using public resources correctly, strict implementation of forest protection laws. and suggestions are put forward the point of preventing the desertification of Turkey. Kemal frequently emphasizes that the destruction of the forest, which causes erosion and desertification, causes permanent damage despite its very short return, and says that this cannot be a solution to the economic problem of the villagers trying to make a living and that the governors should create resources for employment for the forest villagers. This paper aims to analyze the author's view of nature with a critical approach, in the context of forestry problems in the aforementioned work.

Keywords: Yaşar Kemal, literature and nature, nature ethics, nature destruction, forestry.

SAMSUN İLİ TRABZON HURMASI (*Diospyros kaki* L.) BAHÇELERİNDE PERSIMMON CRYPTIC VIRUS ENFEKSİYONUNUN ARAŞTIRILMASI

INVESTIGATION ON PERSIMMON CRYPTIC VIRUS INFECTION IN PERSIMMON (*Diospyros
kaki* L.) ORCHARDS IN SAMSUN PROVINCE

Sena ÇANKAYA

¹ Ondokuz Mayıs Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Samsun, Türkiye

¹ ORCID ID: <https://orcid.org/0000-0002-5692-9527>

Miray ARLI-SÖKMEN

¹ Ondokuz Mayıs Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Samsun, Türkiye

² ORCID ID: <https://orcid.org/0000-0002-4963-9070>

ÖZET

Trabzon hurması (*Diospyros kaki* L.), ilkbaharda geç çiçeklenen subtropikal bir meyve türüdür. Trabzon hurmasında günümüze kadar 4 viroid (Citrus viroid VI, Apple fruit crinkle viroid, Persimmon latent viroid ve Persimmon viroid 2) ve 4 virüs türü (Persimmon virus A, Persimmon latent virüs, Persimmon virus B ve Persimmon cryptic virus) belirlenmiştir. Bu virüsler arasında Persimmon cryptic virus (PeCV) ilk olarak İtalya'nın Apulia bölgesinde 2015 yılında saptanmıştır. Daha sonra sırasıyla Türkiye, Kore, İspanya, Güney Amerika ve Kuzey Makedonya olmak üzere dünyada sınırlı sayıda ülkede belirlenmiştir.

PeCV Partitiviridae familyası, Deltapartitivirus cinsine ait bir virüs türüdür. PeCV partikülleri, izometrik şekilli ve 30 nm çapındadır. Virüsün çift sarmallı RNA (dsRNA) ve iki parçalı genom yapısı (RNA-1 ve RNA-2) bulunmaktadır. RNA-1, replikaz (RdRP), RNA-2 ise kılıf proteininin (CP) oluşumundan sorumludur. PeCV, Trabzon hurmasında semptomlu veya semptomsuz olarak enfeksiyon oluşturmaktadır. Semptomlu ağaçlarda yaprak yan damarlarında nekroz gözlenmektedir. Ticari bir antiserumu bulunmadığından, virüsün tanısında moleküler yöntemler kullanılmaktadır. Bu çalışmada, PeCV'nin tanısında dsRNA izolasyon ve RT-PCR yöntemlerinin uygulanabilirliği araştırılmıştır.

Samsun ilinde Trabzon hurması yetiştiriciliğinin yapıldığı 2 adet bahçeden 2021 yılında 14 adet semptomlu ve 14 semptomsuz yaprak örneği alınmıştır. Toplanan yaprak örneklerinden viral dsRNA'lar izole edilmiştir. dsRNA izolasyonunda 0.5 g, 1 g ve 1.5 g olmak üzere 3 farklı yaprak ağırlığı kullanılmıştır. PeCV kapsid protein bölgesine spesifik primer çifti kullanılarak, tek aşamalı reverse transkripsiyon-polimeraz zincir reaksiyon (RT-PCR) yöntemi virüsün tanısı için uygulanmıştır. Çalışma sonucunda, sadece 1.5 g yaprak ağırlığı kullanılarak izole edilen dsRNA örneklerinden beklenen büyüklükte (144 bp) DNA fragmenti elde edilmiştir. Böylece, virüsün hem semptomlu hem de semptomsuz yaprak örneklerinde tespit edilebildiği ve kullanılan yaprak dokusu miktarının dsRNA izolasyonunda önemli olduğu belirlenmiştir. Yöntemin ekonomik olması sebebiyle, gelecekte Trabzon hurması anaç, kalem ve fidanlıklarının sertifikasyon amaçlı test edilmesinde kullanılabileceği sonucuna varılmıştır.

Anahtar Kelimeler: Persimmon, PeCV, dsRNA izolasyonu, RT-PCR

ABSTRACT

Persimmon (*Diospyros kaki* L.) is a subtropical fruit species that blooms late in the spring. Four viroids (Citrus viroid VI, Apple fruit crinkle viroid, Persimmon latent viroid and Persimmon viroid 2) and four virus species (Persimmon virus A, Persimmon latent virus, Persimmon virus B and Persimmon cryptic virus) have been identified on persimmon so far. Among these viruses, Persimmon cryptic virus (PeCV) was first detected in the Apulia region of Italy in 2015. Subsequently, it was determined in a limited

number of countries in the world, including Turkey, Korea, Spain, South America and North Macedonia, respectively.

PeCV is a member of the genus *Deltapartitivirus* in the family *Partitiviridae*. PeCV particles are isometric in shape with a diameter of 30 nm. Its genome has double-stranded RNA (dsRNA) with two segmented structures (RNA-1 and RNA-2). RNA-1 is responsible for the synthesis of viral replicase while RNA-2 encodes the capsid protein (CP). PeCV may cause symptoms in persimmon; however, symptomless infection often does occur. Necrosis on leaf veinlets in symptomatic trees is observed. Since a commercial antiserum of PeCV is not available, molecular methods are used for its diagnosis. In this study, the possibility of applying dsRNA isolation method and the use of RT-PCR in the determination of PeCV were investigated.

Fourteen leaf samples with virus symptom and no symptom were taken from two persimmon orchards in Samsun province in 2021. Viral dsRNAs were isolated from the collected leaf samples. Three different leaf weights (0.5 g, 1 g and 1.5 g) were used in dsRNA isolation. One-step reverse transcription-polymerase chain reaction (RT-PCR) has been applied in PeCV identification using a primer pair specific for its capsid protein region. As a result of the study, an expected size (144 bp) of DNA fragment was only obtained from dsRNA samples of 1.5 g leaf weight. Thus, it was determined that PeCV was detectable in both symptomatic and asymptomatic leaf samples, and the amount of leaf tissue used was important for dsRNA isolation. Also, since this method is highly economical, it is recommended for testing the source of persimmon plant materials (rootstock, scion, and seedling) for certification purposes in the future.

Key words: Persimmon, PeCV, dsRNA isolation, RT-PCR

DÜNYADA VE TÜRKİYE'DE ÇÖLLEŞME VE ARAZİ BOZUNUMUNUN KAPSAMI VE İKLİM DEĞİŞİKLİĞİ İLE ETKİLEŞİMİ

THE EXTENT OF DESERTIFICATION AND LAND DEGRADATION IN THE WORLD AND TURKEY AND ITS INTERACTION WITH CLIMATE CHANGE

Doç. Dr. Tülay TUNÇAY

Soil Fertilizer and Water Resources Central Research Institute, Yenimahalle, Ankara

ORCID ID: 0000-0001-5398-5497

ABSTRACT

Desertification, which directly threatens 25% of the world's land area and 1.5 billion people in 168 countries and leads to the destruction of 12 million hectares of agricultural land every year, increases the pressure on natural resources and causes these resources to lose their regenerative power. It is necessary to develop appropriate management systems to ensure the sustainability of natural resources by taking into account the balance between conservation and use and preventing soil degradation. Desertification is not transforming a region into a desert but the loss of productivity of non-renewable soils. Soil degradation is the loss of soils due to water and wind erosion, the degradation of the physical, chemical, and biological properties of soils and the resulting economic losses, and the long-term loss of vegetation due to the decrease in soil fertility. Soil degradation is a process that occurs not only in agricultural areas but also in areas such as grasslands, pastures, forests, or scrublands/heaths.

After desertification was officially recognized as a serious problem at the United Nations Conference on Desertification (UNCOD) in 1977, studies on the Plan of Action to Combat Desertification (PACH) were conducted in 1979 and 1991. Turkey joined the United Nations Framework Convention on Climate Change in 2003. In this context, many studies are conducted worldwide to measure desertification, monitor the implementation of the Desertification Convention, and determine indicators for improvement. In this direction, it continues its planning and implementation activities under the principles and objectives of Turkey's National Action Program. Data collected by various institutions and organizations show that land degradation has increased significantly in recent decades and will continue to increase if no action is taken. Considering global food security and environmental quality, soil degradation processes are often caused and exacerbated by human activities. As the impacts of climate change increase, so will the negative pressures on soil and water resources. Therefore, the issue of soil degradation will remain on the international agenda in the 21st century. As a result, researchers from various institutions and organizations have attempted to make numerous estimates of desertification and land degradation. While some researchers estimate that 69.5% of the world's drylands are affected by various forms of land degradation due to human-induced land degradation, climate change is recognized as one of the most important factors contributing to land degradation as defined by the United Nations Conference. Developing and adopting sustainable land management practices will be the most important solution to combat land degradation in drylands. However, to properly assess sustainable land management practices, the climate-related and climate-related risks in the region or the causes of natural disasters should be known. The most common methods to assess land degradation worldwide are monitoring, observation, field measurement, and estimation of changes with modeling, which is done after degradation in the area where the experts and land users are involved. Many models have been developed worldwide to protect natural resources with the developed models in this context. Using the latest developments in remote sensing technology, variables and indicators such as climate (precipitation, temperature, drought, flood, etc.), soil quality parameters, land use status, vegetation cover, and management status determination are used in modeling studies. In this context, in our country, a geographically based mathematical model was developed in 2015 in collaboration with the General Directorate for Combating Desertification and Erosion (ÇEM) and TÜBİTAK-BİLGEM in terms of climate, consisting of 7 criteria, 48 indicators and 37 sub-indicators, including climate, water, soil, land

cover and land use, topography and geomorphology, socio-economy and management. According to the desertification risk map created using the model, 25.5% of land areas are at high risk.

Keywords: Land degradation, Climate change, Desertification

ÖZET

Dünya kara alanının % 25’inde, 168 ülkede yaşayan 1,5 milyar nüfusun doğrudan tehdit eden ve her yıl 12 milyon hektar tarım alanının bozulmasına neden olan çölleşme, doğal kaynaklar üzerindeki baskısını artırmakta ve bu kaynakların yenilenme gücünü kaybetmesine neden olmaktadır. Doğal kaynakların korunması ve kullanma dengesi gözönüne alınarak ve toprak kalitesindeki bozulmanın önlenerek sürdürülebilirliğinin sağlanması için uygun yönetim sistemlerinin geliştirilmesi gerekmektedir. Çölleşme bir bölgenin çöl haline gelmesi değil, yenilenemez bir kaynak olan toprakların üretkenliğini kaybetmesidir. Arazi bozunumu su ve rüzgâr erozyonuyla toprakların kaybedilmesi, toprakların fiziksel, kimyasal ve biyolojik özelliklerinin bozulması ve bunun sonucunda toprakların verimliliğinin azalması ile oluşan ekonomik kayıplar ile bitki örtüsünün uzun süreli kaybını ifade eder. Arazi tahribatı sadece tarım alanlarında değil, otlak, mera, orman ya da maki/fundalık gibi alanlarda ortaya çıkan bir süreçtir.

1977 yılında Birleşmiş Milletler Çölleşme Konferansı’nda (UNCOD) çölleşmenin yoğun şekilde sorun olarak ortaya çıktığı resmi olarak kabul edilmesinin ardından 1979 ve 1991 yıllarında konu ile ilgili Çölleşmeyle Mücadele Eylem Planı (PACH) çalışmaları devam etmiştir. Türkiye 2003 yılında Birleşmiş Milletler İklim Değişikliği Çerçeve Sözleşmesi” ne taraf olmuştur. Bu çerçevede çölleşmeyi ölçmek ve Çölleşme Sözleşmesinin Uygulamasını izlemek ve iyileşme göstergelerinin belirlenmesine yönelik dünyada pek çok araştırma yapılmaktadır. Bu doğrultuda Türkiye Ulusal Eylem Programında yer alan ilkelere ve amaçlar doğrultusunda planlama ve uygulama faaliyetlerinin sürdürmektedir. Çeşitli kurum ve organizasyonların elde ettiği verilere göre, son on yıllarda toprak bozunma süreçlerinde önemli bir artış olduğunu ve herhangi bir önlem alınmazsa bu süreçlerin daha da artacağına dair kanıtlar bulunmaktadır. Dünyadaki gıda güvenliği ve çevre kalitesi dikkate alındığında, arazi bozulma süreçleri genellikle insan faaliyeti sonucunda oluşur ve şiddetlenir. İklim değişikliğinin etkisinin giderek artması ile birlikte toprak ve su kaynakları üzerindeki olumsuz baskı da etkisini artıracaktır. Dolayısıyla arazi bozulumu 21.yüzyılda da uluslararası gündemdeki yerini koruyacaktır. Bu nedenle, çeşitli kurum ve organizasyonlar yoluyla araştırmacılar, çölleşme ve arazi bozunumun boyutu hakkında birçok tahminler yapmaya çalışmışlardır. Bazı araştırmacılar insan kaynaklı arazi tahribatının bir sonucu olarak, dünyadaki kurak alanların % 69.5’inin çeşitli arazi bozunum biçimlerinden etkilendiğini tahmin ederken Birleşmiş Milletler Konferansının tanımlandığı gibi, iklim değişiklikleri arazi bozulumuna katkıda bulunan başlıca faktörlerden biri olarak kabul edilmektedir. Sürdürülebilir arazi yönetim pratiklerinin geliştirilmesi ve adaptasyonu Dünyadaki kurak alanlardaki arazi bozunumu ile mücadele için en önemli çözümü getirecektir. Ancak sürdürülebilir arazi yönetim uygulamalarını doğru bir şekilde değerlendirebilmek için, bölgedeki iklim kaynaklı ve iklimle ilgili risk veya bölgedeki doğal felaketlerin nedenleri bilinmelidir. Dünyada arazi bozulumunun değerlendirilmesinde kullanılan en yaygın yöntemler, uzman ve arazi kullanıcılarının görüşünün dâhil edildiği ve bozulmanın olduğu alan içerisinde izleme, gözlemlene, yerinde ölçüm ve sonrasında oluşturulacak olan modelleme ile değişimlerin tahmin edilmesidir. Bu kapsamda dünya genelinde birçok model geliştirilmiş geliştirilen modellerle doğal kaynakların korunması hedeflenmiştir. Uzaktan algılama teknolojisindeki son gelişmelerden de faydalanılarak, modelleme çalışmalarında, iklim (yağış, sıcaklık, kuraklık, taşkın vs.), toprak kalitesi parametreleri, arazi kullanım durumu, bitki örtüsü ve amenajmanın durumunun belirlenmesi gibi çeşitli değişkenler ve göstergeler kullanılmaktadır. Ülkemizde de bu bağlamda, 2015 yılında Çölleşme ve Erozyonla Mücadele Genel Müdürlüğü (ÇEM) ve TÜBİTAK-BİLGEM işbirliğinde Türkiye Çölleşme Modeli (TÇM) iklim, su, toprak, arazi örtüsü ve arazi kullanımı, topoğrafya ve jeomorfoloji, sosyo-ekonomi ve yönetimi olmak üzere 7 kriter, 48 gösterge ve 37 alt göstergeden oluşan coğrafi tabanlı matematiksel bir model geliştirilmiştir. Modele göre oluşturulan çölleşme risk haritasına göre arazi varlığının % 25.5 inde yüksek risk bulunmaktadır.

Anahtar Kelimeler: Arazi bozunumu, İklim değişikliği, Çölleşme

VAN EKOLOJİK KOŞULLARINDA BİYOLOJİK VE ORGANİK GÜBRELEMENİN BÖRÜLCE'NİN (*Vigna sinensis*) VERİM VE VERİM ÖZELLİKLERİ ÜZERİNE ETKİSİNİN BELİRLENMESİ

DETERMINATION OF THE EFFECT OF BIOLOGICAL AND ORGANIC FERTILIZATION ON
THE YIELD AND YIELD CHARACTERISTICS OF COWPEA (*Vigna sinensis*) IN VAN
ECOLOGICAL CONDITIONS

İshak BARAN

¹Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü, Van, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0002-6299-8043>

Haluk KULAZ

²Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Bölümü, Van, Türkiye.

²ORCID ID: <https://orcid.org/0000-0003-3044-5046>

ÖZET

Çalışma, Van ekolojik koşullarında Karagöz börülce çeşidine uygulanan bitki gelişimini teşvik eden mikrobiyal gübreler (*Azot bağlayıcı*, *Fosfor çözücü*, *Rhizobium* bakterisi ve *Mikoriza* mantarı) ve Organik gübrelerin (*Hüyük asit*, *Tavuk gübresi* ve *Solucan gübresi*) verim ve verim özellikleri üzerine etkilerinin belirlenmesi amacıyla 2021 yılında Van Yüzüncü Yıl Üniversitesi Ziraat fakültesi tarla bitkileri bölümü uygulama arazisinde "Tesadüf Bloklarında Bölünmüş Parseller" deneme desenine göre 3 tekrarlamalı olarak düzenlenmiştir.

Çalışma sonuçlarına göre, çıkış süresi 8.2-8.6 gün, bakla bağlama süresi 53.7-55.7 gün, yetiştirme süresi 93.8-95.5 gün, bitki boyu 35.8-42.9 cm, ilk bakla yüksekliği 29.2-32.9 cm, bitkide dal sayısı 4.5-5.6 adet/bitki, bitkide tane sayısı 20.8-24.0 adet/bitki, 100 tane ağırlığı 17.06-19.6 g, tane verimi 60.7-75.1 kg/da arasında değişim göstermiştir. Araştırma sonucunda, en yüksek tane verimi vermicompost-mikoriza uygulamasından 75.1 kg/da olarak elde edilmiştir.

Anahtar kelimeler: Börülce, *Vigna sinensis*, Biyolojik gübreleme, Mikrobiyal gübreleme, Verim

ABSTRACT

The study was carried out in 2021 to determine the effects of microbial fertilizers (Nitrogen binder, Phosphorus solvent, Rhizobium bacteria and Mycorrhiza fungus) and Organic fertilizers (Humic acid, Chicken manure and Worm manure) applied to Karagöz cowpea cultivar on yield and yield characteristics. It was arranged in 3 replications according to the "Divided Plots in Random Blocks" trial design in Van Yüzüncü Yıl University, Faculty of Agriculture, Field Crops Application area.

According to the results of the study, emergence time is 8.2-8.6 days, pod setting time is 53.7-55.7 day, growing time is 93.8-95.5 days, plant height is 35.8-42.9 cm, first pod height is 29.2- 32.9 cm, number of branches per plant 4.5-5.6 pieces/plant, number of grains per plant 20.8-24.0 pieces/plant, 100 grain weight 17.06-19.6 g, grain yield kg/da, 60.7-75.1. As a result of the research, the highest grain yield was obtained as 75.1 kg/da in vermicompost-mycorrhiza application.

Keywords: Cowpea, *Vigna sinensis*, Biological fertilization, Microbial fertilization, Yield

FARKLI GÜBRE UYGULAMALARIYLA FARKLI OLUM DÖNEMLERİNDE HASAT EDİLEN DOMATES MEYVELERİNİN BAZI BİYOKİMYASAL İÇERİKLERİNİN BELİRLENMESİ

DETERMINATION OF SOME BIOCHEMICAL CONTENTS OF TOMATO FRUITS WHICH
WERE HARVESTED IN DIFFERENT FERTILIZER APPLICATIONS AND DIFFERENT
MATURITY PERIODS

Aytekın EKİNCİALP

Doç. Dr. ¹Van Yüzüncü Yıl Üniversitesi, Başkale MYO

ORCID ID: 0000 0003 1500 3215

Çeknas ERDİNÇ

*Doç. Dr. ²Van Yüzüncü Yıl Üniversitesi, Ziraat fakültesi, Ziraat Fakültesi, Tarımsal Biyoteknoloji
Bölümü*

ORCID ID:0000-0003-1208-032X

Selma BİTİK

Öğr. Gör. Dr. ¹Van Yüzüncü Yıl Üniversitesi, Başkale MYO

ORCID ID: 0000 0002 0563 1130

Suat ŞENSOY

Prof. Dr. ³Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü

ORCID ID: 0000-0001-7129-6185

ÖZET

Bu çalışma, dünya sebze üretiminde önemli bir yere sahip olan domates yetiştiriciliğinde farklı gübrelerin etkisini belirleme amacıyla yürütülmüştür. Çalışmada, kimyasal gübreler (20:20:20 (N:P:K) ve organomineral (11:11:11), organik gübre (katı solucan) ve bu gübrelerin 10 farklı kombinasyonları (kontrol, kimyasal gübre (KG) %100, organomineral (OG) %100, katı solucan (KS) %100, KG %75 + KS %25, KG %50 + KS %50, KG %25 + KS %75, OG %75 + KS %25, OG %50 + KS %50, OG %25 + KS %75) uygulanmıştır. Çalışma tesadüf blokları deneme desenine göre 3 tekrarlı ve her tekrarda 20 bitki ile yürütülmüştür. Gübre uygulaması toprak analizi sonucuna göre yapılmıştır. Kimyasal gübre uygulamasında azot 3 dönemde, organomineral ve katı solucan gübresi ise dikimden önce toprağa uygulanmıştır. Organik asitlerden oksalik asit, sitrik asit, malik asit ve süksinik asit içeriğinin en yüksek değeri (sırasıyla 268.807 ppm, 15.016 ppm, 11.588 ppm ve 121.530 ppm) yeşil olum döneminde aldığı saptanmıştır. Pembe olum döneminde fumarik asit içeriğinin ve etilen miktarının (sırasıyla 5.065 ppm ve 3393) en yüksek değerleri aldığı belirlenmiştir. Kırmızı olum döneminde ise toplam fenol, antioksidan kapasitesi, C vitamini, tartarik asit, likopen ve beta karoten içeriğinin (sırasıyla 20.362 mgGAE/100 g, 74.879 Trolox µmolTE/g, 30.481 ppm, 0.359 ppm, 28.449 µg ve 9.876 µg) en yüksek değeri aldığı tespit edilmiştir. Farklı gübre ve gübre dozu uygulamalarının domateste olum dönemleri üzerine etkilerinin istatistiksel olarak ($p<0.05$) önemli olduğu belirlenmiştir.

Anahtar Kelimeler: Biyokimyasal İçerik, Domates, Gübre, Olum Dönemleri

Bu çalışma, Van YYÜ Bilimsel Araştırma Projeleri Başkanlığı tarafından FDK-2021-9646 No'lu proje olarak desteklenmiştir.

ABSTRACT

This study was conducted to determine the effect of different fertilizers in tomato farming, which has an important place in world vegetable production. In the study, chemical fertilizers (20:20:20 (N: P: K) and organomineral (11:11:11), organic fertilizer (solid worm) and 10 different combinations of these fertilizers (control, chemical fertilizer (KG) 100%, organominal (OG) 100%, solid worm (KS) 100%, KG 75% + KS 25%, KG 50% + KS 50%, KG 25% + KS 75%, OG 75% + KS 25%, OG 50% + KS 25% were applied. According to the trial pattern, the study coincidence blocks were conducted with 3 repeats and 20 plants in each repetition. The fertilizer application was based on the soil analysis result. In chemical fertilizer application, nitrogen 3 was applied to the soil during the period, while organomineral and solid worm fertilizer were applied to the soil before planting. The highest value of oxalic acid, citric acid, malic acid, and succinic acid content from organic acids (respectively 268,807 ppm, 15,016 ppm, 11,588 ppm, and 121,530 ppm) was determined to be during the green maturity period. It was found to receive the highest content of oxalic acid, citric acid, malic acid, and succinic acid (respectively 268,807 ppm, 15,016 ppm, 11,588 ppm, and 121,530 ppm) from organic acids during the green maturity period. During the pink maturity period, the fumaric acid content and amount of ethylene (respectively 5,065 ppm and 3393) and during the red maturity period, the total phenol, antioxidant capacity, vitamin C, tartaric acid, lycopene and beta carotene content (respectively 20,362 mgGAE/100 g, 74,879 Trolox $\mu\text{molTE/g}$, 30,481 ppm, 0.359 ppm, 28,449 μg and 9,876 μg) were determined to have the highest values. It was determined that the effects of different fertilizer and fertilizer dose applications on the period of maturity in tomatoes were statistically significant ($p < 0.05$).

Keywords: Biochemical Content, Tomato, Fertilizer, Maturity Periods

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THE IMPORTANCE OF MICROPROPAGATION

Zeynep ERGÜN¹

¹*Adana Alparslan Türkeş Science and Technology University, Faculty of Engineering, Department of Bioengineering, Adana, Turkey*

¹ORCID ID: <https://orcid.org/0000-0002-9868-9488>

Murat GÜNEY²

²*Yozgat Bozok University, Faculty of Agriculture, Department of Horticulture, Yozgat, Turkey*

²ORCID ID: <https://orcid.org/0000-0003-2882-8347>

ABSTRACT

It is an undeniable fact that plants are one of the main sources of human life. People benefit from plants as a source of food, to treat health problems, and to meet their dressing and shelter needs, in sectors such as perfume, cosmetics, chemistry, medicine, furniture, fuel, and paint. With the increasing population and industrialization, the natural growth environments of plants are deteriorating, and unfortunately, some plant species are endangered due to the unconscious collection of plants. Due to all these factors, the interest in plant tissue culture methods, which is one of the plant propagation methods, is increasing. Micropropagation is the process of obtaining the whole plant using plant parts such as embryos, stems, shoots, roots, calluses, single cells, or pollen grains taken from plants (which have the potential to form a complete plant) under aseptically controlled conditions, in an artificial nutrient medium. All materials to be used in micropropagation are sterilized. By adding components such as necessary macro-micro elements, plant growth regulators, and energy sources in artificial nutrient media, besides pH adjustment, plantlets are obtained in vitro through shoot formation, shoot propagation, rooting and acclimatization stages, respectively. Plants obtained by the micropropagation method are free from diseases and pests. This method is a reliable method that allows the rapid reproduction of rare, endangered, difficult to produce, or very valuable plant species. Compared to some other methods, rapid production can be achieved with this method. Thousands of plants with the same form and characteristics can be produced. Less rootstock can be used in production. In addition, this method makes it possible to obtain new cultivars/genotypes (due to somaclonal variation). Because of all these advantages, plant production with tissue culture techniques is becoming widespread. Moreover, some difficulties experienced during reproduction with traditional techniques can be eliminated with tissue culture techniques.

Keywords: Plant biotechnology, Plant tissue culture, Micropropagation.

PRODUCTION OF SECONDARY METABOLITES VIA PLANT MICROPROPAGATION

Zeynep ERGÜN¹

¹*Adana Alparslan Türkeş Science and Technology University, Faculty of Engineering, Department of Bioengineering, Adana, Turkey*

¹ORCID ID: <https://orcid.org/0000-0002-9868-9488>

Murat GÜNEY²

²*Yozgat Bozok University, Faculty of Agriculture, Department of Horticulture, Yozgat, Turkey*

²ORCID ID: <https://orcid.org/0000-0003-2882-8347>

ABSTRACT

The term plant tissue culture (or the aseptic culture of cells), which is becoming more and more important day by day, means the culture of organs, tissues, embryos, seeds, cells, and protoplasts of plants under sterile conditions in artificial nutrient media, under controlled outdoor conditions. In other words, plant tissue culture is an advanced technology application for obtaining products with very high added value. Plant tissue cultures can allow the production of many bioactive chemicals. Today, there are more than 50,000 different secondary metabolites under three basic groups: alkaloids, terpenoids, and phenols (resins, alkaloids, phenols, steroids, glycosides, heterosides, saponins, flavonoids, tannins, essential oils, and coloring agents). Secondary metabolites are mostly produced as a result of mutual interaction between plants and other organisms to form a defense mechanism. Today, secondary metabolites that can be used in medicine, pharmacy, and food fields such as pharmaceutical raw materials, pesticides, flavorings, fragrances, colorants, and food additives can also be produced traditionally. Traditional production is based on either collecting plants from nature or culturing the plants under field conditions. Due to geographical location, meteorological conditions and environmental variations, the content of secondary metabolites in conventional production is likely to be very variable. Since whole plant production requires both labor and land, plant cell and organ cultures have emerged as an alternative method for the production of secondary metabolites from the whole plant. There are some important advantages of obtaining secondary metabolite products by in vitro cell culture methods instead of obtaining them from the whole plant under environmental conditions. Production, independent of environmental effects, with constant stability, based on a certain standard of supply-demand balance can be achieved. The production of secondary metabolites can be done in a safer, simpler, and more predictable way. It may be possible to obtain new secondary products. Endangered species can be protected. Isolation of biochemicals can be faster and more effective than isolation by extraction from the plant. Valuable standard biochemicals can be produced in large quantities in cell and tissue cultures. Compounds that adversely affect quality in field conditions can be destroyed in vitro. In Turkey, domestic and foreign sales of medicinal and aromatic plants are carried out by collecting them from nature. It is predicted that if the secondary metabolites synthesized by these valuable plants are produced by plant tissue culture methods, they will contribute to the protection of natural resources and the destruction of nature can be minimized.

Keywords: Secondary metabolite, micropropagation, tissue culture, phenolics.

FARKLI MANTAR TÜRLERİNİN PROTEİN İZOLASYONU VE PNGase F ENZİMİ KULLANILARAK N- GLİKAN KARAKTERİZASYONUNUN YAPILMASI

PROTEIN ISOLATION AND N- GLYCAN CHARACTERIZATION OF DIFFERENT
MUSHROOM SPECIES BY USING PNGase F ENZYME

Doç.Dr. Sercan KARAV

Çanakkale Onsekiz Mart Üniversitesi, Fen Edebiyat Fakültesi, Moleküler Biyoloji ve Genetik Bölümü

ORCID ID: 0000-0003-4056-1673

Tuba ÇAĞIRTEKİN

*Yüksek Lisans Öğrencisi, Çanakkale Onsekiz Mart Üniversitesi, Lisansüstü Eğitim Enstitüsü,
Moleküler Biyoloji ve Genetik Bölümü*

ORCID ID: 0000-0003-0858-922X

ÖZET

Yenilebilir mantarlar çok eski zamanlardan beri tüketilmekte ve özel bir yiyecek türü olarak sınıflandırılmaktadır. Özel aromaları dışında yüksek besin kalitesine sahip ve birçok farklı biyoaktif bileşik içerirler. Onlara antikanser, antibiyotik ve antioksidan özellikler gibi sağlığa faydalı birçok özellik kazandıran yüksek miktarda protein ve esansiyel amino asitler içerdikleri bulunmuştur. Her mantar türünün protein içeriği türüne bağlıdır ve sağlığa yararlı özelliklerini etkiler. Bu nedenle farklı mantar türlerinin her bir protein parçasının ayrı ayrı araştırılması önemlidir. Her mantar türünün proteinleri izole edilir ve SDS-PAGE jel elektroforezi ile görselleştirilir ve protein içerikleri Qubit 3.0 florometrik analizi kullanılarak analiz edilir.

Protein glikozilasyonu; protein aktivitesini, stabilitesini ve protein-protein etkileşimlerini etkileyen transasyon sonrası bir modifikasyondur. Glikanlar; proteinlerin stabilizasyon, konformasyon ve katlanma özelliklerini etkiler. Glikanların etkilerini incelemek ve işlevlerini anlamak için bağlandıkları proteinlerden ayrılmaları gerekir. Deglikosilasyon, glikanları bağlı oldukları glikoproteinlerden ayırma işlemidir. Peptid-N-glikosidaz F (PNGase F), N- glikanların glikoproteinlerden deglikosilasyonunu katalize etmek için kullanılan bir enzimdir. Son zamanlarda serbest N- glikanların prebiyotik kaynak olarak kullanılabilmesi bildirilmiştir.

Bu çalışma, PNGase F enzimini kullanarak üç farklı yenilebilir mantar türünün (*Marasmius Castaneophilus*, *Agaricus Bisporus*, *Pleurotus Ostreatus*) glikoproteinlerini deglikolize etmeyi amaçlamaktadır. Enzim, mantar glikoproteinlerini parçalar ve serbest N- glikanlar elde edilir. Bu N- glikanların karakterizasyonu, MALDI-TOF Kütle spektrometrisi kullanılarak yapılacaktır. Elde edilen N- glikanlar, potansiyel birer prebiyotik adaylardır ve prebiyotik aktiviteleri in vitro sindirim sistemi kullanılarak test edilecektir.

Anahtar kelimeler: Yenilebilir mantar, N-glikan, MALDI TOF, prebiyotik, in vitro sindirim sistemi, PNGase F.

**Bu çalışma; Çanakkale Onsekiz Mart Üniversitesi Lisansüstü Eğitim Enstitüsü Moleküler Biyoloji ve Genetik Anabilim Dalı öğrencisi Tuba ÇAĞIRTEKİN'in "Farklı Mantar Türlerinin Protein İzolasyonu ve PNGase F enzimi Kullanılarak N- Glikan Karakterizasyonunun Yapılması" isimli Yüksek Lisans tez çalışmasından türetilmiştir. Bu araştırma Çanakkale Onsekiz Mart Üniversitesi Bilimsel Araştırma Projeleri Koordinasyon Birimi tarafından FYL-2022-3873 No'lu Proje Numarasıyla desteklenmiştir.*

ABSTRACT

Edible mushrooms have been consumed since ancient times and are classified as a special kind of food. Except for their special aroma, they have high nutritional quality and contain many different bioactive compounds. It has been found that they contain a high amount of proteins and essential amino acids which give them many health-beneficial features such as anticancer, antibiotic, and antioxidant properties. The protein content of each mushroom species depends on the species and affects its health-beneficial properties. Therefore, it is important to investigate each protein fragment of different mushroom species separately. Fungal proteins of each species are isolated and visualized by SDS-PAGE gel electrophoresis and their protein content are analyzed by using Qubit 3.0 fluorometric analysis.

Protein glycosylation is a post-translational modification that affects protein activity, stability, and protein-protein interactions. Glycans affect the stabilization, conformation, and folding properties of proteins. In order to examine the effects of glycans and to understand their functions, they must be separated from the proteins to which they are attached. Deglycosylation is a process of separating glycans from glycoproteins. Peptide- *N*- glikosidase F (PNGase F) is a mainly used enzyme that catalyzes the deglycosylation of *N*- glycans from glycoproteins. Recently, it has been reported that free *N*- glycans can be used as prebiotic sources.

This study is aimed to deglycolyze glycoproteins of three different edible mushroom species (Marasmius Castaneophilus, Agaricus Bisporus, Pleurotus Ostreatus) by using PNGase F enzyme. The enzyme cleaves the fungal glycoproteins and free *N*- glycans are obtained. Characterization of these *N*- glycans will be done by using MALDI-TOF Mass spectrometry. Obtained *N*- glycans are potential prebiotic candidates and their prebiotic activity will be tested by using an in-vitro digestion system.

Key words: Edible mushroom, *N*- glycan, MALDI TOF, prebiotic, in vitro digestion system, PNGase F.

**This study was derived from the Graduate Thesis of Tuba ÇAĞIRTEKİN entitled as “Protein Isolation and N- Glycan Characterization of Different Mushroom Species by Using PNGase F enzyme” supplied for partial fulfillment of the Master’s Degree at Molecular Biology and Genetics Department at School of Graduate Studies at Çanakkale Onsekiz Mart University. The study was financially supported by Çanakkale Onsekiz Mart University Scientific Research Projects Department with the project number of FYL-2022-3873.*

**ДЕТЕКЦИЯ ВОЗБУДИТЕЛЕЙ ДИАРЕЙНЫХ БОЛЕЗНЕЙ ВИРУСНО-
БАКТЕРИАЛЬНОЙ ЭТИОЛОГИИ У СЛУЖЕБНЫХ СОБАК В АЗЕРБАЙДЖАНЕ**
DETECTION OF CAUSATIVE AGENTS OF DIARRHEAL DISEASES OF VIRUS-BACTERIAL
ETIOLOGY IN SERVICE DOGS IN AZERBAIJAN

Илькин ГАНБАРЛЫ

*Кафедра Эпизоотологии, Микробиологии и Паразитологии Азербайджанского Аграрного
Университета, г.Баку*

Эмма АГАЕВА

*Кафедра Медицинской Микробиологии и Иммунологии Азербайджанского Медицинского
Университета, г.Баку*

АННОТАЦИЯ

Среди инфекционных заболеваний собак наиболее широко распространены кишечные инфекции, преимущественно у щенят с иммунодефицитами, и составляющие 40% заболеваемости, и 45-50% смертности среди заболевших.

Нами в питомнике Министерства Чрезвычайных Ситуаций (МЧС) Азербайджана изучено распространение острых кишечных инфекций (ОКИ) среди служебных собак и установлено, что ОКИ чаще регистрируются среди щенков в возрасте до 6-8 месяцев (45%), а у взрослых собак составляют 20,2%.

Из обследованных собак самая высокая заболеваемость отмечена у ротвейлера (20,4%), несколько ниже у немецкой овчарки (18,5%) и далее эти показатели составили у бельгийской малинуа (12,5%), лабрадор спанниэль (10,5%), голден ретривер (8,9%) соответственно.

Отмечена сезонность проявления ОКИ в весенне-летнее и осенний периоды.

Классическими и молекулярно-генетическими методами изучена этиологическая структура диарейных болезней у собак и установлено моно- и ассоциированное течение ОКИ вирусно-бактериальной этиологии.

На аппарате MariPOC идентифицирована вирус-бактериальная этиология ОКИ и составлена диарейная панель, включающая доминантные возбудители энтеритов у собак.

Установлено, что основную роль в возникновении кишечных инфекций у собак играют парвовирусы, ротавирусы, коронавирусы, а также энтеропатогенные штаммы эшерихий, сальмонелл, протей, клебсиелл, псевдомонад. В реакции агглютинации с ОК сыворотками изучен серотиповой пейзаж одного из доминантных возбудителей диареи – E.coli и установлена их принадлежность к 0157H7; 0127H99; 0111; 08; 018; 039 сероварам.

При идентификации бактерий определены виды – Salmonella spp. (S.typhimurium и S.enteritidis diarigona). S.aureus часто изолировали в ассоциации с E.coli и S.enteritidis.

Среди служебных собак часто регистрировали также вирусно-бактериальную этиологию ОКИ. Так, парво-вирусный энтерит часто протекал как моноинфекция, так и в ассоциации с E.coli серовара 0157H7; 08; 0127.

Установлено частое ассоциативное течение ОКИ у служебных собак МЧС в 62% случаев. Выявлены основные возбудители ОКИ при моно- и ассоциированном течении болезни.

Таким образом, определен структурный пейзаж этиологически значимых патогенов при кишечных ассоциированных и моно-инфекциях вирусно-бактериальной этиологии у служебных собак в питомнике МЧС Азербайджана.

Изучены и определены серовары E.coli, циркулирующие в питомнике. Определено распространение антибиотикорезистентности штаммов микроорганизмов, наиболее часто встречаемое в микробных ассоциациях.

Ключевые слова: острые кишечные инфекции, моно- и ассоциированные инфекции, этиологические структуры, E.coli, серовары, парвовирусы, антибиотикорезистентность.

ABSTRACT

Among the infectious diseases of dogs, intestinal infections are the most widespread, mainly in puppies with immunodeficiencies, and make up 40% of the incidence, and 45-50% of the mortality among the diseased.

In the kennel of the Ministry of Emergency Situations (MES) of Azerbaijan, we have studied the spread of acute intestinal infections (AII) among service dogs and found that AII is more often registered among puppies under the age of 6-8 months (45%), and in adult dogs they are 20.2 %.

Of the examined dogs, the highest incidence was noted in the Rottweiler (20.4%), slightly lower in the German Shepherd (18.5%), and then these figures were in the Belgian Malinois (12.5%), Labrador Spaniel (10.5%), golden retriever (8.9%), respectively.

Was noted the seasonality of the manifestation of AII in the spring-summer and autumn periods.

The etiological structure of diarrheal diseases in dogs was studied by classical and molecular genetic methods and the mono- and associated course of AEI of viral-bacterial etiology was established.

The virus-bacterial etiology of AII was identified on the MariPOC apparatus and a diarrheal panel was compiled, including the dominant pathogens of enteritis in dogs.

It has been established that the main role in the occurrence of intestinal infections in dogs is played by parvoviruses, rotaviruses, coronaviruses, as well as enteropathogenic strains of Escherichia, Salmonella, Proteus, Klebsiella, Pseudomonas.

In the agglutination reaction with OK sera was studied the serotype landscape of one of the dominant pathogens of diarrhea – E.coli and was established their belonging to O157H7; O127H99; O111; O8; O18; O39 serovars.

When identifying bacteria, the following species were identified: Salmonella spp. (S.typhimurium and S.enteritidis diarirona). S.aureus has often been isolated in association with E. coli and S.enteritidis.

Among service dogs, a viral-bacterial etiology of AII was also often recorded. So, parvovirus enteritis often proceeded as a monoinfection, and in association with E.coli serovar O157H7; O8; O127.

A frequent associative course of AII in service dogs of the Ministry of Emergency Situations was established in 62% of cases. Were identified the main causative agents of AII in mono- and associated course of the disease.

Thus, was determined the structural landscape of etiologically significant pathogens in intestinal associated and mono-infections of viral and bacterial etiology in service dogs in the kennel of the Ministry of Emergency Situations of Azerbaijan.

The serovars of E.coli circulating in the nursery have been studied and identified. Was determined the distribution of antibiotic resistance of microorganism strains, most often found in microbial associations.

Key words: acute intestinal infections, mono- and associated infections, etiological structures, E. coli, serovars, parvoviruses, antibiotic resistance.

DIYET LİFİNİN SÜT ENDÜSTRİSİNDE KULLANIM AMAÇLARI INTENDED USE OF DIET FIBER IN DAIRY INDUSTRY

Melek ZOR

Ağrı İbrahim Çeçen Üniversitesi, Turizm İşletmeciliği ve Otelcilik Yüksekokulu, Gastronomi ve Mutfak Sanatları Bölümü, Ağrı, Türkiye

Menekşe BULUT

Iğdır Üniversitesi, Mühendislik Fakültesi, Gıda Mühendisliği Bölümü, Iğdır, Türkiye

Merve SİLGAN

Iğdır Üniversitesi, Lisansüstü Eğitim Enstitüsü, Iğdır, Türkiye

ÖZET

Fonksiyonel gıdalar; vücudun temel besin öğelerine olan ihtiyacı yanında, insan fizyolojisi ve metabolik fonksiyonları üzerinde önemli faydalar sağlayan, sağlıklı bir yaşama ulaşmada etkinlik gösteren gıdalardır. Gıda alanında en hızlı büyüyen sektörün süt sektörü olduğu çalışmalarda ön plana çıkmıştır. Tüketicilerin yoğun talebi ile karşılaşan süt endüstrisi ürünleride pek çok yolla fonksiyonel hale getirilmektedir. Bu yollardan birisi de diyet liflerinin kullanılmasıdır. Diyet lifleri süt sektöründe geniş kullanım alanı bulmuştur. Bu durumun başlıca nedeni; divertiküloz, kabızlık, hemoroid, kolon kanseri, obezite, diyabet ve kalp hastalıklarına karşı besinsel liflerin koruyucu etkisi ve diyet liflerinin bağırsak kanseri ve kardiyovasküler rahatsızlıklara karşı yararlı etkileri yanında gıda formülasyonlarında kullanımıyla ortaya çıkan teknolojik özelliklere de sahip olmasıdır. Diyet lifi süt sektöründe tüm bu özelliklerine ilave olarak; yağ ve kolesterol miktarını azaltarak daha sağlıklı ürünler elde etmek, kıvam artırıcı, stabilizasyonu sağlamak, yağı ikame etmek, sinerezisi önleme, hacim artırıcı ve kalori azaltmak, fiziksel ve duyuşsal özellikleri koruma veya iyileştirme, depolama özelliklerini iyileştirmek gibi amaçlarla peynir, kefir, yoğurt, dondurma gibi ürünlerde tek başına veya birlikte geniş şekilde kullanılır. Diyet lifinin süt endüstrisinde kullanımı ile ilgili gelişmeler ve çalışmalar hızlı bir şekilde artış göstermekte ve belirtilen özelliklerinden ötürü önemli bir hale gelmektedir.

Anahtar Kelimeler: Süt ve Süt Ürünleri, Diyet Lifi, Fonksiyonel Gıda.

ABSTRACT

Functional foods; They are foods that provide important benefits on human physiology and metabolic functions, as well as meeting the body's need for basic nutrients, and are effective in reaching a healthy life. The fact that the fastest growing sector in the food sector is the dairy sector has come to the fore in the studies. Dairy industry products, which are in high demand by consumers, are made functional in many ways. One of these ways is the use of dietary fibers. Dietary fibers have found wide use in the dairy industry. The main reason for this situation is; nutritional fibers have a protective effect against diverticulosis, constipation, hemorrhoids, colon cancer, obesity, diabetes and heart diseases, and besides the beneficial effects of dietary fibers against intestinal cancer and cardiovascular diseases, they also have technological properties that emerge with their use in food formulations. In addition to all these features of dietary fiber in the dairy industry; It has a wide range of alone or in combination with other products uses in products such as cheese, kefir, yoghurt, ice cream for purposes such as obtaining healthier products by reducing the amount of fat and cholesterol, increasing consistency, replacing fat, providing stabilization, preventing syneresis, increasing volume, reducing calories, protecting or improving physical and sensory properties, and improving storage properties. Developments and studies related to the use of dietary fiber in the dairy industry are increasing rapidly and are becoming important due to their stated properties.

Keywords: Milk and Dairy Products, Dietary Fiber, Functional Food.

GLAYÖLDE (*Gladiolus atroviolaceus*) BAZI MORFOLOJİK ÖZELLİKLER ARASI İLİŞKİNİN KATEGORİK TEMEL BİLEŞENLER ANALİZİ İLE İNCELENMESİ

INVESTIGATION OF THE RELATIONSHIP BETWEEN SOME MORPHOLOGICAL CHARACTERISTICS IN GLADIOLUS (*Gladiolus atroviolaceus*) BY CATEGORICAL PRINCIPAL COMPONENTS ANALYSIS

Nalan TÜRKOĞLU¹

¹Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, Van, Türkiye

¹ORCID ID: <https://orcid.org/0000-0003-2639-360X>

Sıddık KESKİN²

²Van Yüzüncü Yıl Üniversitesi, Tıp Fakültesi, Temel Tıp Bilimleri Bölümü,

Biyoistatistik Anabilim Dalı, Van, Türkiye

²ORCID ID: <https://orcid.org/0000-0001-9355-6558>

ÖZET

Glâyöl, soğanımsı gövde üzerinde, paralel damarlı yaprak yapısına sahip ve kesme çiçek olarak yetiştirilen süs bitkilerinden birisidir. Anavatanı Asya, Avrupa ve Güney Afrika'nın tropik bölgeleri olmakla birlikte, diğer birçok ülkede de yaygın olarak yetiştiriciliği yapılmaktadır. Çiçekli dönemin uzunluğu, diğer çiçeklere göre daha ekonomik üretilebilirliği, kesme çiçeklerin uzun süre canlılığını koruyabilmesi ve farklı çiçek rengine sahip olması tercih edilebilirliğini artırmaktadır. Bu bağlamda ele alınan bu çalışmada, Van ili Kampüs bölgesinin, farklı lokasyonlarında yetişen glâyöl bitkisinde bazı morfolojik özellikler arası ilişkinin Kategorik Temel Bileşenler Analizi ile incelenmesi amaçlanmıştır. Morfolojik özellikler olarak, Çiçek boyu (mm) Çiçek çapı (mm), Salkım boyu (mm) Salkım kalınlığı (mm) sayısı, Sap boyu (mm), Yaprak çapı (mm), Yaprak uzunluğu (mm) ve renk değişkenleri alınmıştır. Analiz sonucunda, lokasyonla birlikte 10 değişken arasındaki varyasyonun yaklaşık % 40'ı (%39.82) birinci boyut ile açıklarken, %16.63' ü ikinci boyut ile açıklanmış ve iki boyut ile toplam açıklanabilir varyans oranı %56.45 olarak bulunmuştur. Çiçek çapı ile yaprak çapı arasında ve çiçek rengi ile lokasyon arasında pozitif yüksek korelasyon bulunmuştur. Benzer şekilde diğer özellikler (Yaprak uzunluğu, Çiçek boyu, Salkım sayısı ve Salkım boyu) arasında da pozitif yönlü yüksek korelasyon bulunmuştur. Çalışma sonucunda, ayrıca, yüksek boyutlu verilerde; değişkenler arası ilişkileri inceleme ve boyut indirgeme yöntemi olarak, kategorik temel bileşenler analizinin kullanılabilir olduğu gözlenmiştir.

Anahtar Kelimeler: Kesme çiçek, morfolojik özellikler, boyut indirgeme, korelasyon

ABSTRACT

Gladiolus is one of the ornamental plants grown as cut flowers on a bulbous stem with parallel veined leaves. Although its homeland is the tropical regions of Asia, Europe and South Africa, it is widely cultivated in many other countries. The length of the flowering period, its more economical production compared to other flowers, the fact that cut flowers can maintain their vitality for a long time and have different flower colors increase their preferability. In this context, in this study, it is aimed to examine the relationship between some morphological features in gladiolus grown in different locations of Campus region in Van province, by Categorical Principal Components Analysis. Flower length (mm), Flower diameter (mm), Cluster length (mm) Cluster thickness (mm), Cluster number, Stem length (mm), Leaf diameter (mm), Leaf length (mm) and color variables were considered as morphological characteristics. As a result of the analysis, approximately 40% (39.82%) of the variation between 10 variables, including location, was accounted for the first dimension, while 16.63% was accounted for the second dimension. Total accounted variance was found 56.45% with the two dimensions. A positive



high correlation was found between flower diameter and leaf diameter, and between flower color and location. Similarly, a high positive correlation was found between other characteristics (Leaf length, Flower length, Cluster number and Cluster length). As a result of the study, also, in high-dimensional data; it has been observed that Categorical principal component analysis can be used as a method of examining relationships between variables and dimension reduction.

Keywords: Cut flower, morphological characteristics, dimension reduction, correlation

BURSA İLİNDE DEVECİ ARMUDU BAHÇELERİNİN TOPRAK VERİMLİLİĞİ VE BİTKİ BESLEME DURUMLARI

SOIL PRODUCTIVITY AND PLANT NUTRITION CONDITIONS OF DEVECİ PEAR GARDENS IN BURSA PROVINCE

Elif ÖZTÜRK¹

¹ Bursa Uludağ Üniversitesi, Fen Bilimleri Enstitüsü, Toprak Bilimi ve Bitki Besleme Anabilim Dalı
Bursa/ TÜRKİYE

¹ORCID ID: 0000-0001-6883-2012

Hakan ÇELİK²

² Bursa Uludağ Üniversitesi, Ziraat Fakültesi, Toprak Bilimi ve Bitki Besleme Anabilim Dalı
Bursa/ TÜRKİYE

²ORCID ID: 0000-0003-4673-3843

ÖZET

Çalışma, Bursa ilindeki deveci armudu yetiştiriciliği yapılan bazı bahçelerin verimlilik durumlarının toprak, bitki ve meyve analizleri ile belirlenmesi amacıyla yapılmıştır. Bursa ilinde farklı lokasyonlarda yer alan yirmi bahçeden 0-30 ve 30-60 cm derinlikten Eylül ayında alınan toprak örnekleri yanı sıra bitkilerden yaprak ve meyve örnekleri alınarak besin elementi analizleri yapılmıştır. Yapılan yaprak, meyve ve toprak analiz sonuçlarından elde edilen değerler konu ile ilgili verilen referans sınır değerlerle karşılaştırılarak bitkilerin beslenme durumları tespit edilmeye çalışılmıştır. Çalışmadan elde edilen bulgular doğrultusunda, Bursa ilinde bazı deveci armudu yetiştiriciliği yapılan bahçelerden alınan toprak örneklerinin genel olarak orta kireçli, orta bünyeli ve hafif tuzlu sınıfına girdikleri tespit edilmiştir. Toprakların pH değerlerinin 2 farklı derinlikte ortalama olarak 8.12– 8.42 arasında değiştiği ve hafif alkali sınıfa girdikleri görülmüştür. Toprakların organik madde içerikleri 0-30 cm derinlikte ortalama %2.21, 30-60 cm derinlikte ise %1.06 olarak belirlenmiştir. Toprak örneklerinin 0-30 cm derinlikte ortalama element içerikleri % 0.125 azot (N), 34.45 mg kg⁻¹ fosfor (P), 147.70 mg kg⁻¹ potasyum (K), 4160 mg kg⁻¹ kalsiyum (Ca), 241.54 mg kg⁻¹ magnezyum (Mg), 92.35 mg kg⁻¹ sodyum (Na), 17.55 mg kg⁻¹ demir (Fe), 20.37 mg kg⁻¹ bakır (Cu), 2.09 mg kg⁻¹ çinko (Zn), 6.63 mg kg⁻¹ mangan (Mn) ve 0.55 mg kg⁻¹ bor (B) şeklindedir. Sınır değerlerle karşılaştırıldığında ilk derinlikte N, Mg, Zn ve B yeterli, P, Ca, Fe ve Cu'nun fazla, K ve Mn'in az olduğu tespit edilmiştir. Bahçelerden alınan yaprak örneklerinin ortalama element içerikleri % 2.08 N, % 0.15 P, %1.26 K, % 1.58 Ca, % 0.29 Mg, %0.10 Na, 105.22 mg kg⁻¹ Fe, 10.74 mg kg⁻¹ Cu, 46.16 mg kg⁻¹ Zn, 198.52 mg kg⁻¹ Mn ve 25.77 mg kg⁻¹ B olarak belirlenmiştir. Sınır değerlerle karşılaştırıldığında N'un az, P, K, Na, Mg, Fe, Cu, Zn ve B'un yeterli, Ca ve Mn'in fazla seviyede olduğu tespit edilmiştir. Meyve örneklerinin minimum ve maksimum besin element içerikleri incelendiğinde sırasıyla %0.19- 0.46 N, %0.04-0.09 P, %0.46-0.83 K, %0.003-0.4 Ca, %0.03-0.04 Mg, %0.03-0.05 Na, 2.97-9.81 mg kg⁻¹ Fe, 3.32-8.61 mg kg⁻¹ Cu, 0.30-12.37 mg kg⁻¹ Zn, 1.98-6.66 mg kg⁻¹ Mn ve 7.03-27.77 mg kg⁻¹ B içerdikleri görülmüştür. Soylu (2006) tarafından bildirilen meyve sınır değerlerine göre N, P, K, Mg, Na, Cu, Zn ve Mn'in yeterli seviyenin üzerinde, Ca, Fe ve B'un minimum ve maksimum değerlere göre az ve fazla olduğu tespit edilmiştir. Yapılan çalışma sonucunda; üreticilerin deveci armudu üretimini bilinçsiz olarak yaptığı, toprak analizlerine göre yapılmayan bir gübreleme programı izlediği, toprak özelliklerine uygun gübre çeşidi kullanmadığı görülmüştür. Üretim bu şekilde devam etmesi durumunda yörede yetiştirilen bu ürünlerde dengesiz gübrelemeye bağlı bitki besleme sorunlarının artarak verimde azalmaların yaşanabileceği sonucuna varılmıştır.

Anahtar Kelimeler: deveci armudu, besin elementi, interaksiyon, verim.

ABSTRACT

The study was carried out in order to determine the productivity status of some orchards in Bursa, where deveci pear is grown, by soil, plant and fruit analysis. Nutrient analyzes were carried out by taking leaf and fruit samples from plants, as well as soil samples taken from 0-30 and 30-60 cm depth in September from 20 orchards located in different locations in Bursa. The nutritional status of the plants was tried to be determined by comparing the values obtained from the results of the leaf, fruit and soil analysis with the reference limit values given on the subject. According to the findings obtained from the study, it has been determined that the soil samples taken from the orchards where some deveci pear cultivation is carried out in Bursa are generally classified as medium calcareous, medium textured and slightly salty. It has been observed that the pH values of the soils vary between 8.12 and 8.42 on average at 2 different depths and they are in the slight alkaline class. The organic matter content of the soils was determined as 2.21% at a depth of 0-30 cm and 1.06% at a depth of 30-60 cm. The average element content of soil samples at a depth of 0-30 cm is 0.125% nitrogen (N), 34.45 mg kg⁻¹ phosphorus (P), 147.70 mg kg⁻¹ potassium (K), 4160 mg kg⁻¹ calcium (Ca), 241.54 mg kg⁻¹ magnesium (Mg), 92.35 mg kg⁻¹ sodium (Na), 17.55 mg kg⁻¹ iron (Fe), 20.37 mg kg⁻¹ copper (Cu), 2.09 mg kg⁻¹ zinc (Zn), 6.63 mg kg⁻¹ manganese (Mn) and 0.55 mg kg⁻¹ boron (B). When compared with the limit values, it was determined that N, Mg, Zn and B were sufficient, P, Ca, Fe and Cu were over the limits, K and Mn were less at the first depth. Average element contents of leaf samples taken from orchards was determined as 2.08% N, 0.15% P, 1.26% K, 1.58% Ca, 0.29% Mg, 0.10% Na, 105.22 mg kg⁻¹ Fe, 10.74 mg kg⁻¹ Cu, 46.16 mg kg⁻¹ Zn 198.52 mg kg⁻¹ Mn and 25.77 mg kg⁻¹ B. When compared with the limit values, it was determined that N was low, P, K, Na, Mg, Fe, Cu, Zn and B were sufficient, Ca and Mn were at high levels. When the minimum and maximum nutrient contents of the fruit samples were examined, it was observed that they contain 0.19-0.46% N, 0.04-0.09% P, 0.46-0.83% K, 0.003-0.4% Ca, 0.03-0.04% Mg, 0.03-0.05% Na, 2.97-9.81 mg kg⁻¹ Fe, 3.32-8.61 mg kg⁻¹ Cu, 0.30-12.37 mg kg⁻¹ Zn, 1.98-6.66 mg kg⁻¹ Mn and 7.03-27.77 mg kg⁻¹ B respectively. According to the fruit limit values reported by Soylu (2006), N, P, K, Mg, Na, Cu, Zn and Mn were found to be above sufficient levels, and Ca, Fe and B were found to be less or more than the minimum and maximum values. As a result of the study; It has been observed that the producers unconsciously produce deveci pear, follow a fertilization program that is not made according to soil analysis, and do not use fertilizer types suitable for soil properties. It has been concluded that if the production continues in this way, plant nutrition problems due to unbalanced fertilization may increase and may occur decrease in yield in these products grown in the region.

Keywords: deveci pear, nutrient elements, interaction, yield

BİNGÖL YÖRESİNDE TOPLANAN BALLARIN ANTİMİKROBİYAL ETKİSİ ANTIMICROBIAL EFFECT OF HONEYS COLLECTED IN BİNGÖL REGION

Dr. Öğr. Üyesi Yusuf ÇAKIR¹

¹Bingöl Üniversitesi, Gıda, Tarım ve Hayvancılık Meslek Yüksekokulu, Gıda İşleme Bölümü, BİNGÖL, TÜRKİYE

¹ORCID ID: <https://orcid.org/0000-0002-3789-3039>

Araş. Gör. Dr. Gökhan DERVİŞOĞLU²

²Bingöl Üniversitesi, Fen Edebiyat Fakültesi, Moleküler Biyoloji ve Genetik Bölümü, BİNGÖL, TÜRKİYE

²ORCID ID: <https://orcid.org/0000-0001-7195-2031>

ÖZET

Bu araştırmada, Bingöl ilinin Genç, Kiğı, Sancak ve Yedisu ilçelerinden toplanan balların antimikrobiyal etkileri disk difüzyon yöntemi ile araştırılmıştır. Üç farklı konsantrasyonda (500, 250 ve 125 mg/mL) hazırlanan bal örneklerinin antimikrobiyal etkileri Gram pozitif (+) *Staphylococcus aureus* ATCC 29213 ve *Listeria monocytogenes* NCTC 5348 bakterileri, Gram negatif (-) *Escherichia coli* ATCC 25922 bakterisi, maya olarak *Saccharomyces cerevisiae* ATCC 76521 ve mantar (küf) için ise *Candida albicans* ATCC 90028 kullanılarak test edilmiştir. Ayrıca, bu araştırmada balların antimikrobiyal etkilerini daha iyi değerlendirebilmek için bir antibiyotik olarak Ampisilin/Sulbaktam (SAM) (20 µg/disk) kullanılmıştır. Ampisilin/Sulbaktam (SAM)'ın (20 µg/disk) bal örneklerinde kullanılan mikroorganizmalara karşı antimikrobiyal etkisi de aynı yöntemle test edilmiştir.

Sonuç olarak; üç farklı konsantrasyonda (500, 250 ve 125 mg/mL) hazırlanan bal örnekleri arasında 500 ve 250 mg/mL'lik konsantrasyonların *Staphylococcus aureus*'a karşı antibakteriyel etkisi var iken, 125 mg/mL'lik konsantrasyonların ise *Staphylococcus aureus*'a karşı antibakteriyel etkisi tespit edilmemiştir. Üç farklı konsantrasyondaki tüm bal örnekleri *Listeria monocytogenes*'e karşı antibakteriyel etki göstermemiştir. Farklı konsantrasyonlardaki Genç ve Yedisu bal örneklerinden sadece 500 mg/mL'lik konsantrasyonlarının *Escherichia coli*'ye karşı antibakteriyel etkisi bulunurken, farklı konsantrasyonlarda hazırlanan Kiğı ve Sancak bal örneklerinin *Escherichia coli*'ye karşı antibakteriyel etkileri belirlenmemiştir. Tüm bal örneklerinden sadece 500 mg/mL'lik konsantrasyonların *Saccharomyces cerevisiae*'ye karşı antimikrobiyal etki gösterdiği, diğer 250 ve 125 mg/mL'lik konsantrasyonların *Saccharomyces cerevisiae*'ye karşı antimikrobiyal etkisi olmadığı belirlendi. Tüm bal örneklerinin incelenen konsantrasyonları *Candida albicans*'a karşı antifungal bir etki göstermedi. Ayrıca, Ampisilin/Sulbaktam (SAM)'ın (20 µg/disk) *Staphylococcus aureus* ve *Listeria monocytogenes* (Gram-pozitif bakterileri), *Escherichia coli* (Gram-negatif bakteri), *Saccharomyces cerevisiae* (maya) ve *Candida albicans* (mantar) mikroorganizmalarına karşı yüksek antimikrobiyal etkiye sahip olduğu tespit edilmiştir.

Anahtar Kelimeler: Bingöl, Bal, Antibakteriyel Etki, Antifungal Etki, Antimikrobiyal Etki

ABSTRACT

In this research, the antimicrobial effects of honeys collected from Genç, Kiğı, Sancak, and Yedisu districts of Bingöl province were investigated by disc diffusion method. The antimicrobial effects of honey samples prepared at three different concentrations (500, 250, and 125 mg/mL) were tested using *Staphylococcus aureus* ATCC 29213 and *Listeria monocytogenes* NCTC 5348 bacteria as Gram positive (+), *Escherichia coli* ATCC 25922 bacterium as Gram negative (-), *Saccharomyces cerevisiae* ATCC 76521 as yeast, and *Candida albicans* ATCC 90028 as fungus (mold). In addition, Ampicillin/Sulbactam (SAM) (20 µg/disc) was used as an antibiotic to better evaluate the antimicrobial

effects of honeys in this research. The antimicrobial effect of Ampicillin/Sulbactam (SAM) (20 µg/disc) against the microorganisms used in honey samples was also tested with the same method.

As a result; while the 500 and 250 mg/mL concentrations among honey samples prepared at three different concentrations (500, 250, and 125 mg/mL) have an antibacterial effect against *Staphylococcus aureus*, the antibacterial effect of the concentrations of 125 mg/mL against *Staphylococcus aureus* was not detected. All honey samples at three different concentrations showed no antibacterial effect against *Listeria monocytogenes*. While only the 500 mg/mL concentrations from different concentrations of Genç and Yedisu honey samples were found to have an antibacterial effect against *Escherichia coli*, the antibacterial effects of Kiğı and Sancak honey samples prepared at different concentrations against *Escherichia coli* were not detected. It was determined that only 500 mg/mL concentrations from all honey samples had an antimicrobial effect against *Saccharomyces cerevisiae*, while the other 250 and 125 mg/mL concentrations did not have an antimicrobial effect against *Saccharomyces cerevisiae*. The studied concentrations of all honey samples did not show an antifungal effect against *Candida albicans*. Moreover, Ampicillin/Sulbactam (SAM) (20 µg/disc) was found to have a high antimicrobial effect against *Staphylococcus aureus* and *Listeria monocytogenes* (Gram-positive bacteria), *Escherichia coli* (Gram-negative bacteria), *Saccharomyces cerevisiae* (yeast), and *Candida albicans* (fungus) microorganisms.

Keywords: Bingöl, Honey, Antibacterial Effect, Antifungal Effect, Antimicrobial Effect

DOZLARI AZALTILMIŞ BAZI FUNGİST ORTAMLARINDA *Clonostachys rosea*'nin *Pythium debaryanum* ve *Sclerotinia sclerotiorum* PATOJENLERİNE KARŞI ETKİSİ

The EFFECT of *Clonostachys rosea* AGAINST *Pythium debaryanum* and *Sclerotinia sclerotiorum* in SOME REDUCED-DOSAGE FUNGICIDE MEDIA

Gökhan BOYNO¹

¹Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye

¹ORCID ID: <https://orcid.org/0000-0003-3195-0749>

Rojbin ÇEVİK²

²Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye

²ORCID ID: <https://orcid.org/0000-0003-3064-8345>

Semra DEMİR³

³Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye

³ORCID ID: <https://orcid.org/0000-0002-0177-7677>

ÖZET

Fungal mücadele çerçevesinde toprak kökenli hastalıklarla mücadele her zaman daha zor olmaktadır. Yapılan mücadeleler ise çoğunlukla kimyasal mücadele şeklindedir. Özellikle de *Pythium debaryanum* ve *Sclerotinia sclerotiorum* gibi hastalığa neden olan patojenler, oluşturdukları direnç formları veya geliştirdikleri dayanıklılık mekanizmaları ile bu kimyasallardan zamanla etkilenmemektedir. Ayrıca bu kimyasallar hem insan sağlığını hem de doğal çevreyi olumsuz etkilemektedir. Ek olarak kullanılan bu fazla kimyasallar, önemli bir ekonomik kayba neden olmaktadır. Bu problemler her geçen gün daha da iyi anlaşılmalı ve araştırmacılar biyolojik mücadeleye veya entegre mücadele programlarına odaklanmalıdır. Biyolojik mücadele kullanılan biyo-kontrol ajanlar ise son zamanlarda bu kimyasalların yerini almaya başlamıştır. Bu biyo-kontrol ajanlardan birisi de *Clonostachys rosea*'dir. *C. rosea* patojenlere karşı bitki direncini artırırken, aynı zamanda ürettikleri enzimlerle de patojenleri engellediği bilinmektedir. Bu kapsamda *P. debaryanum* ve *S. sclerotiorum* patojenlerine karşı yoğun olarak kullanılan %50 Captan ve %80 Thiram etkili maddeli fungusitlerin 1 (önerilen doz), 2, 4 ve 8 kata kadar azaltılmış dozlarının PDA ortamına ekleyerek *C. rosea*'nin bu patojenler üzerinde etkisi *in vitro* koşullarında araştırılmıştır. Kontrol olarak sadece PDA ortamı kullanılmıştır. Bu ortamlarda 3 hafta boyunca fungal mikroorganizmaların miseliyal gelişimleri ve inhibisyon oranları değerlendirilmiştir. Yapılan ölçümlerde, her iki fungusitte de önerilen ve önerilenin 2 kat azaltılmış dozlarında *C. rosea*'nin, diğer patojen funguslara göre miseliyal gelişimi daha fazla olduğu görülmüştür. İnhibisyon oranları ise belirlenen süre içinde önerilen dozların 4 ve 8 kat azaltılmış formlarında oluşmuştur. Sonuç olarak *C. rosea*'nin fungusit dozlarından daha az etkilendiği ve ilerleyen zamanlarda bunu avantaja çevirerek patojenleri baskı altına aldığı söylenebilir. Bu durum, entegre mücadele çalışmalarına önemli katkılar sunacağı gibi dozları azaltılmış fungusitlerin kullanılmasıyla da hem insan sağlığı hem de doğal dengenin korunması adına önem arz edecektir.

Anahtar Kelimeler: Fungisit dozları, *Clonostachys rosea*, *Pythium debaryanum*, *Sclerotinia sclerotiorum*

ABSTRACT

It is always more difficult to fight soil-borne diseases within the framework of fungal control. The controls are mostly in the form of chemical control. In particular, pathogens that cause disease such as *Pythium debaryanum* and *Sclerotinia sclerotiorum* are not affected by these chemicals over time with the resistance forms they create or the resistance mechanisms they develop. In addition, these chemicals

negatively affect both human health and the natural environment. These excess chemicals used in addition cause a significant economic loss. These problems are being better understood and researchers have focused on biological control or integrated control programs. Bio-control agents used in biological control have recently started to replace these chemicals. One of these biocontrol agents is *Clonostachys rosea*. While *C. rosea* increases plant resistance against pathogens, it is also known to inhibit pathogens with the enzymes they produce. In this context, by adding 1 (recommended dose), 2, 4 and 8 times reduced doses of fungicides with %50 Captan and %80 Thiram active substance, which are used intensively against *P. debaryanum* and *S. sclerotiorum* pathogens, to the PDA media, it is possible to determine the effects of *C. rosea* on these pathogens. The effect was investigated under *in vitro* conditions. Only PDA media was used as a control. Mycelial growth and inhibition rates of fungal microorganisms were evaluated in these media for 3 weeks. In the measurements made, it was observed that mycelial growth of *C. rosea* was higher than other pathogenic fungi at the recommended and 2 times reduced doses of both fungicides. Inhibition rates, on the other hand, occurred in 4 and 8 times reduced forms of the recommended doses within the specified period. As a result, it can be said that *C. rosea* is less affected by the doses of fungicide, and by using this advantage in the future, it suppresses the pathogens. This will not only make significant contributions to integrated control studies, but also will be important for the protection of both human health and natural balance with the use of fungicides with reduced doses.

Keywords: Fungicide doses, *Clonostachys rosea*, *Pythium debaryanum*, *Sclerotinia sclerotiorum*

KİVİ MEYVESİNİN ELMA İLE OLGUNLAŞTIRILMASI THE RIPENING OF KIWIFRUIT BY APPLE

Yeşim BEDİR¹

Araştırma Görevlisi, Atatürk Üniversitesi, Ziraat Fakültesi, Gıda Mühendisliği Bölümü, Erzurum, Türkiye

ORCID ID: <https://orcid.org/0000-0003-4756-7269>

M.Murat KARAOĞLU¹

Profesör Doktor, Atatürk Üniversitesi, Ziraat Fakültesi, Gıda Mühendisliği Bölümü, Erzurum, Türkiye

ORCID ID: <https://orcid.org/0000-0002-9919-8824>

Aslıhan HANOĞLU¹

Yüksek Lisans Öğrencisi, Atatürk Üniversitesi, Ziraat Fakültesi, Gıda Mühendisliği Bölümü, Erzurum, Türkiye

ORCID ID: <https://orcid.org/0000-0002-4772-5944>

ÖZET

Meyvenin olgunlaşması, doğal bir süreç olup, meyve çeşitli fiziksel ve kimyasal değişikliklerden geçerek; gittikçe tatlı, renkli, yumuşak ve lezzetli bir hal almaktadır. Bu olgunlaşma sürecini kontrol etmek amacıyla kalsiyum karpit, asetilen, etilen, propilen, ethefon (etrel), glikol, etanol gibi çeşitli yapay ajanlar kullanılmaktadır. Ancak bu yapay ajanların meyve olgunlaştırılmasında kullanılması sağlık üzerinde oluşturabileceği zararlardan dolayı tartışma konusu olmaktadır. Son yıllarda yapay meyve olgunlaştırıcılarını farklı yönleriyle değerlendirmek ve standart uygulamaları araştırmak önem arz etmektedir. Kivi meyvesinin olgunlaştırılmasında doğal bir ajan olarak elma kullanımının kısa sürede olgunlaştırma sağladığı bilinmesine rağmen, tekstürel özelliklerin araştırıldığı çalışmalar kısıtlıdır. Bu çalışmada farklı depolama sıcaklıklarında (oda/buzdolabı); kivi (Hayward) tek başına ve elma (Starking) ile birlikte 45 gün boyunca depolanmıştır. Depolamanın 0., 15., 30. ve 45. günlerinde Tekstür analiz cihazı ile Tekstür Profil Analizi (TPA) yapılarak sertlik, kohesivlik, yapışkanlık, elastikiyet, çignenebilirlik ve sakızimsılık değerleri hesaplanmıştır. Çalışmada depolama süresinin artmasına bağlı olarak tüm örneklerde yapışkanlık dışında diğer tekstürel parametrelerin azalış gösterdiği belirlenmiştir. Olgunlaşma sürecinin oda sıcaklığında buzdolabında depolamaya göre tüm örneklerde daha hızlı gerçekleştiği tespit edilmiştir. Depolama süresince elma ile depolanan kivi örneklerinde olgunlaşmanın göstergesi olan sertlik değeri önemli seviyede azalmıştır. Tek başına depolanan kivi örneklerinde başlangıç sertlik değerleri 15. gün sertlik değerlerine kıyasla oda sıcaklığında 10 kat azalırken elma ile depolanan örneklerde sertlik değeri 15 kat azalış göstermiştir. Buzdolabı sıcaklığında ise tek başına depolanan kivi örneklerinin sertlik değeri %30 azalırken elma ile depolanan örneklerde bu azalış % 60 düzeyinde gerçekleşmiştir. Elde edilen TPA sonuçlarına göre kivi için elma ile depolanarak doğal yollardan daha hızlı olgunlaştırılacağı sonucuna varılmıştır.

Anahtar Kelimeler: Kivi, Olgunlaştırma, Elma, Tekstür Profil Analizi

ABSTRACT

The ripening of the fruit is a natural process, and the fruit undergoes various physical and chemical changes; It is getting sweeter, more colorful, soft and delicious. Various artificial agents such as calcium carbide, acetylene, ethylene, propylene, ethefon (etrel), glycol, ethanol are used to control this maturation process. However, the use of these artificial agents in fruit ripening is a matter of debate because of the harm they may cause on health. In recent years, it is important to evaluate artificial fruit ripeners from different aspects and to investigate standard applications. Although it is known that the

use of apple as a natural agent in the ripening of kiwi fruit provides ripening in a short time, studies investigating textural properties are limited. In this study, at different storage temperatures (room/refrigerator); Kiwi (Hayward) alone and together with apple (Starking) were stored for 45 days. On the 0th, 15th, 30th and 45th days of storage, Texture Profile Analysis (TPA) was performed with a Texture analyzer and hardness, cohesiveness, stickiness, elasticity, chewability and gumminess values were calculated. In the study, it was determined that other textural parameters, except stickiness, decreased in all samples depending on the increase in storage time. It was determined that the maturation process was faster in all samples compared to refrigerated storage at room temperature. During storage, the hardness value, which is an indicator of ripening, decreased significantly in kiwi samples stored with apples. The initial hardness values of kiwi stored alone decreased 10 times at room temperature compared to the 15th day hardness values, while the hardness value decreased 15 times in the samples stored with apples. In the refrigerator temperature, the hardness value of kiwi samples stored alone decreased by 30%, while this decrease was 60% in samples stored with apples. According to the TPA results obtained, it was concluded that the kiwi would mature faster naturally by storing it with apples.

Keywords: Kiwi, Ripening, Apple, Texture Profile Analysis

İKLİM DEĞİŞİKLİĞİ PERSPEKTİFİNDE TARIM, ÇEVRE VE GIDA GÜVENLİĞİ İLİŞKİLERİ

RELATIONS ON AGRICULTURE, ENVIRONMENT AND FOOD SAFETY THROUGH CLIMATE CHANGE PERSPECTIVE

Havva Eylem POLAT

Doç.Dr., Ankara Üniversitesi Ziraat Fakültesi, Tarımsal Yapılar ve Sulama Bölümü

Yalçın GÜÇER

Dr., Ankara Üniversitesi Kalecik Meslek Yüksekokulu, Bağcılık ve Bağ Ürünleri Teknolojisi Programı

Elif Ayşe ANLI

Dr., Ankara Üniversitesi Ziraat Fakültesi, Süt Teknolojisi Bölümü

Alper Serdar ANLI

Doç.Dr., Ankara Üniversitesi Ziraat Fakültesi, Tarımsal Yapılar ve Sulama Bölümü

ÖZET

Tüm dünyada, iklim değişikliği konusu, akademik-bilimsel çalışmalara yön verdiği gibi, ekonomik ve politik karar verici mekanizmalar üzerinde de baskısını arttırmaktadır. Ortak hedef, insan faaliyetlerinin özellikle doğal çevre üzerindeki olumsuz etkilerini azaltarak, iklim değişikliğinin önüne geçmektir. Özellikle, canlı yaşamının sürdürülebilirliğini sağlayan tarımsal üretimde, sera gazı salınımlarının kontrol edilmesi ve toprak- su kirliliğini önleyici tedbirlerin alınmasına ilişkin uygulamalar yapılmaktadır. Bunun yanında, iklim değişikliği ile ortaya çıkan kuraklık, sel, şiddetli yağışlar, sıcaklık dalgalanmaları ve benzeri olağandışı hava koşulları gibi olumsuz etkilere karşı da tarımsal üretimde önlemlerin alınması ve bu konuda üreticilerin desteklenmesi de ön plana çıkmaktadır. Yukarıda sayılan tüm bu önlemlerin, gıdaya dönüşen tarımsal ürünlerin üretim sürecinde, insan sağlığını tehdit etmeyecek biçimde uygulanması önemlidir. Bitkisel üretimde zirai mücadele yöntemi ve kullanılan kimyasallar, toprak iyileştiricileri, pestisitler, hormonlar ve bunların miktar ve özellikleri güvenli gıda üretimine etki eden ilk adımlardır. Son yıllarda, dünyada birçok ülkede iyi tarım uygulamaları ile çevre kirliliğinin azaltılması ve önlenmesinin yanında gıda güvenliğinin sağlanması da hedeflenmektedir. Bu uygulamalar; organik tarım, tarımsal atık yönetimi sistemlerinin kurulması, temiz ve yenilenebilir enerji (güneş, rüzgâr, biyogaz, biyokütle) kullanımı, kimyasal gübreleme yerine kontrollü organik gübre ya da kompost kullanımı, zirai mücadelede doğal yöntemler vs. sayılabilir. Bu çalışmada, iklim değişikliği ve iklim değişikliğinin azaltılmasına yönelik uygulamaların tarım, çevre ve gıda üretimi üzerindeki etkilerinin tahmin edilmesinin yanında, konu tarımsal üretim, çevre kirliliği ve gıda güvenliği ilişkileri çerçevesinde değerlendirilmiştir.

Anahtar Kelimeler: Çevre kirliliği, gıda, iklimsel parametreler, iyi tarım uygulamaları, karbondioksit salınımı, sera gazları.

ABSTRACT

All over the world, the issue of climate change not only directs academic-scientific studies, but also increases its pressure on economic and political decision-making mechanisms. The common goal is to prevent climate change by reducing the negative effects of human activities on the natural environment. Especially in agricultural production, which ensures the sustainability of living life, practices are carried out to control greenhouse gas emissions and to take measures to prevent soil-water pollution. In addition, it is also important to take measures in agricultural production and support the producers in this regard against adverse effects such as drought, flood, heavy rains, air temperature fluctuations and similar unusual weather conditions caused by climate change. It is important that all of the above-mentioned



measures are implemented in the production process of agricultural products that turn into food, in a way that does not threaten human health. Plant disease control method and chemicals used in crop production, soil conditioners, pesticides, hormones and their quantities and properties are the first steps that affect safe food production. In recent years, it is aimed to reduce and prevent environmental pollution with good agricultural practices, as well as to ensure food safety in many countries around the world. These practices are; organic agriculture, the implementation of agricultural waste management systems, use of clean and renewable energy (solar, wind, biogas, biomass), use of controlled organic fertilizer or compost instead of chemical fertilization, natural methods for plant disease control, etc... In this study, besides estimating the effects of climate change and its mitigation strategies on agriculture, environment and food production, the subject is discussed within the framework of agricultural production, environmental pollution and food safety relations.

Keywords: Carbon dioxide emission, climatic parameters, environmental pollution, food, good agricultural practices, greenhouse gases.

ETLİK PİLİÇ RASYONLARINA BİTKİSEL EKSTRAKT KARIŞIMI (DİGESTAROM) EKLENMESİNİN DUODENUM VE İLEUM HİSTOLOJİSİ ÜZERİNE ETKİSİ

THE EFFECT OF HERBAL EXTRACT MIXTURE (DIGESTAROM) SUPPLEMENTATION TO DIETS ON DUODENUM AND ILEUM HISTOLOGY IN BROILER CHICKENS

Özay GÜLEŞ¹

¹*Afyonkocatepe Üniversitesi, Veteriner Fakültesi, Histoloji-Embriyoloji Anabilim Dalı, Afyonkarahisar, Türkiye.*

¹ORCID ID: <https://orcid.org/0000-0001-6170-1706>

Mustafa YILDIZ²

²*Çanakkale Onsekiz Mart Üniversitesi, Çan Uygulamalı Bilimler Yüksekokulu, İş Sağlığı ve Güvenliği Bölümü, Çanakkale, Türkiye*

²ORCID ID: <https://orcid.org/0000-0003-4128-8947>

ÖZET

Etlik piliç beslemede fitojenik yem katkıları antibakteriyel, antienflamatuvar ve performans artırıcı olarak kullanılmaktadır. Sunulan çalışmada broylerlerde antibiyotiklerin yerine alternatif olarak kullanılan fitojenik yem katkı maddelerinin rasyonlarda farklı düzeyde kullanılmasının, duodenum ve ileum morfolojisi üzerine etkilerinin araştırılması amaçlanmıştır. Bu amaçla çalışmada 48 adet erkek ROSS-308 bir günlük broyler civciv kullanıldı. Vücut ağırlıkları 43 ± 3 g olan civcivler, her bir deney grubu 8 tekrardan oluşan (her kümeste 2 civciv olmak üzere) üç deney grubundan 24 tekrarlamaya rastgele ayrıldı. Kontrol grubu hayvanlar mısır/soya fasulyesi küspesine dayalı bazal diyet ile beslendi. Diğer iki deneme grubu ise 100 mg/kg (DIG100) ve 150 mg/kg (DIG150) fitojenik ürün Digestarom® ile desteklenmiş bazal diyetle beslendi. Sonuç olarak, broyler civciv rasyonlarına bitkisel ekstrakt karışımı takviyesinin genel olarak villus yüksekliği ve villus genişliğini artırdığı, tunika muskularis kalınlığını ise azalttığı belirlenmiştir. Dolayısıyla, bitkisel ekstrakt karışımı bağırsak yüzey alanını, sindirim ve emilim seviyelerini artırarak daha iyi sindirim ve absorpsiyona yol açabilir, ayrıca mikrobiyal yükü azaltarak broyler civcivlerde canlı ağırlık kazancını artırabilir.

Anahtar Kelimeler: Broiler, kas kalınlığı, kript derinliği, villus genişliği, villus yüksekliği

ABSTRACT

Phytogenic feed additives are used as antibacterial, anti-inflammatory and performance enhancer in the nutrition of broiler chicks. In the present study, it was aimed to investigate the effects of the usage of phytogenic feed additives which are used as an alternative to antibiotics in broilers at different levels in the rations, on the morphology of the duodenum and ileum. For this purpose, 48 male ROSS-308 one-day-old broiler chicks were used in the study. Chicks with a body weight of 43 ± 3 g were randomly divided into 24 replicate sets from three experimental groups, each of which consisted of 8 replicates (2 chicks per house). The other two experimental groups were fed with a basal diet supplemented with 100 mg/kg (DIG100) and 150 mg/kg (DIG150) phytogenic product Digestarom®. In conclusion, it was determined that herbal extract mixture supplementation to broiler chick rations generally increased villus height and villus width, and decreased tunica muscularis thickness. Hence, herbal extract mixture might lead to better digestion and absorption by increasing the intestinal surface area, digestion and absorption levels, also increase body weight gain in broiler chicks by reducing the microbial load.

Keywords: Broiler, crypt depth, muscular thickness, villus height, villus width

FARKLI KURUTMA TEKNİKLERİNİN GOJİ BERRY MEYVESİNİN BİYOAKTİF ÖZELLİKLERİ VE FENOLİK BİLEŞİMİ ÜZERİNE ETKİSİ

EFFECT OF DIFFERENT DRYING TECHNIQUES ON BIOACTIVE PROPERTIES AND PHENOLIC COMPOSITION OF GOJI BERRY FRUITS

Büşra TURAN¹

¹Yıldız Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Gıda Mühendisliği Anabilim Dalı, İstanbul,
TÜRKİYE

¹ORCID ID: <https://orcid.org/0000-0003-2522-9971>

Zeynep Hazal TEKİN ÇAKMAK²

²İstinye Üniversitesi, Sağlık Bilimleri Fakültesi, Beslenme ve Diyetetik Bölümü, İstanbul, TÜRKİYE

²ORCID ID: <https://orcid.org/0000-0002-3369-3128>

Selma KAYACAN ÇAKMAKOĞLU³

³Yıldız Teknik Üniversitesi, Kimya Metalurji Fakültesi, Gıda Mühendisliği Bölümü, İstanbul,
TÜRKİYE

³ORCID ID: <https://orcid.org/0000-0001-9498-1839>

Salih KARASU⁴

⁴Yıldız Teknik Üniversitesi, Kimya Metalurji Fakültesi, Gıda Mühendisliği Bölümü, İstanbul,
TÜRKİYE

⁴ORCID ID: <https://orcid.org/0000-0002-2324-1865>

ÖZET

Bu çalışmada, sıcak hava kurutma (SHK), ultrases destekli vakum kurutma (UVK), vakum kurutma (VK), dondurarak kurutma (DK) ve ultrases ön işlemlili dondurarak kurutma (UDK) tekniklerinin Goji Berry meyvesinin kuruma süresi, toplam fenolik bileşen değeri, antioksidan kapasitesi, fenolik profili, renk değişimi üzerine etkisi araştırılmıştır. SHK, VK ve UVK teknikleri için kurutma işlemi 50°C de gerçekleştirilmiştir. Goji Berry meyvesinin kurutma süresi 275-1330 dakika arasında değişmiştir. UVK işlemi diğer iki kurutma yöntemine göre daha hızlı kuruma davranışı sergilemiştir. Toplam fenolik madde değeri taze örnek için 700 mg GAE /100g olarak tespit edilmiştir. Kuru örneklerin toplam fenolik değeri 1002,53-1217,00 mg GAE/100g arasında değişmiştir. Tüm kurutma yöntemleri için kurumuş örneklerin toplam fenolik madde değeri taze örneklerden daha fazla bulunmuştur. UVK işlemi diğer tüm kurutma yöntemlerine göre daha yüksek oranda toplam fenolik madde değeri sergilemiştir. Taze ve kurutulmuş örneklerin antioksidan kapasite değerleri DPPH ve CUPRAC yöntemleri ile belirlenmiştir. DPPH ve CUPRAC değerleri sırasıyla 15,70-28,10 mgTE/100g ve 40,98-226,09 mgTE/100g arasında değişmiştir. Taze örneğin L*, a* ve b* renk değerleri sırasıyla 42,09, 29,77 ve 23,55 olarak tespit edilmiştir. Kurutma tekniklerinin meyvenin renk değişimi üzerine etkisini incelemek için toplam renk değişim indeksi değeri (ΔE) hesaplanmıştır. ΔE değeri 4,59-23,93 arasında değişirken SHK tekniği için daha yüksek oranda bulunmuştur. Farklı kurutma tekniklerinin fenolik profili üzerine etkileri de önemli bulunmuştur. SHK ile kurutulan örneklerin fenolik bileşiklerinin degradasyonu diğer kurutma yöntemlerine göre daha yüksek bulunmuştur. Bu çalışmanın sonuçları farklı kurutma yöntemlerinin Goji Berry meyvesinin kurutma hızı ve biyoaktif bileşen miktarını önemli derecede etkilediği ve daha biyoaktif madde degradasyonu için SHK yöntemine alternatif olarak UVK yönteminin kullanılabileceğini göstermiştir.

Anahtar Kelimeler: Goji berry, kurutma, fenolik madde.

ABSTRACT

In this study, the effect of different drying methods namely, hot air drying (HAD), ultrasound-assisted vacuum drying (UAVD), vacuum drying (VD), freeze-drying (FD), and ultrasound-assisted freeze drying on the drying time, total phenolic content, antioxidant capacity, phenolic profile and color change of Goji Berry fruit were investigated. The drying process for HAD, VD, and UAVD techniques was carried out at 50°C. The drying time of Goji Berry fruit varied between 275-1330 minutes. UAVD treatment showed faster-drying behavior than the other two drying methods. The total phenolic content value was determined as 700 mg GAE /100g for the fresh sample. The total phenolic content value of dry samples varied between 1002.53-1217.00 mg GAE/100g. For all drying methods, the total phenolic content of the dried samples was higher than the fresh samples. UAVD treatment exhibited a higher total phenolic content value than all other drying methods. Antioxidant capacity values of fresh and dried samples were determined by DPPH and CUPRAC methods. DPPH and CUPRAC values varied between 15.70-28.10 mg TE/100g and 40.98-226.09 mg TE/100g, respectively. The L*, a*, and b* color values of the fresh sample were determined as 42.09, 29.77, and 23.55, respectively. The total color change index value (ΔE) was calculated to examine the effect of drying techniques on the color change of the fruit. While the ΔE value ranged between 4.59 and 23.93, it was found to be higher for the HAD technique. The effects of different drying techniques on the phenolic profile were also found to be significant. The degradation of phenolic compounds in the samples dried with HAD was higher than in the other drying methods. The results of this study showed that different drying methods significantly affected the drying rate and amount of bioactive components of Goji Berry fruit, and the UAVD method can be used as an alternative to the HAD method for more bioactive compound retention.

Keywords: Goji Berry, drying, phenolic compounds.

***In vitro* KOŞULLARDA BAZI ORGANİK GÜBRE VE BÜYÜME DÜZENLEYİCİLERİNİN DOMATESTE ÇİMLENMEYE VE *Sclerotinia sclerotiorum*'a KARŞI ETKİLERİ**

THE EFFECTS of SOME ORGANIC FERTİLİZERS and GROWTH REGULATORS on
GERMİNATION and *Sclerotinia sclerotiorum* in TOMATOES *In vitro* CONDITIONS

Nisa Asel TATAR¹

¹Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye

¹ORCID ID: <https://orcid.org/0000-0002-3324-4509>

Eylül Hüsna AYDOĞAN²

²Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye

²ORCID ID: <https://orcid.org/0000-0002-3156-1324>

Oktay CALAYIR³

³Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye

³ORCID ID: <https://orcid.org/0000-0003-0009-1195>

Gökhan BOYNO⁴

⁴Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye

⁴ORCID ID: <https://orcid.org/0000-0003-3195-0749>

Emre DEMİRER DURAK⁵

⁵Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye

⁵ORCID ID: <https://orcid.org/0000-0001-5757-6332>

Semra DEMİR⁶

⁶Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü, Van, Türkiye

⁶ORCID ID: <https://orcid.org/0000-0002-0177-7677>

ÖZET

Domates, dünya çapında üretimi ve tüketimi bakımından oldukça önemli bir yere sahiptir. Ancak yetiştiriciliği fazla olan bu üründe, hastalıkların salgın halde görülmesi kaçınılmazdır. Bu hastalıklarla yapılan mücadeleler ise çoğunlukla kimyasal mücadele şeklindedir. Ancak *Sclerotinia sclerotiorum* gibi hastalıklar direnç formları veya geliştirdikleri dayanıklılık mekanizmaları ile bu kimyasallardan zamanla etkilenmemektedir. Aynı zamanda bu kimyasallar insan ve çevre sağlığına önemli sorunlara neden olmaktadır. Kimyasalların oluşturduğu problemlerden dolayı, araştırmacılar alternatif çözümler aramaya odaklanmıştır. Bu alternatif çözümlerden birisi de organik gübrelerin veya büyüme düzenleyicilerinin bitkinin hastalıklara karşı direncini arttırmaya yöneliktir. Araştırmamızın amacı, bazı organik gübrelerin (deniz yosunu ve solucan gübresi) ve büyüme düzenleyicilerinin (giberellik asit ve salisilik asit) *in vitro*'da hem hastalığa hem de domates tohumlarının çimlenmesine olan etkisini belirlemektir. Bu çerçevede PDA (Potato dextrose agar)'lı besi ortamlarına test edilen organik gübreler ve büyüme düzenleyicileri eklenmiştir. Patojenli gruplara tohum ekiminden 5 gün önce 7 günlük genç *S. sclerotiorum* patojeninden 5 mm'lik diskler halinde petri merkezine ekimi yapılmıştır. Daha sonra her petriye 3 adet steril edilmiş tohum eklenmiş ve 5 tekrarlı olacak şekilde dizayn edilmiştir. Kontrol grubu olarak %50 Captan fungusitli ve sadece PDA'lı besi ortamları oluşturulmuştur. Tohum ekiminden 7 gün sonra çimlenme oranları, 14 gün sonra hastalık şiddetleri ve boy ölçümleri değerlendirilmiştir. Genel olarak tüm uygulamalarda tohum çimlenmesi görüldü de en yüksek oran hem hastalıklı hem de hastaliksız gruplarda bulunan giberellik asitli besi ortamında belirlenmiştir. Hastalık şiddetinde ise

fungisitli kontrolde %8 ile en düşük, sadece PDA'lı ortamda ise %86 ile en yüksek olduğu belirlenmiştir. Test gruplarında ise deniz yosunlu ortamda en düşük hastalık şiddeti görülmüştür. Bitki boyunda ise en yüksek değer hastaliksız giberellik asitli besi ortamında tespit edilmiştir. Sonuç olarak kimyasal mücadeleye alternatif bir çözüm olan organik gübreleme ve büyüme düzenleyicilerinin hem bitki gelişimine hem de hastalıklarla mücadelede önem arz etmektedir.

Anahtar Kelimeler: Domates, *Sclerotinia sclerotiorum*, Organik gübre, Büyüme düzenleyicisi

ABSTRACT

Tomato has a very important place in terms of production and consumption worldwide. However, it is inevitable that diseases will be seen in epidemic form in this product, which has a high cultivation. The fight against these diseases is mostly in the form of chemical control. However, diseases such as *Sclerotinia sclerotiorum* are not affected by these chemicals over time with their resistance forms or the resistance mechanisms they have developed. At the same time, these chemicals cause significant problems for human and environmental health. Because of the problems posed by chemicals, researchers have focused on seeking alternative solutions. One of these alternative solutions is to increase the resistance of the plant against diseases with organic fertilizers or growth regulators. The aim of our research is to determine the effect of some organic fertilizers (seaweed and vermicompost) and growth regulators (gibberellic acid and salicylic acid) on both disease and germination of tomato seeds in vitro. In this context, tested organic fertilizers and growth regulators were added to the media with PDA (Potato dextrose agar). 5 days before planting seeds in groups with pathogens, 7-day-old young *S. sclerotiorum* pathogen was sown in the petri center as 5 mm discs. Then, 3 sterilized seeds were added to each petri dish and designed to be 5 replicates. As the control group, media with 50% Captan fungicide and only PDA were created. Germination rates 7 days after sowing, disease severity and height measurements 14 days later were evaluated. Although seed germination was observed in all applications in general, the highest rate was determined in the gibberellic acid medium in both diseased and disease-free groups. It was determined that the disease severity was the lowest with 8% in the control with fungicide, and the highest with 86% in the media with only PDA. In the test groups, the lowest disease severity was observed in the seaweed media. In plant height, the highest value was determined in disease-free gibberellic acid media. As a result, organic fertilization and growth regulators, which are an alternative solution to chemical control, are important for both plant development and disease control.

Keywords: Tomato, *Sclerotinia sclerotiorum*, Organic fertilizer, Growth regulator

FERMENTE SÜT ÜRÜNLERİNDE DOĞAL YOLLA BENZOİK ASİT OLUŞUMU
PRODUCING BENZOIC ACID BY NATURAL WAY IN FERMENTED DAIRY PRODUCTS

Zeynep GÜRBÜZ¹

Arş. Gör., Atatürk Üniversitesi Ziraat Fakültesi Gıda Mühendisliği Bölümü, Erzurum, Türkiye

¹ORCID ID: <https://orcid.org/0000-0003-4066-0241>

Mustafa ŞENGÜL¹

Prof. Dr., Atatürk Üniversitesi Ziraat Fakültesi Gıda Mühendisliği Bölümü, Erzurum, Türkiye

¹ORCID ID: <https://orcid.org/0000-0001-8447-2256>

Elif DAĞDEMİR¹

Prof. Dr., Atatürk Üniversitesi Ziraat Fakültesi Gıda Mühendisliği Bölümü, Erzurum, Türkiye

¹ORCID ID: <https://orcid.org/0000-0002-5610-0188>

Tuba ERKAYA KOTAN²

Doç.Dr., Atatürk Üniversitesi Teknik Bilimler Meslek Yüksekokulu Gıda İşleme Bölümü Gıda teknolojisi Programı, Erzurum, Türkiye

²ORCID ID: <https://orcid.org/0000-0003-4571-3090>

Hüseyin Ender GÜRMERİÇ³

Öğr. Gör., Gümüşhane Üniversitesi/Şiran Mustafa Beyaz Meslek Yüksekokulu/Gıda İşleme Bölümü/Gıda Kalite Kontrolü ve Analizi Programı

³ ORCID ID: [0000-0001-8636-1031](https://orcid.org/0000-0001-8636-1031)

ÖZET

Süt ve süt ürünleri besleyici özellikleri nedeniyle temel gıda kaynağı olarak yaygın bir şekilde tüketilmektedir. Süt ve süt ürünlerinin bu besleyici özellikleri temel olarak makro ve mikro gıda bileşenleri ile ilişkilendirilmektedir. Bu bileşenler proteinler, karbonhidratlar, lipidler, vitaminler, organik asitler, mineraller gibi bir dizi kimyasal yapıları içermektedir.

Organik bir asit olan hippurik asit gibi düşük molekül ağırlıklı asitler süt metabolomu olarak adlandırılmakta ve biyolojik sistemlerde anahtar rol oynayan organik asitler olarak bilinmektedirler. Bir süt metabolomu hippurik asit, süt hayvanlarında bağırsak mikroflorasından üretilen, fermentasyon sırasında benzoik aside dönüştürülebilen doğal bir organik asittir.

Fermente süt ürünleri insan beslenmesinde elzem bir değere sahip olup, üretiminde laktik asit bakterileri (LAB) önemli rol oynar. LAB, fermentasyon sırasında organikler asit üreterek gıdaların korunmasında önem arz etmektedirler. Sütte düşük konsantrasyonlarda bulunabilen hippurik asitten LAB tarafından fermentasyon yoluyla benzoik asit doğal bir bileşen olarak meydana gelebilmektedir. Süt ve süt ürünlerinde az miktarlarda bulunan benzoik asit antibakteriyel özelliği nedeniyle büyük öneme sahiptir.

Fermente süt ürünlerinde benzoik asit oluşumunda öngörülen ikinci metabolik yol ise olgunlaşma ya da depolama sırasında β -fenil-propionik (hidrosinamik) asit ve sinamik asit ara ürünlerinin oluşturduğu fenilalaninin bozunma reaksiyonudur. Olası üçüncü yol ise, laktik asit bakterilerinin belirli suşları tarafından üretilen benzaldehidin oto-oksidasyonudur. Özetle hippurik asidin dönüşümüne ek olarak bahsedilen bu iki yol (fenilalaninin degradasyonu ve benzaldehidin oto-oksidasyonu) fermente süt ürünlerinde benzoik asidin oluşumunda etkili olabilmektedir. Sonuç olarak, fermente süt ürünlerinde benzoik asidin doğal yolla birikmesi, ürün mevzuata uygunluk bakımından incelenirken dikkate alınması gereken önemli bir husus olarak değerlendirilmelidir.

Anahtar Kelimeler: Hippurik Asit, Benzoik Asit, Fermente Süt Ürünleri

ABSTRACT

Milk and dairy products are generally consumed as a basic food source due to their nutritious properties. These nutritional properties of milk and dairy products are mainly associated with macro and micro food components. These components include a number of chemical structures such as proteins, carbohydrates, lipids, vitamins, organic acids, minerals.

Low molecular weight acids such as hippuric acid is an organic acid, are called the milk metabolome and are known as organic acids that play a key role in biological systems. Hippuric acid, a milk metabolome, is a natural organic acid produced from the intestinal microflora of dairy animals that can be converted to benzoic acid during fermentation.

Fermented dairy products have an essential value in human nutrition and lactic acid bacteria (LAB) play an important role in their production. LAB is important in the preservation of food by producing organic acids during fermentation. Benzoic acid can be formed as a natural component by fermentation by LAB from hippuric acid, which can be found in low concentrations in milk. Benzoic acid, which is found in small amounts in milk and dairy products, is of great importance due to its antibacterial properties.

The second metabolic pathway predicted for the formation of benzoic acid in fermented milk products is the degradation reaction of phenylalanine, which is formed by β -phenyl propionic (hydrocinnamic) acid and cinnamic acid intermediates during ripening or storage. A third possible pathway is the auto-oxidation of benzaldehyde produced by certain strains of lactic acid bacteria. In summary, these two ways (degradation of phenylalanine and auto-oxidation of benzaldehyde) in addition to the conversion of hippuric acid can be effective in the formation of benzoic acid in fermented milk products. As a result, the natural accumulation of benzoic acid in fermented milk products should be considered as an important issue to be considered when examining the product for regulatory conformity.

Keywords: Hippuric Acid, Benzoic Acid, Fermented Dairy Products

ERZURUM PİYASASINDA SATIŞA SUNULAN YOĞURTLARIN ANTİOKSİDAN AKTİVİTELERİNİN TESPİTİ

DETERMINATION OF ANTIOXIDANT ACTIVITIES OF YOGURT SAMPLES MARKETED IN
ERZURUM, TURKEY

Hüseyin Ender GÜRMERİÇ¹

*Öğr. Gör., Gümüşhane Üniversitesi/Şiran Mustafa Beyaz Meslek Yüksekokulu/Gıda İşleme
Bölümü/Gıda Kalite Kontrolü ve Analizi Programı*

¹ORCID ID: 0000-0001-8636-1031

Zeynep GÜRBÜZ²

Arş. Gör., Atatürk Üniversitesi Ziraat Fakültesi Gıda Mühendisliği Bölümü, Erzurum, Türkiye

²ORCID ID: <https://orcid.org/0000-0003-4066-0241>

Tuba ERKAYA KOTAN³

*Doç.Dr., Atatürk Üniversitesi Teknik Bilimler Meslek Yüksekokulu Gıda İşleme Bölümü Gıda
teknolojisi Programı, Erzurum, Türkiye*

³ORCID ID: <https://orcid.org/0000-0003-4571-3090>

Mustafa ŞENGÜL²

Prof. Dr., Atatürk Üniversitesi Ziraat Fakültesi Gıda Mühendisliği Bölümü, Erzurum, Türkiye

²ORCID ID: <https://orcid.org/0000-0001-8447-2256>

ÖZET

Yoğurt geleneksel olarak uzun yıllardır tüketilen ve besleyici özelliği yüksek olan bir gıdadır. İçerisinde bulunan protein, karbonhidrat ve yağ bileşenlerinin yanı sıra kalsiyum, fosfor, magnezyum, çinko ve B grubu vitaminler sayesinde fonksiyonel ve sağlığa faydalı bir besin olarak tanımlanmaktadır. Fermente süt ürünleri, süt bileşenlerinin farklılaşarak besinsel değerinin ve biyolojik yararlılığının arttığı bir süreç sonucunda elde edilmektedir. Süte göre yoğurtta daha fazla olan bu fonksiyonel faydaların laktik asit bakterileri tarafından gerçekleştirilen fermantasyonun bir sonucu olduğu bilinmektedir. Fermente süt ürünleri içerisinde yer alan yoğurt, sahip olduğu besleyici ve fonksiyonel özellikler nedeniyle toplum için önemli bir besin kaynağıdır. Sağlık üzerine var olan olumlu etkileri birçok araştırma ile ortaya konulmuştur. Bu etkilerinden birisi de antioksidan özellik göstermesi olup hücrelerin yenilenme sürecini hızlandırarak kanserli hücre oluşumunun engellenmesinde katkısı olduğu yapılan bilimsel çalışmalar ile ortaya konmaktadır.

Bu çalışmada, Erzurum'daki farklı marketlerde satılan 12 farklı markaya ait tam yağlı homojenize yoğurtların antioksidan aktiviteleri, 2, 2-diphenyl-1-picrylhydrazyl (DPPH) kullanılarak belirlenmiştir. DPPH aktivitesi % inhibisyon olarak değerlendirildiğinde en yüksek değer % 63.31±5.21, en düşük değer ise % 30.25±3.18 olarak bulunmuştur. %50 inhibisyon (DPPH) için gerekli inhibitör (suda çözünür ekstrakt) madde miktarının ifade edildiği IC₅₀ değerlerinin 5.45±0.35 mg/ml ile 12.98±1.15 mg/ml arasında değiştiği belirlenmiştir. Piyasadan toplanan farklı markalara ait yoğurtların antioksidan aktivitelerinin değerlendirildiği çalışmamızda % inhibisyon ve IC₅₀ değerleri değişkenlik göstermiştir. Yoğurt örneklerinin DPPH aktivitesi incelendiğinde istatistiksel olarak iki farklı grubun oluştuğu tespit edilmiştir. Örneklerden beş tanesi bir grupta yedi tanesi diğer grupta yer almıştır. IC₅₀ değerlerinin istatistiksel incelemesinde ise örneklerin altı farklı gruba ayrıldığı ve aralarında önemli istatistiksel farklar (p<0,05) bulunduğu tespit edilmiştir. Araştırma sonucunda, piyasa da satılan yoğurtların değişen oranlarda antioksidan aktivite gösterdiği tespit edilmiştir.

Anahtar Kelimeler: Yoğurt, Antioksidan Aktivite, DPPH, IC₅₀

ABSTRACT

Yogurt is a food that has been consumed traditionally for many years and has high nutritional properties. It is defined as health beneficial food since contains proteins, carbohydrates, and lipids in addition to calcium, phosphorous, magnesium and group B vitamins. Fermented dairy products are obtained as a result of a process in which the nutritional value and biological usefulness of milk components differ. It is known that these functional benefits, which are more in yogurt than in milk, are a result of fermentation by lactic acid bacteria. Yogurt, which is one of the fermented milk products, is an important food source for the society due to its nutritive and functional properties. Its positive effects on health have been demonstrated by many studies. One of these effects is that it has antioxidant properties, and it has been demonstrated by scientific studies that it contributes to the prevention of cancerous cell formation by accelerating the regeneration process of cells.

In this study, antioxidant activities of 12 different brands of full-fat homogenized yogurts sold in different markets in Erzurum were determined by using 2, 2-diphenyl-1-picrylhydrazyl (DPPH). When DPPH activity was evaluated as % inhibition, the highest value was found as $63.31 \pm 5.21\%$ and the lowest value as $30.25 \pm 3.18\%$. It was determined that the IC_{50} values, in which the amount of inhibitory (water-soluble extract) substance required for 50% inhibition (DPPH) was expressed, ranged from 5.45 ± 0.35 mg/ml to 12.98 ± 1.15 mg/ml. In our study, in which the antioxidant activities of yoghurts of different brands collected from the market were evaluated, % inhibition and IC_{50} values varied. When the DPPH activity of the yoghurt samples was examined, it was determined that two different groups were formed statistically. Five of the samples were in one group and seven in the other group. In the statistical analysis of IC_{50} values, it was determined that the samples were divided into six different groups and there were significant statistical differences ($p < 0.05$) between them. As a result of the research, it was determined that the yoghurts sold in the market showed antioxidant activity at different rates.

Keywords: Yogurt, Antioxidant Activity, DPPH, IC_{50}

YENİ DOĞAN KUZULARDA İŞHALE NEDEN OLAN BAKTERİYEL ETKENLER

Eda Nur OKMAN¹

¹Van Yüzüncü Yıl Üniversitesi, Veteriner Fakültesi, İç Hastalıkları Anabilim Dalı, Van, Türkiye.

¹ORCID ID: <https://orcid.org/0000-0001-9016-9739>

Sülyeman KOZAT²

²Van Yüzüncü Yıl Üniversitesi, Veteriner Fakültesi, İç Hastalıkları Anabilim Dalı, Van, Türkiye.

²ORCID ID: <https://orcid.org/0000-0001-5089-2623>

ÖZET

Ülkemizin coğrafi koşulları ve arazi yapısı küçükbaş hayvancılık faaliyetlerini, hayvan yetiştiriciliği faaliyetleri arasında önemli bir yerde konumlandırmıştır. Küçükbaş yetiştiriciliği hayvansal üretimin büyük bir kısmını oluşturmakta ve ülkemizde ekonomik anlamda büyük bir yer tutmaktadır. Ülkemizdeki küçükbaş yetiştiriciliği, hayvan sayısının fazla olmasına rağmen yeterli verimi sağlayamamakta, üretim potansiyelinin çok altında kalmaktadır. Bunun en önemli sebepleri arasında bu alanda meydana gelen hastalıklar ve bu hastalıkların oluşturduğu verim kayıplarıdır. Küçükbaş yetiştiriciliğinde meydana gelen hastalıkların en sık görüldüğü dönem doğumdan sonraki dönem olan neonatal (1 ile 28 gün) dönemdir. Bu dönemde meydana gelen hastalıkların diğer dönemlere göre daha yüksek olduğu ve kuzularda yaşamları boyunca görülen hastalıkların yaklaşık %50 ile %72'sinin neonatal dönemde olduğu rapor edilmiştir. Neonatal dönemdeki hastalıklarda mortalite yüksek seyrettiğinden dolayı ekonomik kayıplar diğer dönemlere göre fazla olmaktadır. Neonatal kuzu hastalıkları arasında ise yüksek morbidite ve mortalite ile seyreden ishaller küçükbaş yetiştiriciliğinin en önemli hastalıkları arasında yer almaktadır. Neonatal ishaller doğumdan birkaç gün sonra veya doğumu izleyen birkaç haftalık süreç içerisinde çok fazla kuzu ölümüne sebebiyet vermektedir. Bu dönemde görülen ishaller, hayvanların gelişmelerinde duraklama, ilaç masrafları, kronik olarak yüksek verim kaybı ile seyrettiğinden dolayı hayvansal üretimde ekonomik olarak önem arz etmektedir. İshallerin viral, bakteriyel ve paraziter olmak üzere birden fazla etiyolojisi vardır. Neonatal kuzu ishallerinin en önemli etkenlerinden biri olan bakteriyel etkenler, bu ishaller arasında en fazla görülen etkenlerden birini teşkil etmektedir. Bu derlemede ülkemizdeki hayvancılığın ve hayvansal üretimin önemli bir kolunu oluşturan koyun yetiştiriciliğinin neonatal döneminde ishale neden olan sebeplerin bakteriyel etiyolojilerinden bahsedilerek, bakteriyel ishallerin oluşumu, klinik bulguları ve tedavileri hakkında kısa bilgiler verilecektir.

Anahtar Kelimeler: kuzu, yenidoğan, ishal, bakteriyel etkenler

ABSTRACT

The geographical conditions and land structure of our country have positioned sheep and goat farming activities in an important place among livestock activities. Ovine breeding constitutes a large part of animal production and has a great economic place. Despite the high number of animals, ovine breeding cannot provide sufficient yield in our country and remains below the production potential. Among the most important reasons for this are the diseases that occur in this area and the yield losses caused by these diseases. The most common period of diseases occurring in this area is the neonatal period. It has been reported that the diseases occurring in this period are higher than the other periods and that approximately 50% to 72% of the diseases seen in lambs throughout their lives occur in the neonatal period. Among neonatal lamb diseases, diarrhea with high morbidity and mortality is among the most important diseases. Neonatal diarrhea causes lamb deaths a few days after birth or within a few weeks after birth. Diarrhea seen in this period is economically important as it progresses with stagnation in the development of animals, drug costs, and chronically high yield loss. Bacterial agents, one of the most important causes of neonatal lamb diarrhea, have an important place among these diarrheas. In this



review, bacterial etiologies of the causes of diarrhea in the neonatal period of sheep breeding, which is an important branch of animal husbandry in our country, will be mentioned, and brief information will be given about clinical findings and treatments.

Keywords: lamb, neonatal, diarrhea, bacterial agents.

YENİDOĞAN KUZULARDA İŞHALE NEDEN OLAN VİRAL ETKENLER VIRAL AGENTS CAUSING DIARRHEA IN NEWBORN LAMBS

Eda Nur OKMAN¹

¹*Van Yuzuncu Yil University, Veterinary Faculty, Internal Medicine, Van, Turkey.*

¹ORCID ID: <https://orcid.org/0000-0001-9016-9739>

Sülyeman KOZAT²

²*Van Yuzuncu Yil University, Veterinary Faculty, Internal Medicine, Van, Turkey.*

²ORCID ID: <https://orcid.org/0000-0001-5089-2623>

ÖZET

Ülkemizin coğrafi koşulları ve arazi yapısı küçükbaş hayvancılık faaliyetlerini, hayvan yetiştiriciliği faaliyetleri arasında önemli bir yerde konumlandırmıştır. Küçükbaş yetiştiriciliği hayvansal üretimin büyük bir kısmını oluşturmakta ve ülkemizde ekonomik anlamda büyük bir yer tutmaktadır. Ülkemizdeki küçükbaş yetiştiriciliği, hayvan sayısının fazla olmasına rağmen yeterli verimi sağlayamamakta, üretim potansiyelinin çok altında kalmaktadır. Bunun en önemli sebepleri arasında bu alanda meydana gelen hastalıklar ve bu hastalıkların oluşturduğu verim kayıplarıdır. Küçükbaş yetiştiriciliğinde meydana gelen hastalıkların en sık görüldüğü dönem doğumdan sonraki dönem olan neonatal (1 ile 28 gün) dönemdir. Bu dönemde meydana gelen hastalıkların diğer dönemlere göre daha yüksek olduğu ve kuzularda yaşamları boyunca görülen hastalıkların yaklaşık %50 ile %72'sinin neonatal dönemde olduğu rapor edilmiştir. Neonatal dönemdeki hastalıklarda mortalite yüksek seyrettiğinden dolayı ekonomik kayıplar diğer dönemlere göre fazla olmaktadır. Neonatal kuzu hastalıkları arasında ise yüksek morbidite ve mortalite ile seyreden ishaller küçükbaş yetiştiriciliğinin en önemli hastalıkları arasında yer almaktadır. Neonatal ishaller doğumdan birkaç gün sonra veya doğumu izleyen birkaç haftalık süreç içerisinde çok fazla kuzu ölümüne sebebiyet vermektedir. Bu dönemde görülen ishaller, hayvanların gelişmelerinde duraklama, ilaç masrafları, kronik olarak yüksek verim kaybı ile seyrettiğinden dolayı hayvansal üretimde ekonomik olarak önem arz etmektedir. İshallerin viral, bakteriyel ve paraziter olmak üzere birden fazla etiyolojisi vardır. Neonatal kuzu ishallerinin en önemli etkenlerinden biri olan viral etkenler, bu ishaller arasında en fazla görülen etkenlerden birini teşkil etmektedir. Bu derlemede ülkemizdeki hayvancılığın ve hayvansal üretimin önemli bir kolunu oluşturan koyun yetiştiriciliğinin neonatal döneminde ishale neden olan sebeplerin viral etiyolojilerinden bahsedilerek, viral ishallerin oluşumu, klinik bulguları ve tedavileri hakkında kısa bilgiler verilecektir.

Anahtar Kelimeler: Diarrhea, lamb, viral agents, newborn.

ABSTRACT

The most important part of our country's animal husbandry is cattle and small cattle breeding. Diseases occurring in this area cause yield losses and various damages. In the neonatal period, diarrhea is among the most significant causes of loss of animal yield in cattle and sheep farming. Diarrhea, which occurs in sheep and goat farming, is a problem in animal husbandry. Especially in newborn calves and lambs, severe diarrhea to causes death is among the most crucial livestock problems. The majority of these diarrheas occur in the postpartum period, and deaths occur due to diarrhea. This study mentions the viral etiologies of the causes of diarrhea in sheep breeding, which is an essential branch of animal husbandry in our country, especially in lambs in the neonatal period. The neonatal period is one of the periods in which animal yield loss is most common, especially in sheep breeding, which reduces the enterprise's profitability and productivity the most. Diarrhea in the neonatal period causes lamb deaths shortly before birth, during birth, or within a few weeks after birth. The diseases occurring in this period are higher



than in other periods, and approximately 50% to 72% of the diseases seen in lambs throughout their lives occur. This article gives detailed information about the classification of viral causative agents, clinical findings, and treatments.

Keywords: Diarrhea, lamb, viral agents, newborn.

FARKLI GAMA IŞINI DOZLARI (⁶⁰Co) UYGULANMIŞ HIYARDA TRİCHODERMA TÜRLERİNİN FUSARIUM VE PYTHIUM HASTALIĞA KARŞI ETKİLERİNİN BELİRLENMESİ

DETERMINATION OF THE EFFECTS OF TRICHODERMA SPECIES AGAINST FUSARIUM
AND PYTHIUM DISEASE IN CUCUMBER APPLIED TO DIFFERENT GAMMA RAY DOSES
(⁶⁰Co)

Mürşide HATİPOĞLU

*Doktora Öğrencisi, Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Tarımsal Biyoteknoloji Ana
Bilim Dalı*

ORCID NO: 0000 0002 1514 8951

Muhsin YILDIZ

Öğr. Gör, Van Yüzüncü Yıl Üniversitesi, Gevaş MYO

ORCID NO: 0000 0002 0766 5174

Hasret GÜNEŞ

*Doktora Öğrencisi, Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Bitki Koruma Ana Bilim
Dalı*

ORCID NO: 0000 0003 3155 2695

Selma BİTİK

Öğr. Gör. Dr. Van Yüzüncü Yıl Üniversitesi, Başkale MYO

ORCID NO: 0000 0002 0563 1130

Semra DEMİR

Prof. Dr. Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü

ORCID NO: 0000-0002-0177-7677

Çeknas ERDİNÇ

Doç. Dr. Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarımsal Biyoteknoloji Bölümü

ORCID NO: 0000-0003-1208-032X

ÖZET

Bu çalışmada farklı gama ışın dozları kullanılarak hıyarda (*Cucumis sativus* L.) *Trichoderma harzianum*, *Trichoderma virens* türlerinin Fusarium ve Pythium ssp. hastalıklarına karşı etkileri araştırılmıştır. Öncelikle tohumlara 50, 100, 150, 200 ve 250 Gy gama ışını uygulanmıştır. Faktöriyel deneme desenine göre 4 tekerrürlü yürütülen bu çalışmada belli aralıklarla sürgün boyu ve çapı, klorofil (SPAD) miktarı belirlenmiş, deneme sonunda ise sürgün ve kökte yaş-kuru ağırlık, kök boyu, yaprak sayısı, yaprak alanı gibi fide gelişim kriterlerinin yanısıra membran zararlanma indeksi ve yaprak oransal nem içeriği, L, a, b, Chroma ve Hue renk değerleri ölçülmüştür. Aynı zamanda Pythium için 0-4 ve Fusarium için 0-5 skalası ile hastalık şiddeti belirlenmiştir. Farklı mutasyon dozlarının sürgün ve kök boyu, yaş ve kuru ağırlıklar, yaprak alanı ile Fusarium ve Pythium hastalık şiddeti üzerine etkili olduğu gözlenirken *Trichoderma* uygulamasının genel olarak incelenen özellikler üzerinde önemli etkisinin olmadığı belirlenmiştir. Özellikle 200 ve 250 Gy gama ışını dozlarının, mutasyon uygulanmayan bitkilere göre sürgün boyunda % 11 ile yüzde 15 arasında artış sağladığı görülmüştür. *Trichoderma* türlerinin hastalık şiddetine etkisi Fusarium hastalığında önemli iken, Pythium hastalığında önemsiz bulunmuştur.

Anahtar kelimeler; Hıyar, Gama ışını, Fusarium, Pythium, *Trichoderma*.

ABSTRACT

In this study, the effects of *Trichoderma harzianum* and *Trichoderma virens* species against *Fusarium* and *Pythium* diseases were investigated by using different gamma rays in cucumber (*Cucumis sativus* L.). There were applied 50, 100, 150, 200 and 250 Gy gamma rays to the seeds. In this study, which was carried out with 4 replications according to the factorial design, shoot length and diameter, chlorophyll (SPAD) amount were determined at regular intervals, and at the end of the experiment, seedling development criteria such as fresh-dry weight in shoot and root, root length, number of leaves, leaf area as well as membrane damage index, leaf relative moisture content, L, a, b, Chroma and Hue color values were determined. While it was observed that different mutation doses were significant on shoot and root length, fresh and dry weights, leaf area, and *Fusarium* and *Pythium* disease severity, it was determined that *Trichoderma* application did not have a significant effect on the characteristics examined in general. It has been observed that especially the doses of 200 and 250 Gy gamma rays increased in shoot length between 11% and 15% compared to the plants without mutation. While the effect of *Trichoderma* species on disease severity was significant in *Fusarium* disease, it wasn't significant in *Pythium* disease.

Keywords: Cucumber, Gama rays, *Fusarium*, *Pythium*, *Trichoderma*

FOOD

ANUJ B

Bannari Amman Institute Os Technology, Computer Technology, Sathyamangalam, India

ORCID ID: <https://orcid.org/0000-0002-6711-9626>

KAVIN KUMAR P

Bannari Amman Institute Os Technology, Computer Technology, Sathyamangalam, India

ORCID ID: <https://orcid.org/0000-0003-3022-6556>

SANKAR PRASATH S

Bannari Amman Institute Os Technology, Computer Technology, Sathyamangalam, India

ORCID ID: <https://orcid.org/0000-0003-1945-622X>

PRAGUSHPATHI P

Bannari Amman Institute Os Technology, Computer Technology, Sathyamangalam, India

ORCID ID: <https://orcid.org/0000-0002-3652-9390>

SRIDEEPANRAJ S

Bannari Amman Institute Os Technology, Computer Technology, Sathyamangalam, India

ORCID ID: <https://orcid.org/0000-002-8917-2356>

VINOTH KUMAR C M

Bannari Amman Institute Os Technology, Computer Technology, Sathyamangalam, India

ORCID ID: <https://orcid.org/0000-0002-3399-959X>

ABSTRACT

Food is one of the important energy source for living beings; as such quality of food and safety have been in the highest demand throughout the human history. Internet of things (IOT) is a technology which is used to connect anything at anytime . Utilizing IOT in the food supply chain (FSC) is believed to enhance the quality of life by tracking as well as tracing the food conditions and live-sharing the obtained data with the consumers or with the FSC supervisors. Currently, the applications of IOT in the FSC is still in the developing stage and there is a big gap for its development. The purpose of this paper is to explore the possibility of applying IOT for agriculture to track and trace the food quality and safety. Mobile applications for food freshness was successfully developed and the results proved that consumer mobile cameras can be used to test the freshness of food. With the help of the IOT technology this information could be shared with all the consumers and also with the supervisors.

Keywords: Food, IOT, FSC, food quality, fresh food.

PRODUCTIVITY OF SOYBEAN (*Glycine max* (L.) Merrill) AS INFLUENCED BY TIME OF FERTILIZER APPLICATION AND ROW SPACING

* *Ehizogie J. FALODUN** and *Phebe Asanga*

Department of Crop Science, Faculty of Agriculture, University of Benin, Nigeria.

ABSTRACT

Time of fertilizer application and proper spacing increases yields, nutrient use efficiency, reduces nutrient losses and prevents damage to the environment. Field studies were conducted during the 2016 and 2017 wet seasons at the Research Farm, Department of Crop Science, Faculty Agriculture, University of Benin, Nigeria. The objective of this study was to determine the optimum plant spacing and time of fertilizer application for growth and grain yield of soybean (*Glycine max* (L.) Merrill). The experiments were laid out as a 3 x 5 factorial in a Randomized Complete Block Design (RCBD) in three replications the treatments consisted of three spacing, S₁ (10cm x 50cm), S₂ (15cm x 15cm), S₃ (20cm x 50cm) and four times of fertilizer application. T₀ (at planting), T₁ (2 WAP), T₂ (4 WAP) T₃ (6 WAP) and T₄ (8 WAP). The parameters measured were number of leaves, number of branches, plant height, the leaf size (cm), number of pods per plant, pod weight per plant (g), shelling %, 1000 seed weight (g), harvest index (%) and grain yield (t/ha). Results showed that plant height increased significantly with earliness to times of fertilizer application up to 6 WAP and decreased at 8 WAP and this trend was observed to be similar for the number of leaves, branches and leaf size. Total dry matter and grain yield increased at the earliest time of fertilizer application from planting to 4 WAP, a decrease in plant spacing from 20 cm x 50 cm to 10 cm x 50 cm increased the grain yield (18.45% and 28.08%) and total dry matter (15.30% and 23.89%) in both cropping seasons. To maximize grain yield of soya bean, farmers in this locality should adopt narrower spacing of either S₁ (10cm x 50cm) or S₂ (15cm x 50cm) and early application of fertilizer at T₀ (at planting) to T₂ (4 WAP).

Keywords: fertilizers, grain yield, plant spacing, soya bean,

MICROPROPAGATION OF ATROPA BELLADONNA L

Stanislava Stateva

*Agricultural Academy, Institute of Plant Genetic Resources, „Konstantin Malkov” Sadovo, Plovdiv,
Bulgaria*

ORCID ID: <https://orcid.org/0000-0002-6016-2904>

ABSTRACT

Herbs play an important role in the prevention and treatment of many diseases. Over 80% of the world's population uses medicinal plants, and according to the World Health Organization, this percentage is constantly growing. Preservation of the species requires it to be studied in its entirety under controlled conditions. The experiment tested 2 main media - Quorin & Lepoivre and Murashige & Skoog. The effect of auxins IBA and IAA at concentrations of 0.2, 0.5 and 1.0 mg /l in three consecutive replicates every 10 days was studied. There were fewer roots with less developed root system in the auxin IAA variants than in the control variant, which had a very well-developed root system. It was found that there was no statistically significant difference between the heights, the number of leaves and the number of explant roots in 0.2 mg / l IBA and the control variant with statistical error $\alpha = 1\%$.

Keywords: in vitro, micropropagation, rooting, Atropa belladonna L

KOYUN SÜTÜNÜN BESİN İÇERİĞİ VE BİYOAKTİVİTESİ NUTRITIONAL CONTENT AND BIOACTIVITY OF SHEEP MILK

Murat Emre TERZİOĞLU¹

¹*Atatürk University, Faculty of Agriculture, Department of Food Engineering, Erzurum, Turkey.*

¹*ORCID ID: <https://orcid.org/0000-0001-6370-0694>*

İhsan BAKIRCI²

²*Atatürk University, Faculty of Agriculture, Department of Food Engineering, Erzurum, Turkey.*

²*ORCID ID: <https://orcid.org/0000-0002-3744-3863>*

ÖZET

İnsanoğlunun yaşamını devam ettirebilmesi için beslenme zaruri bir ihtiyaçtır. Günümüzde beslenme tüketicinin bilinçlenmesi ile artık sadece besin öğelerini karşılamak amacıyla değil aynı zamanda refah seviyesini yükselterek kaliteli ve sağlıklı yaşam koşullarını amaçlamaktadır. Bu anlamda fonksiyonel özelliğe sahip gıdalar hem bileşimleri hem de farmakolojik özellikleri ile bu istekleri karşılayabilmektedir.

Süt ve süt ürünlerinin beslenmemizde ayrı bir yeri bulunmaktadır. Süt ve ürünleri denilince ilk akla gelen inek sütü olmasına karşın koyun sütünün besin öğelerinin daha zengin olduğu bilinmektedir. Fonksiyonel özelliğe sahip gıdalardan biri olan koyun sütü makro ve mikro bileşikleri inek sütüne kıyasla daha fazla oranda içeren üstün özelliklere sahiptir. Koyun sütü; protein kalitesi ve biyoaktivitesi, yağ asidi kompozisyonu, konjuge linoleik asit içeriği, mineral madde (Ca, P, Mg, Zn, Fe ve Cu) ve vitamin (A, B1, B2, C ve E vitamini) içeriği ile inek ve keçi sütünden daha zengin bir kaynaktır. Ayrıca koyun sütünün sahip olduğu besin öğelerinin sağlık üzerinde pek çok olumlu katkıları olduğu da bilinmektedir. Nitekim bu bileşenlerden biri olan biyoaktif peptitlerin antihipertansif, antioksidan, antidiyabetik, antimikrobiyal, antitrombotik, immünomodülatör, opioid ve mineral bağlama gibi çeşitli fizyolojik işlevlere sahip olduğu ortaya konmuştur. Biyoaktif peptitlerin salınımının fermente ürünlerde kullanılan starter kültürler vasıtasıyla sağlanması da koyun sütünden üretilen ürünlerin bu aktivitelere sahip olacağı anlamına gelmektedir.

Koyun sütünün ve ürünlerinin hem ihtiyacımız olan besin öğelerini sağlamada hem de farmakolojik katkıları düşünüldüğünde tüketiminin yaygınlaştırılması kaçınılmaz bir gerçektir. Bu nedenle koyun sütü ve ürünlerinin tüketiminin yaygınlaştırılması için bu alanda çalışmaların detaylandırılması ve çeşitlendirilmesine ihtiyaç vardır. Mevcut derleme koyun sütünün besin öğeleri ve biyoaktivitesine genel bir bakış niteliğindedir.

Anahtar Kelimeler: Koyun sütü, biyoaktivite, biyoaktif peptitler, farmakolojik özellikler

ABSTRACT

Nutrition is an essential need for human beings to survive. Today, with the awareness of the consumer, nutrition aims not only to meet the nutritional elements but also to provide quality and healthy living conditions by increasing the level of welfare. In this sense, foods with functional properties can meet these demands with both their composition and pharmacological properties.

Milk and dairy products have a special place in our diet. Although cow's milk comes to mind as a raw material when milk and dairy products are mentioned, it is known that sheep milk is richer in nutrients. Sheep milk, one of the foods with functional properties, has superior properties that contain macro and micro compounds in greater proportions than cow's milk. Sheep milk is a richer source than cow and goat milk with its protein quality and bioactivity, fatty acid composition, conjugated linoleic acid content, mineral substance (Ca, P, Mg, Zn, Fe, and Fr), and vitamin content (A, B1, B2, C and E

vitamins). It is also known that the nutritional elements of sheep milk have many positive contributions to health. As a matter of fact, it has been revealed that bioactive peptides, one of these components, have various physiological functions such as antihypertensive, antioxidant, antidiabetic, antimicrobial, antithrombotic, immunomodulatory, opioid, and mineral binding. Ensuring the release of bioactive peptides through starter cultures used in fermented products means that products produced from sheep milk will also have these activities.

It is an inevitable fact that, considering both the nutritional elements we need and the pharmacological contributions of sheep milk and its products, their consumption should be widespread. For this reason, it is necessary to elaborate and diversify the studies in this field in order to spread the consumption of sheep milk and its products. This review is an overview of the nutrients and bioactivity of sheep milk.

Keywords: Sheep milk, bioactivity, bioactive peptides, pharmacological properties

FARKLI YÖNLERİYLE MEYVELİ PROBİYOTİK YOĞURTLAR FRUITY PROBIOTIC YOGURTS IN TERMS OF THEIR DIFFERENT ASPECTS

Murat Emre TERZİOĞLU¹

¹Atatürk University, Faculty of Agriculture, Department of Food Engineering, Erzurum, Turkey.

¹ORCID ID: <https://orcid.org/0000-0001-6370-0694>

İhsan BAKIRCI²

²Atatürk University, Faculty of Agriculture, Department of Food Engineering, Erzurum, Turkey.

²ORCID ID: <https://orcid.org/0000-0002-3744-3863>

ÖZET

Beslenmede gıdalardan daha fazla verim alabilmek için içerisine farklı bileşenler ilave edilerek zenginleştirme işlemine başvurulabilmektedir. Bu sayede gıdaların eksik olduğu düşünülen yönleri tamamlanmakta ve sağlık açısından daha fazla olumlu etkiye sahip gıdalar üretilmektedir. Çeşitli biyoaktif bileşikler yönünden önemli bir kaynak olan meyveler (muz, çilek, ahududu, çarkıfelek meyvesi, elma, kayısı vb.) yoğurtlara ilave edilerek yoğurdun besin içeriğini zenginleştirmekte ve fonksiyonel özellikler kazandırmaktadır. Önemli bir lif kaynağı olarak gösterilen meyveler aynı zamanda yapısında bulunan mineral maddeler, vitaminler, monoterenler, fitoöstrojenler, flavonoidler, kükürt bileşikler ve biyoaktif peptitler ile beslenme ve sağlık açısından önemli bir kaynaktır. Yoğurt kalsiyumun yanı sıra fosfor, çinko, magnezyum, B1 (tiyamin), B2 (riboflavin), B3 (niyasin) ve B12 gibi vücutta ihtiyaç duyulan mineral maddeleri ve vitaminleri süte göre daha yüksek oranda bünyesinde barındırmaktadır. Yoğurt içerdiği olduğu bileşenlerle (biyoaktif peptitler, yağ asitleri, vitaminler ve mineral maddeler) fonksiyonel özellikler taşımakta, meyve ilavesi ile bu fonksiyonel özellikleri geliştirilebilmektedir. Yoğurt üretiminde klasik starter kültürler (*Streptococcus salivarius* subsp. *thermophilus* ve *Lactobacillus delbrueckii* subsp. *bulgaricus*) yerine probiyotik mikroorganizmaların (*Lactobacillus acidophilus*, *Lactobacillus plantarum*, *Lactobacillus casei*, *Lactobacillus rhamnosus*, *Bifidobacterium bifidum* ve *Bifidobacterium lactis*) kullanılması ise vücutta sindirim enzimlerinin üretiminde, mineral maddelerin biyoyararlılığını arttırmada, vitaminlerin üretiminde, kolesterol seviyesinin düzenlenmesinde ve kabızlığın önlenmesinde etkin bir rol oynamaktadır. Yoğurda meyve ilavesiyle probiyotik mikroorganizmalar üzerinde prebiyotik (inülin, fruktooligosakkarit ve galaktooligosakkaritler) etki oluşturularak gelişim desteklenmekte ve depolama periyodu boyunca probiyotik mikroorganizmaların canlı kalabilme oranı artırılmaktadır. Bu alanda yapılan çeşitli çalışmalar olmasına rağmen süt endüstrisinde ürün çeşitliliğini arttırmak ve eksiklikleri gidermek adına yapılacak yeni ve detaylı çalışmalara ihtiyaç duyulmaktadır. Bu çalışma meyveli probiyotik yoğurtların çeşitli özellikleri bakımından değerlendirilmesi niteliğini taşımaktadır.

Anahtar Kelimeler: Meyveli probiyotik yoğurt, probiyotik mikroorganizmalar, prebiyotik etki

ABSTRACT

In order to get more efficiency from food in nutrition, enrichment process can be applied by adding different components. In this way, the aspects of foods that are thought to be deficient are completed and foods with more positive effects in terms of health can be produced. Fruits (bananas, strawberries, raspberries, passion fruit, apple, apricot etc.), which are an important source of various bioactive compounds, are added to yogurt, and enrich the nutritional content of yogurt and give it functional properties. Fruits, which are shown as an important source of fiber, are also an important source of nutrition and health with the mineral substances, vitamins, monoterpenes, phytoestrogens, flavonoids, sulfur compounds, and bioactive peptides in their structure. In addition to calcium, yogurt contains minerals and vitamins needed in the body such as phosphorus, zinc, magnesium, B1 (thiamine), B2

(riboflavin), B3 (niacin), and B12 at a higher rate than milk. Yogurt has functional properties with the components it contains (bioactive peptides, fatty acids, vitamins, and mineral substances), and these functional properties can be improved with the addition of fruit. The use of probiotic microorganisms (*Lactobacillus acidophilus*, *Lactobacillus plantarum*, *Lactobacillus casei*, *Lactobacillus rhamnosus*, *Bifidobacterium bifidum*, and *Bifidobacterium lactis*) instead of classical starter cultures (*Streptococcus salivarius* subsp. *thermophilus* and *Lactobacillus delbrueckii* subsp. *bulgaricus*) in yogurt production plays an active role in the production of digestive enzymes in the body, in the increase of the bioavailability of mineral substances, in the production of vitamins, in the regulation of cholesterol levels and in the prevention of constipation. With the addition of fruit in yogurt, a prebiotic (inulin, fructooligosaccharides, and galactooligosaccharides) effect is created on probiotic microorganisms and their development is supported and their survival rate is increased during the storage period. Although there are various studies conducted in this field, new and detailed studies are needed to be carried out in order to increase the variety of products and eliminate deficiencies in the dairy industry. This study has the characteristic of an evaluation of fruity probiotic yogurts in terms of their various properties.

Keywords: Fruity probiotic yogurt, probiotic microorganisms, prebiotic effect

2022-2026 YILLARI ARASI TÜRKİYE ORGANİK YUMURTA ÜRETİMİNİN ZAMAN SERİSİ ANALİZLERİNE GÖRE DEĞERLENDİRMESİ

AN EVALUATION of ORGANIC EGG PRODUCTION in TURKEY BETWEEN 2022-2026
BASED on TIME SERIES ANALYSIS

Ayça Nur ŞAHİN DEMİREL¹

¹*Iğdır Üniversitesi Ziraat Fakültesi Tarım Ekonomisi Bölümü, Iğdır, Türkiye.*

¹*ORCID ID: <https://orcid.org/0000-0003-2988-8448>*

ÖZET

Kümes hayvancılığı; hayvancılık sektörünün en gelişmiş ve teknolojiye en açık sektörlerinden biridir. Üretimin kolay ve hızlı olmasının yanında maliyetin düşük olması diğer hayvancılık sektörlerine göre avantajlarından. Sağlıklı beslenme konusunda her geçen gün daha da duyarlı olan tüketiciler protein açığının kapatılmasında kırmızı ve beyaz ete alternatif olarak tavuk yumurtası tüketimine yönelmektedirler. Yumurtalar içerisinde protein ve besin değeri en yüksekte olan organik tavuk yumurtası ise tüketiciler için alternatif bir tercih olmaktadır.

Organik yumurta, hormon, toksik madde, ağır metal veya pestisit ile temas etmemiş, sadece doğal yem ile beslenmekte olan tavuklardan elde edilmektedir. Konvansiyonel üretim metoduyla üretilen tavuk yumurtalarına kıyasla 3 kat daha fazla omega-3 yağ asidi, %40 daha fazla A vitamini ile 2 kat daha fazla E vitamini içeren organik yumurtaların önemi, günümüz pandemi şartlarında insan sağlığı için daha dikkat çekici bir hal almıştır.

Bu çalışmada, Türkiye geneli 2022-2026 yılları arası organik yumurta üretimine yönelik zaman serisi-trend analizi 4 farklı metod ile gerçekleştirilmiştir. Çalışma kapsamında mevcut organik yumurta çiftçi sayıları, organik yumurta için kullanılan tavuk sayıları ve organik yumurta üretiminde tavuk başına yıllık yumurta verimi zaman serilerine bağlı olarak analiz edilmiştir. Zaman serisi analizlerinde Linear Trend Analysis (LTA), Exponential Growth Method (EGM), Quadratic Trend Analysis (QTA), S-curve yöntemleri kullanılmış ve 2022-2026 yılları arasında Türkiye çapında organik yumurta üretim verilerinin en gerçekçi tahminleri yapılmaya çalışılmıştır. Tarım ve Orman Bakanlığı verilerine göre 2002 yılında yalnızca 1 adet çiftçi ile başlayan organik yumurta serüveni 2020 yılında 91 çiftçi sayısına ulaşmıştır. Dahası, 2002 yılında tek bir ilde başlayan organik yumurta üretimi 2020 yılı itibarıyla Türkiye çapında toplam 20 ilde gerçekleştirilmiştir. Ayrıca, 2002-2020 yılları arasındaki verilere göre her geçen yıl yumurta sayısı ve yumurtalık tavuk sayısında artış gözlemlenmiştir. Ancak 2007-2015 yılları arasında tavukların yumurtlama verimliliğinde durağanlık, 2016-2018 yılları arasında artış ve 2018-2020 yılları arasında düşüş trendi gözlemlenmiştir. Çalışma sonucunda, 2026 yılına kadar tavuk sayısı ve organik yumurta üretiminde büyük miktarlarda artışların olabileceği öngörülmüşken, tavuk başına yıllık yumurta veriminde ise durağan sürecin devam edeceği beklenmektedir. Elde edilen sonuçlara bağlı olarak, tavuk başına yumurta verimini ve dolayısıyla işletme yumurta verimini artırıcı önlemler konusunda gerek üreticilerin gerekse sektöre yeni girecek olan girişimcilerin bilgilendirilmesi önerilmektedir.

Anahtar Kelimeler: Trend Analizi, Organik Yumurta, Verim, Öngörüleme

ABSTRACT

The poultry farming; It is one of the most advanced and technologically open sectors of the livestock sector. In addition to being easy and fast to produce, its low cost is one of its advantages compared to other livestock sectors. Consumers, who are more sensitive to healthy nutrition every day, tend to consume chicken eggs as an alternative to red and white meat in order to fill the protein deficit. Organic chicken eggs, which have the highest protein and nutritional value among eggs, are an alternative choice for consumers.

The organic eggs are obtained from chickens that have not been in contact with hormones, toxic substances, heavy metals or pesticides, and are fed only with natural feed. The importance of organic eggs, which contain 3 times more omega-3 fatty acids, 40% more vitamin A and 2 times more vitamin E compared to chicken eggs produced with the conventional production method, has become more remarkable for human health in today's pandemic conditions.

In this study, time series-trend analysis for organic egg production between 2022-2026 in Turkey was carried out with 4 different methods. Within the scope of the study, the number of organic egg farmers, the number of chickens used for organic eggs and the annual egg yield per hen in organic egg production were analyzed depending on the time series. Linear Trend Analysis (LTA), Exponential Growth Method (EGM), Quadratic Trend Analysis (QTA), S-curve methods were used in time series analysis and the most realistic estimates of organic egg production data across Turkey between 2022-2026 were tried to be made. According to the data of the Ministry of Agriculture and Forestry, the organic egg adventure, which started with only one farmer in 2002, reached 91 farmers in 2020. Moreover, organic egg production, which started in a single province in 2002, has been carried out in 20 provinces across Turkey as of 2020. In addition, according to the data between 2002 and 2020, an increase in the number of eggs and laying hens has been observed every year. However, stagnation in ovulation productivity of chickens was observed between 2007 and 2015, an increase trend was observed between 2016-2018 and a decreasing trend was observed between 2018 and 2020. As a result of the study, it is predicted that there may be large increases in the number of chickens and organic egg production until 2026, while the stagnant process is expected to continue in the annual egg yield per hen. Depending on the results obtained, it is recommended that both the producers and the entrepreneurs who will enter the sector be informed about the increase in the egg yield per hen and thus the egg yield of the enterprise.

Keywords: Trend Analysis, Organic Egg, Yield, Forecasting

LEAF AND SHOOT GROWTH OF APPLE TREES APPLYING CHEMICAL FERTILIZERS WITH IRON AND ZINC

Füsun GÜLSER¹

¹*Van Yüzüncü Yıl University, Faculty of Agriculture, Department of Soil Science and Plant Nutrition,
Van, Türkiye*

¹ORCID ID: <https://orcid.org/0000-0002-9495-8839>

İlhan KARAÇAL¹

¹*Van Yüzüncü Yıl University, Faculty of Agriculture, Department of Soil Science and Plant Nutrition,
Van, Türkiye*

ABSTRACT

This study was carried out to determine the effects of iron and zinc fertilization on leaf and shoot growth of Starking apple trees in a randomized completely experimental design as four replication at the Fruit and Sapling Production Station of Van Provincial Directorate of Agriculture. In the experiment, 250 g N, 250 g P₂O₅ and 50 g K₂O per tree were applied to each plot as a basic fertilization. In soil and foliar fertilization, iron sulphate (FeSO₄.7H₂O, 20 % Fe) and zinc chloride (ZnCl₂, 44% Zn) were used as chemical fertilizers respectively. The highest leaf surface area (24.51 cm²) and dry leaf weight (0.286 g) were obtained in alone applications of zinc chloride and iron sulphate respectively. The highest shoot length (30.50 cm) and dry shoot weight (3.198 g) were in combine applications of iron sulphate and zinc chloride. The lowest means belong leaf surface area (20.80 cm²), shoot length (16.00 cm), dry shoot weight (0.969 g) were determined in control while the lowest dry leaf weight (0.247 g) was determinate in alone zinc chloride application. It was determined that zinc and iron fertilizations positively affected growth of apple trees.

Keywords: Apple tree, fertilization, growth, iron, zinc.

VAN GÖLÜ HAVZASINDA YETİŞTİRİLEN YEREL EKMEKLİK BUĞDAY (*Triticum aestivum* L.) ÇEŞİTLERİNE AİT FARKLI POPÜLASYONLARIN VERİM VE VERİM ÖĞELERİNİN BELİRLENMESİ

DETERMINATION OF DIFFERENT POPULATIONS OF THE WHEAT (*Triticum aestivum* L.)
LANDRACES CULTIVATED IN VAN LAKE BASIN

Şadiye DEMİR ATMACA

Doktora öğrencisi Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Van

PhD student, Van Yüzüncü Yıl University, Science Sciences Institute, Van

ORCID ID: 0000-0003-4174-3778

Burak ÖZDEMİR

Doktora öğrencisi Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Van

PhD student, Van Yüzüncü Yıl University, Science Sciences Institute, Van

ORCID ID: 0000-0002-7766-4909

Sana JAMAL SALİH

Doktora öğrencisi Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Van

PhD student, Van Yüzüncü Yıl University, Science Sciences Institute, Van

ORCID ID: 0000-0001-9937-1001

Fevzi ALTUNER

Dr. Öğretim Üyesi Van Yüzüncü Yıl Üniversitesi Gevaş Meslek Yüksekokulu, Bitkisel ve Hayvansal Üretim, Organik Tarım Programı Van

Van Yüzüncü Yıl University Gevaş Vocational School, Crop and Animal Production, Organic Agriculture Program, Van

Asst. Prof. Van Yüzüncü Yıl University Gevaş Vocational School, Crop and Animal Production, Organic Agriculture Program, Van

ORCID ID: 0000-0002-2386-2450

Erol ORAL

Doç. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi Tarla Bitkileri Bölümü, Van

Assoc. Professor, Van Yüzüncü Yıl University, Faculty of Agriculture, Department of Field Crops, Van

ORCID ID: 0000-0001-9413-1092

Mehmet ÜLKER

Prof. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi Tarla Bitkileri Bölümü, Van

Prof. Dr., Van Yüzüncü Yıl University, Faculty of Agriculture, Department of Field Crops, Van

ORCID ID: 0000-0001-9419-2012

ÖZET

Van koşullarında, 2019-2020 yılları içerisinde yürütülen bu çalışma Van Gölü Havzasında yetiştiriciliği yapılan yerel ekmeçlik buğday çeşitlerine ait farklı popülasyonların tane verimi ve verim öğelerini karşılaştırmak amacıyla yürütülmüştür. Karasu-90 ve Doğu-88 standart buğday çeşitlerinin kontrol olarak kullanıldığı denemede Van, Muş ve Bitlis'ten toplanan ve yöre halkı tarafından Karakılıçık,

Kırmızı Tir, Beyaz Tir, Kırmızı Kirik, Beyaz Kirik, Hevidi, Toptopik ve Geverik isimli yerel çeşitlerin karışımlarından oluşan 121 buğday popülasyonu kullanılmıştır. Deneme materyalinin popülasyon olması nedeniyle birçok özellik bakımından geniş bir varyasyon göstermektedirler. Augmented deneme desenine göre yürütülen çalışmada tane veriminin yanında bitki boyu, başak boyu, başakta başakçık sayısı, metrekarede başak sayısı, bin tane ağırlığı, toplam verim ve hasat indeksi incelenmiştir. Araştırma sonucunda elde ettiğimiz bulgulara göre toplanan yerel buğday popülasyonlarına ait en düşük ve en yüksek değerler; metrekarede başak sayısı için 130,7 – 625,7 adet, bitki boyu için 73,7- 102,7 cm, başak boyu için 5,1 – 11,1 cm, başakta başakçık sayısı için 10,1 – 18,8 adet, tane verimi için 12,3 – 450 kg/da toplam verim için 58,4 – 1.219,4 kg/da bin tane ağırlığı için 31,9 – 64,2 g, hasat indeksi için %12,6 – 43,7 aralığında değişim göstermiştir. Ayrıca çalışmada incelenen karakterlere ilişkin ortalama, standart sapma ve değişim katsayıları belirlenmiştir. İncelenen karakterler içinde en fazla varyasyon metrekarede başak sayısı, bitki boyu, başak boyu, başakçık sayısı, bin tane ağırlığı, hasat indeksi ve tane veriminde gözlenmiştir.

Anahtar kelimeler: Ekmeklik buğday (*Triticum aestivum* L.), Yerel çeşit, Verim, Verim ögeleri, Augmented deneme deseni

ABSTRACT

This study, which was carried out in Van conditions in 2019-2020, was carried out to compare the grain yield and yield components of different populations of local varieties grown in the Van Lake Basin. In the experiment in which Karasu-90 and Doğu-88 standard wheat varieties were used, 121 wheat populations collected from Van, Muş and Bitlis and consisting of mixtures of local varieties named Karakılıçık, Kırmızı Tir, Beyaz Tir, Kırmızı Kirik, Beyaz Kirik, Hevidi, Toptopik and Geverik were used by the local people. Due to the population size of the experimental material, they show a wide variation in terms of many characteristics. The study was carried out according to the augmented trial design; besides grain yield, plant height, spike length, number of spikes per square meter, thousand-grain weight, total yield and harvest index were examined. The lowest and highest values of the local wheat populations collected according to the findings we obtained as a result of the research; 73.7- 102.7 cm for plant height, 5.1- 11.1 cm for spike length, 10.1- 18.8 for the number of spikelets per spike, 130.7- 625.7 for the number of spikes per square meter, 58.4 – 1.219.4 kg/da for total yield, 12.6 – 43.7 % for harvest index, 12.3 – 450 kg/da for grain yield, 31.9 – 64.2 g for thousand-grain weight has changed. In addition, the mean, standard deviation and coefficients of variation were determined for the characters examined in the study. The most variation among the investigated characters was observed in the number of ears per square meter, plant height, spike length, the number of spikelets per spike, thousand-grain weight, harvest index and grain yield.

Keywords: Bread wheat (*Triticum aestivum* L.), Landrace, Yield, Yield components, Augmented trial design

KİMYASAL GÜBRE VE RİZOBAKTERİ (PGPR) KOMBİNASYONLARININ ARPA ÇEŞİTLERİNDE VERİM VE VERİM ÖZELLİKLERİ ÜZERİNE ETKİLERİ

THE EFFECTS OF CHEMICAL FERTILIZER AND RHISOBACTERIAL (PGPR)
COMBINATIONS ON YIELD AND YIELD PROPERTIES IN BARLEY VARIETIES

Fevzi ALTUNER

*Dr. Öğretim Üyesi Van Yüzüncü Yıl Üniversitesi Gevaş Meslek Yüksekokulu, Bitkisel ve Hayvansal
Üretim, Organik Tarım Programı Van*

*Van Yüzüncü Yıl University Gevaş Vocational School, Crop and Animal Production, Organic
Agriculture Program, Van*

*Asst. Prof. Van Yüzüncü Yıl University Gevaş Vocational School, Crop and Animal Production,
Organic Agriculture Program, Van*

ORCID ID: 0000-0002-2386-2450

Burak ÖZDEMİR

Doktora öğrencisi Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Van

PhD student, Van Yüzüncü Yıl University, Science Sciences Institute, Van

ORCID ID: 0000-0002-7766-4909

Sana JAMAL SALİH

Doktora öğrencisi Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Van

PhD student, Van Yüzüncü Yıl University, Science Sciences Institute, Van

ORCID ID: 0000-0001-9937-1001

Erol ORAL

Doç. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi Tarla Bitkileri Bölümü, Van

Assoc. Professor, Van Yüzüncü Yıl University, Faculty of Agriculture, Department of Field Crops, Van

ORCID ID: 0000-0001-9413-1092

Şadiye DEMİR ATMACA

Doktora öğrencisi Van Yüzüncü Yıl Üniversitesi, Fen Bilimleri Enstitüsü, Van

PhD student, Van Yüzüncü Yıl University, Science Sciences Institute, Van

ORCID ID: 0000-0003-4174-3778

Mehmet ÜLKER

Prof. Dr., Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi Tarla Bitkileri Bölümü, Van

Prof. Dr., Van Yüzüncü Yıl University, Faculty of Agriculture, Department of Field Crops, Van

ORCID ID: 0000-0001-9419-2012

ÖZET

Bu araştırma bazı kimyasal gübre ve bitki büyümesini teşvik eden bakteri (PGPR: *Bacillus megaterium*, *Bacillus subtilis*, *Lactococcus* spp.) kombinasyonlarının beş arpa çeşidinde (Tarm, Beyşehir, Konevi, Karatay ve Kral) verim ve verim özellikleri üzerine etkilerini belirlemek üzere yürütülmüştür. Araştırma 2017-2018 vejetasyon döneminde tesadüf bloklarında bölünmüş parseller deneme desenine göre üç tekerrürlü olarak yürütülmüştür. Araştırmada uygulamaların tane verimi, toplam verim, hasat indeksi,

başaklanma süresi, başak erme süresi, metrekarede başak sayısı, bitki boyu, başakta başakçık sayısı, başakta tane sayısı ve bin tane ağırlıkları üzerine etkileri incelenmiştir.

Buna göre çeşitlerin metrekarede başak sayıları arasında oluşan farklar önemli ($p<0.05$), geriye kalan diğer özellikler arasındaki farklar ise çok önemli ($p<0.01$) seviyede oluşmuştur. Uygulamaların tane verimi, toplam verim başaklanma süresi, bitki boyu ve başakta başakçık sayılarında oluşan ortalama değerler arasındaki farklar çok önemli ($p<0.01$), başakta tane sayıları ortalamaları arasında oluşan farklar ise önemli ($p<0.05$) seviyede gerçekleşmiştir. İnteraksiyonların tane verimi, toplam verim, hasat indeksi, başaklanma süresi ve başak erme süresi üzerindeki etkileri çok önemli ($p<0.01$) seviyede oluşmuştur.

Tarm çeşidi, tane verimi (423 kg/da), toplam verim (1748 kg/da), metrekarede başak sayısı (569.17 adet), başak boyu (17.01) ve bin tane ağırlığı (51.33 g) gibi verilerde en yüksek değerlere sahip olmuştur. Kral çeşidi tane verimi, toplam verim, başak erme süresi, metrekarede başak sayısı, bitki boyu, başak boyu ve bin tane ağırlığında en düşük değerlere sahip olmuştur. 100+B uygulaması (Ekimle birlikte 10 kg/da DAP; İlkbaharda sapa kalkmadan önce 6.2 kg N/da + PGPR) en yüksek tane verimi, toplam verim, başak erme süresi ve bitki boyu değerlerine sahip olmuştur.

Kışlık ekim zamanının PGPR etkisi üzerinde kısıtlayıcı etkiye sahip olduğu, bu nedenle kışlık ekim periyodunda arpa ekilişlerinin daha erken dönemlerde yapılmasının PGPR etkisi üzerinde daha faydalı olacağı belirlenmiştir.

Anahtar Kelimeler: Tahıllar, Bitki büyümesini teşvik edici rizobakteri (PGPR), Kimyasal gübreleme, Verim öğeleri,

ABSTRACT

This research was carried out to determine the effects of some chemical fertilizers and plant growth promoting bacteria (PGPR: *Bacillus megaterium*, *Bacillus subtilis*, *Lactococcus* spp.) combinations on yield and yield components of five barley cultivars (Tarm, Beyşehir, Konevi, Karatay and Kral). The research was carried out according to the randomized blocks in split plot design with three replications in the 2017-2018 vegetation period.

In the research, the effects of the applications on grain yield, total yield, harvest index, spiking time, spike maturation time, number of spike per square meter, plant height, number of spikelets per spike, number of grains per spike and 1000 grain weights were investigated.

Accordingly, the differences between the number of spikes per square meter of the cultivars were significant ($p<0.05$), while the differences between the remaining features were very significant ($p<0.01$). The differences between the average values of the grain yield, total yield, spiking time, plant height and number of spikelets per spike were very significant ($p<0.01$), while the differences between the average number of grains per spike were significant ($p<0.05$). The effects of the interactions on grain yield, total yield, harvest index, spiking time and spike maturation time were very significant ($p<0.01$).

Tarm cultivar had the highest values such as grain yield (423 kg/da), total yield (1748 kg/da), number of spikes per square meter (569.17), spike length (17.01) and 1000 grain weight (51.33 g). Kral cultivar had the lowest values in grain yield, total yield, spike maturation time, number of spike per square meter, plant height, spike length and 1000 grain weight. 100+B application (10 kg/da DAP with sowing; 6.2 kg N/da + PGPR before stepping in spring) had the highest grain yield, total yield, spike maturation time and plant height values.

It has been determined that the winter sowing time has a restrictive effect on the PGPR effect, therefore, barley planting in the early winter sowing period will be more beneficial on the PGPR effect.

Keywords: Cereals, Plant growth promoting rhizobacteria (PGPR), Chemical fertilization, Yield components

INVESTIGATING COLD, HOT AND ALCOHOLIC EXTRACTS OF *LAWSONIA INERMIS* LINN (HENNA) AS CYTOLOGICAL STAINS.

*Halima Saliu Aliu*¹

¹University of Benin, School of Basic Medical Sciences, Department of Medical Laboratory Science, Benin City, Nigeria.

¹ORCID ID: 0000-0002-6049-4546

*Efosa B. Odigie*²

²Department of Medical Laboratory Science, University of Benin, Benin City, Nigeria. Histopathology / Cytopathology

²ORCID ID: <https://orcid.org/0000-0002-1233-0491>

*Agbonluai Richard Ehimigbab*³

³University of Benin, School of Basic Medical Sciences, Department of Anatomy, Benin City, Nigeria.

³ORCID ID: <https://orcid.org/0000-0002-0255-1020>

ABSTRACT

Lawsonia inermis is a shrub or small tree widely cultivated as an ornamental and hedge plant. It is commonly called henna in English, Laali in Yoruba, Lalle in Hausa and Nchanwu in Igbo dialects respectively. It is widely cultivated commercially for the production of henna, which is a dye extracted from its leaves. Haematoxylin has been used extensively as a nuclear counter stain and for the staining of specific intracellular and extracellular substances, as it has also been used in the textile industries, although to a lesser extent. **Objectives:** Haematoxylin has been widely used as both a primary stain and a counter stain in Cytopathology investigation worldwide. However, this study aimed at exploring the staining properties of *Lawsonia inermis* (Henna) as an alternate stain in Cytopathology assessments, the introduction of *Lawsonia inermis* extract as an alternative stain may help to resolve the monopolization in Cytopathology assessments of cells which is of economic benefit to the laboratory and patients at large. **Methods:** leaves of *L.inermis* were dried, grounded, soaked in different solvents, filtered and freeze dried. The different extracts were prepared by substituting Haematoxylin powder in Harris Haematoxylin preparation method. These prepared stains were then used to stain Cytology smears, at different time intervals. **Result:** It was observed that the slides picked-up stain very poorly, the alum mordant did not significantly enhance the staining ability of *L.inermis* extract, as there was also no significant change with the different time intervals. Although during the filtration process of the extract, especially the cold-water extract, stained our nails for about 2 months before finally fading off, therefore, this study suggests that the fault may be from the stain preparation procedure used for the extracts. **Conclusion:** The findings of this study demonstrate that freeze-dried extracts of *L. inermis* is not effective for nuclear staining in cytopathology compared to the conventional Haematoxylin.

Keywords: *L.inermis*, staining, Haematoxylin, cytopathology, Mordant.

EFFECTS OF *Zingiber officinale* RHIZOME EXTRACT ON THE HISTOMORPHOLOGY OF OVARIES AND HORMONAL INDICES OF FEMALE WISTAR RATS

*Chelsea Osayande*¹

¹University of Benin, School of Basic Medical Sciences, Department of Medical Laboratory Science, Benin City, Nigeria.

¹ORCID ID: <https://orcid.org/0000-0002-5762-3263>

*Theophilus Ogie Erameh*²

²Igbinedion University Okada, Department of Medical Laboratory Science, Edo State, Nigeria

²ORCID ID: <https://orcid.org/0000-0002-3015-5615>

ABSTRACT

Zingiber officinale has been used as a spice and herbal medicine over time. Although the effects of ginger on the female reproductive system have been studied, however, its effects on ovarian function have not been fully understood. The aim of this study is to determine the effects of *Zingiber officinale* on the histomorphology of the ovaries of adult female wistar rats. A total of 35 female adult wistar rats weighing 180 to 200g were used for this study. They were distributed into 7 major groups of five rats to their weight respectively. The control group (A) was fed with grower's mash and water. The experimental groups B, C and D (100mg/kg, 200mg/kg and 400mg/kg respectively) were administered the aqueous extract for 1 month while groups E, F and G (100mg/kg, 200mg/kg and 400mg/kg respectively) were administered the aqueous extract for 2 months. The ovary were harvested, immediately fixed in 10% formal saline and analyzed histopathologically. Sections were stained with haematoxylin and 1% eosin stains and examined microscopically. Groups were compared using ANOVA and presented as Mean \pm S.E.M. while P value ≤ 0.05 were significant. The administration of *Z. officinale* extract did not significantly affect the weight the female wistar rats in all doses. Similarly, *Z. officinale* extract did not impact strongly on the hormonal profile parameters in female wistar rats in all doses and throughout the duration of this study. Female wistar rats treated with 400mg/kg *Z. officinale* extract revealed increased extended corpus luteum with visible varying primary unilaminar and secondary multilaminar follicle suggestive of increased folliculogenesis in the 2 months duration. *Z. officinale* extract did not impact strongly on hormonal profile of female rats exposed at varying doses and duration. However it shows morphology (histopathology) changes that is suggestive of increased folliculogenesis. Further studies be conducted on the specific active ingredients of *Z. officinale* extract responsible for the histomorphological changes observed in the ovary of wistar rats.

Keywords: *Zingiber officinale*, histomorphology, Hormonal assay, ovaries and infertility

SURVIVAL OF SUMMER AND WINTER FORM OF THAUMETOPOEA PITYOCAMPA IN THE HIBERNATION PERIOD

Gergana Ivanova Zaemdzhikova

Forest Research Institute – Sofia, Bulgarian Academy of Sciences

*Bulgarian Academy of Sciences, Forest Research Institute, 132 Kliment Ohridski Blvd., Sofia, 1756,
BULGARIA*

ORCID ID: <https://orcid.org/0000-0002-0694-4331>

ABSTRACT

In the present work, the influence of factors affecting the survival of summer and winter form of pine processionary moth (*Thaumetopoea pityocampa*) in the period of hibernation was studied. The investigation was carried out under laboratory conditions at room temperature and natural light. The development of 1224 individuals was observed, of which 708 of the summer form (224 hibernating larvae and 484 cocoons) and 516 larvae of the winter form, collected during processions. In all cocoons of summer form, excavated at the end of winter season, pupae were not found. In the winter form, an average higher parasitism rate by Tachinidae was observed – 10.5% against 0.6% in the summer one. At the same time, in the summer form the mortality caused by entomopathogenic fungi is much higher – av. 35% against 1% in the winter. In both phenological forms, the mortality caused by unknown factors (av. 10.7%) was low, as well as the rate of unemerged pupae (av. 5.3%). Within the summer form, in both hibernating stages, the mortality caused by entomopathogenic fungi was high – av. 27.7% (caterpillars) and 37.4% (prepupae), respectively. However, a significant difference was found in the mortality caused by unknown factors – av. 31.7% (caterpillars) vs. 2.5% (prepupae). In both hibernating stages of summer form, the rates of parasitism and unemerged pupae were negligible.

Keywords: pine processionary moth, phenological forms, survival rate, influencing factors, Bulgaria.

SURFACE MODIFICATION OF POLYPROPYLENE WITH SINGLE POSS MOIETY NANOPARTICLES FOR SUPERHYDROPHOBIC APPLICATIONS

R. Mashhadi^a, B. Akbari^{a}, M. Karimi^b*

^a Department of Life Science Engineering, Faculty of New Sciences and Technologies, University of Tehran, Tehran, 1439957131, Iran

^b Polymerization Engineering Department, Iran Polymer and Petrochemical Institute (IPPI), Tehran, 14965/115, Iran

ABSTRACT

In this study, the surface of medical grade polypropylene was modified by O₂ plasma depositing active COOH groups. These groups were used for reaction with Amine- derivative polyhedral oligomeric silsesquioxane nanostructure. According to this clear and straightforward method, the superhydrophobic surface was achieved. The ATR-FTIR spectrum confirmed the grafting of COOH and polyhedral oligomeric silsesquioxane on the polymer. The amount of hydrophobicity was determined by Contact angle measurement. The result showed that, after the plasma, the COOH group was deposited on the polymer, and polyhedral oligomeric silsesquioxane grafted after a chemical reaction. As a result, the contact angle of the surface became 153°, which refers to the superhydrophobicity of the surface.

Keywords: polypropylene, superhydrophobic, polyhedral oligomeric silsesquioxane, Contact angle.

IN VIVO AND IN VITRO CYTOGENETIC ANALYSIS OF *ROSA ALBA* L. HYDROSOL

***Tsvetelina Gerasimova*¹**

¹*Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria*

¹<https://orcid.org/0000-0002-5661-9721>

***Gabriele Jovtchev*²**

²*Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria.*

²<https://orcid.org/0000-0002-0170-4718>

***Svetla Gateva*³**

³*Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria.*

<https://orcid.org/0000-0002-6567-831X>

***Tsveta Angelova*⁴**

⁴*Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria.*

***Alexander Stankov*⁵**

⁵*Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria.*

***Margarita Topashka*⁶**

⁶*Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria.*

<https://orcid.org/0000-0002-7585-1673>

***Ana Dobрева*⁷**

⁷*Institute for Roses and Aromatic Plants, Kazanlak, Bulgaria*

<https://orcid.org/0000-0002-4241-9817>

***Milka Mileva*⁸**

⁸*The Stephan Angeloff Institute of Microbiology, Bulgarian Academy of Sciences, Sofia, Bulgaria*

<https://orcid.org/0000-0002-3218-4487>

ABSTRACT

The Bulgarian *Rosa alba* L. is known for its extremely fine essential oil, used in perfumery. Along with the oil, hydrosol is another valuable product obtained after rose oil water-steam distillation process. The hydrosol is also widely used in cosmetics. Regardless its widespread use in our everyday live, little scientific researches exist considering cytotoxic and genotoxic activity of hydrosols. This fact set our goal that is to perform cytogenetic analyzes and to study these effects. To fulfill this purpose mitotic index and nuclear division index were used as endpoints for cytotoxicity. The genotoxicity was studied by analysis of chromosomal aberrations and micronuclei formation. The study was conducted on a complex of *in vivo* (barley and ICR mice) and *in vitro* (human lymphocytes) test-systems. Concentrations of 6, 11, 14 and 20% were applied to higher plant and lymphocyte cells for 1 and 4 hours, and to laboratory mice - 11 and 20%, respectively. The obtained effects varied in the test-systems and concentrations applied. Rose hydrosol does not show any cytotoxic effect in barley, whereas a low cytotoxicity has been described in mice bone marrow cells and human lymphocytes at all concentrations compared to the untreated control. The hydrosol exhibited low, concentration-dependent, statistically significant genotoxic/clastogenic effect compared to the untreated controls assessed by chromosome



aberrations and micronuclei in all test-systems. The human lymphocytes were the most sensitive to the hydrosol and the level of chromosome injuries was duration of treatment dependent. The cytogenetical analysis showed that cytotoxic effect of hydrosol is much weaker than that of the mutagen N-methyl N-nitro N-nitrosoguanidine in barley and lymphocytes, while the level of the mitotic index in laboratory mice was close to those treated with the experimental mutagen. The genotoxic effect of all tested hydrosol concentrations was significantly lower ($p < 0.001$) than that of the positive controls in all test-systems.

Keywords: *Rosa alba* L. hydrosol, *in vivo* and *in vitro* test-systems, cytotoxicity, genotoxicity.

APPLICATION OF BIOSORBENTS FOR REMOVAL OF NITRITE FROM CONTAMINATED WATER

Subhashish Dey

Department of Civil Engineering, Gudlavalleru Engineering College, Andhra Pradesh, India

ABSTRACT

In rural India the contamination of water by nitrite is profound. Cost-effective and safe water treatment methods are required to remove nitrite from water. A nitrite is regulated in drinking water quality primarily because excess amount can cause methemoglobinemia (also known as blue baby syndrome) disease. The fresh water contains 3% in the worldwide. Human and industrial activities produce and discharge wastes containing nitrite metal into the water resources making them polluted and threatening human health and ecosystem. Conventional methods for the removal of nitrite metal ions such as chemical precipitation and membrane filtration are more expensive when treating large amounts of water, inefficient at low concentrations of metal and generate large quantities of sludge and other toxic products that require careful disposal. Bio-sorption is eco-friendly and alternative methods for treatment of wastewater. These methods have advantages over conventional methods because it has a lower cost, easily available and reused. The present work studies the feasibility use of neem leaf, custard apple leaf, guava leaf, mango tree leaf, orange peel and banana peel as a biosorbent in removal of nitrite from contaminated water. The removal efficiency is 100% obtained from this work. The effects of different parameters like contact time, agitation speed, adsorbent dosage, pH and temperature are also studied. Also, the biomass can be modified by physical and chemical treatment before use. The process can be made economical by regenerating and reusing the bio-sorbent after removing the heavy metal.

Keywords: Nitrite, Water, Biosorbents, Regenerating, Removal efficiency and Heavy metals

ROLE OF LACTIC ACID BACTERIA IN FOOD AND HUMAN HEALTH

Nora HAMDAOUI^{1,4}, Yahya ROKNI^{2,3}, Mohamed MOUNCIF⁴, and Mustapha MEZIANE¹*

¹Laboratory for the improvement of agricultural production, biotechnology, and the environment, Department of Biology, Faculty of Sciences, University Mohammed I, Mohammed VI Avenue, BP: 524, 60000 Oujda, Morocco.

²Research unit Bioprocess and Biointerfaces, Laboratory of industrial engineering and surface engineering, National School of Applied Sciences, Sultan MoulaySlimane University, BeniMellal, Morocco.

³Laboratory of Bioresources, Biotechnology, Ethnopharmacology and Health, Faculty of Sciences, Mohammed Premier University, BP 717, Oujda, Morocco

⁴Process Engineering and Food Technologies Departement Institute of Agronomy and Veterinarymedicine (IAV-Hassan II) BP 6202 Rabat, Morocco.

ABSTRACT

This review aims to show the importance of lactic acid bacteria to humans. Lactic acid bacteria (LAB), a group of Gram-positive, cocci, rods that do not produce spores, are non-mobile to produce lactic acid as their primary fermentation product. LAB is used since ancient times for the fermentation of food and dairy items. Today researchers focus their study on the importance of LAB in the food industry, medical health, and substituting chemicals. They are highly beneficial microorganisms for human beings. Their main effects can produce bacteriocins, aromatic compounds, have good antioxidant activity, acidifying power, proteolytic power, antifungal actions, antiallergic effects, and anti-cancer activity that prevention of colon cancer and preservation of food. Then LAB be can either spontaneous or inoculated starter cultures in milk fermentation. The starter culture of LAB can be either mesophilic or thermophilic. LAB have a role in dairy products to produce acid essential as a preservative agent and generate the flavor of the products. Are play an essential role in forming texture and have applications in the production of gluten-free bakery products through their ability to produce exopolysaccharides. It can be concluded that one must consume food products fermented by LAB due to their preventive effect on human health.

Keywords: Lactic acid bacteria, Food, Human Health, anti-cancer, Antimicrobial.

THE NEXUS OF CIRCULAR ECONOMY AND GREEN ECONOMY APPROACH TOWARD ACHIEVING SUSTAINABILITY

Gideon Oluwaseun Olayioye

Nigeria Immigration Services (NIS), Lagos State, Nigeria

Promise Goodness Adeleye

Department of Agriculture, University of Ilorin P.M.B 1515. Ilorin, Kwara State, Ilorin, Nigeria

Oludare O. Osiboye

School of Sciences, Tai Solarin College of Education, Omu-Ijebu, Ogun State, Nigeria

Aderemi Timothy Adeleye

Dalian Institute of Chemical Physics, Chinese Academy of Sciences (CAS), Dalian, China

ORCID ID: 0000 0003 0103 5419

ABSTRACT

Sustainable development requires strategic keys to accomplish its targets. Such pathways are circular economy (CE) and green innovation strategies. The experts have recently reported that both circular economy and green economy strategies are practicable systematic options towards achieving sustainable development. Incorporation of green innovation and circular economy are being proposed to tackle urgent problems of environmental degradation and resource scarcity with responsible production and consumption as further stated in SDG-12. As claimed by the United States Environmental Protection Agency (EPA), sustainable manufacturing describes the “environmentally-sound processes” that a business chooses to operate and function. Such processes include using non-polluting products, conserving the energy produced by natural resources, and following safe production protocols for employees and consumers. By following the specific targets and sustainable development goals set by the UN, sustainable production can be obtained and carried out through all levels of business. In view of this Circular economy and green innovation employ 3R principles approach (3R-means R1-reduce, R2-reuse and R3-recycle materials). The principles account for a circular system where all materials are recycled, all energy is derived from renewables; activities support and rebuild the ecosystem and support human health and a healthy society and resources are used to generate value. This study provides understanding and principles of circular economy and green economy toward achieving sustainability.

Keywords: Circular economy, Green economy, sustainability, Environment, Pollution

**SYSTEMATIC REVIEWS ON GLOBAL CLIMATE CHANGE IMPACTS,
ENVIRONMENTAL RISKS & 2030 SUSTAINABLE AGENDA**

Gideon Oluwaseun Olayioye

Nigeria Immigration Services (NIS), Lagos State, Nigeria

Promise Goodness Adeleye

Department of Agriculture, University of Ilorin P.M.B 1515. Ilorin, Kwara State, Ilorin, Nigeria

Oludare O. Osiboye

School of Sciences, Tai Solarin College of Education, Omu-Ijebu, Ogun State, Nigeria

Aderemi Timothy Adeleye

Dalian Institute of Chemical Physics, Chinese Academy of Sciences (CAS), Dalian, China

ORCID ID: 0000 0003 0103 5419

ABSTRACT

SDG-13 is on climate action. This is one of the major global issues and aspect that demands action in order to keep the ecological sphere healthy. Therefore, achievement of the SDGs necessitates an ambitious climate agreement. The major important decisions that were taken both at UNFCCC COP20 in Lima and COP21 in Paris will really leave remarkable footprint on Sustainable global development by 2030 the target deadline. A high-ambition agreement that aims to limit global warming to 2°C by 2100 is key and needs to be embraced and worked upon in order to be able to achieve the best over via SDGs globally. The climate agreement is unlikely to impact global warming or the frequency and severity of weather-related disasters in the period up to 2030; it will, however, play a significant role thereafter. With positive steps on SDG-13, a high-ambition climate agreement can provide a clear policy framework and the legal basis for action on climate change, incentivise international cooperation, and mobilize additional finance and resources for mitigation and adaptation activities that support climate compatible development. Therefore, this works is dedicated to systematic reviews on global climate change to assess its impacts on human and environments. Moreover, the environmental risks & 2030 Sustainable Agenda were equally assessed with recommended solutions. Ambitious SDGs will promote national policies that will underpin the delivery of decarbonization pathways to achieve a high-ambition climate agreement

Keywords: Mitigation, Climate change, Sustainable goals, Environment, Risks and Impacts

HIGHLY SUSTAINABLE HYDROPHOBICALLY ASSOCIATED DOUBLE NETWORK HYDROGELS AS ADVANCED FLEXIBLE STRAIN SENSORS

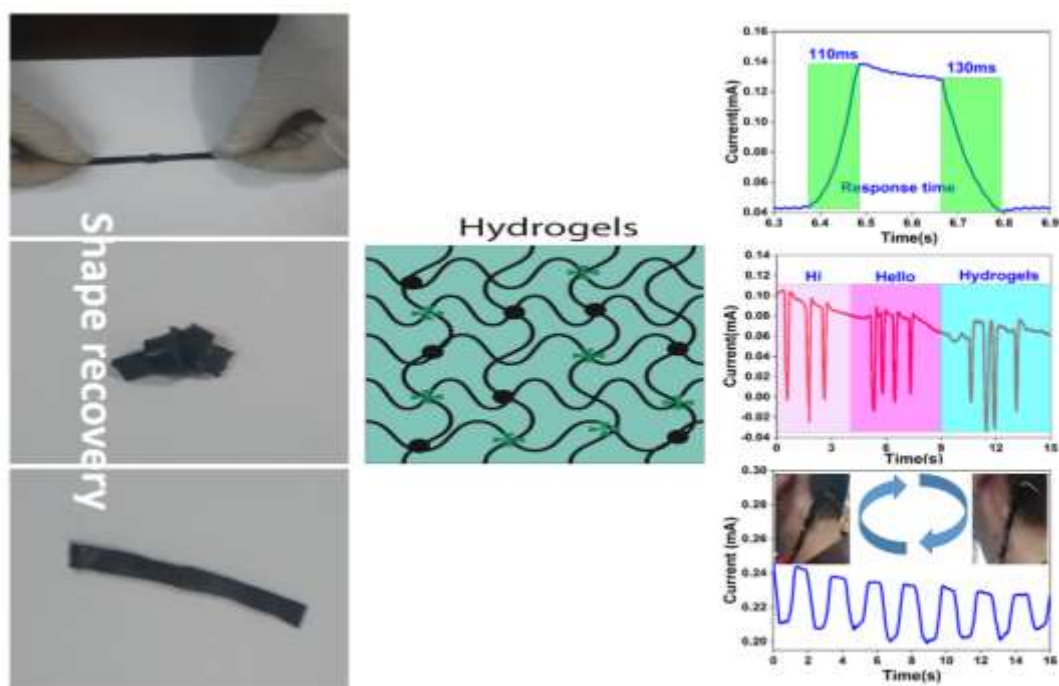
Mansoor Khan and Luqman Ali Shah

*Polymer Lab 108, National Centre of Excellence in Physical Chemistry, University Of Peshawar, KPK
 Pakistan*

ABSTRACT

In the recent era, the hydrogels based strain sensor attract the attention of researchers worldwide and could be widely applied in human machines interfaces, monitoring of human health and soft robotics. However, producing a good strain sensor with high mechanical properties, low hysteresis energy, shape recovery, quick response and long-range strain sensitivity is still a challenging job. To respond to these requirements, multifunctional dual crosslinked hydrogels were developed using one pot free radical polymerization, the hydrogels were consist of lauryl methacrylate, acrylamide, and acid functionalized multiwall carbon nanotubes (A-MWCNTs). Hydrophobic interactions and hydrogen bonding keep the integrity of the network. Due to the dual crosslinking, the synthesized hydrogels display outstanding mechanical performance (high fracture stress, strain, toughness). In shape recovery, the materials even resist the knot and recover their original shape after compression under an enormous load for a long time without leaking water. The low hysteresis energy of 11.57 kJm^{-3} makes it a suitable candidate for strain sensing with high sensitivity ($\text{GF} = 6.5$ at 500% strain) to monitor different human motions (wrist, neck, neck twisting, finger motion at different angles) including repose to different speaking words and swallowing. Similarly, due to its good mechanical properties, the cyclic stability was monitored up to 300 cycles and still, the hydrogel was stable, with a fastest response time of less than 130ms. Our prepared hydrogels not only be used to develop more sensitive strain sensors to monitor human health issues but they can also be used in wearable electronic devices where strain sensing is required.

Graphically Abstract



AN EFFICIENT LEAD FREE PEROVSKITE BASED SOLAR CELL SIMULATED USING SCAPS-1D

Mohammed ElSaid SARHANI, Mohamed Abdelilah FADLA*, Mohamed Lamine BELKHIR, Bachir BENTRIA, Tahar DAHAME*

Laboratoire de physique des matériaux, Université Amar Telidji de Laghouat; BP 37G Laghouat 03000, Algeria.

ABSTRACT

Lead based perovskite materials are commonly used in the PSC, such as methylammonium and formamidinium lead halide solar cells. The best power conversion efficiency of approximately 25% has been achieved for the lead halide solar cells with MA-PbI₃ as active layer. But, presence of toxic heavy metal like lead associated over whole lifecycle of perovskite solar cells (PSCs) is the major concern from environment perspective. Fortunately, various type of less toxic cations such as Sn, Bi, Ti, Sb and Ge have demonstrated as a substitute of lead cation in PSCs. Recent implementation of formamidinium tin iodide and methylammonium tin iodide have open up the way towards non-toxic PSCs. In 2020 a 14.03 % power conversion efficiency obtained by Abdelaziz et al. in simulation study of formadinum tin iodide based solar cell.

The main objective behind this present research work is to make a comparison between lead halide and lead-free perovskite solar cells simulated using SCAPS-1D simulator. The simulation executed in the same environment of T=300K and no schunt and no series resistance also the same ETL and HTL with the same optimum thickness of them. The comparison lights the characteristics of the different perovskite material, which are MA-PbI₃, FA-PbI₃, MA-SnI₃, and FA-SnI₃. results obtained that tin very good substituent for the lead from all sides, and the lead-free device is better performant and less toxicity.

Keywords: PSC, perovskite, simulation, photovoltaic energy, SCAPS



MOUNTAINS SPEAK LOUDER THAN WORDS

Dr. A.R.Ershadi

ABSTRACT

Words are born and may die sooner or later, but mountains stand still and firm for milliard years in history and geography. Azerbaijan land and history is attached to its mountains. For any reason your home and territory cannot be encircled and called a new home within the old one. Historically, all references refer to Karabagh as an enclave (surrounded) region in the main land of Azerbaijan. Why and how? The history of colonialism and geopolitical considerations of the world and regional powers in the past are behind it. After the collapse of Russian empire under the Nicholas II, the Soviet Union created the Nagorno-Karabakh Autonomous Region **within Azerbaijan** in 1924. Its only overland access route to Armenia is via the 5 km wide so-called **Lachin corridor** with all remaining parts hugged by the Mother land Azerbaijan. Karabagh is part of Azerbaijan and its injured part will remain an inseparable part of the mother land forever .

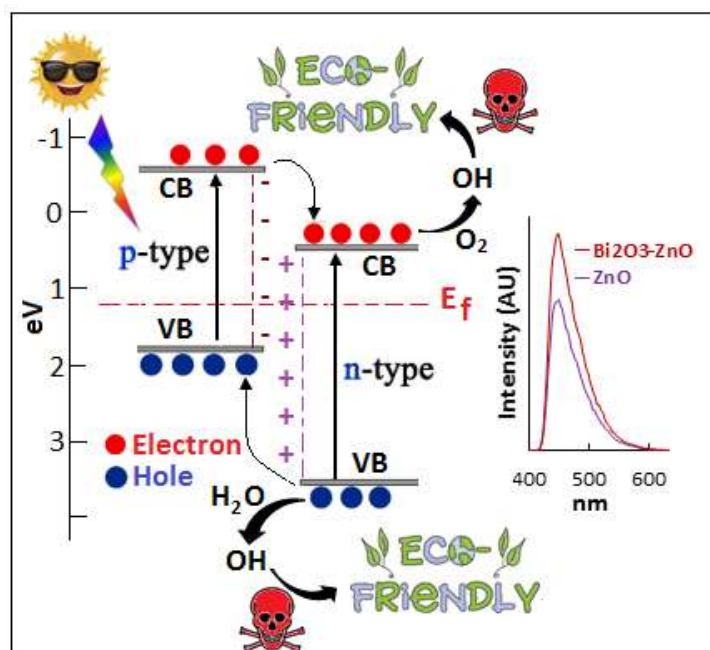
DEVELOPMENT OF Bi₂O₃-ZnO HETEROSTRUCTURE FOR ENHANCED PHOTODEGRADATION OF RHODAMINE B AND REACTIVE YELLOW DYES

Muhammad Saeed, Misbah Yasin, Majid Muneer, Muhammad Usman*

Department of Chemistry, Government College University Faisalabad, Pakistan

ABSTRACT

Semiconductor based photocatalysis is one of the effective techniques of AOPs for environmental remediation. In present work, the development of an efficient photocatalyst formed by coupling of p-type Bi₂O₃ and n-type ZnO is reported. The Bi₂O₃-ZnO heterostructures with 5, 10 and 15% Bi₂O₃ were synthesized by co-precipitation method. The prepared heterostructures were characterized by various advanced techniques including XRD, XPS, UV-Visible spectroscopy, FTIR, SEM and surface area measurement. The prepared ZnO and Bi₂O₃-ZnO heterostructures were tested as photocatalysts for photodegradation of dyes using mixed solution of rhodamine B and reactive yellow dyes. The 5% Bi₂O₃-ZnO heterostructure was found as most efficient photocatalyst with 93 and 91% photodegradation of rhodamine B and reactive yellow dyes, respectively. It was found that incorporation of 5% Bi₂O₃ with ZnO enhanced the photocatalytic activity about 15 times towards photodegradation of dyes.



Mechanism of photodegradation of dyes

ETHNOBOTANICAL UTILISATION OF *BLIGHIA SAPIDA* IN ABEOKUTA METROPOLIS, SOUTH WESTERN NIGERIA

ONASANYA Abimbola Kofoworola, OLALEKAN Olawale Jubril, ELUMALERO Gabriel Olabode, OGUNBELA Adegboyega Ayo, APENAH Maria Olamide, AGBOOLA John Olatunji, AJAYI Olalekan Kehinde*

Forestry Research Institute of Nigeria, Forest Based Rural Resource Centre, Ikija-Ijebu, Ogun State

ABSTRACT

Ackee (*Blighia sapida*) is an important source of raw materials for dye adsorbent, food and medicine, used for landscaping and ornamentals with tremendous export potentials. The consumption of its unripe fruit has caused illness and poisoning which is a major constraint to its usage and popularity and the utilization of indigenous fruit bearing trees such as ackee is fast becoming more unpopular in Nigeria thereby leading to its scarcity, unavailability and inevitable decline in economic viability. Hence, the availability of the tree in the study location and its declining popularity despite its vast usefulness needs to be assessed. The objective of this study is to document the ethnobotanical use of ackee amongst the residents of Abeokuta Metropolis, Southwest Nigeria. The study location is geographically located at latitude 7 0 10'N to 70 15'N and longitude 3 0 17' E to 30 26'E. This study was conducted using structured questionnaire in a completely randomized design with oral interview used to obtain data from 200 respondents. The results show that it is 84% scarce and 11.5% available and 4.5% not sure about its familiarity. Information about its usage is mainly from family and friends at 22%. The fruit is the most consumed part at 43%. The consumption rate is at 22% amongst respondent with 25% confirming that they don't eat it and 53% have no contact at all. The ethnobotanical use of ackee in Abeokuta cuts across all demographic classification as its numerous usage among the locals is not yet fully maximized.

Keywords: Forest conservation, environmental management, Food security, Livelihoods security.

POSSIBILITIES FOR SETTING UP AND DEVELOPING A SOIL SAMPLING APP FOR ANDROID MOBILE DEVICES

Bogdan-Vasile CIORUȚA¹

¹*University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca, Doctoral School,
Calea Mănăștur 3-5, 400372, Cluj-Napoca, Romania;*

¹*ORCID ID: <https://orcid.org/0000-0003-0863-7543>*

Mirela COMAN²

²*University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca, Doctoral School,
Calea Mănăștur 3-5, 400372, Cluj-Napoca, Romania;*

ABSTRACT

In the context of the widespread use of state-of-the-art technology and equipment (smartphones, drones, etc.) it is more than natural that the same thing should happen in agricultural practices. Thus, through this paper, we aim to observe, analyze and describe the extent to which it is possible for technology and equipment to be involved in soil monitoring and protection. Based on our observations, analyses, and experiences, there is a need, more than ever, for the configuration and development of mobile applications for soil monitoring and protection, but also for supporting decisions regarding sustainable land use. Such applications are not available to anyone in order to be created, but they require an efficient collaboration between specialists working in the field of soil sciences, as well as between those working in the field of applied informatics. As such, the application we refer to is an alternative to the classic soil sampling sheet, and can also support obtaining other data from the field (soil color and texture, land use conditions, hydrometeorological conditions of the area, etc). Such a sampling sheet included in a dedicated app can support both the sampling process itself, but can also have special implications in the curricular area of STEM subjects, computer science, software engineering, computer-assisted training, etc.

Keywords: agricultural practices, monitoring, soil protection, applied informatics, soil sampling app.

PRESERVATIVE POTENTIAL OF DATURA METEL SEED OIL ON TRIPLOCHITON SCLEROXYLON (SCHUMANN)

Funmilayo Okanlawon¹

¹Federal College of Forestry, Department of Wood and Paper Technology, Ibadan, Nigeria.

¹ORCID ID: <https://orcid.org/0000-0002-5676-6342>

Olubukola Awotoye²

²Federal College of Forestry, Department of Forestry Technology, Ibadan, Nigeria.

²ORCID ID: <https://orcid.org/0000-0001-8318-8923>

Julius Kayode³

³Federal College of Forestry, Department of Wood and Paper Technology, Ibadan, Nigeria.

³ORCID ID: <https://orcid.org/0000-0003-0145-9537>

Emmanuel Adelusi⁴

⁴Federal College of Forestry, Department of Wood and Paper Technology, Ibadan, Nigeria.

⁴ORCID ID: <https://orcid.org/0000-0002-3352-1289>

ABSTRACT

This experiment was carried out to evaluate the potential of extracted *Daturametel* seed oil as a wood preservative against fungi attack. The oil was extracted from the seed by Soxhlet and wood samples of *Triplochitonscleroxylon* cut to 20x20x60mm. The oil was applied on the samples and the samples exposed to apurely cultured *Sclerotiumrolfsil* (brown rot fungi) and *Pleurotusostreatus*(white rot fungi). The percentage weight loss and absorption rate were determined laid in a 3x7 completely randomized design. The results showed a mean value of 18.29% weight loss for the control while the sample exposed to brown rot fungi had a mean value of 14.11% and that exposed to white rot fungi had a mean value of 12.72% respectively indicating the potential of *Daturametel* seed oil as a bio-preservative against fungal growth especially on *Triplochitonscleroxylon*wood.

Keywords: Datura metel, bio-preservative, *Triplochiton scleroxylon*.

**BIOASSAY OF PLANT EXTRACTS AGAINST *TRIBOLIUM CASTANEUM*
(COLEOPTERA ;TENEBRIONIDAE)**

Ugwu Juliana Amaka

Forestry Research Institute of Nigeria.

Federal College of Forestry Ibadan, Department of Forestry Technology

Ibadan, Oyo state, Nigeria

ORCID ID: <https://orcid.org/0000-0003-1862-6864>

ABSTRACT

Tribolium castaneum (Herbst) (Coleoptera: Tenebrionidae) is a very important insect pests of stored grains causing economic damage to several stored products. Laboratory bioassay of aqueous extracts of six plants; *Azadirachta indica* (Neem), *Xylopi aethiopica* (Grain of selim), *Cymbopogon citratus* (Lemon grass), *Piper guineense* (African black pepper) *Zingiber officinale* (Ginger) and *Ocimum gratissimum* (African basil) were conducted for their contact and residual toxicity on adult *T. castaneum* at ambient temperature of $27\pm 2^{\circ}\text{C}$ and 80% relative humidity. Aqueous extracts of the test plant were applied in crude form at 1ml and 2ml /5adult insects for contact and residual assays respectively on petri dishes lined with filter paper in a Complete Randomized Design (CRD) with three replications. The mortality of adult *T. castaneum* were recorded at 20 minutes intervals for 24hours, data collected were subjected to Analysis of Variance(ANOVA) and significant means were separated using Duncan Multiple Range Test (DMRT). The results showed that aqueous extracts of all the plants evaluated had toxic effects on adult *T.castaneum* ranging from 60.0% - 86.6% and 33.4% - 86.6% mortalities for contact and residual toxicity respectively at 24 hours post application. Highest mortality of 86.6% was observed in *A. indica* and *Z. offiinale* extracts for contact and residual toxicity respectively. The aqueous extracts of plant materials evaluated have shown great potentials against *T. castaneum* under laboratory conditions. Hence, their usage should be encouraged as a viable alternate to synthetic insecticide in preserving stored products against *T. castaneum* infestation to mitigate health and environmental hazards associated with synthetic pesticides application.

Key words: rust –red flour beetle, aqueous extracts, mortality, plant materials

PRESERVATION AND CONSERVATION OF PLANTS FOR TRADITIONAL MEDICINAL USE: THE CASE OF TRADITIONAL HEALING PROFESSION IN THE BAPEDI SOCIETY

Prof. Dr. Dr. Morakeng Edward Kenneth Lebaka

*University of Zululand – KwaDlangezwa Campus; Faculty of Humanities and Social Sciences,
Department of Creative Arts, South Africa*

ORCID NO: 0000-0002-4652-9490

ABSTRACT

Traditional healers who live in Greater Sekhukhune District Municipality are known for their healing arts. They are self-employed and generate some income from consultation by patients, training the trainees (*mathasana*) to become traditional healers, and by treating patients for different health-related problems or ailments. They conserve and preserve plants for multiple traditional healing purposes, and the parts that are used include barks, leaves, roots, flowers, and saps. The aim of this paper is to record techniques and methods used by traditional healers in the Bapedi culture for conserving and preserving plants for traditional medicinal use. Therefore, the question raised for this study is: What are the methods and techniques used by Bapedi traditional healers to conserve and preserve plants for traditional medicinal use? Informal interviews, video recordings and photographing the selection of plant material and the drying technique were used to collect data. Secondary sources included published books and Journal articles. The results have shown that plants should not be processed until the identification is certain. It was further observed that drying is a crucial step in preserving collected plant material and many plants will shed seeds during the drying process. It was concluded that to ensure that a specimen retains its colour and does not become brittle or scorched, the moisture must be removed rapidly, and good air circulation will speed up the process.

Keywords: Conservation, preservation, medicinal, traditional healing, healing arts, Bapedi society.

ASSESSMENT OF ANTIBIOTIC USE AMONG POULTRY FARMERS IN ANAMBRA STATE, NIGERIA

Umeakunne, L.

Ifeoma Quinette Anugwa (Nee Irohibe), PhD

Department of Agricultural Extension,

University of Nigeria, Nsukka

ABSTRACT

There is a potential threat to human health resulting from inappropriate antibiotic use in livestock. The study assessed antibiotic use among poultry farmers in Anambra State, Nigeria. Multistage random sampling procedure was used to select 96 respondents for the study. A structured interview schedule was used to collect data. Descriptive and Chi-square statistics was used to analyze data. The mean age of the respondents was 42 years. The mean number of years spent in poultry production was 8 years and the mean flock size 30 birds. Mean income per production circle was N17,445.00 (less than 1USD). All respondents frequently applied antibiotics in poultry production. Tetracycline was the major antibiotic used. Only half of the poultry producers were aware of antibiotic withdrawal periods but none of them observed it due to fear of capital losses. Majority of poultry farmers had no knowledge of the adverse effects of antibiotic residues to public health. The farmers administered the antibiotics were mainly through oral route. Most of the farmers used antibiotics for disease prevention and treatment through oral route of administration. Major benefits of the use of antibiotics were low mortality rate ($M=2.46$), improved egg quality ($M=2.16$), and preventing and reducing the incidence of infectious disease. Major problems associated with use of antibiotics in poultry were high production costs, poor and inadequate extension service and poor knowledge of withdrawal period. There was a significant association ($X^2 = 43.08$; $P = 0.000$) of awareness of withdrawal period with sex. Farmers should be educated on alternative methods of infectious disease management, which would decrease the use of antibiotics.

Keywords: Antibiotics use; Farmers; Human Health; Poultry; Nigeria.

ZINC OXIDE NANOPARTICLES AS A FERTILIZERS TO ENHANCE THE GROWTH PARAMETERS OF PLANTS

Abhishek V. Yadav

*National Centre for Nanoscience and Nanotechnology,
University of Mumbai kalina, Maharashtra*

ABSTRACT

In the present study, we compared the effects of different concentrations(10mg, 50mg, 100mg, 150mg, 200mg) of zinc oxide nanoparticles (ZnO NPs) as a nanofertilizer on germination, growth and biochemical parameters of *Lablab purpureus*. Till now it is observed that at range of 150mg concentration particles is phytotoxic and adversely affect germination, seedling growth and biochemical parameters of all the test crops. It decreased germination and reduces the stem size. Unlike the concentrations range 10mg, 50mg enhanced germination, seedling growth, pigments, sugar, LRWC, plant height etc. Zinc oxide Nanopartiches can be synthesized by sol-gel methods and further characterizations can be done by UV-vis absorption, X-Ray Diffraction (XRD), Particle size analyzer/ Dynamic Light Scattering (PSA/DLS),etc.

Key words: stress, nanofertilizer, *Lablab purpureus*, PSA,DLS,XRD, electrolyte leakage, etc.

APPLICATION OF THE LANGMUIR AND FREUNDLICH MODELS TO THE ADSORPTION ISOTHERMS OF HEAVY METALS BY PURIFIED CLAY

Nassima RIOUCHI^{1}, Oussama RIOUCHI¹, Mohamed ABOU-SALAMA¹, Mohamed LOUTOU¹*

1- LCM2E, Nador Multidisciplinary Faculty (FPN), Nador, Mohamed 1st University, Morocco

ABSTRACT

Bentonite, which consist essentially of clay minerals belonging to the smectite group, have a wide range of chemical and industrial uses. The structure chemical composition, exchangeable-ion type and small crystal size of smectite are responsible for several properties, including a large chemically active surface area, a high cation-exchange capacity and interlamellar surface having usual hydration characteristics. A sample collected from Zaghouan (North East Tunisia, North Africa) is studied through some physico-chemical methods. Results from X-ray diffraction, chemical analysis, infrared spectroscopy, thermogravimetric analysis (TGA) and differential thermal analysis (DTA), cation exchange capacities, specific and total surfaces, confirm the general smectite character of the sample. The adsorption capacity of this clay was tested out using three metallic ions (Pb^{2+} , Zn^{2+} , Ni^{2+}). The results showed that, in all cases, adsorption can be illustrated by Freundlich or Langmuir isotherms. However, for $10^{-3}M Pb^{2+}$ the low value of the correlation coefficient (R^2) indicated that the experimental data for the adsorption didn't fit to any linear form of the Langmuir equation. Metal adsorbed onto Zaghouan clay varied in the decreasing order $Pb^{2+} > Zn^{2+} > Ni^{2+}$ and fitted in satisfactorily with the uptake capacity. For Pb^{2+} the amount of adsorbed ions remained higher than the CEC (cation exchange capacity) of the clay fraction. This result may be due to adsorption of hydroxy lead complex in addition to sorption of bivalent lead form which explains the high amount of Pb^{2+} removed from aqueous solution.

Keyword: clay minerals, smectite , adsorption ,X-ray diffraction, thermogravimetric analysis (TGA) and differential thermal analysis (DTA),

THE STUDY ON EXTRACTION PROCESS AND ANALYSIS OF COMPONENTS IN ESSENTIAL OILS OBTAINED FROM THE WASTAGE PEELS OF CITRUS FRUITS

*Yusra Khatoon, Saimah Khan**

Department of Chemistry, Integral University, India.

ORCID ID: 0000-0002-6483-4325*

ABSTRACT

The widely produced citrus plant belong to the family Rutaceae are orange, lemon, and sweet lime. The production and uses of these fruits are relatively high over the world. Otherside, the peels of these fruits also cause environmental pollution, as they are mainly discarded as waste. The utilization of waste peel is a point of interest. The waste peel can be used to obtain essential oil for various applications. The extracted essential oil from peels of citrus fruits save environment from contamination. Citrus essential oil (EO) is widely used in food, chemical industry, medical treatment and other fields because of its pleasant aroma, antioxidant properties, and antimicrobial activity. Citrus fruits peel waste can be an effective feedstock for isolation of natural bioactive components such as limonene, a high value- added chemical broadly used for food, pharmaceutical, and cosmetic industrial applications. In this project, the very economical method is used to obtain essential oil from peels of citrus fruits. The extraction is done using Steam distillation and Soxhlet apparatus. In this study, the peels of three fruits namely orange, sweet lime and lemon were extracted using Steam distillation and Soxhlet apparatus and their percentage yield was calculated. From the results, it is concluded that the percentage yield of all three-fruit peel sample using Steam distillation follows the order:

Orange peel EO > Lemon peel EO > Sweet lime peel EO

From the results, it is concluded that the percentage yield of all three-fruit peel sample using Soxhlet extraction follows the order:

Orange peel EO > Sweet lime EO > lemon peel EO

It was also concluded from the result that the %yield of EO obtained using Soxhlet apparatus is more than steam distillation.

POTENTION OF STRIGOLACTONE ANALOG ENCAPSULATED WITH EpCAM APTAMER-LIPOSOME NANOPARTICLE BASED AS TARGETED THERAPY FOR COLORECTAL CANCER

Fathiyatul Mudzkiroh¹

¹*Universitas Islam Indonesia, Faculty of Medicine, Student, Sleman Regency, Indonesia.*

¹ORCID ID: <https://orcid.org/0000-0002-5636-7747>

Dita Juliana Pravita²

²*Universitas Islam Indonesia, Faculty of Medicine, Student, Sleman Regency, Indonesia.*

²ORCID ID: <https://orcid.org/0000-0003-0660-2929>

Shinta Marcelyna³

³*Universitas Islam Indonesia, Faculty of Medicine, Student, Sleman Regency, Indonesia.*

³ORCID ID: <https://orcid.org/0000-0002-7183-2504>

ABSTRACT

Colorectal cancer is cancer that occurs in the colon and rectum and is the 3rd highest case in Indonesia and causes 10% of deaths caused by cancer in western countries. The management of colorectal cancer is currently limited to its low effectiveness and high side effects. This literature review was made to find out the potential of strigolactone analog encapsulated with targeted nanoparticle-based liposomes as a colorectal cancer treatment. Literature study is done by analyzing related sources, the majority come from journals accessed from PubMed, Scencedirect, and Springer. Strigolactone is a phytohormone that has anticancer effects. Various analogs of strigolactone have been developed, which is ST362 has a higher inhibitory effect on cancer cell proliferation than others. In the process, ST362 will induce a decrease in cyclin B1 levels. This is followed by a decrease in Cdc25C, which plays a role in the activation of Cdk1. Both pathways cause slow accumulation of the B1 / Cdk1 cyclin complex so that the cell cycle remains in the G2 phase. This strigolactone analog is encapsulated with (EpCAM-Aptamer)-PEGlated-Liposome, where the combination of the three can increase the release of the drug in its environment gradually and increase its specificity to colorectal cancer cells better than without encapsulation. Based on the synergy that has been found related to the antiproliferation effect of strigolactone analog, the potential for liposomal encapsulation, and its modification; it is hoped that the liposome-modified encapsulated strigolactone analogue could be a new treatment solution for colorectal cancer.

Keywords: colorectal cancer, strigolactone analogue, ST362, EpCAM-Aptamer, dan liposome.

LIPID PROFILE, FREE FATTY ACID, APOLIPOPROTEIN B, APOLIPOPROTEIN B 48, APOLIPOPROTEIN B 100 AND MALONDIALDEHYDE IN *MYCOBACTERIUM TUBERCULOSIS* INFECTED INDIVIDUALS BEFORE, DURING AND AFTER TREATMENT

***Dr. Ihim Augustine Chinedu¹**

Nnamdi Azikiwe University, Awka, Nigeria

ORCID ID: 0000-0001-9991-0714

Prof Onyenekwe Charles Chinedum¹

Nnamdi Azikiwe University, Awka, Nigeria

ORCID ID: 0000-0001-6181-9835

Prof Meludu Samuel Chukwuemeka¹

Nnamdi Azikiwe University, Awka, Nigeria

ORCID ID: 0000-0001-5547-4156

ABSTRACT

Cardiovascular risk prediction is of high importance for clinicians and patients to assess the risk of developing cardiovascular disease (CVD), thereby allowing for preventive interventions to be instituted in those patients. Lipids and malondialdehyde (MDA) status of individuals with active *Mycobacterium tuberculosis* (MTB) infection were determined before, after two, and six month's treatment. This prospective follow-up study recruited 159 tuberculosis (TB) treatment-naïve individuals. They were followed up on a six-month course of anti-tuberculosis therapy (ATT). 120 individuals completed the study. Lipids and malondialdehyde were measured before ATT, at two and six months post-treatment. MTB was detected by microscopy and Genexpert methods. Lipids and malondialdehyde levels were determined spectrophotometrically. A one-way ANOVA test and LSD's post hoc multiple comparisons were used for statistical analyses. The mean levels of FFA, MDA, Apolipoprotein B, and B 48 were significantly lower in individuals with active TB at 2months and 6months on ATT compared with the baseline ($p < 0.05$). The mean levels of Apolipoprotein B100 were significantly higher in individuals with active TB at 2months and 6months following ATT compared with the baseline ($p < 0.05$). These findings suggest reduced levels of MDA, Apo B, and B 48 with increased levels of Apo B100 in individuals with active MTB infection following treatment. The observed significantly raised level of Apo B100, even with treatment, indicates a higher risk of cardiovascular disease. Lipid profile and apo B100 levels significantly increased while malondialdehyde, apolipoproteins B, and B 48 significantly decreased after treatment indicating a good therapeutic response.

Keywords: Cardiovascular Disease, *Mycobacterium tuberculosis*, Lipid Profile, Free Fatty Acid, Apolipoprotein B, Apolipoprotein B 48, Apolipoprotein B 100, Malondialdehyde.

VAN İLİ DAMIZLIK SIĞIR YETİŞTİRİCİLERİ BİRLİĞİNE ÜYE OLAN VE OLMAYAN İŞLETMELERİN SÜT SIĞIRCILIĞI İLE İLGİLİ TEKNİK BİLGİ KAYNAKLARININ BELİRLENMESİ

DETERMINATION OF TECHNICAL INFORMATION SOURCES RELATED TO DAIRY CATTLE BREEDING OF FARMS THAT ARE MEMBERS OF VAN PROVINCE CATTLE BREEDERS ASSOCIATION AND WHICH ARE NOT MEMBERS

Kenan ÇİFTÇİ¹

¹Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Van, Türkiye.

¹ORCID ID: 0000-0002-9545-0455

Mustafa TERİN²

²Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Van, Türkiye.

²ORCID ID: <https://orcid.org/0000-0002-6550-335X>

Melike CEYLAN³

³Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Van, Türkiye.

²ORCID ID: <https://orcid.org/0000-0002-1301-6576>

İbrahim YILDIRIM⁴

⁴Van Yüzüncü Yıl Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Bölümü, Van, Türkiye.

²ORCID ID: <https://orcid.org/0000-0002-0883-8612>

ÖZET

Bu tebliğde Van ili damızlık sığır yetiştiricileri birliğine üye olan ve olmayan süt sığircılığı işletmelerinin süt sığircılığı ile ilgili teknik bilgi sağladıkları kaynakların belirlenmesi amaçlanmıştır. Araştırmanın ana materyali, oransal örnekleme yöntemi kullanılarak hesaplanan 178 adet anketten oluşmaktadır. Örnek hacmi %90 güven aralığı ve % 5 hata payı dikkate alınarak belirlenmiştir. Veriler, damızlık sığır yetiştiricileri birliğine üye olan 89 ve üye olmayan yine 89 üretici ile yüz yüze görüşme yoluyla elde edilmiştir. Çalışma kapsamında damızlık sığır yetiştiricileri birliğine üye olan ve olmayan işletmelerin süt sığircılığı ile ilgili teknik bilgi kaynaklarının karşılaştırmalı olarak analizinde Best-Worst (En iyi - En kötü) analiz tekniğinden yararlanılmıştır.

Araştırma sonuçlarına göre, hem damızlık sığır yetiştiricileri birliğine üye olan ve hem de üye olmayan işletmelerde çiftçiler, süt sığircılığı ile ilgili teknik bilgileri en çok nereden öğreniyorsunuz sorusuna kimseden öğrenmiyorum (var olan bilgim yeterli) cevabını vermiştir. Aynı şekilde, hem damızlık sığır yetiştiricileri birliğine üye olan ve hem de üye olmayan işletmelerde çiftçiler, süt sığircılığı ile ilgili teknik bilgileri en az nereden öğreniyorsunuz sorusuna internetten öğreniyorum cevabını vermiştir. Bu sonuçlara göre, damızlık sığır yetiştiricileri birliğine üye olmanın çiftçilerin süt sığircılığı ile ilgili teknik bilgileri edindikleri kaynaklar açısından bir farklılık ortaya koymadığı söylenebilir. Ayrıca, hem birliğe üye olan hem de üye olmayan çiftçilerin süt sığircılığı ile ilgili teknik bilgiler konusunda kendilerine çok güvendikleri, başka kaynaklara ihtiyaç duymadıkları ve onlara güvenmedikleri sonucunu çıkarmak da mümkündür.

Anahtar Kelimeler: Süt sığircılığı, Damızlık Sığır Yetiştiricileri Birliği, Best-Worst, Van.

ABSTRACT

In this paper, it is aimed to determine the sources from which dairy cattle farms, which are members of the Van breeder's association and which are not, provide technical information about dairy cattle farms.

The main material of the paper consists of 178 questionnaires calculated using the proportional sampling method. The sample size was determined considering the 90% confidence interval and 5% margin of error. The data were obtained through face-to-face interviews with 89 and 89 non-member farmers of the breeder's association. Within the scope of the study, the Best-Worst analysis technique was used in the comparative analysis of the technical information resources related to dairy cattle of the farms that are members of the breeding cattle breeders' association and those that are not.

According to the results of the research, the farmers, both in the dairy cattle breeders' association and non-member associations, answered "I don't learn from anyone" (my existing knowledge is sufficient) to the question of where do you learn the technical information about dairy cattle. In the same way, the farmers, who are both members of the breeding cattle breeders' association and non-member enterprises, answered the question "I learn from the internet" to the question of where do you at least learn technical information about dairy cattle. According to these results, it can be said that being a member of the breeding cattle breeders' association does not make a difference in terms of the sources from which the farmers obtain technical information about dairy cattle. In addition, it is possible to conclude that both the member and non-member farmers are very confident about the technical information about dairy cattle, they do not need and do not trust other sources.

Keywords: Dairy cattle, Cattle Breeders Association, Best-Worst, Van.