



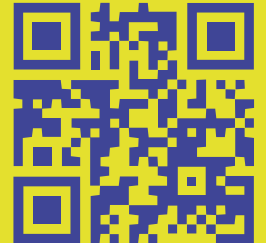
ASMAC

International Congress on Multidisciplinary Approaches in Agricultural Sciences

Abstract Proceedings Book

978-605-9945-42-4

asmac.bayburt.edu.tr



15 - 17 May
2024

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**Bayburt-Türkiye
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Bayburt University Publications

Issue No: 43

ISBN: 978-605-9945-42-4

Publication Date: 26.07.2024



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International Congress on Multidisciplinary Approaches in Agricultural Sciences (ASMAC)



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WELCOME TO ASMAC

Agriculture is one of the most basic and vital activities in human history. This important process from soil to the table includes not only food production but also economic, environmental, and social regulations. In this context, we were very pleased to see you at the "International Congress of Multidisciplinary Approaches in Agricultural Sciences".

Our congress, hosted by Bayburt University between 15-17 May 2024, discussed the key role of agriculture worldwide and the important challenges it faces. This valuable interaction between the participants emphasized that agriculture is a critical set of elements not only in food production but also in terms of sustainability, economy, and social well-being. Our congress was held in a hybrid format this year in order to emphasize the global importance of agriculture more effectively and to provide wider interaction among participants. By offering both face-to-face and online participation opportunities, the congress was made easily accessible to everyone.

The International Congress of Multidisciplinary Approaches in Agricultural Sciences provided participants with an in-depth understanding of the future of the agricultural sector, as well as the opportunity to learn the latest innovations and developments in the sector. This event strengthened the multidisciplinary approach in agriculture by touching on global problems such as climate change and population growth, enabled the discussion of scientifically innovative approaches to current problems, and provided a multidisciplinary perspective on soil, water, plant and animal interactions. It also offered opportunities to meet industry experts and share experiences through interaction and networking opportunities among participants.

The International Congress of Multidisciplinary Approaches in Agricultural Sciences became a valuable information platform for everyone working multidisciplinary in the field of agriculture and offered participants an in-depth perspective on current issues in the sector. We were very happy to see you among us at this important event, which emphasizes that agriculture is not only a sector but also an indispensable source of life for humanity.

Sincerely,

Organizing Committee



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in Agricultural Sciences (ASMAC)**



**Bayburt-Türkiye
15-17 May 2024**

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**Bayburt-Türkiye
15-17 May 2024**





INTERNATIONAL CONGRESS ON MULTIDISCIPLINARY APPROACHES IN AGRICULTURAL SCIENCES

15 - 17 May 2024
Bayburt / TÜRKİYE



15 May 2024

Prof. Dr. Fuat Sezgin Conference Hall (Baberti Külliyesi)

09.30-10.30	REGISTRATION		
10.30-11.00	OPENING SPEECHES		
11.00-11.30	OPENING COCKTAIL		
11.30-13.00	<p>SUGAR INDUSTRY IN TURKEY PANEL</p> <p>Head of Session: Prof. Dr. Vecihi AKSAKAL (Bayburt University)</p>	<p>Prof. Dr. Erdoğan ÖZTÜRK (Atatürk University) Doç. Dr. Okan DEMİR (Atatürk University) Necati KARAVAIZOĞLU (Sukkar Sugar General Manager) Dr. Mahmut TAŞCI (Mezra Agriculture Manager)</p>	
13.00-14.00	LUNCH TIME (Bayburt University Culture Center)		
	Invited Speaker Session-1 (Team Participation Code: pgkac12)		
14.00-16.00	<p>Head of Session: Doç. Dr. Ümit YILDIRIM (Bayburt University)</p>	<p>Prof. Pier Paolo Roggero (Sassari University) Dr. Seifeddine Jomaa (Helmholtz Centre for Environmental Research) Dr. Indiana A. Olbert (Galway University) Dr. Muhammad Usman Farid (Galway University) Assist. Prof. Abdul GHAFOOR (University of Agriculture Faisalabad)</p>	
16.00-16.15	BREAK TIME		
Sessions	AMFİ I	AMFİ II	AMFİ III



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/ Time	Head of Session: Doç. Dr. Aybike KAMILOĞLU		Head of Session: Doç. Dr. Emre TEKCE		Head of Session: Doç. Dr. Yaşar ERDOĞAN	
	Title	Autors	Title	Autors	Title	Autors
16:15-16:30	Exploring the Neurological Effects of COVID-19 and Herbal Interventions: A Comprehensive Review	Ebrahim ALİNİA-AHADANI Zahra ALİZADEH-TARPOEI Sahebe HAJİPOUR Neda HOSSEİNİPOUR Zeliha SELAMOGLU	Effect of gas concentration on decolorization of aqueous solutions containing acid yellow 17 by ozonation process	İbrahim CENGİZ	Devlet Ziraat İşletmeleri Kurumu Ticari İşletmeler Müessesesi Faaliyetleri (1942-1950)	Uğur UÇAR
16:30-16:45	Impact of Pomegranate on Enhancing the Body's Immune System	Ebrahim Alinia-Ahandani Hadi Darzi-Ramandi Jalal Aminrezaei-Astaneh Alimohammad Yavari	Karaciğer Enzimleri ve Beslenmenin Etkisi	Mazhar Burak CAN Aybüke İMİK	Tarımsal Kooperatiflerin İşlevselliklerinin ve Sürdürülebilirliklerinin Tespiti Üzerine Bir Çalışma "Erzurum İli Örneği"	İşıl TAN İrfan Okan GÜLER Fahri YAVUZ
16:45-17:00	Investigating the Effects of Herbal Remedies on Bone and Joint Health	Ebrahim Alinia-Ahandani Jalal Aminrezaei-Astaneh Alimohammad Yavari	Hayvansal Gıda Üretiminde Su Ayak İzinin Değerlendirilmesi	Hacer KAYA Halit MAZLUM	Uses And Economic Importance Of Calendula (Calendula officinalis L.)	Behnam Asgari Lajayer Betül GIDIK Kübra KILIÇ
17:00-17:15	Bayburt İli Ve Çevresindeki İçme Suyu Kaynaklarının Kalitesinin Değerlendirilmesi	Ümit YILDIRIM Onur GÜVEN	Tarımda Dijital Dönüşüm: Blokzincir Teknolojisiyle Şeffaf Ve Sürdürülebilir Gıda Sistemleri	Doruk AYBERKİN	Buğday Üretiminde Lider Ülkelerin 2023-2027 Dönemindeki Üretimlerinin Arama Modeliyle Tahmini	Emine Şeyma ESGİN Ahmet Semih UZUNDUMLU
17:15-17:30	Kimyasal Fertilizlere Çevre Dostu Bir Alternatif: Biyofertilizerler	Recep DUMAN Sinan BAYRAM Ali Savaş BÜLBÜL	Bitki Koruma Başlıklı Bilimsel Araştırmaların Bibliyometrik Analizi: Web Of Science (Wos) Örneği	Emine TAŞ Şükran DERTLİ Betül DURSUNOĞLU	Şeker Pancarı Üretiminde Lider İller ve Türkiye'nin 2023-2027 Dönemindeki Üretimlerinin Arama Modeliyle Tahmini	Şehriban AKAN Ahmet Semih UZUNDUMLU
17:30-17:45			Tıbbi Ve Aromatik Konulu Lisansüstü Tez Çalışmalarının Bibliyometrik Analiz ile Değerlendirilmesi	Emine TAŞ Şükran DERTLİ		

16 MAY 2024

Invited Speaker Session-2 (Team Participation Code: 87eqqh8)

9:00-10:30	<p>Head Of Session: Prof. Dr. Özlem ÖZBEK (Hitit University)</p>	<p>Dr. S. Ravichandran (Lovely Professional University) Dr. Jyoti Rajput (Lovely Professional University) Dr. Muhammad Yasir Naeem (Padua University) Dr. Ebrahim Alinia-Ahandani (Guilan University)</p>
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Sessions / Time	Sessions -1 Team Participation Code: pgkac12		Sessions -2 Team Participation Code: 87eqqh8		Sessions -3 Team Participation Code: qzvqcot	
	Head of Session: Doç. Dr. Didem GÜLERYÜZ		Head of Session: Doç. Dr. Sinan BAYRAM		Head of Session: Doç. Dr. Naciye KUTLU KANTAR	
	Title	Autors	Title	Autors	Title	Autors
10:30-10:45	Sustainable Development Goals Promotes Better Quality of Life	Aarushi Chhibber Zeliha Selamoglu S.Ravichandran	The Utilization Of Citrus Peel Pectins As A Sustainable Fat Replacer In Cookie Formulations	Esmâ Nur YÜREK Sebahat ÖZTEKİN	Atmosferik Soğuk Plazma Teknolojisinin Farklı Meyve Sularının Fitokimyasal Parametreleri Üzerine Etkileri	Flandra SKEJA Cem BALTACIOĞLU
10:45-11:00	Exploring the Influence of a Pomegranate Extract on the functionality of healthy and diseased human gut microbiota	Daniele Giuseppe Buccato Lorenza Francesca De Lellis Alessandro Di Minno Alessandra Baldi Hammad Ullah Balaji Paulraj Paola Cuomo Costanza Valentina Riccioni Adriana Delgado Osorio José Angel Ruffián Henares Maria Daglia	An Overview Of The Natural Compounds Of Plants and Their Effect On Diseases	Sahebe HAJİPOUR Dr ALİNİA-AHANANİ Neda HOSSEİNİPOUR Zahra ALİZADEH-TARPOE Zeliha SELAMOĞLU	Fermente İçeceklerde Biyojen Amin Oluşumu	Ayşe Nur TERZİ Hasan TANGÜLER
11:00-11:15	Alternative water solutions for agricultural purposes: Case study aquifer Nabeul-Hammamet, Tunisia	Masmoudi Jabri K Boubakri A Mansouri, L Bousselmi L Al-Addous M Wellmann J Müller A Akrou H	Ameliorative Activity Of Aster Scaber On İnflammation and Oxidative Stress	Dr Evelyn SABA Arfan YOUSAF Man Hee RHEE	Süt Endüstrisinde Güncel Tüketici Trendleri	Hülya YAMAN
11:15-11:30	A Study Of Demand And Supply Of Beef	Cori Qamara Ari Wibowo Suhardi Dinar Anindiyasari M.I. Haris Nadesta Nazarius	The Effect Of Starter Fertilizer On Production Characteristics Of Broccoli	Maja Sudimac Djordje Moravčević Aleksandar Kostić Ana Vujošević Sandra Vuković Sofija Kilibarda Ivan Tupajic	Glutensiz Beslenmede Bal Kabağı Ununun Önemi	Tomris SEHERİ Cem BALTACIOĞLU
11:30-11:45	The Bacteriophages Therapy of Interdigital Pyoderma Complicated by Cellulitis with Antibiotic-Resistant Pseudomonas aeruginosa in a Dog— Case Report	Mariana Grecu Madalina-Elena Henea, Cristina Mihaela Rîmbu, Catalina Simion, Eusebiu-Viorel Sindilar	Radiational Pollution in Agriculture	Jalal Aminrezaei Astaneh Jalal jahanpanah	Glutensiz Bakliyat Çerezleri	Elif ÇELİK Hasan USLU



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		Gheorghe Solcan				
11:45-12:00	Management of Outsourcing in Food Logistics	Usman Mir KHAN Mesut SELAMOGLU	Prevalence Of Antimicrobial Resistant Enterococci Species At Animal-Human Interface	Muhammad Imran Khan Arfan Yousaf Hamid Irshad Asghar Khan	Yenilebilir Kitosan Film ve Diyatomitin Hamsi'nin (Engraulis Encrasicolus L.) Raf Ömrüne Etkisi	Murat SAKARYA Emre YAVUZER
Sessions / Time	Sessions -4 Team Participation Code: u4nnc10		Sessions -5 Team Participation Code: yanio7r		Sessions -6 Team Participation Code: 5ix5j1l	
	Head of Session: Prof. Dr. Sibel SİLİCİ		Head of Session: Doç. Dr. Volkan GÜL		Head of Session: Doç. Dr. Nuray DEMİR	
	Title	Autors	Title	Autors	Title	Autors
10:30-10:45	Mapping Stakeholder Interests In Baluran National Park's Beef Cattle Enterprise	Dede Aprylasari Siti Azizah Ari Wibowo Muhammad Ihsan Haris Skorn Koonawootrittriron Suhardi	Bitkisel Yağ Ekstraksiyonunda Yeşil Teknikler	Dilşat BOZDOĞAN KONUŞKAN	Hindi Köftelerinde Meşe Palamudu Ununun Kullanım Olanakları	Orhan OZUNLU Haluk ERGEZER
10:45-11:00	Expression Analysis and Comparative Genomics Of Kcs Genes In Sunflower Under Drought Stress	Mahmood-ur-RAHMAN Parwsha ZAİB	Multivariate Statistical Approches Based On Fatty Acid and Trglyceride Composition Of Olive Oils Produced In The Kahramanmaras Region	Abdullah ÇOLAKOĞLU	Effects of Corn and Einkorn Flours on Some Quality Properties of Chicken Burgers	Halime ALP Kübra ÜNAL Esra SABUNCU
11:00-11:15	Promoting Organic Farming Practices: Enhancing Honey Quality and Environmental Sustainability	Vesna K KARAPETKOVSKA HRİSTOVA Zija SAİDOV	State Estimation Of Crop, Pest and Predator Model In An Agricultural System	Meriç ÇETİN	Etlik Piliçlerde Görülen Et Hataları ve Bunlara Sürdürülebilirlik Perspektifinden Çözüm Önerileri	Ahmet YAMAN
11:15-11:30	Propolis And Turmeric As Burn Wound Healing Modulators	Zeeshan Ali H. M. Hashim Qayyum Usama Bin Matloob M. Asif Aziz Arfan Yousaf Mansur Abdullah M. Moaen ud Din Aayesha Riaz Evelyn Saba Imtiaz Ahmad Khan	Bacteriophage Usage For Bacterial Disease Management In Potato	Gülsüm ÜNAL Nida ÜNLÜ Eminur ELÇİ	Farklı Plastikleştiricilerle Elde Edilen Soya Proteini ve Jelatin Bazlı Film Çözeltilerinde Viskozitenin Değişimi	Güneş KOÇ Gülistan OKUTAN Gökhan BORAN
11:30-11:45	Honey Resources Management In Miroslava Village, Iasi County	Marius Gheorghe DOLIŞ Claudia PÂNZARU Alexandru USTUROI Mădălina Alexandra DAVIDESCU	Pollination Of Grape Fruits	Fatma ALAN Aysen Melda ÇOLAK	Çeşitli Proteinlerin Propolis Mikroenkapsülasyonunda Kullanılması	Habibe SELÇUK Ayhan BAŞTÜRK
11:45-12:00	Effect Of Larval Homogenate Developing From Unfertilized Eggs On Infertility	Sibel SİLİCİ	Atık Balık İç Organlarından Elde Edilmiş Yağ İle Sabun Üretimi	Salih YORULMAZ Emre YAVUZER	Balık Jelatini ve Balık Yağı Bazlı Fonksiyonel Jelibon Üretimi	Halil İbrahim ŞİMŞEK Emre YAVUZER Hamza ALAŞAVAR



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						Aslı ŞAN	
Sessions / Time	Sessions -7 Team Participation Code: eq0137t		Sessions -8 Team Participation Code: zt7d1oc		Sessions -9 Team Participation Code: jfw457r		
	Head of Session: Prof. Dr. Şaziye Canan BÖLÜKBAŞI AKTAŞ		Head of Session: Prof. Dr. Sinan AKTAŞ		Head of Session: Prof. Dr. Zeliha SELAMOĞLU		
	Title	Autors	Title	Autors	Title	Autors	
13:30-13:45	Environmental Sustainability Through Rain Water Harvesting	Nikita SHARMA S.RAVICHANDRAN Zeliha SELAMOĞLU	Usage Of Teff and Chia Seed Flour In Gluten Free Chicken Patties: An Alternative Product For Celiac Patients	Nazik Meziyet Dilek Kübra ÜNAL Ahsen Nur TURAN	Fındık ve Fındık Ürünlerinde E-Ticaret Uygulamalarının Değerlendirilmesi	Arzu KARAOSMANOĞLU	
13:45-14:00	Physiology Of Afamin, A Potential Early Indicator Of Metabolic Syndrome	Nurlan AKHMETOV Bülent BAYRAKTAR Emre TEKCE Ali Savaş BÜLBÜL Vecihi AKSAKAL	Kedilerde Feline Panleukopenia Hastalığının Hemogram Ve Biyokimya Parametreleri Üzerine Etkileri	Bensu Çemre ÇELİK Mustafa KOÇKAYA	Tea Tourism and Sustainability In The Context Of Regional Development: The Case Of Rize Province	Gökçen AYDINBAŞ	
14:00-14:15	Photosensitisation Dermatitis In Animals	Gheorghe SOLCAN Alina ANTON	Siyah Asker Sineği (Hermetia illucens) Larva Ununun Kanatlı Beslemede Kullanımı	Esra ÇAĞAN ULUSAN Merve KARAGÖZ	Development Of A Novel Cracker Formulation With Black Chickpea Flour and Black Cumin Seed Meals	Nezahat OLCAY Mustafa Kürşat DEMİR	
14:15-14:30	Challenges and Possible Solutions in Plastic Pollution	S.RAVICHANDRAN Zeliha SELAMOĞLU R.M.MADHUMITHA SRİ	Effect Of Ultrasound Treatment On Some Physicochemical Properties Of Quinoa Milk	Ayşegül BEŞİR ÖZGEÇEN	The Improvement Of Functional Crackers With Lupin Flour and Black Cumin Meal	Elif YAVER	
14:30-14:45	Human Health Effects of E-Waste and its Possible Solutions	S. RAVICHANDRAN Zeliha SELAMOĞLU	Kronik Zayıflığa Sahip Bir Koyunun Karaciğerinde Multiple Kistik Ekinokokkoz ve Ultrasonografik Tanısı	Uğur AYDOĞDU	Elma Diliminin Patlatarak Kurutulması	Cem BALTACIOĞLU Mehmet YETİŞEN Hasan USLU	
14:45-15:00	Qualitative Characteristics Of The Ohrid Belvica (Salmo Ohridanus, Stenbacher 1892) and The Ecological Habitat	Dijana BLAZHEKOVİJK – DİMOVSK Tatjana Dejanoviçj			Çölyak hastalığı, etkileri ve glutensiz beslenme	Beyza Bal Safa KARAMAN	
Sessions / Time	Sessions -10 Team Participation Code: fvq55e0		Sessions -11 Team Participation Code: 1x3ilot		Sessions -12 Team Participation Code: 30ec8j3		
	Head of Session: Prof. Dr. Halil YOLCU		Head of Session: Prof. Dr. Kerim GÜLLAP		Head of Session: Prof. Dr. Ayhan CEYHAN		
	Title	Autors	Title	Autors	Title	Autors	
13:30-13:45	Assessment Of Methane Production Through The Anaerobic Digestion Of Rice Straw From Pakistan	Furqan MUHAYODİN Abdul GHAFOOR Muhammad Usman FARİD Abdul SHABBİ	Bazı Biyolojik Gübre Formülasyonu Uygulamasının Çilek Yetiştiriciliğine Etkileri	Rumeysa BAŞAK Prof. Dr. Rafet Aslantaş	Glauconite in Agriculture and Soil: Properties, Applications, and Impacts	Tulkinzhon GAİPOV Muhammad YASİR Yaira RAKHMETOVA Zeliha SELAMOĞLU	



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13:45-14:00	Microbial Phytase Supplementation: "An Approach For Enhanced Mineral Absorption In Equine Diets"	Qurat ul ain SAJİD Muhammad Umair ASGHAR Barbara KROL Mariusz KORCZYNSKI	Tuz Stresi Altında Yetiştirilen Domates (Solanum lycopersicum L.) Bitkisinde Mikoriza Ve Büyüme Düzenleyicilerin Etkisi	Emine DİRENMEK Yelderem AKHOUNDNEJAD Yahya NAS	Production of dairy products in the republic of Kazakhstan	Kamila NURİLAEVA Zeliha SELAMOĞLU
14:00-14:15	Using Methyl Jasmonate As Elicitor For Calendula Officinalis L. Hairy Roots	Bohdanovych Taisa Matvieieva Nadiia	Farklı Tuzluluk Düzeylerinde Yetiştirilen Çiçeklerde, Glutamin ve Silisyum Uygulamalarının Erkencilik, Verim ve Meyve Kalite Özellikleri Üzerine Etkileri	Nafiye Ünal Eda Elif Yavuzlar İmirci Zafer Üçok	Medicinal Potential of Mango, known for its nutritional properties	Tetiana Krupodorova Mustafa Sevindik İmran Uysal Zeliha Selamoğlu
14:15-14:30	Evaluation of Banana's Medicinal Potential	Falah Saleh Mohammed, Mustafa Sevindik İmran Uysal Zeliha Selamoğlu	Identification Of Orthotospovirus Tomatomaclulae (Tswv) In Tomatoes	Cumali YETİŞ Nida Ünü Eminur Elçi	The Advent Of Genome Edited Crops, Implications, Challenges and Regulatory Bottlenecks	Allah BAKHSH
14:30-14:45	Literature Research on Biological Activities of Cucumis melo	Shahnaz Fathi Mustafa Sevindik İmran Uysal Zeliha Selamoğlu	The Prickly Fig (Opuntia Ficus-Indica L.) Flower Structure	Fatma ALAN Ayşen Melda ÇOLAK	Influence of grape polyphenols on intestinal health and production in pigs	Andrei Claudiu Proca, Loredana Horodincu, Gheorghe Solcan, Carmen Solcan
14:45-15:00	Why staphylococcus aureus is still a major bug of dairy industry worldwide?	Arfan Yousaf, Asghar Khan Sadaf Anees	Doğu Akdeniz Bölgesi Turunçgil Üretim Alanlarında Turunçgil Sarı Damar Açılması Hastalığının Durumu İle İlgili Araştırmalar	Nüket ÖNELGE Büşra FİDANCI AVCI Merve KAZAK	Eriobotrya japonica in terms of Biological Activity	Tetiana Krupodorova Mustafa Sevindik İmran Uysal Zeliha Selamoğlu
15:00-15:15	Pollinator-Friendly Landscapes and Habitat Manipulation for Biodiversity and Pest Suppression	Ammara Riaz Maryam	Doğu Akdeniz Bölgesi Turunçgil Süs Bitkilerinde Citrus Cachexia Viroid (CCaVd)'inin Araştırılması	Nüket ÖNELGE Gabriyella BERİGEL Merve KAZAK	The Use Of Spectroscopy In Halloumi Cheese Studies	Maria Tarapoulouz Ioannis Pashalidis Charis Theocharis
Sessions / Time	Sessions -13 Team Participation Code: bx9bqry		Sessions -14 Team Participation Code: 2hf7alg		Sessions -15 Team Participation Code: 11i9n8o	
	Head of Session: Doç. Dr. Nesrin Ecem BAYRAM		Head of Session: Prof. Dr. Mehmet GÜL		Head of Session: Prof. Dr. Kemal KURT	
	Title	Autors	Title	Autors	Title	Autors
15:15-15:30	Sahil Koşullarına Uygun Sentetik Yonca (Medicago Sativa L.) Genotiplerinin Geliştirilmesi	Fatma BUDAK Ayşe ÖZMAN Aytekin AKSOY Taner AKAR	Dependence Of Laminitis Syndrome In Cow Ration By Structure, In The First 2 Months After Calving	Nexhat Mazreku Avni Robaj	KIWI (Actinidia deliciosa): Biological Activities and General Properties	Shahnaz Fathi Mustafa Sevindik İmran Uysal Zeliha Selamoğlu
15:30-15:45	Glutamin ve Silisyum Uygulamalarının Çiçeklerde Tuzluluk	Nafiye Ünal	Recovery Of Spinal Walking In Paraplegic Dogs Using	Mädälina Elena Henea Eusebiu Viorel Şindilar	Chemical Characterization and Preliminary Evaluation Of The	Lorenza Francesca DE LELLIS



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	Stresi Üzerine Etkilerinin Morfo-fizyolojik Olarak Değerlendirilmesi	Eda Elif Yavuzlar İmirgi Zafer Üçok	Physiotherapy And Supportive Devices To Maintain The Standing Positton	Liviu Cătălin Burtan Iuliana Mihai, Mariana Grecu Alina Anton, Gheorghe Solcan	Efficacy And Tolerability Of A Food Supplement Based On Malva Extract and Sorbitol Against Functional Constipation In Healthy Consumers	Daniele Giuseppe BUCCATO Hammad ULLAH Alessandra BALDI Alessandro DI MÍNNO Roberto SACCHI Paulraj BALAJI Maria DAGLIA
15:45-16:00	Identification Of Bacterial Brown Rot Disease Agent In Potato	Halil Furkan AKKUŞ Nida Ünlu Eminur Elçi	Reproduction Management Of Shagya Arabian Horse Breed In Rădăuți Stud Farm	Claudia PÂNZARU Marius Gheorghe DOLIŞ Mădălina Alexandra DAVIDESCU	Green synthesized silver nanoparticles: Characterization, phytostimulatory impacts, and degradation potential for organic pollutants	Hafiza Komal Naeem Samia Kanwal
16:00-16:15	Van İlinde Bulunan Cuscuta approximata Bab.'nın Moleküler Tanısının Yapılması	Bernur ANLAYIŞ İlhan KAYA TEKBUDAK Mustafa USTA	Occurrence Pattern and Biology of Herbicide-resistant Echinochloa Species in China	Muhammad Zia Ul haq Qiang Sheng	The Influence Of Harvest On The Phytochemical Composition Of Wild Rocket Hybrid Marte F1 Leaves	Sofija Kilibarda Đorđe Moravčević Sandra Vuković Ana Vujošević Aleksandar Ž. Kostić
16:15-16:30	Süs Bitkilerinde Yaprak Bitleri	Elsin GÖZLÜKLÜ Ayşe YEŞİLAYER İlker KEPENEKÇİ	Unlocking the Potential: Whey Protein as a Cornerstone for Functional Food Innovation	Muhammad Yasir NAEEM	Agricultural Electric Vehicles and Lithium-ion Battery Integration	Jalal jahanpanah1 Jalal Aminrezaei Astaneh
16:30-16:45	The Effect Of Using Of Carob Powder, Butter And Olive Oil On Rheological Properties Of Spreadable Chocolate	Rezvan SHİEHZADEH Mehmet Murat KARAOĞLU Yeşim BEDİR Aşlıhan HANOĞLU	Embracing Intelligence: The Rise of Intelligent Food Packaging in the Food Sector	Muhammad Yasir NAEEM	Current Status And Future Prospective Of Vancomycin-Resistant Staphylococcus Aureus (Vrsa)	Saba Fatima Asghar Khan Arfan Yousaf
16:45-17:00	The Effect Of Rehydration Process On The Textural Properties Of Carrot, Radish And Cucumber	Aşlıhan HANOĞLU Yeşim BEDİR Mehmet Murat KARAOĞLU	Nutrient Optimization In Poultry Diets: Strategies For Enhancing Ammino Acid Availability Through Soybean Processing	Muhammad Umair ASGHAR Qurat ul ain SAJİD Martyna Wilk Mariusz Korczyński	Anticancer And Other Biological Activities Of Mushroom Derived Ergosterol Peroxide	Rida Mumtaz Ammara Riaz
Sessions / Time	Sessions -16		Sessions-17		Sessions -18	
	Team Participation Code : um305rf		Team Participation Code: xp3qpvq		Team Participation Code: 9c3iqjb	
	Head of Session: Prof. Dr. Taşkın POLAT		Head of Session: Doç.Dr.Hacer KAYA		Head of Session: Prof. Dr. Memiş ÖZDEMİR	
	Title	Autors	Title	Autors	Title	Autors
15:15-15:30	Acceleration of electrons in a vacuum induced by the interaction of two chirped, tightly focused linearly polarized laser pulses.	Jyoti RAJPUT	Tarımda İş Sağlığı Güvenliği: Türkiye'de Bitkisel Ve Hayvansal Üretim Sektöründe İş Kazaları ve Meslek Hastalıklarının Analizi	Mustafa ÖZDEMİR	Genes Involved In Adaptability Of Goat To Extreme Temperature Variatons	Muhammad Moaen-ud-Din Saba Mehreen Arfan Yousaf Mansur Abdullah Sandhu Imtiaz Ahmad Khan Aayesha Riaz Evelyn Saba



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						Nasir Abbas Hafiz M. Waheed
15:30-15:45	Elucidating the responsiveness of wheat genotypes toward potassium regimens under terminal drought	Umar FAROOQ Muhammad Abu BAKAR ZIA, Muhammad Asad AZEEM Zeshan Hassan	Saf Jips Mineralinin Tarım Toprağına Etkisi	Murat CAMUZCUOĞLU	Identification And Molecular Characterization Of Newcastle Disease Virus Immunogenic Protein Gene	Aayesha Riaz Arfan Yousaf Imtiaz Ahmad Khan Mansoor Abdullah Muhammad Moaen-ud-Din Evelyn Saba
15:45-16:00	Comparison Of Yield Of Domesticated And Wild Allium Ursinum Individuals	Gordanić Stefan Aleksandar Ž. Kostić Đorđe Moravčević Tatjana Marković Sofija Kilibarda Sandra Vuković Jelena Pantović	Aşağı Seyhan Ovası (Mersin-Adana) Sulama Ve Drenaj Kanallarının Su Kalitesi	Can AKBULUT CAMUZCUOĞLU Cüneyt GÜLER	Isolation And Molecular Characterization Of E. Coli O157 Human Isolates From Different Hospitals Of Islamabad And Rawalpindi	Aayesha Riaz Arfan Yousaf Imtiaz Ahmad Khan Mansoor Abdullah Muhammad Moaen-ud-Din Evelyn Saba Syeda Maryam Hussain
16:00-16:15	Influence Of Sowing Time And Irrigation On Production Characteristics Of Sweet Corn	Ivan TUPAJIĆ Đorđe MORAVČEVIĆ Marija ČOSIĆ Biljana ŠEVIĆ Jelena STOJILJKOVIĆ Dragana STEVANOVIĆ Maja SUDIMAC	Developments In The Use Of New Alternative Protein Sources Used In Animal Nutrition	Nurlan AKHMETOV Emre TEKCE Nazan YASULERGEZER	Induced Lambda Cyhalothrin Intoxication In Zebra Fish (Danio Rerio)	H. M. Hashim Qayyum Zeeshan Ali Usama Bin Matloob Mazhar Iqbal Zafar Arfan Yousaf Mansur Abdullah M. Moaen ud Din Aayesha Riaz Evelyn Saba Imtiaz Ahmad Khan
16:15-16:30	Phytochemical Composition Of Genista Ferox Leaves Using Hplc-Tof/Ms Analysis	Ilhem BENCHERCHAR Ratiba MEKKIOU Ibrahim DEMIRTAS Fatih GÜL Serkan KOLDAS Ramdane SEGHIRI	Blue Egg Market and Awareness In Türkiye	Damla SARI	Olfactory Memory And The Impact Of Smell On Behavioral Physiology	Nurlan AKHMETOV Bülent BAYRAKTAR Özkan OFLAZ
16:30-16:45	Phytochemical (eucalyptus oil) management of root knot nematode (Meloidogyne incognita) kofoid and white chit wood in tomato (Lycopersicon esculentum L.)	Ifra Siddique Muhammad Farooq Amina Nabi	Potential Effects Of Microplastics On Animal Products	Nurlan AKHMETOV Vecihi AKSAKAL Emre TEKCE Nazan YASULERGEZER	Biological Activities of Passiflora edulis	Falah Saleh Mohammed Mustafa Sevindik İmran Uysal Zeliha Selamoğlu
16:45-17:00	Biological Control of Root Knot Nematode, Meloidogyne Incognita, In Vitro, Greenhouse and Field in Tomato	Ifra Siddique Muhammad Farooq Amina Nabi			Effect of reducibility on the catalytic activity of NiAl-SPC-derived hydrotalcite in the dry methane reforming process	Zoulikha Abdelsadek Patrick J. Masset
Sessions / Time	AMFİ I		Sessions -19			
	Head of Session: Prof. Dr. Ümmügülüm ERDOĞAN		Team Participation Code : kkob3ja			
			Head of Session: Prof. Dr. Faik KANTAR			



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	Title	Autors	Title	Autors		
15:15-15:30	Almus'da (Tokat) Yetißen Kızılıcıkların (Cornus Mas L.) Bazı Fenolojik, Pomolojik Ve Kimyasal Özelliklerinin Belirlenmesi	Yasin ÖZTÜRK Ümmügülüm ERDOĞAN	Economic Evaluation Of Biotechnological Innovations In The Food Industry	Madalina Alexandra DAVIDESCU Claudia PANZARU Bogdan Iosif DOBOS Alexandru USTUROI Marius Giorgi USTUROI		
15:30-15:45	Effect Of Soy Protein Isolate In Meatball Production On Cooking Loss	Mustafa Onur YÜZER Kübra CİNAR TOPCU Naciye KUTLU KANTAR	Molecular Epidemiology Of Emerging Meca Gene Positive Methicillin-Resistant Staphylococcus Aureus Isolates From Bovine Milk In Pothohar Region, Pakistan: A Cross-Sectional Study	Asghar Khan Aneela Zameer Durrani Arfan Yousaf		
15:45-16:00	Using The Production Capacity Of Medicinal Plants With Emphasis On The Correct Use Of Nano-Fertilizers	Neda HOSSEİNİPOUR Ebrahim Dr ALİNİA-AHADANİ Sahebeh HAJİPOUR Zeliha SELAMOĞLU	The Impact of the Green Deal on the Logistics Sector: Keys to Transformation	Rzgar Farooq RASHID Mesut SELAMOĞLU		
16:00-16:15	Some Novel Technological Applications To Preserve Bee Pollen and Increase Its Bioavailability	Aydın KILIÇ	Guar gum, Ulva lactuca L. biomass, and xanthan gum-based copolymer novel biosorbent for adsorptive removal of acid orange10 water	Hafiza Komal Naeem Samia Kanwal		
16:15-16:30	The Effect Of Radiofrequency Electromagnetic Fields (Rf-Ema) On Some Behaviors Of Honeybees	Yaşar Erdoğan Veli Acar Yahya Yasin Yılmaz Sadık Çıvracı	Proximate Composition Of Non-Conventional Food Plants From An Endangered Plant Biome	Mariana ROCHA Lígia GARCÍA Katya Anaya SCATTONE		
16:30-16:45	Türkiye'de Kırmızı Et Fiyatlarının Değişimi Üzerine Bir Analiz	Mustafa Bora MEŞELİ Vecihi AKSAKAL	Panosteitis In A Bucovina Shepherd Dog. Case Report	G. Solcan, V. Vulpe, Mădălina Elena Henea, R.A. Baisan, Cristina Mihaela Rîmbu, E.V. Şındılar		
16:45-17:00	Türkiye'nin Yeni Lif Bitkisi: Dev Isırgan Otu (Girardinia diversifolia)	Ali Kemal AYAN Büşra TİK Mert ARSLANBAYRAK Beyzanur ERİŞGİN	Use Of Biosensors As A New Approach In Agricultural Analysis Applications	Yahya Yasin Yılmaz Yaşar Erdoğan		
17:00-17:15	Kenevirin Etnobotaniği Kullanım Alanları ve Geleceği	Ali Kemal AYAN				
17:30-18:00	CONGRESS CLOSING MEETING					
17 MAY 2024						
TECHNICAL TRIP (WILL BE HELD IN CASE OF SUFFICIENT PARTICIPANTS)						



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EXPLORING THE NEUROLOGICAL EFFECTS OF COVID-19 AND HERBAL INTERVENTIONS: A COMPREHENSIVE REVIEW

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Abstract

As we know, the COVID-19 pandemic has ushered in an era of unprecedented global health challenges, with respiratory symptoms dominating clinical presentations. However, emerging evidence has shed light on the profound neurological implications of the virus, necessitating a deeper understanding and exploration of potential therapeutic interventions. This paper endeavors to provide a comprehensive review of the reported neurological effects of COVID-19 and investigates the efficacy of herbal interventions in ameliorating these effects. Recent research has uncovered a spectrum of neurological manifestations associated with COVID-19, spanning from cognitive impairment and headaches to more severe conditions such as anosmia, stroke, Guillain-Barré syndrome, and encephalitis. The intricate mechanisms underlying neurological damage involve direct viral invasion, immune-mediated processes, blood-brain barrier disruption, and neuroinflammation, underscoring the multifaceted nature of the disease. In response to the urgent need for effective treatments, there is a burgeoning interest in harnessing the potential of herbal interventions with neuroprotective properties. Key botanical agents, including Ginkgo biloba, curcumin, Bacopa monnieri, ashwagandha, and Rhodiola rosea, have demonstrated promising therapeutic potential in mitigating neurological damage. These botanical compounds exhibit a diverse array of pharmacological activities, including antioxidant, anti-inflammatory, and neurotrophic effects, which contribute to their neuroprotective efficacy. While preliminary evidence suggests the potential benefits of herbal interventions, further clinical research is imperative to validate their safety and efficacy in the context of COVID-19-related neurological complications. Rigorous clinical trials are warranted to elucidate the optimal dosing regimens, potential drug interactions, and long-term effects of herbal remedies, thereby informing evidence-based clinical practice. In conclusion, understanding the neurological effects of COVID-19 and exploring herbal interventions represent crucial endeavors in addressing the holistic impact of the pandemic on human health. Collaboration between researchers, healthcare providers, and traditional healers is essential to advance our knowledge and develop effective strategies for combating COVID-19-related neurological complications.

Keywords: COVID-19, Neurological effects, Herbal interventions, Neuroprotection, Ginkgo biloba, Curcumin, Bacopa monnieri, Ashwagandha, Rhodiola rosea.



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IMPACT OF POMEGRANATE ON ENHANCING THE BODY'S IMMUNE SYSTEM

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Abstract

Background: This abstract aims to investigate the impact of pomegranate on the body's immune system, elucidating its mechanisms of action and potential therapeutic implications. **Materials and Methods:** A comprehensive review of the existing literature was conducted to gather evidence on the effects of pomegranate on immune function. PubMed, Scopus, and Web of Science databases were searched using relevant keywords such as "pomegranate," "immunity," "immunomodulation," and "immune system." Studies including in vitro experiments, animal models, and clinical trials were analyzed to evaluate the immunomodulatory properties of pomegranate and its bioactive constituents. **Results:** Pomegranate contains a diverse array of bioactive compounds, including polyphenols, flavonoids, and ellagitannins, which have been shown to exert immunomodulatory effects. Preclinical studies have demonstrated that pomegranate supplementation can enhance innate and adaptive immune responses by stimulating the activity of immune cells such as macrophages, natural killer cells, and lymphocytes. Furthermore, pomegranate-derived compounds exhibit antioxidant and anti-inflammatory properties, which contribute to their overall immunomodulatory effects. **Conclusion:** The findings from preclinical and clinical studies suggest that pomegranate supplementation may have potential benefits for enhancing immune function and reducing the risk of infections and inflammatory diseases. However, further research is needed to fully elucidate the mechanisms underlying the immunomodulatory effects of pomegranate and to optimize its therapeutic use. Incorporating pomegranate into dietary regimens may represent a promising strategy for promoting immune health and bolstering the body's defenses against various pathogens and diseases.

Keywords: Pomegranate, immune system, immunomodulation, bioactive compounds, health benefits.



INVESTIGATING THE EFFECTS OF HERBAL REMEDIES ON BONE AND JOINT HEALTH

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Abstract

Background: This comprehensive review aims to delve into the multifaceted effects of various herbs on bones and joints, shedding light on their therapeutic mechanisms and potential clinical applications. **Materials and Methods:** Key databases including PubMed, Scopus, and Web of Science were queried using relevant search terms such as "herbal remedies," "bone health," "joint health," and "musculoskeletal disorders." Articles meeting inclusion criteria were critically evaluated to elucidate the molecular mechanisms, pharmacological properties, and therapeutic potential of selected herbs in the context of bone and joint health. **Results:** Herbs rich in bioactive compounds such as flavonoids, polyphenols, and alkaloids have demonstrated promising properties in promoting bone formation, inhibiting bone resorption, and alleviating joint inflammation. Key examples include *Boswellia serrata*, *Curcuma longa*, and *Salvia miltiorrhiza*, which have shown anti-inflammatory, antioxidant, and chondroprotective effects in preclinical and clinical studies. Furthermore, herbal formulations containing a synergistic blend of ingredients have exhibited enhanced efficacy in mitigating bone loss and ameliorating joint pain. **Conclusion:** By regulating key molecular targets such as nuclear factor-kappa B (NF-κB), mitogen-activated protein kinases (MAPKs), and bone morphogenetic proteins (BMPs), certain herbs exert profound effects on cellular processes underlying skeletal health. The synthesis of these findings underscores the potential of herbal interventions for augmenting bone density, preserving joint function, and mitigating the progression of musculoskeletal disorders.

Keywords: Herbal remedies, bone health, joint health, musculoskeletal disorders, therapeutic mechanisms.



BAYBURT İLİ VE ÇEVRESİNDEKİ İÇME SUYU KAYNAKLARININ KALİTESİNİN DEĞERLENDİRİLMESİ

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Özet

Amaç: Bu çalışmada Bayburt şehir merkezi ve yakın çevresinde bulunan su kaynaklarının kalitesi karakterize edilmiştir. Bununla birlikte elde edilen verilerin ulusal ve uluslararası kabul edilen içme suyu standartlarına göre değerlendirilmesi amaçlanmıştır. **Materyal ve Yöntem:** Çalışma alanına ait jeoloji, sayısal yükseklik, eğim, arazi kullanım, toprak ve dağılım haritalarını oluşturmak için Coğrafi Bilgi Sistemi (CBS) yazılımı olan ArcGIS 10.4 programı kullanılmıştır. Arazi çalışmalarında örnekleme noktalarının koordinatlarının tespiti GPS ile yapılmıştır. Toplamda 29 su örneği toplanmış, örneklerle ait fiziksel parametreler (sıcaklık (°C), pH, Eh (mV), çözülmüş oksijen (mg/L), elektriksel iletkenlik (µS/cm)) WTW Multiparametre Portatif cihazı ile yerinde ölçülmüştür. Su örnekleri soğuk zincir ile laboratuvara nakledilerek +4 °C’de muhafaza edilmiştir. Su örneklerinin anyon analizleri dijital büret ve spektrofotometre yöntemleriyle, katyon/iz element derişimleri ise ICP-MS yöntemiyle belirlenmiştir. Suların sınıfını belirlemek amacıyla Piper Diyagramından yararlanılmıştır. Genel su kalitesini sınıflandırmaya ve karakterize etmeye yönelik olan Su Kalitesi İndisi (WQI) ve Ağır Metal Değerlendirme İndisi (HEI) çalışmamızda kullanılmıştır. Türk Standardı (TS 266) ve Dünya Sağlık Örgütü (WHO) içme suyu standartları temel alınarak su örneklerinin fizikokimyasal parametre sonuçları yorumlanmıştır.

Bulgular: Piper diyagramına göre su örneklerinin büyük bir çoğunluğu Ca-Mg-HCO₃⁻ tip sular sınıfına girmektedir. WQI değerlerine göre su örneklerinin dördü “kötü su”, diğerleri “iyi su” sınıfında olup HEI değerlerine göre ise suların tümünde “düşük kirlilik” gözlenmiştir. TS 266 ve WHO standartlarını aşan parametreler sırasıyla NO₃⁻, F, As ve B ile NO₃⁻, F ve As şeklindedir.

Sonuç: Su kaynaklarına ait fizikokimyasal parametrelerin aralıkları şu şekildedir; Sıcaklık: 9,9–22,4 °C, pH: 6,89–8,07, Eh: -62,22–2,7 mV, DO: 4,97–8,91 mg/L, EC: 255–1070 µS/cm, Ca⁺²: 38,3–126,9 ppm, Mg⁺²: 2,3–52,1 ppm, Na⁺: 0,5–117,4 ppm, K⁺: 0,1–89,0 ppm, Cl⁻: 0,1–36,0 ppm, HCO₃⁻: 128,6–555,4 ppm, SO₄⁻²: 6,0–63,0 ppm, NO₃⁻: 0,4–209,6 ppm, NO₂⁻: 0,06–0,18 ppm, F⁻: 0,84–2,14 ppm, Si: 4,4–16,8 ppm, Al: 0,0–62,9 ppb, As: 0,2–27,0 ppb, B: 1,9–1032,8 ppb, Ba: 8,9–183,6 ppb, Br: 10,3–145,5 ppb, Co: 0,02–0,25 ppb, Cr: 0,0–2,7 ppb, Cu: 0,0–1,5 ppb, Fe: 0,00–33,2 ppb, Li: 0,2–28,3 ppb, Mn: 0,03–2,49 ppb, Mo: 0,2–21,9 ppb, Ni: 0,0–6,9 ppb, Sr: 82–1347 ppb, Sb: 0,0–0,4 ppb, Ti: 0,2–2,5 ppb, V: 0,1–10,2 ppb, Zn: 0,0–3,4 ppb.

Anahtar kelimeler: Su kaynağı, su kalitesi, CBS, Bayburt.



HAYVANSAL GIDA ÜRETİMİNDE SU AYAK İZİNİN DEĞERLENDİRİLMESİ

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Özet

Su, insan sağlığının, çevresel sürdürülebilirliğin, endüstriyel üretimin ve gıda güvenliğinin en temel unsurudur. Yerkürede kullanılabilir tatlı su kaynakları toplam su kütlelerinin sadece % 2.5'ini oluşturmaktadır. Dünya nüfusundaki hızlı artış, küresel ısınma, endüstriyel üretimdeki ilerlemeler ve bilinçsiz kullanım etkileriyle sınırlı olan tatlı su kaynakları azalmaktadır. Bu anlamda su kaynaklarının verimli kullanılmasını sağlayan “su ayak izi” kavramı ön plana çıkmaktadır. Su ayak izi, genel anlamıyla bir ürünün üretiminden tüketimine kadarki tüm aşamalarda gerekli olan tatlı su miktarını ifade eder. Literatürdeki ilgili çalışmalarda, Dünya genelindeki tarımsal üretim içerisinde hayvansal ürünlerin üretimi su ayak izinin çok önemli bir kısmını (yaklaşık üçte birini) oluşturduğu bildirilmektedir. Bu çalışmalarda, et üretiminin su ayak izinin süt ve yumurta üretiminden fazla olduğu, et üretimi içerisinde de sığır etinin en yüksek paya sahip olduğu bildirilmiştir. Türkiye’de su ayak izinin sektörel dağılımında tarımsal faaliyetlerin % 89 ile ilk sırada yer alması hayvansal gıda üretiminde su yönetiminin doğru yapılmasının ülkemiz açısından önemini ortaya koymaktadır. Gelecekte, küresel nüfus artışıyla birlikte hayvansal gıda üretiminin artışı ve üretim sistemlerinin gelişmesi muhtemeldir. Bu durumun mevcut tatlı su kaynakları üzerinde ek bir baskı oluşturacağı öngörülmektedir. Bu nedenle hayvansal gıda üretiminin tüm aşamalarında gerekli olan su miktarının ürün bazında bilinmesi suyun doğru yönetimi ve verimli kullanımı açısından oldukça önemlidir. Ayrıca düşük su ayak izine sahip yemlerin kullanılması, meraya dayalı hayvancılığın teşvik edilmesi, gıda israfının önlenmesi ve üretim zincirindeki tüm paydaşların bilinçlendirilmesi hayvansal üretimde su ayak izini azaltan ilave önlemler olarak sıralanabilir. Bu çalışmada su kullanımının yüksek olduğu hayvansal gıda üretiminde su ayak izinin önemi küresel ölçekte ve Türkiye özelinde değerlendirilmiştir.

Anahtar kelimeler: Hayvansal gıda üretimi, Su ayak izi, Su yönetimi, Sığır eti



BİTKİ KORUMA BAŞLIKLİ BİLİMSEL ARAŞTIRMALARIN BİBLİYOMETRİK ANALİZİ: WEB OF SCIENCE (WOS) ÖRNEĞİ

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Özet

Amaç: Son yıllarda bitki koruma konusunda yapılan bilimsel ve akademik çalışma sayılarında artış olmasına rağmen ulusal literatürde ve Web of Science (WoS) veri tabanında bitki koruma konusunun bibliyometrik analiz tekniği ile inceleyen herhangi bir araştırmaya rastlanılmaması dikkat çekmiştir. Buradan yola çıkarak bu çalışmanın temel amacını Web of Science (WoS) veri tabanında yayımlanan bitki koruma başlıklı bilimsel araştırmaların bibliyometrik profilinin ve bibliyometrik ağ bağlantılarının ortaya koyulması oluşturmuştur. **Materyal ve Yöntem:** Web of Science (WoS) veri tabanında Advanced Search Query Builder (gelişmiş arama sorgu oluşturucu) kısmından TI (başlık) seçilerek (TI=(plant*)) AND TI=(protection*) şeklinde tarama yapılmıştır. Elde edilen bilimsel araştırmalara ilişkin veriler Sankey diyagramı, VOSviewer ve kelime bulutu programlarından faydalanılarak bibliyometrik analiz yöntemiyle incelenmiştir. Tüm bu bilgiler ışığında bu araştırma kapsamında araştırmaların yıllara göre yayım- atıf dağılımı, belge türü, WoS dizini, WoS kategorisi, alıntı konusu, araştırma alanı, yayım başlıkları, bilim ağı kategorisi, yayım dili, açık erişim durumu, yayıncıları, atıf analizi, alıntılanan referanslar, bibliyometrik eşleştirme ve ortak yazar-kelime-atıf analizleri gerçekleştirilmiştir. **Bulgular:** WoS'un gelişmiş arama sorgu oluşturucu kısmında bitki koruma başlıklı bilimsel araştırmalara yönelik gerçekleştirilen tarama sonucunda ulaşılan toplam 3,809 yayım incelemeye tabi tutulmuştur. Bu bağlamda WoS veri tabanında bitki koruma başlıklı ilk yayımın 19 çalışma ile 1970 yılında yayımlandığı ve her yıl birbirine paralel olarak araştırma sayılarının arttığı bulgusuna ulaşılmıştır. Bununla birlikte en fazla yayımın 2,458 çalışma ile makale türünde olduğu belirlenmiştir. Web of Science kategorilerinin en fazla bitki bilimleri olduğu bunu sırasıyla tarım bilimi, çevre bilimleri, gıda bilimi teknolojisi gibi bilim ağı kategorilerinin takip ettiği bulgusuna ulaşılmıştır. Aynı zamanda alıntı konularının en fazla mahsul bilimi olduğu bunu sırasıyla entomoloji, bitki patolojisi, herbisistler, pestisitler ve zemin zehirlenmesi gibi konuların takip ettiği buna paralel olarak araştırma bölgelerinin en fazla tarım olduğu bunu sırasıyla bitki bilimleri gibi araştırma bölgelerinin takip ettiği belirlenmiştir. Bitki koruma başlıklı bilimsel araştırmaların en fazla SCI-EXPANDED indexinde yayımlandığı bunu sırasıyla CPCİ-S, ESCİ, SSCİ, BKCI-S, BKCI-SSH, CPCİ-SSH, A&HCI ve IC indexlerinde yayımlandığı bulgusuna ulaşılmıştır. Bununla birlikte yayım dillerinin en fazla İngilizce olduğu belirlenmiştir. Bitki koruma başlığı ile ilgili en fazla Almanya'da çalışma gerçekleştirildiği bunu sırasıyla Amerika Birleşik Devletleri, Çin gibi ülkelerin takip ettiği bulgusuna ulaşılmıştır. **Sonuç:** Sonuç olarak günümüzde bitki koruma konusuna yönelik gerçekleştirilen araştırmaların ivmesinin arttığı ve araştırmacıların ilgisini çeken konu olmaya devam ettiği tespit edilmiştir. Bitki koruma başlıklı bilimsel araştırmaların bibliyometrik profilinin farklı veri tabanlarında incelenmesi önerilmiştir.

Anahtar kelimeler: Bitki, koruma, Web of Science, bibliyometri.



TIBBİ VE AROMATİK KONULU LİSANSÜSTÜ TEZ ÇALIŞMALARININ BİBLİYOMETRİK ANALİZ İLE DEĞERLENDİRİLMESİ

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Özet

Amaç: Bu çalışmada, 1996-2024 yılları arasında Yüksek Öğretim Kurumu Tez Merkezi (Yöktez) veri tabanında yayımlanan tıbbi ve aromatik bitki konulu lisansüstü tez çalışmalarının bibliyometrik analiz yöntemi ile incelenmesi amaçlanmaktadır. Bu araştırma tıbbi ve aromatik bitkilerin bibliyometri bakış açısıyla incelenmesine yönelik yapılan ilk ve özgün bir çalışmadır. Dolayısıyla tıbbi ve aromatik bitkilerin bibliyometrik bakış açısının araştırılması ve belirlenmesi açısından önem taşımaktadır. **Materyal ve Yöntem:** Yüksek Öğretim Kurumu Tez Merkezinin tarama bölümünde “tıbbi ve aromatik bitki” ve “tıbbi aromatik bitki” değişkenleri kelimeleri ile gelişmiş tarama yapılmıştır. Bu kapsamda tıbbi ve aromatik bitki konulu lisansüstü tez çalışmalarının bibliyometrik analiz yöntemi ile değerlendirilmesinde “tez türleri”, “yazarları”, “yılları”, “illeri”, “üniversiteleri”, “enstitüleri”, “anabilim dalları”, “danışman sayıları”, “danışman unvanları”, “konuları”, “sayfa ve konu sayıları”, “yayımlanan dili”, “anahtar kelime sayıları”, “anahtar kelimeleri” olmak üzere toplam 14 soruya cevap aranmıştır. Bu sorulara cevap aranan lisansüstü tez çalışmaları IBM SPSS Statistics 25.0 paket programında, Word Art kelime bulutunda ve Sankey diyagramında analiz edilmiştir. Elde edilen veriler ile frekans ve yüzde analizleri yapılmıştır. Araştırma sonuçları bibliyometri analiz yöntemiyle değerlendirilmiştir. **Bulgular:** Yapılan analiz sonucunda Yöktez veri tabanının gelişmiş taraması üzerinden “tıbbi ve aromatik bitki” ve “tıbbi aromatik bitki” değişkenleri kullanılarak arama yapıldığında 154’ü yüksek lisans (YL), 28’i doktora (DR) olmak üzere toplam 182 lisansüstü teze ulaşılmıştır. Tez çalışmalarından 174’ünün Türkçe, 8’inin İngilizce dilinde hazırlandığı bulgusuna ulaşılmıştır. Tıbbi ve aromatik bitki konusunda 2017-2024 yılları arasında daha fazla çalışma gerçekleştirildiği belirlenmiştir. Lisansüstü tez çalışmalarının en fazla Fen Bilimleri Enstitüsü’nde hazırlandığı bulgusuna ulaşılmıştır. Bununla birlikte tez çalışmalarının en fazla Isparta’da yer alan Süleyman Demirel Üniversitesi bünyesinde hazırlandığı belirlenmiştir. Aynı zamanda tez çalışmalarında en fazla “tıbbi”, “aromatik”, “bitki”, “analiz”, “madde”, “antioksidan”, “kurutma”, “uçucu”, “tarım”, “fesleğen” gibi anahtar kelimelerin kullanıldığı bulgusuna ulaşılmıştır. Lisansüstü tezlerinin en fazla Tarla Bitkileri ve Gıda Mühendisliği Ana Bilim Dallarında hazırlandığı buna paralel olarak tıbbi ve aromatik bitki konulu tez çalışmalarının en fazla Ziraat, Botanik ve Gıda Mühendisliği konusunda hazırlandığı belirlenmiştir. Bununla birlikte lisansüstü tez çalışmalarının en fazla bir konuda hazırlandığı bulgusuna ulaşılmıştır. Tez çalışmalarına en fazla bir akademisyenin danışmanlık yaptığı ve en fazla danışmanlık yapan akademisyen unvanının Profesör Doktor olduğu belirlenmiştir. Aynı zamanda kadın yazarların tıbbi aromatik bitki konusunda daha fazla çalışma yaptığı bulgusuna ulaşılmıştır. **Sonuç:** Sonuç olarak son yıllarda tıbbi aromatik bitkiler ile ilgili yazılmış tez çalışmalarının sayılarında artış meydana geldiği sonucuna ulaşılmıştır. Çalışma sonuçlarının yalnızca YÖKTEZ’den elde edilen verilerin oluşturması nedeniyle tıbbi aromatik bitkilere yönelik yurt dışında hazırlanan tez çalışmalarının incelenmesi önerilmiştir.

Anahtar kelimeler: Bibliyometri, yüksek lisans tezi, doktora tezi, tıbbi ve aromatik bitki.



TARIMSAL KOOPERATİFLERİN İŞLEVSELLİKLERİNİN VE SÜRDÜRÜLEBİLİRLİKLERİNİN TESPİTİ ÜZERİNE BİR ÇALIŞMA “ERZURUM İLİ ÖRNEĞİ”

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Özet

Amaç: Tarım sektöründen geçimini sağlayan insanların; ekonomik, sosyal ve kültürel ihtiyaçlarını karşılayabilmek için ortaklaşa yürüttükleri faaliyetlerin başında kooperatifçilik gelmektedir. Kooperatif üyelerinin ihtiyacının karşılanıp, çeşitli problemlerin çözülebilmesi işlevsellik olarak ifade edilirken, kooperatif faaliyetlerinin devamlılık sağlayabilmesi ise sürdürülebilirlik kavramıyla tanımlanabilir. Bu çalışmada, Erzurum ilindeki tarımsal kalkınma kooperatiflerinin işlevsellikleri ve sürdürülebilirlikleri tespit edilerek, bu kooperatiflerin etkinliğinin artırılması yönünde ihtiyaçların, çözümlerin ve politika önerilerinin oluşturulması amaçlanmıştır. **Materyal ve Yöntem:** Çalışmanın materyali, Erzurum ilinin; orta, güney ve kuzey bölgelerinde bulunan 19 ilçesinde, toplam 95 tarımsal kooperatifle yüz yüze yapılan anket verileridir. Bu verilerle, SPSS istatistik programında deskriptif analizler yapılarak, sonuçlar tablolastırılmıştır. Regresyon analizi için, Limdep paket programında model oluşturulup, probit modeliyle tahmin edilmiştir. Bağımlı değişken olarak işlevsellik ve sürdürülebilirlik ele alınmış, diğer bağımsız değişkenlerin etkisi ölçülmüştür. **Bulgular:** Kooperatif başkanlarının %72,6'sının ilk/orta okul mezunu olduğu, %27,4'ünün lise ve üzeri eğitim aldığı tespit edilmiştir. %62,5'inin tarım dışı bir faaliyette bulunmadığı ve %73,7'sinin ise bir sosyal güvencesi olduğu belirlenmiştir. Kuruluş yılları açısından kooperatiflerin %42,7'si 2010-2023 yılları arasında kurulduğu saptanmıştır. Faaliyet amaçları sırasıyla %81,1 süt sığırcılığı, %11,6 sulama faaliyeti ve %7,4 ile ormancılık işleridir. Kooperatiflerin halihazırda %58,9'unun faal olmadığı, %41,1'inin ise faaliyetlerine devam ettiği tespit edilmiştir. Faal olamayanların; %32,8'i hayvan alımı yapılamadığı için, %17,9'u ortakların anlaşamaması ve bireysellikten vazgeçemedikleri için ve %17,2'si ise bütçe ve sermaye yetersizliği sebebiyle faal olamadıkları tespit edilmiştir. Kooperatiflerin kuruluş amacı doğrultusunda şimdiye kadar başarılı olduğunu düşünenlerin oranı %23,2 iken; başarısız olduğunu düşünenlerin oranı ise %76,8 olarak belirlenmiştir. **Sonuç:** Kooperatiflerin yeteri düzeyde işlevsel olmadığı ve faaliyetlerinin sürdürülebilirlik açısından yetersiz kaldığı tespit edilmiştir. Ortaklarının problemlerini çözebilme hususunda başarılı olması ve maddi açıdan kendi ayakları üzerinde durabilmesi, kooperatiflerin işlevsellik ve sürdürülebilirlik açısından önemini ortaya çıkarmaktadır. Üye çiftçilerin hem üretim hem de ürettiklerini pazarlama aşamasında kooperatiflerinden destek alabilmesi; kazançlarını artırabilmesi ve rekabet gücünün artması noktasında önem arz etmektedir. Bu bağlamda eksikliklerin giderilip, hatalı yönlerin bertaraf edilmesi fayda sağlayacaktır.

Anahtar kelimeler: Tarımsal kooperatifçilik, işlevsellik, sürdürülebilirlik, regresyon analizi.



ŞEKER PANCARI ÜRETİMİNDE LİDER İLLER VE TÜRKİYENİN 2023-2027 DÖNEMİNDEKİ ÜRETİMLERİNİN ARIMA MODELİYLE TAHMİNİ

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Özet

Amaç: Şeker pancarı endüstriyel bir bitki olup rafine edilerek şeker üretiminde kullanılmaktadır. Şeker sadece ekonomik bir ürün olmayıp birçok girdi ve istihdam sağlayan ve katma değeri yüksek bir üründür, hem gıda kaynağı hem de hayvan yemi olarak kullanılması, özellikle insan sağlığında ön plana çıkan şekerin varlığı, şeker pancarını öne çıkarmaktadır. Bu çalışmanın amacı, şeker pancarı üretiminde yer alan başlıca illerde ve Türkiye’de 2023-2027 yılları için şeker pancarı üretim miktarlarını tahmin etmektir. **Materyal ve Yöntem:** Çalışmanın ana materyali ikincil veri kaynağı olan TÜİK’ten elde edilmiştir. Bunun dışında birçok ulusal ve uluslararası veri kaynakları ile beraber birçok makale, kitap bildiri, tez ve rapor bu çalışmada kullanılmıştır. 1991 ile 2023 yılları arasında TÜİK’ten alınan 32 yıllık şeker pancarı üretim verilerini SAS istatistik programı yardımı ile ARIMA istatistik yöntemini kullanarak analiz edilecektir. **Bulgular:** Türkiye genelinde şeker pancarı üretimi sıralamasında önde gelen illeri incelediğimizde ilk üçe giren illerde %28.19 en yüksek oranla Konya, %8 ile ikinci sırada Yozgat ve son olarak %5,9 olarak üçüncü sırada Eskişehir olduğu söylenebilmektedir. **Sonuç:** Bu tahminlerin amacı tarım sektörüne ve şeker pancarı üretimin geleceğe yönelik planların oluşturulmasına büyük katkı sağlamaktır. Şeker fabrikalarının özelleştirilmesinden sonra şeker pancarı üretiminde şeker varlığının gelecek yıllara göre etkisini anlamak ve yapılacak kota uygulamalarının sonuçlarını tahmin etmek amacıyla belirli bir zaman dilimindeki üretim eğilimleri ortaya konacak ve gelecekteki şeker pancarı üretimine ilişkin stratejik bilgiler verilerek önde gelen iller de kişi başına şeker üretiminin yeterli olup olmadığı konusunda bir tahminde bulunulacaktır. Elde edilen sonuçlar doğrultusunda önerilerde bulunulacaktır.

Anahtar kelimeler: Özelleştirme, Şeker pancarı Fabrikası, Şeker pancarı üretimi, Zaman serisi.



SUSTAINABLE DEVELOPMENT GOALS PROMOTES BETTER QUALITY OF LIFE

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Fig.1: Sustainable Development Goals

Abstract: In this 21st century, our human society recognized the value of sustainable development. In this recent technology advancement, sustainable development has become a topic of debate. The Sustainable Development Goal (SDGs) is development which meet the needs of the present generation without compromising the ability of future generations to meet their own needs. A primary objective is to meet basic human needs and desires, such as food, water, clothing, shelter and healthcare which remain inaccessible to many in society. The important aspects of sustainable development are equality between countries, religions and genders to ensure a fair distribution of resources. Sustainable development favors for better quality of life. Sustainable development was first adopted by the United Nations in 2015 as a universal call to action to end poverty and protect our environment. The development must balance society, economy and environment. Overall sustainable development can be achieved through a balance between all these pillars. The main challenges to sustainable development are poverty and unemployment, climate change and water conflicts. At present, India is witnessing major environmental degradation at alarming rates. High pressure is developed upon the land and natural resources to support overpopulation. In this article we focus on strategies for sustainable development that is necessary for survival of our present generation. Also this article explores all the SDG'S, ways to solve those problems and then summing up with a conclusion.

Keywords: Sustainable Development, Climate change, Environment, Sustainable Development Goals, Lifestyle, Development activity.



EXPLORING THE INFLUENCE OF A POMEGRANATE EXTRACT ON THE FUNCTIONALITY OF HEALTHY AND DISEASED HUMAN GUT MICROBIOTA

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Abstract

Background: Pomegranate is known for its beneficial effects on human health mainly due to its polyphenol content. Recent evidence suggests its potential to influence gut microbiota, impacting various health conditions. This study aimed to evaluate the effects of a pomegranate fruit standardized extract on gut microbiota functionality using *in vitro* simulated digestion-fermentation, mimicking human digestive processes. **Material and Methods:** Antioxidant profile and short-chain fatty acids (SCFAs) production were assessed with Folin-Ciocalteu, FRAP, DPPH and ABTS assays, and HPLC-RID analysis, respectively. **Results:** Digestion/fermentation increased pomegranate polyphenol content, but the FRAP, DPPH, and ABTS assays indicated reduced antioxidant and antiradical activities. Otherwise, fermentation positively affected SCFA production by gut microbiota. **Conclusion:** Pomegranate fruit is promising in positively influencing gut health, warranting further investigation as a potential prebiotic.

Keywords: *In vitro* digestion, *In vitro* fermentation, Antioxidant capacity, Gut microbiota, Short-chain fatty acids.



**ALTERNATIVE WATER SOLUTIONS FOR AGRICULTURAL PURPOSES: CASE
STUDY AQUIFER NABEUL-HAMMAMET, TUNISIA**

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Abstract

Background: In water stressed regions, the overexploitation of groundwater in irrigation leads to an increase in salinity which makes it unsuitable for irrigation of some cultures such as citrus trees. Therefore, this research introduces the use of reverse osmosis (RO) for the desalination of brackish groundwater for irrigation purposes in the aquifer Nabeul-Hammamet (N-H), Tunisia taking into consideration both social and economic aspects. **Materials and Methods:** The aquifer N-H is situated in the northeastern of Tunisia and it is characterized by a semiarid to arid climate with a mean annual rainfall of 425 mm (Hajji et al., 2021). Moreover, in 2018, the overexploitation rate was about 670 % which corresponded to an exploited water volume around 10.82 Mm³ (DGRE, 2018). The RO membrane module implemented in the demo-site is an ultra-low-pressure membrane (Vontron Technology Co, Ltd) with an active area of 2.8 m² and a theoretical permeate flow rate of 2.84 m³/d. **Results:** Intensive sampling campaigns were carried out in the southeast and the southwest regions of the aquifer. The average salinity concentrations of the groundwater were 4 g/L ± 1 and 4.4 g/L ± 2.52 in both areas, respectively. The farm selected for the implementation of the RO unit is located in the southeastern part of the aquifer called Bir Rommana. It has a total area of 2000 m², the main culture is citrus trees, requiring approximately 400 m³ of water every 15 days for parcel irrigation. The groundwater quality collected from a well in this farm is the following: conductivity, 4.13 mS/cm; salinity, 2.5 g/L; Mg²⁺, 103.82 mg/L; N-NO₃⁻, 23.38 mg/L and Cl⁻, 631.26 mg/L, whereas the concentrations accepted by the citrus trees according to the technical center of citrus are: 1.5-3 mS/cm, 0.84-1.743 g/L, 7.14-36.45 mg/L, <5 and 141.81-283.62 mg/L, respectively. Hence, the actual quality of the groundwater doesn't fit with the norms of irrigation. On the other hand, the investigation of the RO membranes performance showed a rejection rate (R) of 97.95% and a permeate quality which fits with the norms of the irrigation of citrus trees. However, low conversion rate (Y) of 10% was achieved indicating a significantly limited production capacity for the RO system. The implementation of a pretreatment step using ultrafiltration unit is ongoing with our partners German Jordanian



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University (GJU), TU Berlin (TUB) and Delta Umwelt-Technik (DELTA) in order to improve the water production capacity of the overall RO system. **Conclusion:** The adoption of non-conventional water through the desalination of brackish water using RO system presents a promising option to overcome the salinity problem in the demo-site. However, more work is required for the optimization of the operating conditions of the RO system to improve its treatment capacity.

Keywords: Reverse osmosis, desalination, brackish water, irrigation.



THE UTILIZATION OF CITRUS PEEL PECTINS AS A SUSTAINABLE FAT REPLACER IN COOKIE FORMULATIONS

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Abstract

In this study, the potential use of pectin extracted from citrus peels (grapefruit, lemon, and orange) to be used as a sustainable fat replacer in cookies has been investigated. This has resulted in reduced calorie, healthy, and functional cookie formulations. Pectin is a natural polysaccharide found in fruits and can be used in food as a thickener, stabilizer, and emulsifier due to its water-soluble and gel-forming properties. For this purpose, pectin from grapefruit, lemon, and orange peels was extracted using a conventional extraction method with citric acid solution (pH 2.0) and precipitated with 96% ethyl alcohol, then washed, dried, and powdered. The obtained pectins were compared with commercial pectin through Fourier Transform Infrared Spectroscopy (FTIR) analysis to confirm the pectin structure. Pectin gels prepared with distilled water were incorporated into cookie formulations as butter replacers at 10%, 20%, and 30% levels. Increasing levels of pectin resulted in higher viscosity and less spreading behavior of cookie doughs. Compared to control cookies, cookies with increased pectin levels were lighter in color and had higher volume. This phenomenon was attributed to pectin gels binding free water in the cookie matrix and inhibiting the Maillard reaction. According to sensory analysis results, cookies made with lemon pectin (at 10% and 20%) received the highest scores. Consequently, pectin gel can be used as a butter replacer in cookies up to 30%. The valorization of fruit waste into pectin is an important step in waste management, environmental, and sustainability aspects. Thus, reducing fruit waste can contribute to achieving sustainability goals such as ending hunger, developing healthy products, and utilizing resources more efficiently.

Keywords: pectin, fat replacer, cookie, food waste management, sustainability.



AMELIORATIVE ACTIVITY OF ASTER SCABER ON INFLAMMATION AND OXIDATIVE STRESS

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Abstract

Background: In mountainous regions, wild herbs which can also be edible in nature for humans and animals possess a wide array of biologically diversified properties. It is because of the fact that due to the cold weather of mountains; they are enriched in certain kinds of phytochemicals such as anti-oxidants, anti-inflammatory and many more. One such kind of an herb is Aster scaber (AS). It is a widely cultivated culinary herb in Korean peninsula and used as a side dish in Korean culinary cuisine. **Materials and Methods:** In view of its extensive use in cuisine, we geared to unravel the anti-oxidant and anti-inflammatory effects of AS in murine alveolar macrophage cell line (MH-S). 2, 2'-Azino-bis-3-ethylbenzothiazoline-6-sulfonic acid (ABTS) and 2, 2-diphenyl-1-picryl-hydrazyl-hydrate (DPPH) assays were used to reveal anti-oxidant activities of AS. Anti-inflammatory activity was checked via Nitric oxide assay (NO) and cytotoxicity was confirmed via MTT assay. Expression of pro-inflammatory mediators and cytokines were determined via RT-PCR. **Results:** Results revealed a dose dependent (7.8~ 1,000 µg/mL) inhibition of oxidation by AS 70% ethanol (ASE) extract as compared to Trolox and Ascorbic acid respectively. NO showed a dose dependent decrease (5~ 40 µg/mL) in MH-S cells with AS when stimulated with Coal Fly Ash (CFA). Moreover, this dose for NO reduction was also found to be least cytotoxic for cells as determined by cellular viability (MTT) assay. The gene expression of pro-inflammatory mediators (iNOS and COX-2) and cytokines (IL-6 and IL-1β) and were also dose dependently inhibited by AS in MH-S cells. **Conclusion:** Therefore, in light of these findings, AS exhibited a strong anti-oxidant and anti-inflammatory agent. These results also justify the extensive use of this mountainous herb in culinary practices for beneficial effects on human health.

Keywords: *Aster Scaber*, Inflammation, Nitric oxide, anti-oxidant.



A STUDY OF DEMAND AND SUPPLY OF BEEF

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Abstract

The level of hunger can be reduced by fulfilling the needs of animal protein. One of the sources of animal protein is beef. The equitable consumption of beef among the public hinges on the selling price of beef being a significant factor. The price of beef is determined by the interaction of supply and demand within the beef market itself. However, an imbalance between beef production and consumption can result in unmet needs and price fluctuations. This research aims to achieve two objectives: (1) to identify the factors influencing the demand for beef in East Kalimantan, and (2) to identify the factors influencing the supply of beef in East Kalimantan. Secondary data were collected in a time series format spanning 10 years (from 2012 to 2021). The collected data include beef production, beef consumption rates, beef prices, cattle population, beef income, chicken meat prices, chicken egg prices, Gross Regional Domestic Product (GRDP), and the population of East Kalimantan. Purposive sampling was employed to determine the sample and research location. The data analysis method used was multiple linear regression. The research findings indicate that (1) beef price, chicken meat price, chicken egg price, GRDP per capita at current prices, population, and beef consumption do not significantly influence beef demand in East Kalimantan, and (2) beef price, live cattle price, cattle population, beef income, and beef production do not significantly influence beef supply in East Kalimantan. The information from this study provides valuable insights for stakeholders in cattle farming development.

Keywords: animal protein, beef price, demand, supply, zero hunger.



**THE BACTERIOPHAGES THERAPY OF INTERDIGITAL PYODERMA
COMPLICATED BY CELLULITIS WITH ANTIBIOTIC-RESISTANT *Pseudomonas
aeruginosa* IN A DOG—CASE REPORT**

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Abstract

Pseudomonas aeruginosa is a highly pathogenic bacterium with high pathogenicity, that can cause serious infections in all species and especially in dogs. Treatment of the infection induced by this bacterium can be a challenge considering that some strains have developed resistance to most classes of antimicrobials. The use of bacteriophages to alleviate infections caused by *Pseudomonas aeruginosa* has demonstrated their potential for both internal and external applications. This study aimed to illustrate the treatment with bacteriophages in bacterially complicated skin lesions that do not respond to antimicrobial therapy.

Keywords: bacteriophages; antimicrobials; antibiotic resistance; skin infection; *Pseudomonas aeruginosa*



EXPRESSION ANALYSIS AND COMPARATIVE GENOMICS OF *KCS* GENES IN SUNFLOWER UNDER DROUGHT STRESS

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Abstract

Background: Drought stress is considered as the main abiotic factor which badly affects growth of sunflower plant. Several studies have been carried out to understand the mechanism of drought stress tolerance in plants. *KCS* genes are responsible for wax biosynthesis and reported to be involved in drought stress tolerance. **Materials and Methods:** In this study, comparative genomics and expression profiling of *KCS* genes was done to understand their role in stress mechanism. Evolutionary studies of *KCS* genes were carried out by phylogenetic followed by Synteny analysis. The expression profiling analysis was performed through qPCR and fold expression was recorded. **Results:** Phylogenetic analysis revealed that *KCS* genes were divided into six distinct clades which was further confirmed by Synteny analysis and concluded that *KCS* genes in both species share the same evolutionary origin. Further, they were amplified in sunflower by using gene specific primers. Five genes, i.e. *KCS2*, *KCS4*, *KCS5*, *KCS10* and *KCS18* were successfully amplified in sunflower. Then, sunflower plants were subjected to drought stress and expression profiling of amplified *KCS* genes was carried out by Real Time PCR. All the five genes were up-regulated under drought showing their role in stress conditions; however, the expression level of each gene was varied. Maximum relative expression was found for *KCS4* gene in T1, i.e. 19 fold as compared to control. Total chlorophyll contents were decreased under drought stress while antioxidants like catalase, peroxidase, superoxide dismutase and proline were increased. **Conclusion:** This study concluded that *KCS* genes have role in drought stress tolerance and their expression is significantly up-regulated under stress conditions.

Keywords: Sunflower, wax biosynthesis, drought, gene expression profiling, *KCS* genes



**PROMOTING ORGANIC FARMING PRACTICES: ENHANCING HONEY QUALITY
AND ENVIRONMENTAL SUSTAINABILITY**

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Abstract

The honey industry is experiencing increased interest in organically produced honey due to concerns about environmental sustainability and the potential health benefits associated with organic farming practices. This study investigates and compares the quality parameters, chemical composition, and pesticide residue presence in organically and conventionally produced honey. Samples were collected from apiaries located in the Eastern mountainous region of North Macedonia between 2021 and 2023. A total of 30 samples were collected, from organic and conventional beekeepers.

The samples were sent for analysis to an accredited laboratory in Turkey, where appropriate methods for honey analysis were employed. Quality parameters, such as chemical composition, HMF, pH, and the presence of pesticide residues, were analyzed in accordance with regulations set by the European Commission (2020). The results indicated that all honey samples, regardless of their organic or conventional origin, met the regulatory standards for safety and quality. The chemical composition of the honey, as well as the presence of pesticide residues, were within the permissible limits as prescribed by the Quality Regulation. These findings confirm that beekeeping practices and environmental conditions in the region are conducive to the production of safe and high-quality honey. Although this study represents only the first step in researching organic honey in the region, its results are significant in supporting the sustainability of the honey industry and the growth of organic product consumption.

Keywords: organic honey, quality parameters, pesticide residues, North Macedonia.



PROPOLIS AND TURMERIC AS BURN WOUND HEALING MODULATORS

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Abstract

Skin wound healing is a multifactorial gradual process to retain the integrity of skin. Skin holds a diversified microbial flora which determines its time lapse for the completion of wound healing. To expedite the healing process and to avoid any untoward delay and complication, some healing agents are strongly required to curb all these factors. A huge variety of therapeutics are commercially available nowadays owning different drawbacks i.e., cost, availability, hypersensitivity, antibacterial spectrum, contraindications etc. Therefore, it is the need of hour to explore some conventional ethnobotanical agents, which can facilitate the healing process due to their availability and least harmful effects. For this study, we explored the effectiveness of propolis and turmeric and their combined effects at different time intervals viz 3, 7 and 10 days post wound induction. Both of the agents had been used since ancient times with proven results as reported in previous studies. Propolis, a byproduct in honey collection systems, used by the bees which contains resinous substances to disinfect and protect their hives. When studied its chemical constituents it was found that it contains flavonoids which play crucial role in wound healing process by maintaining the optimum condition at the wound site. It also act as an antioxidant, up-regulating various pathways, which collectively act as healing modulator. The turmeric powder obtained locally was used in the study for wound dressing in the ointment form. We studied their effects in albino rats' model (n=30) divided in to five equal groups of six rats (Group 1: Propolis ointment, Group 2: Turmeric Ointment, Group 3: Propolis + Turmeric Group 4: Positive control with no treatment and Group 5: Negative Control), under optimum native conditions. First degree burn wounds were induced on the dorsum of rats at pre disinfected and shaved areas. The wounds were treated with propolis extract and turmeric ointments separately and in combination twice a day. Afterwards at day 3, 7 and 10 post wound induction, skin biopsies from treated and non-treated groups were obtained for histopathology manifestations. Grossly, healing time was significantly decreased along with reduced wound contraction time, improved scar formation in propolis treated group. While the healing extent was not encouraging in group of alone turmeric



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treated compared with that of propolis alone group. Moreover, propolis and turmeric in combination has revealed significant synergetic healing effects as compared to rest of study groups. Histopathologically, non-significant result were obtained among all treated groups. The sepsis of wound were also monitored in all groups and revealed that propolis and turmeric combined group yielded significant antimicrobial effects compared with treated and non-treated groups during the entire course of study. No untoward systemic effects were observed during the entire study in the all treated groups. Propolis composition greatly varies with the changed geographical locations and related flora hence, altering the constituents accordingly. In the present study we have used a single source of honey propolis obtained from hilly area during blossom of Phulai (*Senegalila modesta*) plant and locally grown turmeric powder. The study results are very promising. Based on the study findings, it is highly recommended to ascertain the healing potential of indigenous propolises obtained from different indigenous plants' blossoms for various types of wound alone and in combination with turmeric.

Keywords: Propolis, Turmeric, Wound modulation, Ointment



THE EFFECT OF STARTER FERTILIZER ON PRODUCTION CHARACTERISTICS OF BROCCOLI

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Abstract

Background: Broccoli (*Brassica oleracea* var. *italica*) is a very popular vegetable species that is characterized by a specific taste and high nutritional value. The flower is used for food, although the other green parts of this plant are also edible. In Serbia, broccoli is produced throughout the year, except for winter. Due to the relatively short growing season, it is a good pre-crop, as well as a subsequent crop. During production, the utilization of applied nutrients is questionable, and therefore their effect on production. **Materials and Methods:** During these studies, the influence of micro granulated starter fertilizer (Super Start NP 10:35 +2% MgO + 5% S +2% Zn, Elixir Zorka, Serbia) on the production characteristics of broccoli was investigated, with the aim of finding the optimal dose its applications. Fertilizer was added to the soil along both sides of the planted plants at a distance of about 10 cm from the roots. In addition to the control in which no starter fertilizer was applied, there were 5 more treatments with doses from 15 to 35 kg/ha. Broccoli variety Parthenon F1 (Sakata Seed) was grown at a density of 28,800 plants/ha. Other agro technical measures were standard (watering, protection). **Results:** Inflorescences were harvested at technological maturity when they reached the appropriate size. The measured values for the width, height and mass of the inflorescence were significantly higher in the varieties with the highest doses of starter fertilizer. The yield behaved in the same way. The width of the inflorescence ranged from 16.37 to 20.63 cm, the height from 12.52 to 14.79 cm, the mass of the inflorescence from 448.7 to 661.4 g, while the yield had values from 10.68 to 15.74 t/ha. **Conclusion:** For all examined parameters, the values obtained at the highest doses of starting fertilization (30 and 35 kg/ha) did not differ statistically significantly. Based on this, it can be concluded that the dose of applied starter fertilizer of 30 kg/ha is optimal in the production of broccoli.

Keywords: starter fertilizer, broccoli, flowering, yield.



International Congress on Multidisciplinary Approaches
in Agricultural Sciences (ASMAC)

Bayburt-Türkiye
15-17 May 2024



RADIATIONAL POLLUTION IN AGRICULTURE

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Abstract

Radiational pollution, also known as radioactive contamination, is the presence of radioactive substances resulting from human activities. In agriculture, this contamination can significantly impact crop production, soil health, and food safety. Radioisotopes play essential roles in various agricultural processes, including plant breeding, soil fertility assessment, pest control, and food preservation. However, responsible use and safety measures are crucial to minimize risks.

Radioisotopes contribute to:

Plant Breeding: Developing high-yielding, disease-resistant crop varieties.

Soil Fertility Assessment: Optimizing nutrient levels and irrigation practices.

Pest Control: Reducing pests without harmful chemicals.

Food Preservation: Extending shelf life by inhibiting microbial growth.

The International Atomic Energy Agency (IAEA) collaborates with the Food and Agriculture Organization (FAO) to assess contamination in agricultural production. Their goal is to ensure radiation safety for consumers and the environment. By balancing technological advancements with environmental protection, we can enhance crop productivity and food quality.

Keywords: Radioisotopes, Contamination, Soil health, Crop production, Plant breeding.



**PREVALENCE OF ANTIMICROBIAL RESISTANT ENTEROCOCCI SPECIES AT
ANIMAL-HUMAN INTERFACE**

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Abstract

Introduction: Antimicrobial resistance (AMR) is a growing public health concern worldwide, and enterococci are a significant contributor to this problem. Enterococci are commensals bacteria of the gastrointestinal tract of both humans and animals, and they have the ability to acquire and disseminate antimicrobial resistance genes. To address the antimicrobial resistance, it is very important to understand the behavior of antimicrobial resistant bacteria at human animal interface. The current study is designed to investigate the possibility of antibiotic resistance transfer from animals to humans through enterococci under local livestock production systems **Materials Methods:** A total of 246 pooled faecal samples were collected from the cattle population of five Tehsils of Chakwal district. Individual level faecal samples were collected from cattle attendants. Samples were transferred to the laboratory under cold conditions. The presence of enterococci species was determined by using brain heart infusion (BHI) broth and Slantez and Bartley Agar. Three biochemical tests were performed. Esculine was hydrolyzed and the medium was turned dark brown in presence of bile. No bubble formation was seen during catalase test showing negative result. Mannitol fermentation test was found positive for all samples. For final identity confirmation of enterococci species PCR was performed. **Results:** 209 out of 246 were confirmed as enterococcus faecium and E. faecalis. Among positive isolates, 102 samples were from attendants and 107 from cattle. Kirby-Bauer antibiotic tests were performed to identify *Enterococcus* isolates resistant to different antibiotics. Enterococcus faecium was found completely resistant to Chloremphenicol and Ampicillin. **Conclusions;** The present study showed that animal human interface is also a source for antimicrobial resistance and further investigation required for Resistance pattern in both animals and humans. Intersection of animals and humans must be addressed while developing any policy to curb AMR.

Keywords: Antimicrobial resistance; Human-Animal interface, Resistant *Enterococci*



BİTKİSEL YAĞ EKSTRAKSİYONUNDA YEŞİL TEKNİKLER

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Özet

Ekstraksiyon işlemi yağ üretiminde önemli bir işlem basamağıdır. Bitkisel yağlar, yağlı tohum ve meyvelerden yaygın olarak organik çözücü (solvent) ve mekanik presleme yöntemleri gibi klasik yöntemler kullanılarak ekstrakte edilmektedir. Presleme, yağlı materyale basınç uygulanarak yağın çıkarılmasına dayanan eski bir yöntem olup yağın %30'dan fazlası materyalde kalmaktadır. Kalan yağın alınabilmesi için preslenen kek daha sonra solvent ekstraksiyonuna tabi tutulur. Solvent ekstraksiyonunda tohumda kalan yağın tamamına yakın kısmı alınabilmektedir Solvent ekstraksiyonu genellikle iyi bir yağ verimi sağlar ve uygulanması kolaydır. Bununla birlikte yüksek solvent tüketimi ve uzun ekstraksiyon süreleri gerektirir. Ekstraksiyon sonunda çözücünün geri kazanılması sırasında çözücünün buharlaşarak havaya karışması çevreyi olumsuz etkilemekte, son üründe kalan çözücü kalıntıları da çeşitli problemlere yol açabilmektedir. Son yıllarda çevreyi koruma bilincinin artmasına paralel olarak yağ ekstraksiyonunda yeni araştırmalar yeşil teknolojilere doğru yoğunlaşmıştır. Gelişen teknolojiyle birlikte, bu klasik ekstraksiyon yöntemlerine alternatif olarak geliştirilen yeşil ekstraksiyon yöntemleri ile solvent kullanımının ve ekstraksiyon süresinin azaltılmasının yanı sıra yağ verimi ve kalitesinin de artırılması hedeflenmektedir. Yeşil teknikler olarak adlandırılan bu ekstraksiyon yöntemleri; ultrason destekli, enzim destekli, mikrodalga destekli, vurgulu elektrik alanı destekli, süperkritik akışkan ile basınçlı sıvı destekli ekstraksiyon gibi modern ekstraksiyon yöntemleri olarak da anılmaktadır. Bu alternatif yöntemler, klasik ekstraksiyon yöntemleri ile kombine olarak da kullanılabilir. Bu iki ekstraksiyon yönteminin birlikte kullanımı, sadece klasik ekstraksiyon yöntemlerinin kullanıldığı çalışmalara göre, zamandan tasarruf, düşük çözücü tüketimi, kaliteli son ürün eldesi ve çevre dostu uygulamalara olanak sağlamaktadır. Bu derlemede, bitkisel yağ üretiminde son yıllarda klasik ekstraksiyon yöntemlerine alternatif olarak kullanılan yeşil ekstraksiyon teknikleri, prensipleri, avantaj ve dezavantajları ile kullanım olanakları üzerinde durulmuştur.

Anahtar Kelimeler: Bitkisel yağ, ekstraksiyon, yeşil teknik



**MULTUVARIATE STATISTICAL APPROCHES BASED ON FATTY ACID AND
TRIGLYCERIDE COMPOSITION OF OLIVE OILS PRODUCED IN THE
KAHRAMANMARAS REGION**

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Abstract

Aim: This study was conducted to evaluate extra virgin olive oils (EVOOs) collected from different districts (Andırın, Göksun, Onikişubat, Türkoğlu and Pazarcık) of Kahramanmaraş, **Material and Methods:** The fatty acid (FA) and triglyceride (TAG) compositions of total 40 EVOO samples were subjected to principal component and hierarchical cluster analyses. **Results:** In all oils, a total of 5 FAs and 16 TAGs were determined. The obtained values were within the EVOO specification set by IOC (2022). According to ANOVA, there were statistically significant differences between the oils in terms of stearic, oleic and linoleic acid contents, as well as OLL+PoOL, PLL, OOL+PoOO, POL+SLL, OOO, SOO, and POS+SLS contents. When the eigenvalues were taken to be greater than one, 3 principal components (PC) were determined, which explained at least 81% of the variance. PC1 was more correlated with linoleic acid and the TAGs with ECN 44 and 46, PC2 with palmitic and oleic acids and the TAGs with ECN 48, and PC3 with stearic acid and the TAG with ECN 50. The dendrogram obtained from the hierarchical cluster analysis revealed three key clusters: Pazarcık and Türkoğlu had similar EVOO samples in the first cluster, as do Göksun and Onikişubat in the second cluster. Andırın had a more distinct EVOO samples compared to the other locations. **Conclusion:** These results suggest that there existed a significant correlation between the location and the composition of EVOO samples.

Keywords: Olive oil, Fatty acid, Triglyceride, Principal component analysis, Hierarchical cluster analysis



GLUTENSİZ BESLENMEDE BALKABAĞI UNUNUN ÖNEMİ

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Özet

Gluten, birçok tahıl grubunda özellikle buğday, çavdar, yulaf ve arpa gibi ürünlerde bulunan protein grubudur. Gluten unlu mamullerin temel yapısını oluşturur ancak en etkili olduğu yer buğday unudur. Çavdar, arpa ve yulaf gibi tahıllarda etkisi daha düşüktür. Buğday unu, diğerlerinin yanı sıra ekmeke, erişte, bisküvi, kek, kurabiye gibi çeşitli gıdaların üretiminde kullanılır. Ancak buğdayda bulunan gluten proteininin, gluten intoleransı olan bireylerde ortaya çıkan, çölyak hastalığı olarak bilinen otoimmün bozukluğu hastalığından sorumlu olduğu düşünülmektedir. Son zamanlarda glutensiz diyetlere ve beslenmeye ilişkin farkındalık önemli ölçüde artmıştır. Bu beslenmenin popülaritesi glutensiz gıda üretimine de yansımıştır. Bal kabağının daha yüksek içeriğinde gelişmiş antioksidan aktivitelere sahip yüksek bulguları barındırdığı keşfedildi. Buğday unu yerine kurabiye ve kek hazırlığı için beş farklı kompozit hazırlanmış ve uygulanmıştır. Kabak bazlı kurabiyeler arasında kabak posası, kabak çekirdeği ve kabak nişastası kalıntılarından yapılan kurabiyelerin en uygun içeriğe sahip olabileceği düşünülmektedir. Balkabağı, mor tatlı patates, mısır ve kurt ringa balığı unundan oluşan kompozit unu kurabiye ve muffin lezzetini arttıracak ön görülmüştür. Bu nedenle, kompozit un, mineraller ve amino asitler bakımından zengin, düşük ve yüksek nemli pişmiş gıda ürünleri için kullanılabilmesi hususuna değinilmiştir. Yemeye hazır unlu mamullerin popülaritesinin artmasıyla birlikte, lif ve biyoaktif içeriği yüksek, az kullanılan meyve ve sebzelerle zenginleştirmek, halk sağlığını iyileştirmek için uygulanan en verimli çalışmalar arasında örnek gösterilebilir. Diyabet, obezite, hiperkolesterolemi gibi insan yaşamını etkileyen hastalıklara uygun düşük kalorili bir diyet sağlamak ve unda ve kurabiyelerde bulunan karbonhidrat içeriğindeki azaltarak ve daha yüksek protein içermesini sağlayabiliriz. Kabak unuyla elde edilen kurabiye yapısı besin değeri bakımından zengindir ve insan popülasyonlarında diyabet durumlarını azaltıp fonksiyonel bir gıda olarak pazara sunulabilir. Öngörülen ve seçilen formüller, yakın, diyet lifi, mineraller ve amino asitleri içeren kimyasal bileşimleri açısından daha fazla değerlendirilmiştir. Kullanım ve depolamada, mineral yönünden zengin ve su tutma özelliği nedeniyle balkabağı ununun kullanımıyla sağlıklı, raf ömrünü uzatma gayesi duyusal özellikleri korumanın mümkün olduğu görülmüştür. Sonuç olarak balkabağı unu glutensiz gıda üretiminde başarıyla kullanılmaktadır.

Anahtar kelimeler: Balkabağı, Gluten, Kompozit, Mineral, Un



YENİLEBİLİR KİTOSAN FİLM VE DİYATOMİTİN HAMSI'NİN (*Engraulis encrasicolus* L.) RAF ÖMRÜNE ETKİSİ

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Özet

Bu çalışmada kitosan filmle kaplamanın ve diyatomit tabaklamasının hızlı bozulan bir gıda olan balığın raf ömrüne etkileri incelenmiştir. **Amaç:** Yenilebilir filmler sağlık açısından güvenilir, basit teknoloji ile elde edilebilir, üretim maliyetleri düşük ve çevreyi kirletmeyen doğal koruyucu filmlerdir. Diyatomit doğal organik kökenli sediment bir kayaç olup iyi bir adsorbandır. Çalışmada Hamsi (*Engraulis encrasicolus* L.) balığının kitosan filmle kaplanması ve diyatomit içerikli ortamda tabaklanması işleminin depolama süresindeki toplam mezofilik, psikrofilik ve psikrotrof bakteriler üzerindeki etkileri incelenmiştir. **Materyal ve Yöntem:** Hamsi balıkları kırık buz içerisinde soğuk zincirde korunarak buz içerisinde strafor kutuda laboratuvara getirilmiştir. Balıkların boy ve ağırlık ölçümleri sırasıyla 10.3 ± 0.06 cm olarak ve 7.75 ± 0.09 gr. olarak ölçülmüştür. Hazırlanan kitosan filmle balıkların tek tek tüm yüzeyin kaplanması sağlanmıştır. Hazırlanan örnekler ve kontrol grubu balıklar kap tabanına diyatomit konularak, buzdolabı koşullarında analizleri yapılmak üzere depolanmıştır. Çalışma boyunca buzdolabı saklama koşullarında bulunan örneklerde toplam mezofil aerobik bakteri, psikrofil ve psikrotrof bakteri sayısındaki değişimler incelenmiştir. **Bulgular:** Mikrobiyolojik veriler depolama başlangıcından son gün olan 6. güne kadar kontrol grubunda önemli artışlar meydana geldiği göstermiştir. Depolanmanın 1. gününden itibaren kontrol grubunda psikrofil ve psikrotrof bakteri 5×10^3 kob/g değerinde kaydedilirken, depolamanın 2. günü kontrol grubu mezofil bakteri 25×10^3 kob/g psikrofil ve psikrotrof bakteri $17,5 \times 10^3$ kob/g değerine ulaşmıştır. % 1 kitosan çözeltisi eklenmiş filmle kaplanan ve diyatomitli ortamda yer alan gruplarda ise depolanmanın 6. gününe kadar herhangi bir üreme olmamış ve 6. gün mezofil bakteri 2×10^2 kob/g ve psikrofil ve psikrotrof bakteri ise 3×10^2 kob/g değerlerine yükselmiştir. **Sonuç** Kitosan içeren filmlerin ve diyatomitin kullanımı balık etlerinde, kontrol grubu ile karşılaştırıldığında raf ömrünü önemli düzeyde uzatmıştır. Doğal kaynaklı bir biyopolimer olan kitosan gıda kaynaklı bakteri, küf ve mantarlara karşı antimikrobiyal aktivitesi ile gıdalar için potansiyel bir koruyucu katkı maddesidir. Bu özelliğinin yanı sıra film oluşturabilme ve bariyer özelliklerinin olması kitosanı antimikrobiyal özellikte yenilebilir film ve kaplamalar için ideal bir materyal haline getirmektedir. Kitosanın özellikle atık deniz ürünlerinden (istakoz vb.) elde edilerek üretimi ve doğal bir nem tutucu diyatomitin tabaklanan ürünlerde kullanımı gıda endüstrisine önemli katkılar sağlayacaktır.

Anahtar kelimeler: Kitosan, Diyatomit, Yenilebilir film, Gıda, Sağlık, Hamsi.



ETLİK PİLİÇLERDE GÖRÜLEN ET HATALARI VE BUNLARA SÜRDÜRÜLEBİLİRLİK PERSPEKTİFİNDEN ÇÖZÜM ÖNERİLERİ

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Özet

Son 50 yıl içinde etlik piliçlerin genetik ve besleme stratejilerindeki değişikliklerle çok hızlı büyümeleri sonucunda *Pectoralis major* kasını etkileyen kas hataları (anomalileri) ortaya çıkmaya başlamıştır. Bu hatalar üzerine yapılan araştırmalar, oluşan bu et hatalarının sebeplerini, hızlı tespitini, et kalitesine olan etkilerini ve bu hataların hayvan refahını da göz önüne alarak nasıl azaltılabileceği üzerine yoğunlaşmıştır.

Bu hatalar “Beyaz Çizgiler” (BÇ), “Tahtamsı Göğüs” (TG) ve “Spagetti et” (SE) olarak sınıflandırılmakta ve her birinin kendine özgü ve ayırt edici karakteristik özellikleri ile tanımlanmaktadır. Bu anomalilerden BÇ, *P. major* kasının yüzeyinde kas liflerine paralel olarak uzanan beyaz çizgilerin ortaya çıkmasıyla karakterize edilir, TG ise pektoral kasta meydana gelen ciddi bir sertleşme ve buna eşlik eden kan oturmaları olarak ortaya çıkar. SE ise göğüs kasını oluşturan kas lifi demetlerinin bütünlüğünün kaybı ile spagetti görünümü olarak kendini göstermektedir. Anomalili etlerin sahip oldukları yapısal özelliklerin eksikliklerinden dolayı tüketilmelerinde, besin değerlerinde ve teknolojik olarak işlenmelerinde sorunlar mevcuttur. Et anomalisine sahip göğüs etleri görünümünden dolayı tüketiciler tarafından tercih edilmemektedir. Bunun yanında bu anomaliye sahip etlerde protein oranı azalmakta yağ oranı artmakta ve böylece besleyici özelliklerinde değişimler meydana gelmektedir. Bileşimde yaşanan bu değişikliklere ilaveten yapısal sorunlarda oluşmakta ve bu değişiklikler ileri işlenmiş ürünlerde etin su tutma kapasitesinin ve marine ürünlerde marinasyon kapasitesinin düşmesi gibi problemlere neden olmaktadır. Anomaliye sahip göğüs etlerinin taze tüketimlerinde pazar problemlerinin yaşanması ve ileri işlenmiş ürünlerde teknolojik problemler yaratması ekonomik kayıplara neden olmaktadır. Sektörde et hatalarının görülme sıklığının yüksek olmasından dolayı dünyada milyonlarca dolar kayba sebep olduğu tahmin edilmektedir.

Günümüzde tüm sektörlerde olduğu gibi etlik piliç sektöründe de sürdürülebilirlik çok önemli bir konu haline gelmiştir. İklim krizi ve/veya savaşlar gibi olumsuz durumlara ilaveten et hatalarını engelleyebilecek sürdürülebilir tüm uygulamalar kanatlı hayvan yetiştirilmesi ve refahı için çok büyük önem arz etmektedir.

Bu çalışmada et hatalarının kısa tarihsel geçmişi, hataları oluşturan genetik ve çevresel faktörler ile sürdürülebilirlik perspektifinden yapılacak uygulamalar ile bu hataları azaltma stratejilerinin neler olabileceği üzerinde durulacaktır.

Anahtar kelimeler: Etlik piliç, Beyaz Çizgiler, Tahtamsı Göğüs, Et Hataları, Sürdürülebilirlik.



FARKLI PLASTİKLEŞTİRİCİLERLE ELDE EDİLEN SOYA PROTEİNİ VE JELATİN BAZLI FİLM ÇÖZELTİLERİNDE VİSKOZİTENİN DEĞİŞİMİ

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Özet

Gıda kalitesinin korunmasının yanı sıra gıdaların görsel ve fonksiyonel olarak geliştirilmesi amacıyla yenilebilir film ve kaplamalar kullanılmaktadır. Plastikleştirici olarak kullanılan organik bileşenler yenilebilir film ve kaplamaların mekanik özelliklerini, geçirgenliğini ve endüstriyel olarak kullanımını etkilemektedir. **Amaç:** Bu çalışmada, farklı plastikleştiricilerin protein bazlı film oluşturabilen çözeltilerin viskozitesine etkisi araştırılmıştır. **Materyal ve Yöntem:** Taşıyıcı polimer olarak kullanılan soya proteini ve jelatin %1, 2 ve 5 olmak üzere üç farklı konsantrasyonda kullanılmıştır. Plastikleştirici olarak kullanılan gliserol, sorbitol, sükröz, polietilen glikol 200 ve polietilen glikol 400; protein konsantrasyonuna göre %20, 40, ve 60 olmak üzere üç farklı oranda kullanılmıştır. Elde edilen çözeltilerin viskozitesi 30, 45 ve 60°C'de Brookfield DVIII Ultra reometre kullanılarak ölçülmüştür. **Bulgular:** Çalışmada elde edilen sonuçlara göre, soya proteini kullanılan örneklerde protein oranının %1'den %5'e çıkması viskozitenin 10 kata kadar artışına neden olmuştur. Jelatin kullanılan örneklerde ise bu artış oranı yaklaşık 3 kat kadardır. Sıcaklık artışı, beklendiği gibi viskozitenin düşmesine neden olmuş, 30°C'de ölçülen viskozite değerleri 60°C'de yaklaşık %50 oranında azalmıştır. Plastikleştirici konsantrasyonundaki artışın genel olarak viskozite üzerine çok önemli bir etki göstermediği ve bu durumun farklı oranlarda kullanılan plastikleştirici miktarının birbirine çok yakın olmasından kaynaklandığı görülmüştür. Diğer taraftan, plastikleştirici çeşidi, özellikle %60 gibi yüksek kullanım oranlarında, film çözeltilerinin viskozitesinde önemli değişikliklere neden olmuştur. Özellikle sorbitol ve sükrözün film çözeltilerinde daha yüksek viskoziteye neden olabildiği gözlenmiştir. Jelatin ile hazırlanan film çözeltilerinin viskozitesi soya proteini ile hazırlanan film çözeltilerinden daha düşüktür. **Sonuç:** Elde edilen sonuçlar, hem taşıyıcı polimerin hem de plastikleştiricilerin film oluşturabilen çözeltilerin viskozitesi üzerine etkisinin önemli olduğunu göstermiştir.

Bu çalışma, Van Yüzüncü Yıl Üniversitesi Bilimsel Araştırma Projeleri Başkanlığı tarafından FYL-2020-9223 kodlu proje ile desteklenmiştir.

Anahtar kelimeler: Yenilebilir film ve kaplamalar, jelatin, soya proteini, viskozite, gliserol, sorbitol, sükröz, polietilen glikol, plastikleştirici.



HONEY RESOURCES MANAGEMENT IN MIROSLAVA VILLAGE, IASI COUNTY

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Abstract

From a beekeeping perspective, Miroslava village is situated within the bio apiarian area of Moldova Plateau, which offers favorable conditions for type II honey gathering. The estimated honey-bearing potential of Miroslava village is 119.901 kg, with the forests in the area contributing 100.704 kg, primarily from the abundant acacia and linden trees. Additionally, crops, pastures, meadows, and orchards contribute 19.197 kg to the honey-bearing potential. Stationary beekeeping in the area can accommodate 966 swarm bees, capable of producing 24.150 kg of honey. For pastoral beekeeping, approximately 2.280 beehives can be utilized for acacia gathering and 1.320 beehives for linden gathering.

Data obtained from the Ciurea forestry district provided information on species of interest and their respective areas (see Figure 1). Utilizing this information, we calculated the total honey production and gathering honey production. Notably, the forest contains two key species, linden and acacia, which are highly valuable for beekeeping, collectively yielding over 98 tons of honey. Other forestry species have lesser significance in terms of beekeeping interest, particularly as sources of honeydew.

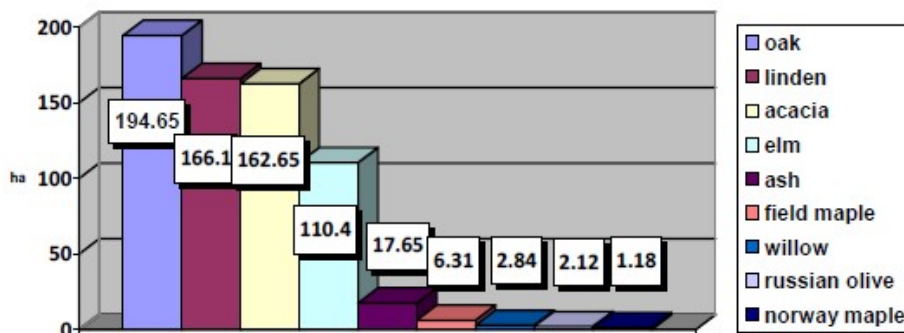


Fig. 1 The forestry species in the studied area

Based on data gathered from the Miroslava village hall, the primary meliferous sources, including crops, orchards, pastures, and meadows, were identified. Considering the area covered by these sources, the honey-bearing potential was estimated to exceed 20 tons (Table 1). The overall honey-bearing potential of Miroslava village, approximately 120 tons, can be effectively utilized through stationary beekeeping, leveraging the continuous harvest provided by meliferous sources during



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the active season. Stationary beekeeping is recommended for the gathering of acacia and linden, with anticipated productions of approximately 54 and 44 tons, respectively.

Nr. crt.	Species	Surface (ha)	Average production (kg/ha)	Potential production (kg)	Gathering production (kg)
1	Oak	194.65	20	3893	1298
2	Elm	110.40	20	2208	736
3	Ash	17.65	20	353	118
4	Field maple	6.31	20	126	42
Total honeydew source		329.01	-	6580	2194
5	Acacia	162.65	1000	162650	54217
6	Linden	166.10	800	132880	44293
Total nectar source		328.75	-	295530	98510
Total		657.76	-	302110	100704

Tab. 1 Honey bearing potential of Miroslava forests

If we consider that a colony of bees with moderate strength consumes approximately 90 kg of honey per year for their own sustenance, and that half of this amount is required for a swarm, and assuming a 20% increase in the number of families (swarms), and a planned honey output of 25 kg per hive, the final calculation indicates an average of about 124 kg of honey annually gathered per bee colony.

By dividing the determined honey-bearing potential of the Miroslava village area by the annual honey yield per hive, it is determined that the studied area provides optimal conditions for stationary beekeeping for 966 swarm bees. In cases where pastoral beekeeping is practiced for acacia and linden gathering, based on recommended hive loading standards per hectare, approximately 2,280 beehives can be allocated for acacia gathering, and approximately 1,320 beehives for linden gathering in the area.

Key-words: Shagya Arabian, broodmares, reproduction, management.



EFFECT OF LARVAL HOMOGENATE DEVELOPING FROM UNFERTILIZED EGGS ON INFERTILITY

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Abstract

Social species in the order Hymenoptera are characterized by a haplo-diploid sex determination system in which male and female development are achieved from unfertilized and fertilized eggs, respectively. In the honey bee (*Apis mellifera*), the colony consists of a queen, thousands of sterile (sterile) female workers, and several hundred seasonal males (drones) raised during the breeding season when colony resources are concentrated. Developmental stages in all castes consist of egg, larva, pupa and adult stages. Male bees develop from unfertilized eggs by parthenogenesis and are reared in honeycomb cells that are larger than worker bee eyes. Spermatogenesis in honeybee drones, like males in other Hymenoptera species, begins in the larval stage and ends in the pupal stage. Apilarnil is a bee product with biologically active properties. It is obtained by filtration and pulverization of drone larvae homogenate harvested at the 7-day larval stage, before the honeycomb eyes close. Apilarnil is a homogeneous and milky substance, yellowish gray in color and sour in taste. Its structure contains water (65-75%), proteins (9-12%), carbohydrates (6-12%), fatty acids and lipids (3.5-8%), minerals (1-1.5%) amino acids (threonine, leucine, isoleucine, methionine) as well as sex hormones such as testosterone, prolactin, progesterone and estradiol. Recent studies have shown that male bee larvae have both estrogenic and androgenic effects. Its effect on infertility, one of the bioactive properties of the larva developing from an unfertilized egg, is remarkable.

Keywords: apilarnil, drone larvae, unfertilized egg, infertility



ENVIRONMENTAL SUSTAINABILITY THROUGH RAIN WATER HARVESTING

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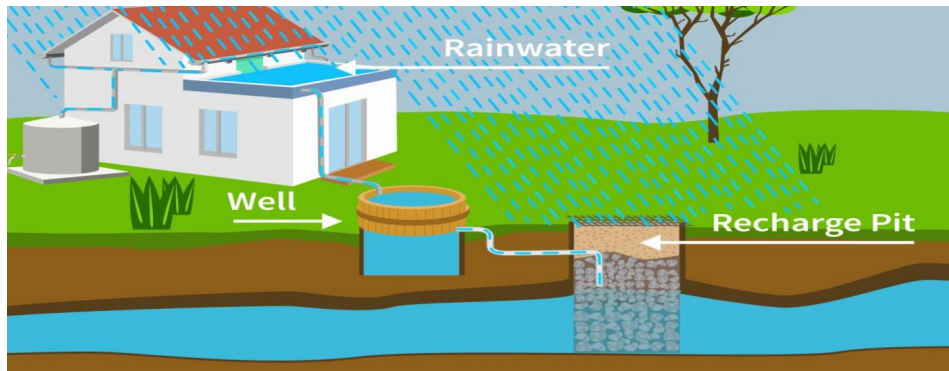
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Abstract

Due to global population rises the demand of water supply also increases in industries, agricultural and domestic supply of drinking water. Since the groundwater resources are depleting, the rainwater harvesting is the only way to solve the water problem. The rain water harvesting involves the collection of water from surfaces on which rain fall and stores the water for future use. Rainwater will be useful for the demand of water supply and also help to improve the quantity and quality of water. Water is essential to meet all our basic needs, like cooking, drinking, washing, bathing, etc. we use surface water from lakes, rivers, ponds etc. to meet our basic needs in our daily life. In surface water (lake, river, ponds, etc.) the dissolved salts present in it is more. If the water is high in salt content, then the cleaning capacity of water decreases, and the soap consumption, during washing increases. Soft water consumes less soap and produces more foam with soap solution. Rain water is the purest form of water and in areas where there is water scarcity, people use rain water for domestic purpose. The worldwide water crisis is a major source of concern. Due to population expansion and industrialization, higher water consumption is unavoidable.



PHYSIOLOGY OF AFAMIN, A POTENTIAL EARLY INDICATOR OF METABOLIC SYNDROME

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Abstract

Metabolic syndrome is a fatal endocrinopathy that begins with insulin resistance and is accompanied by systemic disorders such as abdominal obesity, glucose intolerance or diabetes mellitus, dyslipidemia, hypertension and coronary artery disease. Metabolic syndrome is a set of conditions that often occur together and increase your risk of diabetes, stroke, and heart disease. Major components of metabolic syndrome include obesity, high blood pressure, high blood triglycerides, low HDL cholesterol levels, and insulin resistance. Afamin is a single-chain glycoprotein produced in the liver, consisting of 578 amino acid residues, with a molecular weight of 75 kDa, a potential early marker of metabolic syndrome. Afamin acts as an extracellular vitamin E transporter in neuroprotection, fertility, vitamin E bioavailability, including transport via blood-brain. However, information regarding the physiological role of Afami in the organism and disease processes is limited.

In this context, it was aimed to examine the physiology of aphamin, a potential early indicator of metabolic syndrome. In addition, it is thought that the development of therapeutic interventions for diseases such as diabetes associated with metabolic syndrome and the data obtained by bringing together the studies in this field will be a valuable resource for future studies.

Keywords: Afamin, Vitamin E binding protein, Glycoprotein, Metabolic Syndrome, Diabetes.



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PHOTOSENSITISATION DERMATITIS IN ANIMALS

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Abstract

Photosensitization, also known as photodermatitis is an abnormal reaction of the skin when exposed to light and is caused by accumulation of photosensitizing substances in the skin, resulting a severe dermatitis of skin unprotected by unpigmented.

There are three types of photosensitization: (a) primary, in which photodynamic chemicals, or plant toxins, reach the skin through the circulation, (b) congenital porphyria, in which there is a metabolic, congenital defect in porphyrin metabolism and (c) secondary (hepatogenous), which occurs when the capacity of the liver to excrete derived from the catabolism of alimentary chlorophyll, is impaired. Characteristic is the appearance of cutaneous lesions after exposure to solar radiation, in depigmented, uncovered or poorly covered areas with hair and pigment: erythema, swelling, heat, pain, itching, haemorrhagic spots, yellowish exudate, sometimes followed by the appearance of vesicles and pustules. Finally, dry gangrene of the affected area sets in, followed by epithelialisation under the crust or the detachment of epidermal flaps, with the appearance of ulcers prone to secondary infections.

Photobiotropic dermatitis are latent skin conditions that are triggered, reawakened or aggravated by the action of solar radiation. Skin diseases with photobiotropic activation include lupus erythematosus, pemphigus, atopic dermatitis, scleroderma, dyschromias, uveitis dermatitis syndrome (Voght-Koyanagi-Harada).

Key words: photodermatitis, cattle, dog, cat, pathogenesis, clinical signs.



CHALLENGES AND POSSIBLE SOLUTIONS IN PLASTIC POLLUTION

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Fig.1: Plastics production

Abstracts

Plastics (**Fig.1**) are extensively utilized in numerous industries due to their long-lasting nature, affordability, and adaptability, becoming an essential component of the worldwide economy. As societies produce waste, only a small portion of it is recycled, while the rest ends up in different ecosystems, causing harm to the environment and living organisms. The environmental degradation caused by plastics has raised significant concerns regarding their disposal. To achieve more sustainable resource management, there is a pressing need for the world to shift from a linear economy to a more resilient circular economy approach in handling plastic waste. In a circular economy, plastics are utilized and reutilized for extended periods, extracting their full potential value, and eventually recovering and regenerating products at the end of their useful life. Alongside reusing and recycling plastics, numerous technological innovations and interventions play a crucial role. Adopting a circular economy approach for plastics would guarantee a sustainable and resource-efficient future. The primary objective of this study was to investigate the effects of plastic waste on human health and the environment.



QUALITATIVE CHARACTERISTICS OF THE OHRID BELVICA (*Salmo ohridanus*,
STEINDACHNER 1892) AND THE ECOLOGICAL HABITAT

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Abstract

Salmo ohridanus (Steindachner 1892), also known by the local name as the “belvica” is a species of freshwater salmonid fish, endemic to Ohrid Lake (Macedonia). The main goal of this research was to determine the qualitative parameters of the *Salmo ohridanus* and the ecological habitat. The qualitative parameters of the *Salmo ohridanus* were established by determining the chemical composition and energy value of fish meat as well as the microbiological analysis for the presence of total number of microorganisms, *Salmonella* sp. and *Listeria monocytogenes*. Additional analyzes were made, which include the microbiological analysis of water from Ohrid Lake for the presence of thermotolerant coliform bacteria and *Enterococcus faecalis*. The analyzes were performed using several methods, namely: 1. Methods for analyzing the chemical composition of fish meat (determination of moisture content - ISO 712:2009; determination of total nitrogen according to the Kjeldahl spectrophotometric method - HACH DR 400 procedure Method 2410; determination of total fat by gravimetric method (Soxhlet extraction) - AOAC method 2003.6; determination of ash with an oven at 700°C - ISO 3593:1981); 2. Methods for microbiological analysis of fish meat (horizontal method for detection and enumeration of *Listeria monocytogenes* - ISO 11290 - 1:2008; horizontal method for detection and enumeration of *Salmonella* sp. - ISO 6579 - 2008; horizontal method for counting microorganisms - ISO 4833:2003); 3. Methods for microbiological analysis of water (detection and counting of coliform bacteria and *Escherichia coli* - ISO 9308 - 1:2000; detection and enumeration of intestinal enterococci and *Streptococcus faecalis* - ISO 7899 - 2:2000). The chemical parameters of open water fish are strongly influenced by the conditions in the aquatic environment that determine the availability of nutrients. In addition to genetic factors, water quality, pH, temperature, season, oxygen content, motor activities, fish age, type of food, diet, etc. have a certain influence on the chemical composition of fish meat. The following results were obtained by analyzing the chemical composition of the meat from *Salmo ohridanus*: water (72.225 ± 0.455), proteins (19.700 ± 0.101), fats (4.185 ± 0.211) and ash (0.955 ± 0.061). The energy value of fish meat was calculated based on the determined amount of fat and protein, and it amounts to 501.099 kJ/100g. Regarding the microbiological analyses, after the appropriate incubation of 72 hours, the presence of *Listeria monocytogenes* and *Salmonella* sp. has not been proven. With the help of membrane filtration, tests were made on the water quality of Ohrid Lake, for the presence of intestinal enterococci and *Escherichia coli* and they have not been proven, and the water (8 CfU) belongs to the 1st class. The absence of intestinal enterococci and *Escherichia coli* in the waters of Ohrid Lake is a positive sign and indicates that the water can be safe for use and represents an excellent ecological habitat for this endemic fish species that can only be found in Ohrid Lake.

Keywords: fish, *Salmo ohridanus*, Ohrid Lake, chemical composition, microbiological analysis.



ATIK BALIK İÇ ORGANLARINDAN ELDE EDİLMİŞ YAĞ İLE SABUN ÜRETİMİ

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Özet

Bu çalışmada atık alabalık iç organlarından enzimatik hidroliz yolu ile balık yağı elde edilmiştir. Elde edilen balık yağları ile kostik (sodyumhidroksit=NaOH) kullanılarak sabun üretilmiştir. **Amaç:** Ülkemizde yoğun olarak üretimi yapılan alabalığın yaklaşık olarak %40 lık bölümü atık durumdadır. Özellikle karaciğer ve iç organlarda bol miktarda bulunan balık yağlarının başta EPA ve DHA olmak üzere çoklu doymamış yağ asitlerince zengin olduğu bilinmektedir. Bu çalışmada alabalık iç organlarından elde edilen yağ ile kozmetik sabun üretilmiştir. Çalışma atık ürünlerin katma değeri yüksek bir hijyen ürününe dönüştürülmesi noktasında endüstriye ilham verecektir. **Materyal ve Yöntem:** Çalışmada kullanılan alabalık atıkları Niğde’de bulunan bir alabalık üretim tesisinden temin edilmiştir. Atıklar ilk olarak bol su ile yıkanmış 1:1 oranın saf su ile karıştırılmış ve 60C°’ye ayarlanmış bir hot plate üzerinde pH 8 e getirilene kadar önceden hazırlanan 1 N NaOH ile muamele edilmiştir. Daha sonra % 0,5 oranda olacak şekilde alkalaz enzimi ilave edilmiş ve bu koşullarda 1 saat boyunca bekletilerek süre sonunda alkalaz enzimini inaktif etmek için sıcaklık 85 °C’ye yükseltilmiştir. Su banyosundan alınan homojenat kaba filtre kağıdından erlenlere süzölmüş ve santrifüj edilip balık yağı elde edilmiştir. Balık yağının sabunlaşma katsayısı gözetilerek NaOH toplam yağ oranına göre eklenip sabun elde edilmiştir. **Bulgular:** Balık yağı ile elde edilen sabun donduktan sonra (48 saat içinde) deneyimli panelistlere koku testi yapılmıştır. Panelistler sabunda baskın ve rahatsız edici bir balık yağı kokusu olmadığını bildirmişlerdir. Sabunun kurduktan sonraki 7. gününde balık yağı kokusu tamamen yerini sabunsu kokuya bırakmıştır. **Sonuç:** Çalışmada balık atıklarından fonksiyonel bileşenleri bünyesinde barındıran balık yağı üretilmiştir. Sabun üretiminde yöntem olarak soğuk üretim tekniği kullanılması balık yağının yapısının bozulmadan cilt ile temas etmesini sağlamıştır. Sabun üretiminde kullanılan düşük kaliteli ve ucuz yağlar yerine başta omega 3 gibi doymamış yağları bünyesinde barındıran balık yağının kullanımı endüstriye ve ekonomiye katkı sağlayacaktır.

Anahtar kelimeler: Balık atığı, balık yağı, sabun, sağlık



EFFECT OF ULTRASOUND TREATMENT ON SOME PHYSICOCHEMICAL PROPERTIES OF QUINOA MILK

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Abstract

Eating behaviours change day by day. With the increase in vegan/vegetarian eating habits, the interest in products obtained from different plant sources is also increasing. Vegetable milk is important as it is a product used for both direct consumption and formulation preparation. In this study, the effect of ultrasound processing on some physicochemical properties of vegetable milk produced using quinoa was investigated. Dry matter, serum separation, antioxidant activity (DPPH) and total phenolic contents were determined in quinoa milk. Ultrasound was applied to quinoa milk (%13.03 dry matter) for 5, 10 and 15 minutes at amplitudes of 40, 50 and 60. Ultrasound treatment reduced serum separation in all applied ultrasound process parameters. Serum separation decreased from 55% to 19%. The most effective ultrasound parameters on serum separation were the process applied at 60 amplitude for 15 minutes. When examined in terms of functional properties, the ultrasound conditions in which the DPPH reduction capacity statistically increased significantly compared to the control sample were 5 minutes at 50 amplitude. The highest total phenolic substance content was determined as a result of the ultrasound process applied at 50 amplitude for 10 minutes. These results showed the positive effect of ultrasound processing on the physical stabilization of quinoa milk. However no positive correlation was observed between the increase in functional components as a result of increasing the amplitude and duration of the ultrasound process. For this reason, it is recommended that an optimization study be carried out in determining the ultrasound parameters to be applied to quinoa milk.

Keywords: Quinoa, vegetable milk, ultrasound, vegan, vegetarian.



KRONİK ZAYIFLIĞA SAHİP BİR KOYUNUN KARACİĞERİNDE MULTİPLE KİSTİK EKİNOKOKKOZ VE ULTRASONOGRAFİK TANISI

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Özet

Amaç: Kistik ekinokokkoz, köpeklerin ve diğer etoburların ince bağırsaklarında bulunan *Echinococcus granulosus* larvalarının neden olduğu birçok memeli türünün zoonotik paraziter bir enfeksiyonudur. Kistik ekinokokkoz genellikle karaciğeri ve daha az sıklıkla akciğeri, dalağı, böbreği, kemikleri ve beyni etkiler. Çiftlik hayvanlarında kistik ekinokokkoz, et ve süt üretiminde kayıplara, yapağı değerlerinin etkilenmesine ve yenilebilir karaciğer kaybı nedeniyle önemli ekonomik sorunlara yol açtığı bildirilmektedir. Ultrasonografinin gelişmesiyle birlikte birçok organ ve doku taranarak hastalıklar ve patolojiler yönünden incelenebilmektedir. Canlı hayvanlarda karaciğer kistlerinin rutin tanısı için güvenilir bir yöntem yoktur. Bazı araştırmacılar kistik ekinokokkoz tanısı için ultrasonografinin kullanılmasının yararlı olduğunu bildirmişlerdir. Bu olgu sunumunun amacı, kronik zayıflama ve kilo alamama şikayetine sahip bir koyundaki multiple ekinok kistlerinin ultrasonografik olarak ortaya konulmasıdır. **Materyal ve Yöntem:** Balıkesir Üniversitesi Veteriner Fakültesi Hayvan Hastanesi İç Hastalıkları Kliniğine doğum sonrası kilo alamama ve kronik zayıflık şikayetiyle 6 yaşında dişi Kıvırcık-Merinos melezi bir koyun getirildi. **Bulgular:** Rutin klinik muayenede herhangi bir anormalliğe rastlanmadı. Fiziksel muayene bulguları da fizyolojik sınırlar içerisindeydi. Bu nedenle abdominal ultrasonografik inceleme yapılmaya karar verildi. Ultrasonografik inceleme mikrokonveks prob kullanılarak 5 MHz frekansta gerçekleştirildi. Abdominal ultrasonografik muayene sırasında karaciğerde çok sayıda ekinokok kisti görünümü elde edildi. **Sonuç:** Koyunlarda kistik karaciğer ekinokokkozunun kilo alamama ve kronik zayıflamaya neden olabileceği belirlendi. Ayrıca bulgular hidatik kistlerin karaciğerde ultrasonla kolayca fark edilebilecek bazı değişikliklere neden olduğunu ve bu nedenle de hidatik kistlerin tanısında ultrasonografinin faydalı olduğu gösterdi.

Anahtar kelimeler: Koyun, kist hidatik, ultrasonografi, karaciğer.



BALIK JELATİNİ VE BALIK YAĞI BAZLI FONKSİYONEL JELİBON ÜRETİMİ

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Özet

Bu çalışmada atık alabalık derisinden jelatin ve atık uskumru başlarından enzimatik hidroliz yolu ile balık yağı elde edilmiştir. Elde edilen balık yağları ile tatlandırıcı olarak pekmez kullanılarak jelibon üretilmiştir. **Amaç:** Yumuşak şekerler popüler şekerleme ürünleridir. Bu ürünlerin tüketimi ile ilgili en önemli endişe şeker şurubu kullanımından kaynaklı yüksek kalorileri olarak görülmektedir. Şekere alternatif olarak tatlandırıcılar şekerleme ürünlerinde kullanılabilir de istenmeyen tekstürel özellikler meydana gelebilmektedir. Ayrıca yumuşak şekerler fonksiyonel yağ asitleri bakımında fakirdirler. Bu çalışmada, şekere alternatif olarak yumuşak şeker üretiminde pekmezin kullanımı ve yumuşak şekerlerin balık yağı ile zenginleştirilmesi amaçlanmıştır. **Materyal ve Yöntem:** Çalışmada balık derileri Niğde’de bulunan bir alabalık işletmesinden temin edilerek asit/baz ekstraksiyonu ile jelatin elde edilmiştir. Uskumru başları ise yine Niğde’de bulunan bir balık marketten temin edilmiştir. Atıklar ilk olarak bol su ile yıkanmış 1:1 oranın saf su ile karıştırılmış ve 60°C’ye ayarlanmış bir hot plate üzerinde pH 8’e getirilene kadar önceden hazırlanan 1 N NaOH ile muamele edilmiştir. Daha sonra % 0,5 oranında olacak şekilde alkalaz enzimi ilave edilmiş ve bu koşullarda 1 saat boyunca bekletilmiş ve alkalaz enzimini inaktif etmek için sıcaklık 85 °C’ye yükseltilmiştir. Su banyosundan alınan homojenat kaba filtre kağıdından erlenlere süzülüş ve santrifüj edilip balık yağı elde edilmiştir. Jelibon 1.grupta balık jelatini (J), su (S), pekmez (P) ve balık yağı (BY) kullanılırken, Jelibon 2.grupta pekmez miktarı iki kat artırılmıştır. Kontrol grubunda sadece J+S+P kullanılmış ve balık yağı ilave edilmemiştir. Üç farklı jelibonun tekstür profil analizleri 1 mm/s test hızında başlangıç yüksekliğinin %50’sine kadar ardışık iki döngü sıkıştırılmaya tabi tutulması yoluyla tekstür analiz cihazı (TA-XT2i, Stable Micro Systems, Surrey, İngiltere) ve P/35 probu kullanılarak belirlenmiştir. **Bulgular:** Yumuşak şekerler arasında en yüksek sertlik değeri (4251±458 g) kontrol grubunda belirlenmiştir. Formülasyonlara balık yağı ilavesi ile ürünlerin sertlikleri (1617±184 g) azalmıştır. Ayrıca sabit balık yağı içeriğinde pekmez miktarının iki kat artırılması yine sertlikte (376±59 g) azalma ile sonuçlanmıştır. Balık yağı kullanımı ile örneklerin iç yapışkanlıkları azalırken esneklikleri ve çignenebilirlikleri artmıştır. **Sonuç:** Çalışmada balık atıklarından fonksiyonel bileşenleri bünyesinde barındıran jelibon üretilmiştir. Jelibon üretiminde şeker yerine pekmez kullanılması rafine şekerin olası zararlarından korunmaya yardımcı olmuştur. Ayrıca balık yağına bağlı ortaya çıkması muhtemel olan balıksı tadı baskılamıştır. Duyusal verilere göre en çok puanı pekmez miktarının fazla olduğu Jelibon 2. grup almıştır. Bunu sırası ile Jelibon1.grup ve kontrol grubu takip etmiştir. Çalışma verileri atık balık derisinden elde edilen jelatin, atık balık başlarından elde edilen balık yağı, pekmez ve su karışımının son ürün olarak tüketilebilir bir jelibon olarak değerlendirilebileceğini göstermiştir.

Anahtar kelimeler: Balık atığı, balık yağı, jelibon, fonksiyonel gıda.



ASSESSMENT OF METHANE PRODUCTION THROUGH THE ANAEROBIC DIGESTION OF RICE STRAW FROM PAKISTAN

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Abstract

Pakistan is an agricultural country and rice is one of the major crops grown in large areas. Rice straw (RS) is an agricultural residue and its abundant quantities are produced in Pakistan. The current uses of RS include cooking, heating, and feeding animals. However, the unused RS is burned or buried in the soil by the farmers. These practices are not environmentally friendly since both contribute towards greenhouse gases (GHGs) emissions and particulate matter. AD is a biochemical process that converts biomass into various chemicals such as methane, ethanol, hydrogen, etc. This process can be used to utilize the excessive RS. It can provide renewable energy in the form of methane and reduce (GHGs) emissions from rice fields in Pakistan. The estimated RS production yielded about 18.7 million tonnes in 2022 in Pakistan by considering the rice production (11.0 million tonnes) and the residue-to-production ratio as 1.7. Total solids (92.3% of fresh matter), volatile solids (81.0% of fresh matter), and specific methane yield (180 L/kg VS) were used to calculate the total methane production potential. The assessment has resulted in approximately 2721 million m³ of methane production. Methane production through AD can potentially contribute to reducing GHGs emissions and provide renewable energy, especially in the rural areas of Pakistan. RS is a promising substrate for methane production however, some challenges need to be considered for a country like Pakistan such as initial investment to build the biogas plants at the farm scale. This work is expected to provide the basics of RS management in Pakistan.

Keywords: anaerobic digestion, rice straw, methane, environment, greenhouse gases.



MICROBIAL PHYTASE SUPPLEMENTATION: “AN APPROACH FOR ENHANCED MINERAL ABSORPTION IN EQUINE DIETS”

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Abstract

To maximize the health and performance of horses, it is crucial to understand the complex relationship between phytic acid and mineral absorption in horse nutrition. Phytic acid has a major influence on horse nutrition, and this work explores the intricate relationship between phytic acid and mineral absorption in horses. The main source of phosphorus in horse diets is phytic acid, which is included in many plant-based feeds. But it's a problem since it limits the absorption of iron, magnesium, calcium, and zinc, among other vital minerals. This shortage occurs because these minerals are not as bioavailable to the horse's body because phytic acid forms insoluble complexes with them in the digestive system. Impaired mineral absorption has far-reaching consequences for several important physiological processes in horses' health. Muscle and metabolic function rely on magnesium, whereas skeletal growth and bone strength depend on calcium and phosphorus. Recent investigations are aimed at supplementing horse meals with exogenous microbial Phytase to overcome the problem of phytic acid inhibition. Enzyme activity of microbes known as phytase allows for the release of bound minerals, making them more accessible for absorption. Supplementing equine diets with microbial phytase has the potential to enhance horses' health by making minerals easier for the horses to absorb. This work provides a comprehensive overview of the processes involved in inhibiting phytic acid, highlights the significance of mineral absorption in horses, and highlights the benefits of adding microbial Phytase to equine feeds to enhance nutrient utilization and overall horse health. This problem is well demonstrated by the framework, which also suggests that microbial phytase supplementation in horse diets might be a beneficial option.

Keywords: Equine nutrition, Phytic acid, Digestibility, Minerals, Phytase enzyme



USING METHYL JASMONATE AS ELICITOR FOR *Calendula officinalis* L. HAIRY ROOTS

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Abstract

Background: The study of medicinal plants and boosting of their secondary metabolism are some of the goals of modern pharmaceutical and veterinary research. Hairy root cultures can be used for the increase of secondary metabolism. Subsequent elicitation can boost the production of bioactive substances, such as flavonoids, even more. Methyl jasmonate (MeJ) is a possible elicitor for such purpose. The aim of the study was to determine the possibility of using MeJ as elicitor for stimulation of flavonoid biosynthesis in common marigold hairy roots. **Materials and Methods:** Hairy root line of *Calendula officinalis* L. from the collection of Laboratory of Adaptational Biotechnology was used for the research. Samples were cultivated for three weeks on liquid nutrient halfstrength Murashige and Skoog medium with 20 g/l sucrose. After that MeJ at final concentrations 10, 50 and 100 μM was added and cultivation continued for one week. Flavonoid content was determined in ethanolic (70%) extracts of hairy root samples using the standard method with AlCl_3 and expressed as the mg of rutin equivalent per g of fresh weight (mg RE/g FW). **Results:** Initial flavonoid content in the roots was 4.91 ± 1.57 mg RE/g FW. After one week of cultivation it reached 8.58 ± 2.01 mg RE/g FW in the control samples (without MeJ) and 14.49 ± 3.22 ... 19.45 ± 5.52 mg RE/g FW in samples cultivated with MeJ in different concentrations. Thus, MeJ had a positive effect on the synthesis of flavonoids. Such data correlated with our previous results on the research of MeJ elicitation of *Artemisia tilesii* Ledeb. hairy roots. The best boosting effect for *C. officinalis* hairy roots was observed while using 10 μM MeJ. In these samples the flavonoid content peaked at 19.45 ± 5.52 mg RE/g FW, which was 2.27 times more than in the control. Moreover, elicitation with 50 and 100 μM MeJ had almost the same effect (21.90 ... 25.66% less flavonoid content comparing to samples cultivated with 10 μM MeJ). **Conclusion:** Methyl jasmonate at concentration 10 μM was found to be a suitable elicitor for the boosting of flavonoids biosynthesis in hairy root cultures of *C. officinalis*. These findings can be used for the future research of secondary metabolism manipulation in hairy roots. **Acknowledgements:** The research was carried out in MedPlant4Vet framework and partially supported by NAS of Ukraine project No 0123U101081.

Keywords: hairy roots, *Calendula officinalis* L., elicitors, secondary metabolism, flavonoids.



International Congress on Multidisciplinary Approaches
in Agricultural Sciences (ASMAC)



Bayburt-Türkiye
15-17 May 2024

EVALUATION OF BANANA'S MEDICINAL POTENTIAL

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Abstract

Plants have been used for many different purposes from ancient times to the present. The field of pharmacology is at the forefront of different purposes. In this study, the biological activities of *Musa acuminata* reported in the literature were compiled. *Musa acuminata* is known as "banana". It is in the Musaceae family. It is an evergreen perennial plant. Banana is not exactly called a tree. It consists of partially or completely buried bulbs. Both male and female flowers are present in a single inflorescence. Female flowers are located near the base (and develop into fruit), while male flowers are located at the tip of the uppermost bud between the leathery bracts. In literature research, *Musa acuminata* has been shown to have activities such as antioxidant, antimicrobial, anti-inflammatory, anticancer and cytotoxic. As a result, it is thought that the banana plant can be used for different purposes in the field of health apart from its nutritional properties.

Keywords: *Musa acuminata*, banana, biological activity, pharmacology.



International Congress on Multidisciplinary Approaches
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Bayburt-Türkiye
15-17 May 2024

LITERATURE RESEARCH ON BIOLOGICAL ACTIVITIES OF *Cucumis melo*

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Abstract

Apart from their uses as food, clothing and shelter, plants have recently begun to be preferred as raw materials for medicines. In this study, the biological activities of *Cucumis melo* reported in the literature were compiled. *Cucumis melo* is known as 'melon'. It is in the Cucurbitaceae family. The homeland of melon is not exactly known. However, melon is grown in many different geographical regions. In literature studies, *Cucumis melo* has been shown to have activities such as antioxidant, antimicrobial, anti-inflammatory, antiproliferative, anticancer, analgesic, anti-hyperglycemic, antiviral and cytotoxic. As a result, it is thought that the melon plant can be used for many biological activities other than its nutritional aspect.

Keywords: *Cucumis melo*, melon, biological activity, pharmacology.



WHY STAPHYLOCOCCUS AUREUS IS STILL A MAJOR BUG OF DAIRY INDUSTRY WORLDWIDE?

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Abstract

S.aureus associated bovine mastitis is a challenging problem in many parts of the world. Due to smart pathogenesis and camouflaging strategies, it persists in bovine host making itself superbug for dairy industry. There are now about 40 immune evasion molecules known for *S. aureus* that makes it a very tricky pathogen. Furthermore, this number is constantly growing as a result of the identification of new evasion proteins and the addition of new functions to previously reported evasion proteins. Different proteins secreted by *S. aureus* significantly increase its ability to elude neutrophils, the complement system, phagocytosis, opsonization, and various other tactics used by the host immune system to eliminate foreign intruders. *S.aureus* associated bovine mastitis is not only most prevalent type of mastitis but is also very difficult to diagnose, treat and eliminate from herd. Because of the subclinical nature of disease it is very difficult to diagnose it at early stage. Moreover, this bacterium has the capability to bypass managmental strategies designed to control mastitis. It has several adaptations for immune evasion and antibiotic resistance. Vaccination against *S.aureus* associated bovine mastitis is also not very successful due to several reasons. The smart pathogenesis including facultative anaerobic parasitism and biofilm formation makes it challenging for successful treatment

The alternative strategies showing promising results for the control and treatment of *S.aureus* associated bovine mastitis are nanoparticles, probiotics, acoustic pulse therapy, IgY technology, stem cell therapy, herbal therapy, hyper immune sera, bacteriophages and endolysins. The recommended substitutes, in contrast to conventional antibiotics, have more objectives than just encouraging bacterial death and inhibiting bacterial development. These biomimetic strategies offer a comprehensive strategy that can potentially regulate multiple infection stages, including immune response and local microbiota modification, oxidative stress prevention, epithelial cell interaction, and inflammation control. Nevertheless, the veterinary community has only partially investigated these tactics in relation to the management of bovine mastitis. Further research is needed and a useful combination of these alternative strategies will surely makes it possible to eradicate *S.aureus* from dairy herd successfully in the future.

Keywords: *Staphylococcus aureus*, Sub-clinical, Bovine mastitis, pathogenesis.



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Bayburt-Türkiye
15-17 May 2024

**POLLINATOR-FRIENDLY LANDSCAPES AND HABITAT MANIPULATION FOR
BIODIVERSITY AND PEST SUPPRESSION**

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Abstract

Pollinators play a crucial role in maintaining the balance of ecosystems and sustaining agricultural productivity worldwide. However, their populations are facing alarming declines due to various factors, including habitat loss, pesticide use, and climate change. This study examines the significance of pollinators and explores the application of habitat manipulation techniques to promote biodiversity and control pests, thus enhancing ecosystem resilience. The advantages of adopting pollinator-friendly landscapes are manifold. By providing suitable habitats for pollinators, these landscapes facilitate enhanced pollination services, leading to increased crop yields and improved fruit and seed production. Additionally, the presence of diverse flowering plants supports a rich array of wildlife, contributing to overall ecosystem health. Furthermore, pollinator-friendly landscapes promote natural pest suppression mechanisms, reducing the reliance on chemical pesticides and fostering sustainable agricultural practices. Moreover, the aesthetic and recreational values of such landscapes offer additional benefits to human well-being and quality of life. Key components of pollinator-friendly landscapes include a diverse mix of flowering plants, the provision of nesting sites and shelters for pollinators, minimized pesticide usage through integrated pest management strategies, and the maintenance of habitat heterogeneity. Various habitat manipulation strategies are discussed, ranging from planting and managing pollinator-friendly flora to creating and restoring habitats and integrating beneficial insects and other wildlife into agricultural landscapes. These strategies aim to create resilient ecosystems capable of withstanding environmental challenges and supporting thriving pollinator populations. However, several challenges and future perspectives need to be addressed to ensure the effectiveness of habitat manipulation efforts. These include addressing scale and connectivity issues, balancing human needs with pollinator conservation, and addressing emerging threats and opportunities, such as climate change impacts and invasive species. In conclusion, this study underscores the importance of implementing pollinator-friendly practices and conducting further research to support pollinator conservation efforts. By emphasizing the critical role of habitat manipulation in sustaining both pollinators and ecosystems, it advocates for collective action to safeguard biodiversity and agricultural productivity for future generations.

Keywords: Pollinators, Habitat manipulation, Pest suppression, Landscape, Sustainability, Pest management



BAZI BİYOLOJİK GÜBRE FORMÜLASYONU UYGULAMASININ ÇİLEK YETİŞTİRİCİLİĞİNE ETKİLERİ

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Özet

Amaç: Eskişehir ekolojik şartlarında 2023 yılında yürütülen bu çalışmada bazı bakteri formülasyonlarının yaz dikimi ile yetiştirilen çilekte bitki gelişimi, verim ve meyve kalitesine olan etkileri incelenmiştir. **Materyal ve Yöntem:** Bitki materyali olarak nötr gün özelliğe sahip “portola” çilek çeşidinin ekstra grupta yer alan frigo fideleri kullanılmıştır. Kontrol grubu dışında üç adet tekli, 2 adet üçlü ve beş adet beşli bakteri izolatları ile hazırlanan biyolojik gübre formülasyonları kullanılmıştır. Araziye şaşırtılacak fideler 250 ml hacimli viyollere dikilmiş ve 10⁸ cfu/ml konsantrasyonunda bakteri solüsyonları kök bölgesine 10 ml uygulanmıştır. Gün dönümünde 2torf:1perlit karışımı ortama dikilen fideler bir ay sonra tüplü fide olarak siyah plastik malçla kaplı masuralara üç tekerrürlü ve her tekerrürde 10 bitki olacak şekilde dikilmiştir. 15 Ağustos-15 Kasım tarihleri arasında yapılan 8 hasadın ürünleri inceleme materyali olarak kullanılmıştır. **Bulgular:** Eskişehir ekolojisinde yaz dikimi yöntemi ile yetiştirilen portalo çileğinin biyolojik gübre formülasyonlarının tamamına olumlu tepkileri kontrole göre çok önemi seviyelerde gerçekleşmiştir. Araştırmada bitki başına verim, ortalama meyve ağırlığı, meyve boyutları, meyve sertliği, suda çözünebilir kuru madde miktarı (şçkm), titre edilebilir asit miktarı, malik asit, sitrik asit, C Vitamini, Ph, meyve renk değerleri (L, a, b, Hue ve Kroma değeri) incelenmiş ve vejetasyon periyodu sonunda bitkilerin kardeş sayısı tespit edilmiştir. Araştırmada bitki başına verim kontrol uygulamasında 80,9 g iken, biyolojik gübre formülasyonlarında 180,5g (1 nolu uygulama) ile 330,6g (3 nolu uygulama) arasında belirlenmiştir. Ortalama meyve ağırlığı 5 g ile en düşük kontrol uygulamasında, 22g ile en yüksek 3 nolu formülasyondan elde edilmiştir. Meyve suyunun SÇKM içeriği %8,2 (4 nolu formülasyon) ile %13,8 (1 nolu formülasyon) arasında tespit edilmiştir. Meyve suyundaki en yüksek malik asit, sitrik asit ve askorbik asit 1 nolu formülasyondan saptanmıştır. Araştırmada verim, görsel ve duyu kalite parametrelerinin tamamı birlikte değerlendirildiğinde 3, 4, 7 ve 10 nolu formülasyonların genel olarak en iyi sonuçları verdiği belirlenmiştir. **Sonuç:** Eskişehir şartlarında verim ve meyve özellikleri bakımından yaz dikimi portola çeşidi çilek yetiştiriciliğinde bakteri kaynaklı biyolojik gübre formülasyonlarının ekonomik ve ekolojik olarak kullanımlarının uygun olduğu belirtilebilir. Son turfanda çilek üretim dönemi için önemli ve özgün bulgular elde edilmiş olmasına rağmen, sürdürülebilirlik çerçevesinde aynı parselin ikinci yıldan itibaren yıl boyu üretimde kullanılması ve sonuçların değerlendirilmesinin gerekliliği üzerinde durulmaktadır.

Anahtar Kelimeler: Çilek, Portola, Bakteri, Biyolojik Gübre Formülasyonu, Verimi



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THE PRICKLY FIG (*Opuntia ficus-indica* L.) FLOWER STRUCTURE

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Abstract

Prickly fig (*Opuntia Ficus-Indica* L.), which grows naturally on the coastline of the Mediterranean and Aegean regions in our country without culture and breeding studies.); İndian fig, pastor's nut, frankincense fig, known by its other local names as babutsa is a plant in the genus *Opuntia* belonging to the Cactaceae family. The first condition for an effective pollination in fruit growing is the presence of flower powders that are alive, have a high level of morphological homogeneity, and have the ability to germinate. The gender status of fruit trees varies according to the biological structures of flowers, and it is important to know the floral structures in order to obtain high-quality fruits and high yields from Indian figs, since different gender statuses occur according to floral characteristics.

Keywords: Prickly fig, Quality, *Opuntia Ficus-Indica* L., flower.



DOĞU AKDENİZ BÖLGESİ TURUNÇGİL ÜRETİM ALANLARINDA TURUNÇGİL SARI DAMAR AÇILMASI HASTALIĞININ DURUMU İLE İLGİLİ ARAŞTIRMALAR

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Özet

Turunçgil sarı damar açılması hastalığı dünyada ilk kez Pakistan'da ardından Hindistan'da tespit edilmiştir. Türkiye'de 2000'li yıllarda bu hastalığın varlığı yeni bir turunçgil viral hastalığı olarak bildirilmiştir. Bu dönemde hastalığın ilk belirlendiği il olan Adana ilinde eradikasyon işlemi gerçekleştirilerek enfekteli ağaçlar kesilmiştir. Hastalığa turunçgil sarı damar açılması virüsü (CYVCV)'nin neden olduğu ve etmenin tek sarmal pozitif RNA virüsü yapısında olduğu 2012 yılında ortaya konmuştur. **Amaç:** CYVCV'nin yaygınlık durumunu Çukurova Bölgesinde araştırmak, yeni bulaşık alanları saptamak ve izolatlar arasındaki farklılığı moleküler bazda belirlemek amacıyla bu çalışma yürütülmüştür. **Materyal ve Yöntem:** Sörvey çalışmaları 2020-2024 yılları arasında Hatay, Adana ve Mersin illerini kapsayacak şekilde güdümlü sörvey çalışması olarak gerçekleştirilmiştir. Çalışma başta limon olmak üzere portakal, altıntop ve turunç tür ve çeşitlerini kapsamıştır. Toplamda 150 turunçgil parseli ve 10 farklı fidan üretim alanında CYVCV'nin varlığına bakılmış ve 100 farklı örnek RT-PCR yöntemiyle incelenmiştir. Örneklerin toplanması etmenin yapraklarda oluşturduğu sarı renkli damar açılması ve yaprak deformasyonları semptomları göz önüne alınarak yapılmıştır. Alınan örneklerden total nükleik asit ekstraksiyonu CTAB tampon çözeltisi kullanılarak gerçekleştirilmiştir. Elde edilen baz dizilimleri, NCBI veri tabanında "BLAST" metoduyla seçilen kayıtlı CYVCV'leri ile karşılaştırılmıştır. **Bulgular ve Sonuç:** Toplamda 35 örneğin CYVCV ile bulaşık olduğu RT-PCR analizleri sonucunda %1'lik agar jelde oluşturduğu 479 nt baz seviyesindeki bantların varlığı ile belirlenmiştir. Elde edilen bulgular sonucunda hastalık etmeninin bölgede henüz fazla yaygın olmadığı ortaya konmuştur. Çalışmada ayrıca 20 farklı üretim alanlarından ve farklı konukçulardan alınan örneklerin manto protein bölgesinin sekans analizleri gerçekleştirilmiş ve karakterize edilmiştir. Elde edilen sekans analizleri birbirleriyle ve NCBI gen bankasında kayıtlı CYVCV'leri ile yapılan karşılaştırmalar sonucunda izolatlar arasında oldukça düşük farklılıklar bulunduğu (%97.1-99.8) belirlenmiştir. Oluşturulan ağaçta tüm izolatlar aynı bölgede yer almışlardır.

Anahtar kelimeler: CYVCV, Citrus, Türkiye, Turunçgil, RT-PCR.



MEDICINAL POTENTIAL OF MANGO, KNOWN FOR ITS NUTRITIONAL PROPERTIES

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Abstract

With the development of iatrochemistry, plants began to be used in many different fields pharmacologically. In this study, the biological activities of *Mangifera indica* reported in the literature were compiled. *Mangifera indica* is known as "mango". It is in the Anacardiaceae family. Mango is a large fruit tree that can grow to a height of approximately 30 meters. There are types such as "Indian type" and "Southeast Asian type". In literature research, *Mangifera indica* has been shown to have activities such as antioxidant, antimicrobial, anti-inflammatory, antiproliferative, anticancer, antidiabetic and cytotoxic. As a result, when we look at the literature research other than the fruit feature of the mango plant. It is thought that it can be used in many different areas of health.

Keywords: *Mangifera indica*, Mango, biological activity, pharmacology.



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Bayburt-Türkiye
15-17 May 2024

**INFLUENCE OF GRAPE POLYPHENOLS ON INTESTINAL HEALTH AND
PRODUCTION IN PIGS**

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Abstract

The recognition of the necessity for employing natural additives in animal feed has grown alongside the ban of antibiotics in the animal feed sector. Grapes, as well as by-products of the wine industry (grape pomace and seed extracts), contain biologically active chemical constituents that can be used to improve animal production by incorporating them into animal feed. Grapes are a valuable source of polyphenols, especially flavonoids, phenolic acids and stilbenes, most of which have been shown to have therapeutic or health-promoting properties. The aim of this review is to elucidate the influence of polyphenols on intestinal health. The first part of the review highlights the chemical structure of the major polyphenols in grapes and the bioavailability and metabolism of polyphenols in pigs. The second and main part of the review presents an overview of the results of studies investigating the antioxidant, antimicrobial and prebiotic effects, as well as the regulation of intestinal barrier function through signalling pathways and intestinal responses, of grape polyphenols introduced into pig diets. All of this is supported by previous research, findings and conclusions. Finally, this review concluded that supplementing pigs with grape phenolic compounds as natural feed additives may have a role on gut antioxidant, immune and antimicrobial performance and overall production performance in pigs.



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15-17 May 2024

Eriobotrya japonica IN TERMS OF BIOLOGICAL ACTIVITY

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Abstract

Plants attract attention with the active substance they contain. This active ingredient feature is important for many different fields. In this study, the biological activities of *Eriobotrya japonica* reported in the literature were compiled. *Eriobotrya japonica* is known as "loquat". It is in the Rosaceae family. Loquat is an evergreen shrub or tree. Geographically, its homeland is south-central China. In literature studies, *Eriobotrya japonica* has been shown to have activities such as antioxidant, antimicrobial, antidiabetic, antinociceptive, anti-inflammatory, antiproliferative, anticancer and cytotoxic. As a result, it has been observed that the loquat plant contains important pharmacological activities in addition to its consumption as a fruit.

Keywords: *Eriobotrya japonica*, Loquat, biological activity, pharmacology.



THE USE OF SPECTROSCOPY IN HALLOUMI CHEESE STUDIES

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Abstract

Background: Halloumi cheese, renowned for its unique taste and texture, has recently been granted a prestigious Protected Designation of Origin (PDO) label. The PDO label not only enhances the economic value of Halloumi and Hellim but also ensures quality and authenticity by regulating production standards. It serves as a guarantee of origin, indicating to consumers that they are purchasing a genuine product with unique characteristics and flavors derived from its traditional production methods. Moreover, the PDO label protects imitation and promotes sustainable agricultural practices, thereby contributing to the preservation of Cyprus's rich culinary heritage for future generations. In practice, it necessitates adherence to specific criteria regarding milk sourcing and quantities. **Materials and Methods:** This presentation aims to shed light on recent studies that have utilized advanced analytical techniques such as near-infrared (NIR) and middle-infrared (MIR) spectroscopy to analyze Halloumi cheese samples. Chemometric analysis, particularly discriminant analysis, has proven indispensable in deciphering the wealth of spectroscopic data garnered through these methods, employing both supervised and unsupervised approaches. Despite the significance of these techniques, the existing body of literature on Halloumi cheese leveraging spectroscopy-based measurements remains limited. **Results:** Within this context, the NIR model has emerged as a valuable tool, revealing that sample grouping is predominantly dictated by the cheese's composition, with a particular focus on fat, protein, and lactose content. Conversely, the MIR model has drawn attention to the 1150-720 cm⁻¹ subregion, crucial for discerning the origin of the cheese's milk species. This subregion encompasses absorptions indicative of various chemical bonds, offering insights into the intricate composition of Halloumi cheese and its diverse origins. **Conclusion:** Moving forward, continued exploration of these techniques can enhance our understanding of Halloumi cheese production, ensuring its continued excellence in the global market.

Keywords: MIR, NIR, HSI, Halloumi cheese, milk species, seasonal variation



SAHİL KOŞULLARINA UYGUN SENTETİK YONCA (*Medicago sativa* L.) GENOTİPLERİNİN GELİŞTİRİLMESİ

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Özet

Amaç: Ülkemizde işletme düzeyinde büyükbaş damızlık hayvancılığın artışı ile kaliteli kaba yem ihtiyacı da doğal olarak artmaktadır. Yonca (*Medicago sativa* L) içerdiği protein, vitamin ve mineral maddece zengin bir kaba yem kaynağı olarak hayvanlar tarafından yem bitkileri içerisinde en çok tercih edilen bir türdür. Kışlık dilimde yaygın olarak yetiştirilen bir çok yonca çeşidi varken yazlık dilimde tescilli çeşit sayısı az olup sahil koşullarına uyumlu yüksek kuru ot verimi ve kalitesine sahip sonbahar durgunluğu olmayan (nondormant) yada çok az olan (8-9 dormansi) yeni bir sentetik yonca çeşidinin geliştirilmesi bu çalışmanın temel amacıdır. **Materyal ve Yöntem:** Bu çalışmanın ilk aşaması için Avusturya, ABD, İtalya ve Türkiye'den sonbahar durgunluğu olmayan (nondormant) yada çok az olan (8-9 dormansi) toplam 30 adet yonca tarımında sorun hastalık ve zararlılara toleranslı, yüksek kuru ot verimi ve kalitesine sahip, biçmeye toleransı olan eski ve yeni çeşitler, hat ve popülasyonlar başlangıç materyali olarak kullanılmıştır. Çalışmanın ilk yılında her bir genotipten 200-250 adet rasgele tohum iklim odalarında çimlendirildikten sonra fideler 2022 yılı Eylül ayı içerisinde 10 cm sıra üzeri ve 40 cm sıra arası mesafe olacak şekilde 50 m uzunluğunda iki tekrarlı olarak Antalya koşullarında tarlalara şaşırtılmıştır. 2023 yılında köklenmeleri ve kardeşlenmelerine izin verilen her bir genotipe ait tek bitkilerde fenotipik gözlemler alınmıştır. Hastalık ve mikro element eksikliğinden dolayı zararlanma görülen bitkilere negatif seçim yapıldıktan sonra kalan bitkilerde başta bitki boyu olmak üzere çiçeklenme tarihi, çiçek rengi, dik büyüme şekli, yapraklılık ve kardeşlenme durumuna göre başlangıç materyali arasından 250 adet tek bitki seçilmiştir. 2023 Ağustos ayında seçilen bu tek bitkilerden alınan klonlar iklim odasında köklendirildikten sonra 2023 eylül ayı sonu itibariyle Antalya koşullarında her bir bitkiden alınan 10 ar adet klon 10 cm sıra üzeri ve 40 cm sıra arası mesafe ile 1 m uzunluğundaki sıralara şaşırtılmıştır. 2023-2024 kış döneminde soğuk zararı gören 10 adet klona negatif seleksiyon uygulanmış olup şu an itibariyle gözlem ve ölçümler devam etmektedir. **Bulgular:** 2024 ve 2025 yıllarında kuru ot verimine ek olarak fenotipik, patolojik gözlemler ile sindirilebilirlik analizlerine göre polikros döl testlerinde kullanılacak 20-25 hat seçilerek sentetik çeşit geliştirmenin ikinci aşamasına geçilecektir. **Sonuç:** Şu an itibariyle farklı genetik tabana sahip sahil tipi yonca gentiplerinden süper klonlar seçilmiş ve bunlar başarılı bir biçimde köklendirilerek tarla koşullarında yetiştirilmekte ve gözlem ile ölçümlere devam edilmektedir. Bu çalışmanın başarılı bir şekilde tamamlanması durumunda yerli olanaklarla şirketimizin ilk yonca çeşit adayı geliştirilmiş olacaktır.

Anahtar kelimeler: Yazlık yonca, sentetik çeşit, yüksek kuru ot verimi, sindirilebilirlik, klon seçimi.



VAN İLİNDE BULUNAN *Cuscuta approximata* BAB.'NİN MOLEKÜLER TANISININ YAPILMASI

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Özet

Amaç: *Cuscuta approximata* Bab. (yonca küskütü) Türkiye’de yoğun olarak bulunmakta ve özellikle yonca üretim alanlarında ciddi ekonomik kayıplara sebep olmaktadır. Bu çalışma ile Van ili yonca üretim alanlarından toplanan *C. approximata* türlerinin korunmuş bölgelerine ait DNA sekanslarının tespit edilmesiyle türün moleküler tanımlanmasının yapılması hedeflenmiştir. **Materyal ve Yöntem:** Van ilinde 7 farklı bölgeden toplanan *C. approximata*’ya ait toplamda 19 popülasyon örneğinin moleküler tanımlanması yapılmıştır. Bitki örneklerinden izole edilen genomik DNA’lardan ITS bölgelerinin çoğaltılması amacıyla evrensel ITS4 ve ITS5 primerleri kullanılmıştır. Bu primerler yardımıyla, rDNA’da yer alan ITS1, 5,8S ve ITS2 bölgeleri PCR yoluyla çoğaltılmıştır. DNA dizilimi yapılan *C. approximata* türünün genom bilgileri farklı programlar (Geneious Software, CLC Main Workbench) kullanılarak analiz edilmiştir. **Bulgular:** Biyoinformatik analizler sonucunda Van ilinden toplanan örneklerin kendi içinde ve gen bankasında yer alan diğer izolatlar ile %97’den fazla benzerlik oluşturduğu tespit edilmiştir. Çalışmada, nrDNA ITS bölgesi uzunluğunun 682-716bp arasında olduğu belirlenmiştir. **Sonuç:** *C. approximata* örneklerinden elde edilen DNA dizileri Gen Bankası’na (NCBI) kaydedilerek dünyadaki diğer araştırmacıların kullanımına sunulmuştur. Popülasyonlarda, örnek toplanan bölgeler arasında genetik farklılaşma olduğu tespit edilmiştir. *C. approximata* adlı türün moleküler olarak tanımlanması, tarımsal alanlardaki etkisini azaltmak için bazı mücadele yöntemlerinin geliştirilmesine katkı sağlayacaktır. Bu çalışma Van Yüzüncü Yıl Üniversitesi Bilimsel Araştırmalar Proje Başkanlığı tarafından FAP-2018-7425 nolu proje ile desteklenmiştir.

Anahtar kelimeler: *Cuscuta approximata* Bab., ITS, Moleküler tanımlama



THE EFFECT OF USING OF CAROB POWDER, BUTTER AND OLIVE OIL ON RHEOLOGICAL PROPERTIES OF SPREADABLE CHOCOLATE

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Abstract

Background: In this research, it was aimed to determine the rheological changes in chocolate by adding different levels of carob powder and various oils to the spreadable chocolate formulation. **Materials and Methods:** In the study, carob powder was substituted for powdered sugar and cocoa powder used in the production of normal spreadable chocolate, and two different oils (olive oil, butter) were substituted for vegetable oil (palm oil) and its effect on the rheological properties of spreadable chocolate was determined. Carob powder was replaced with powdered sugar and cocoa powder at levels of 50%, 66.8% and 100%, respectively. The palm oil used in the control chocolate formulation was replaced with 100% olive oil, 100% butter, 50% olive oil, 50% butter and finally 100% olive oil/butter mixture (m/m), and the effects of the components used were investigated by performing rheological analyzes on the chocolate samples. **Results:** Spreadable chocolate, which has an important place in the daily diet, is usually consumed at breakfast. It is a food with high energy content. Changing eating habits in recent years; the preference for natural, safe, easily prepared and high nutritional value foods and the increase in interest in ready-to-eat products have led manufacturers to produce new, healthier and functional foods. Therefore, in this study, a new product was developed using nutritious carob and healthier oils (olive oil, butter) as substitute ingredients. The addition of carob powder, powdered sugar, cocoa powder, butter and olive oil at different levels affected the back extrusion (hardness, consistency, cohesiveness, viscosity index) and yield stress values of the chocolate samples at a statistically significant level ($P<0.01$). The highest spreadability strength was determined in the sample containing 66.78% carob powder and 100% butter, and the lowest value was determined in the sample containing 50% carob powder and 100% olive oil. In general, in chocolate formulations containing the same ingredients except oil, spreadability, cohesiveness, consistency, hardness and viscosity index values were found to be higher in samples containing olive oil, while they were lower in samples containing palm oil. **Conclusion:** According to the analysis results, it was concluded that 50% carob powder and 100% butter can be used in the production of spreadable chocolate.

Keywords: Spreadable chocolate, carob, butter, olive oil, rheological properties



**DEPENDENCE OF LAMINITIS SINDROME IN COW RATION BY STRUCTURE, IN
THE FIRST 2 MONTHS AFTER CALVING**

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Abstract

In cows with high milk production food rations contain high amounts of easily fermented foods and the possibility to shown aseptic laminitis had interest study. Experimentally studied the relation of dependency syndrome lameness of structure and balance differences basic-acid equivalents in the period up to ration after calving two months, in three cows, the race "Simental" with the nine heads. Cows were randomly selected in a farm close to the weight and production 4000 - 5000 liters. In each group had three first-calving cows. The study was conducted in the period January - December, 2022. In groups of cows was applied to feeding rations containing different amounts of concentrate and margin basic dyes with those acid equivalents, respectively, 216.31, 114.13 and 43.24. For comparison indicators were assessed on the content of rumen pH, glycemia and calcemia and cases with clinical manifestations of hitching. The data were processed statistically. In conclusion laminitis syndrome with clinical lameness was observed in 4 cows (or 14.81%), of which 3 heads (33.3%) belonged to the third group (DKAB = 32.41) and 1 cattle (11.1%) Group second (DKAB = 94.16). In the third group of cows was found able hypoglycemia (32.08 ± 0.03 mg %) and hypocalcemia ($7.78 \pm 0:06$ mg%), statistically prove, for the entire period of study. 2 cows were first calving.

Keywords: Difference basic-acid (DKAB), luminal pH, laminitis, hypoglycemia, hypocalcemia



**RECOVERY OF SPINAL WALKING IN PARAPLEGIC DOGS USING
PHYSIOTHERAPY AND SUPPORTIVE DEVICES TO MAINTAIN THE STANDING
POSITION**

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Abstract

Paraplegic patients have always been ideal candidates for physiotherapy due to their body's inability to recover on its own. Regardless of the cause that led to the onset of paraplegia (traumatic or degenerative), physiotherapy helps these patients with devices and methods designed to restore the proper functioning of their motility, as well as their quality of life. A total of 60 paraplegic dogs without deep pain in the hindlimbs caused by intervertebral disc extrusion or thoraco-lumbar fractures underwent physiotherapy sessions: manual therapy (massage), electrostimulation (10–20 minutes with possible repetition on the same day), ultrasound therapy, laser therapy, hydrotherapy, and assisted gait in supportive devices or on treadmills to stimulate and relearn walking, which was the main focus of the study. To maintain the standing position over time, we developed different devices adapted for each patient depending on the degree of damage and the possible associated pathologies. Concurrent pathologies (skin wounds, urinary infections, etc.) were managed concomitantly. After 125 to 320 physiotherapy sessions, 35 dogs (58.33%) developed spinal walking and were able to walk without falling or falling only sometimes in the case of a quick look (gait score 11.6 ± 1.57 from 13 considered normal) with a lack of coordination between the thoracic and pelvic limbs or difficulties in turning, especially when changing direction, but with recovery of the quadrupedal position in less than 30 seconds.

Keywords: dog; spinal cord injury; paraplegia; physiotherapy; recovery of spinal walking



REPRODUCTION MANAGEMENT OF SHAGYA ARABIAN HORSE BREED IN RĂDĂUȚI STUD FARM

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Abstract

The present study investigates 2364 instances of gestation recorded between 1997 and 2017 at the Rădăuți stud farm, focusing on the Koheilan, Shagya, Dahoman, El-Sbaa, Gazal, Hadban, Mersuch, and Siglavay-Bagdady genealogical lines of Shagya Arabian horses. The objective is to analyze various parameters related to reproduction, including gestation length, natality rate, foaling interval, age at first foaling, and age of onset of breeding activity.

Gestation in Shagya Arabian horses typically ranges from 310 to 340 days according to literature. In this study, the average gestation length was 339.8 ± 1.94 days, with the shortest observed in the Dahoman bloodline (336.6 ± 1.66 days) and the longest in the Gazal bloodline (341.7 ± 1.88 days). Natality, representing the proportion of successful pregnancies, is approximately 60% for mares overall. However, in the examined population, the average natality rate was 66.08%, with the lowest in the Shagya bloodline (54.65%) and the highest in the Mersuch bloodline (73.21%).

Foaling interval, denoting the time between successive births, typically falls within 337-338 days. However, the studied broodmares exhibited an average foaling interval of 469.5 ± 31.22 days, with the shortest interval in the Gazal bloodline (408.2 ± 40.88 days) and the longest in the Hadban bloodline (538.5 ± 65.33 days).

Age at first foaling is contingent upon factors such as the mare's reproductive health, neurohormonal balance, and breeding success. The average age at first foaling for the studied population was 2191.6 ± 153.1 days, ranging from 231 days in the Siglavay-Bagdady bloodline to 1428 days in the El-Sbaa bloodline.

Data regarding the age of introduction to breeding indicated an average value of 1711.8 ± 103.3 days, with the earliest introduction observed in the Koheilan bloodline (1248 days) and the latest in the Shagya bloodline (1948.2 days).

The findings suggest that while the management practices at the Rădăuți stud farm demonstrate a scientific foundation, there is room for improvement. Specifically, efforts should focus on increasing natality rates, optimizing foaling intervals, and reducing the age of introduction to breeding and age at first foaling in order to enhance reproductive efficiency and overall herd management.

Keywords: Shagya Arabian, broodmares, reproduction, management.



OCCURRENCE PATTERN AND BIOLOGY OF HERBICIDE-RESISTANT *Echinochloa* SPECIES IN CHINA

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Abstract

Background: *Echinochloa* species are problematic weeds in China. The continuous use of herbicides with the same mode of action (primarily ALS, ACCase inhibitors, and synthetic auxins) gave rise to herbicide resistance in Chinese agricultural fields. **Materials and Methods:** Seeds of nine different *Echinochloa* species were collected from seventy agricultural fields in various Chinese provinces, including Heilongjiang, Jiangxi, Jilin, Liaoning, Ningxia, Jiangsu, Zhejiang, Anhui, Hunan, Guangxi, Fujian, Yunnan, and Shanghai during fall 2016. Collected seeds were subjected to seven herbicides application (quinclorac, cyhalofop-butyl, bensulfuron-methyl, bispyribac sodium, pyrazosulfuron, penoxsulam, metamifop) with five varying doses. *Echinochloa* species were evaluated for herbicide resistance based on EC₅₀ values. **Results:** Among herbicide-resistant species, *E. phyllopogon* depicted the highest distribution frequency (29%), followed by *E. crus-galli* var. *mitis* (27%). Results depicted that five *Echinochloa* species evolved resistance against either of the herbicides under study. However, all the populations under study were susceptible to cyhalofop-butyl, penoxsulam, and metamifop. One population of *E. oryzoides*, two of *E. crus-galli*, four of *E. crus-galli* var. *mitis*, and four of *E. phyllopogon* depicted quinclorac-resistance. Meanwhile, bensulfuron-methyl resistance was found in seven populations of *E. phyllopogon*. One population of *E. crus-galli*, two of *E. crus-galli* var. *zelayensis*, and seven of *E. phyllopogon* evolved bispyribac sodium resistance. Furthermore, two populations of *E. phyllopogon* and one population of *E. crus-galli* showed pyrazosulfuron resistance. Pianka's index for niche overlap of *E. oryzoides* vs *E. crus-galli* var. *mitis*, *E. oryzoides* vs *E. crus-galli* var. *zelayensis*, *E. crus-galli* vs *E. crus-galli* var. *zelayensis*, and *E. crus-galli* var. *mitis* vs *E. crus-galli* var. *zelayensis* were recorded in the range of 0.57 to 0.81 depicting their shared factors of population growth. Besides, several of the populations mentioned above depicted multiple herbicide resistance. **Conclusion:** Increasing cases of herbicide resistance in Chinese agricultural fields demand sustainable and diversified weed control approaches, especially for *Echinochloa* weed species.

Keywords: EC₅₀ values, dose response curve, herbicide resistance, Niche overlap



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**UNLOCKING THE POTENTIAL: WHEY PROTEIN AS A CORNERSTONE FOR
FUNCTIONAL FOOD INNOVATION**

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Abstract

Whey protein, an industrial by-product, is gaining recognition for its versatile role in both traditional and innovative food products. Its integration in the food industry not only reduces environmental pollution but also facilitates the creation of high-nutrient functional foods. Whey proteins function as texture modifiers, thickening agents, carriers, and foaming agents, alongside possessing crucial bioactivities. With its rich nutritional composition, including bioactive peptides and essential amino acids, products like whey protein concentrate (WPC), whey protein isolate (WPI), and hydrolyzed whey protein (HWP) are derived. These proteins, encompassing α -lactoglobulin, β -lactalbumin, immunoglobulin, and lactoferrin, are vital for various food engineering applications. Moreover, whey protein contributes to the development of protein-based functional nutrition and holds therapeutic applications. Its antimicrobial properties make it valuable for edible coatings and preserving food products, effectively extending their shelf life. This research underscores whey protein's pivotal role as a foundational component for the next wave of functional food ingredients. By showcasing its diverse applications and promising potential, this study aims to shed light on the significance of whey protein in shaping the future of the food industry.

Keywords: Whey proteins, food industry, functional properties, versatility applications



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**EMBRACING INTELLIGENCE: THE RISE OF INTELLIGENT FOOD PACKAGING
IN THE FOOD SECTOR**

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Abstract

In today's life sciences landscape, a strong emphasis on sustainability, enhanced quality, safety, and elevated standards is paramount. Within this context, the role of food packaging emerges as a critical component throughout the product lifecycle. Enter intelligent packaging, a burgeoning technology within the realm of food production. This innovative approach not only continually monitors the quality of food products but also facilitates seamless communication of pertinent information to consumers. Consequently, it elevates consumer satisfaction while simultaneously combating food waste. This review delves into the myriad technologies employed in intelligent food packaging systems, elucidating both their current applications and future potentials. At its core, this system serves as a bulwark, ensuring safety and maintaining quality standards within the food industry. Yet, despite its promise, challenges such as high implementation costs and legal considerations loom large. Nonetheless, while the practical adoption of this innovation remains somewhat limited, its transformative capabilities and untapped potential are widely acknowledged.

Keywords: Intelligent packaging, safety, quality, and food products.



NUTRIENT OPTIMIZATION IN POULTRY DIETS: STRATEGIES FOR ENHANCING AMINO ACID AVAILABILITY THROUGH SOYBEAN PROCESSING

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Abstract

The optimization of amino acid digestibility and bioavailability in soybean-based diets is pivotal in enhancing growth performance and feed efficiency in poultry nutrition. Soybeans stand as a primary protein source in poultry feeds, supplying indispensable amino acids essential for muscle development, feather growth, and overall avian health. However, inherent anti-nutritional factors present in soybeans, such as trypsin inhibitors, lectins, and phytic acid, pose challenges by impeding protein digestion and limiting amino acid utilization in poultry. This review delves into the impact of diverse processing methods on soybean digestibility and the bioavailability of amino acids in poultry diets. Various techniques, including heat treatment, enzymatic hydrolysis, fermentation, and extrusion, are explored for their efficacy in mitigating anti-nutritional factors while enhancing nutrient digestibility and utilization in poultry. Heat treatments like steam and roasting serve to deactivate trypsin inhibitors and lectins, thereby augmenting protein digestibility in soybeans. Enzymatic hydrolysis facilitates the breakdown of complex proteins into smaller peptides and free amino acids, enhancing their absorption in the digestive tract. Fermentation by beneficial microorganisms is shown to reduce phytic acid levels, thereby enhancing the bioavailability of minerals and amino acids in soybean-based diets. Additionally, extrusion processing, characterized by high temperature and pressure, effectively deactivates anti-nutritional factors and increases the digestibility of soy proteins. A comprehensive understanding of the influence of processing methods on soybean digestibility and amino acid bioavailability is essential for formulating poultry diets that maximize nutrient utilization and foster optimal growth performance. By selecting appropriate processing techniques, poultry producers can mitigate the adverse effects of anti-nutritional factors in soybeans and elevate the nutritional quality of feeds, ultimately enhancing the health and productivity of their flock.

Keywords: Poultry nutrition, soybean processing, amino acid digestibility, feed efficiency, growth performance, fermentation



KIWI (*Actinidia deliciosa*): BIOLOGICAL ACTIVITIES AND GENERAL PROPERTIES

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Abstract

Another name for alternative medicine is known as complementary medicine. The use of plants for different purposes has an important place in alternative medicine. In this study, the biological activities of *Actinidia deliciosa* reported in the literature were compiled. *Actinidia deliciosa* is known as "kiwi". It is in the Actinidiaceae family. Kiwi is a plant originally native to Southern China. But later it spread to many different regions. It can grow at altitudes between 600 and 2,000 m. Its leaves are alternate, long-stalked, deciduous, ovate to almost circular, cordate at the base. Its flowers are white or yellow. In literature studies, *Actinidia deliciosa* has been shown to have activities such as antioxidant, antimicrobial, antiproliferative, antidiabetic, anti-inflammatory, anticancer and cytotoxic. As a result, it is thought that kiwi plant can be used in the field of pharmacology.

Keywords: *Actinidia deliciosa*, kiwi, biological activity, pharmacology.



CHEMICAL CHARACTERIZATION AND PRELIMINARY EVALUATION OF THE EFFICACY AND TOLERABILITY OF A FOOD SUPPLEMENT BASED ON MALVA EXTRACT AND SORBITOL AGAINST FUNCTIONAL CONSTIPATION IN HEALTHY CONSUMERS

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Abstract

Background: Functional Constipation (CF) consists in the difficulty to defecate without a recognizable cause. The purpose of this investigation is to study the efficacy against CF and the tolerability of a food supplement based on *Malva sylvestris* and sorbitol. **Materials and Methods:** The chemical composition of *M. sylvestris* dry extract and its fiber content were determined through RP-UHPLC–HRMS and a gravimetric method, respectively. A survey among food supplement consumers was performed through validated questionnaires evaluating the number of bowel movements/week, the consistency of the stool, and the subject's quality of life, in 56 subjects, treated for 20 days. **Results:** The chemical analysis showed the presence of flavonoids and soluble food fiber. The consumers reported a statistically significant improvement for the measured parameters, without adverse effects. **Conclusion:** These preliminary data suggest the ability of a combination of *M. sylvestris* and sorbitol to alleviate CF.

Keywords: Functional Constipation, Consumer Survey, *Malva Sylvestris*, Laxative Effect.



**GREEN SYNTHESIZED SILVER NANOPARTICLES: CHARACTERIZATION,
PHYTOSTIMULATORY IMPACTS, AND DEGRADATION POTENTIAL FOR
ORGANIC POLLUTANTS**

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Abstract

Green synthesis of nanoparticles using plants is one of the most convenient, economical, and eco-friendly methods nowadays. Moreover, green synthesized silver nanoparticles (AgNPs) have gained interest due to their possible uses in agriculture and the environmental field. The present study focused on the biological synthesis of AgNPs using *Triticum aestivum* and *Zea mays*, their characterization, and their phytostimulatory impact and remediation potential for organic pollutants. Three different types of AgNPs treatments were prepared, T1 was synthesized by using *Triticum aestivum*, T2, by using *Zea mays*, and T3 was a mixture of both types of nanoparticles. T1 analyzed via EDX showed the presence of 44% of Ag₀ and T2 showed 66% of Ag₀ present in dried pellets extracted after synthesis. At 40 µg mL⁻¹ of T1, T2, and T3 applied on methylene blue, 43.3, 47.4, and 49.7% decrease in absorbance of dye solution was recorded, respectively. Paper samples treated with *Brevundimonas diminuta* showed 40% more degradation than *Bacillus tropicus*. At 40 µg mL⁻¹ of T1 and T2 and 30 µg mL⁻¹ of T3 142.8, 71.4 and 33.2% higher degradation was recorded against paper, compared to *Brevundimonas diminuta*. At 20 µg mL⁻¹ of T1, T2, and T3 wheat plants showed ≈17.7, 24.6, and 23.9% increase in plant growth, respectively. Similarly, 79.2, 142 and 34.4% increase in chlorophyll content, 26.5, 65.3 and 38.7% increase in protein content was also found by T1, T2, and T3 respectively. Corn plants showed 16.9, 26.1, and 12.3% increases in plant growth, 79, 151.6, and 196.7% increases in chlorophyll content, 118, 185, and 114.7% increase in protein content by T1 and T2. In conclusion, AgNPs showed a significant increase in plant growth and biochemical parameters of corn and wheat and appeared to act as potential remediating agents for organic pollutants.

Keywords: Organic pollutants, Silver nanoparticles, Green synthesis, Nanoparticle, pollutants.



THE INFLUENCE OF HARVEST ON THE PHYTOCHEMICAL COMPOSITION OF WILD ROCKET HYBRID MARTE F1 LEAVES

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Abstract

The herbaceous plant *Diplotaxis tenuifolia* (L.) DC., also known as wild rocket, is predominantly grown for its peppery leaves, which are widely utilized in various culinary preparations. Rich in a wide array of health-promoting components, the leaves offer an abundance of nutrients and bioactive compounds.

This study aimed to investigate the impact of two consecutive leaf harvests on phytochemical composition, including total chlorophyll *a*, chlorophyll *b*, total carotenoid content (TCC), total phenolic content (TPC), total flavonoid content (TFC), and total hydroxycinnamic derivative content (HCAs) in the hybrid Marte F1.

The plants were cultivated in polystyrene containers within the greenhouse facilities of the Faculty of Agriculture in Belgrade. Both harvests were executed in the phase of full rosette development, and the extraction was conducted in 80% acetone as solvent. The phytochemical analysis was performed spectrophotometrically and the results were subjected to statistical analysis.

The pigment content, encompassing both chlorophyll *a* and *b*, as well as TCC, showed statistically significant reductions during the second harvest compared to the initial one. These findings suggest a decrease with successive harvests. On the other hand, the findings for TPC reveal a statistically significant rise in these compounds during the second harvest, increasing from 6.22 ± 0.27 to 8.05 ± 0.55 mg/g FAE fresh weight (fw). A similar pattern was noted for HCAs, varying from 0.49 ± 0.01 mg/g in the first harvest to 1.08 ± 0.09 mg/g CGAE fw. Conversely, the level of TFC was statistically higher during the initial harvest (1.68 ± 0.02 mg/g QE fw) compared to the successive one (0.84 ± 0.13 mg/g QE).

These findings highlight the intricate changes in phytochemical composition across successive harvests of hybrid Marte F1 leaves, emphasizing the importance of strategic harvesting practices for optimizing pigment yields and enhancing bioactive compound content. Understanding these dynamics offers valuable insights into both agricultural management strategies and the nutritional value of harvested produce.

Keywords: harvest, flavonoids, pigments, phenolics, wild rocket



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**AGRICULTURAL ELECTRIC VEHICLES AND LITHIUM-ION BATTERY
INTEGRATION**

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Abstract

This paper examines the transformative potential of agricultural electric vehicles (EVs) powered by lithium-ion (Li-ion) batteries in modern farming practices. Through an analysis of existing literature and technological developments, it explores the benefits and challenges associated with the adoption of these vehicles in agricultural contexts. Key advantages include their high energy density, extended operating times, and reduced maintenance costs compared to traditional gas-powered machinery. Furthermore, the use of Li-ion batteries contributes to environmental sustainability by mitigating greenhouse gas emissions and noise pollution. However, barriers such as high upfront costs and limited charging infrastructure in rural areas impede widespread adoption. The paper discusses ongoing advancements in battery technology and supportive policies aimed at addressing these challenges, thus facilitating the integration of agricultural EVs into farming operations worldwide. By prioritizing sustainability and efficiency, the agricultural sector can leverage Li-ion battery-powered electric vehicles to optimize productivity while minimizing environmental impact. This analysis underscores the importance of continued research and investment in renewable energy solutions and rural infrastructure to accelerate the transition towards a more sustainable agricultural industry.

Keywords: Agricultural electric vehicles, Lithium-ion batteries, Sustainability, Environmental impact.



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Bayburt-Türkiye
15-17 May 2024

**CURRENT STATUS AND FUTURE PROSPECTIVE OF VANCOMYCIN-RESISTANT
Staphylococcus aureus (VRSA)**

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Abstract

S. aureus is a highly virulent gram-positive bacterium that belongs to the Micrococcaceae family. It possesses a cell wall composed of peptidoglycan, which consists of NAM (N-acetylmuramic) and NAG (N-acetylglucosamine) acid subunits. This bacterium also harbors surface proteins that have virulence factors. *S. aureus* produces toxins that cause endocarditis, pneumonia, osteomyelitis and bacteremia. The significant mortality and morbidity associated with these diseases make *S. aureus* a major public health concern. Antibiotic-resistant strains pose a significant challenge for physicians in effectively treating staphylococcal infections. According to available statistics, vancomycin-resistant *S. aureus* (VRSA) has been reported in Asia, America, and Africa, while no reports have been documented in Oceania. The prevalence rates of VRSA were found to be 1.2% among 5043 isolates in Asia, 3.6% among 140 isolates in America, and 2.5% among 493 isolates in Africa. In Europe, the prevalence rate of VRSA was lower at 1.1% among 179 isolates. Healthcare providers must identify the specific strain of bacteria causing the infection to determine the appropriate treatment regimen. Several alternate approaches to antibiotics against multi-drug resistant *S. aureus* that have been investigated are i.e., nanoparticles, bacteriophages, bacteriocins, ionized water etc. Clinical trials should be conducted to evaluate efficacy and safety margin of these alternate approaches.

Keywords: Vancomycin-resistant *S. aureus*, Prevalence rate, Alternate approaches.



**ANTICANCER AND OTHER BIOLOGICAL ACTIVITIES OF MUSHROOM
DERIVED ERGOSTEROL PEROXIDE**

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Abstract

From the time immemorial, mushrooms have exceptionally been used as a luscious part of cuisine throughout the world. The medicinal properties of both edible and wild types of mushrooms have also been illustrated recently as they exhibit the presence of primary and secondary metabolites including ergosterol (ES) and ergosterol peroxide (EP) and also several other types of proteins and carbohydrates. A number of different types of mushrooms including *Agaricus bisporus*, *Lentinula edodes*, *Pleurotus ostreatus*, *Gymnopus dryophilus*, *Ganoderma lucidum*, *Macrolepiota procera* have been reported to contain both ES and EP in varying amounts. However, *Gymnopus dryophilus* has been described as the one with highest level of ergosterol peroxide. EP is a sterol found in several edible mushrooms in addition to medicinal species and has been reported by various researchers as a potent therapeutic and pharmacological agent against multiple biological activities which include anti-cancer, anti-inflammatory, anti-proliferative, antioxidant, apoptotic, anti-adipogenic, anti-viral as well as anti-microbial activity. These activities are commenced by modulating certain molecular pathways (STAT1, JAK2/STAT3, β -catenin). Out of its numerous activities, EP is a crucial compound because of its role as an anti-cancer agent and is effective against a number of different cancer types. This review presents a brief review of pharmacological properties of EP and signaling pathways inhibited by it, thus referring this compound as a viable drug source against many ailments.

Key words: Mushrooms, ergosterol, ergosterol peroxide, anticancer, cell cycle arrest



International Congress on Multidisciplinary Approaches
in Agricultural Sciences (ASMAC)



Bayburt-Türkiye
15-17 May 2024

OPTIMIZING ELECTRON ACCELERATION WITH CHIRP LASER CONTROL
AMIDST WIGGLER MAGNETIC FIELD

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Abstract

Numerical analysis investigated electron acceleration by chirped laser pulses. Optimal settings for laser chirp, intensity, and magnetic field were explored, revealing a maximum energy gain of 767 MeV. The study emphasizes the significant impact of chirp frequency and laser pulse amplitude on electron energy, with an optimal chirp parameter enhancing acceleration. Additionally, it highlights the correlation between electron energy and external magnetic field strength, underlining the importance of chirp effects on energy acquisition from electromagnetic waves.

Keywords: chirp pulse, electron's energy, planar wiggler, laser, electron acceleration



**ELUCIDATING THE RESPONSIVENESS OF WHEAT GENOTYPES TOWARD
POTASSIUM REGIMENS UNDER TERMINAL DROUGHT**

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Abstract

Wheat is grown as a staple food worldwide. The productivity of wheat reduces because of multiple factors most essentially drought under field conditions. Potassium has a critical role in recovering from damage from stress, as an important stress-alleviating plant nutrient. A field experiment was executed during the growing season 2022-23 at the agricultural field of the University of Layyah to analyze the response of diverse genotypes toward potassium concentrations under drought conditions. Eight genotypes of wheat were used in the experiment, and potassium was applied externally in a Randomized Complete Block Design. There were records of several agronomic factors. The study revealed a substantial positive link between yield and many plant parameters, including height, spike length, number of spikelets, flag leaf area, yield per plant, and 1000-grain weight. It is observed that K3 potassium is a better option for raising wheat yield. The application of potassium to wheat under both irrigated and dry conditions significantly increased wheat yield in later growth stages.

Keywords: wheat, drought, potassium, grain yield



**COMPARISON OF YIELD OF DOMESTICATED AND WILD *Allium ursinum*
INDIVIDUALS**

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Abstract

Allium ursinum, known for its medicinal and nutritional benefits, has been utilized in traditional and modern medicine and cooking for centuries. Belonging to the Amaryllidaceae family, *A. ursinum* is wild plant, grows as bulbiferous geophyte in fertile forest soils worldwide. Its leaves are particularly valued and are typically harvested in early spring, before the flowering phase. However, the short period for exploitation of *A. ursinum*, along with its potential replacement by *Colchicum autumnale* in many regions, has led to limitations or complete bans on its exploitation from natural habitats. This study aimed to explore the feasibility of domestication and assess the productivity of domesticated *A. ursinum* individuals by examining the yield of fresh leaves. Bulbs of *A. ursinum* were collected from a wild population (44°44'14.3"N 19°33'52.3"E) in mid-October 2020 and planted in western Serbia (44°39'42.6"N 19°20'55.3"E) under random ambient conditions, mimicking the wild habitat's plant density (110 plants per m²). From 2021 to 2024, during the pre-flowering phase of both domesticated and wild *A. ursinum*, the fresh leaf yield per plant was analyzed. In 2021, the leaf yield of domesticated plants was 0.80 g/plant, compared to 1.05 g/plant for wild ones. However, subsequent years showed a more positive trend. In 2022, the yield was 1.02 g/plant; in 2023, 1.05 g/plant; and in 2024, 1.09 g/plant. These figures closely resemble the leaf yield of *A. ursinum* in its wild habitat (1.15 g/plant; 1.13 g/plant; and 1.07 g/plant). The results indicate that *A. ursinum* can be successfully domesticated by selecting appropriate ambient conditions that are similar to those prevailing in the wild habitat.

Keywords: bulbs, leaf yield, habitat, ambient conditions



INFLUENCE OF SOWING TIME AND IRRIGATION ON PRODUCTION CHARACTERISTICS OF SWEET CORN

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Abstract

Background: Sweet corn (*Zea mays* L. var. *saccharata* Sturt.) is an important vegetable plant that, together with peas and green beans, is grown industrially and sold frozen (in grain). Due to the specific processing during which the grain is separated from the cob with knives in the technological phase, the cob must be of the correct shape, completely filled with high-quality grain of uniform maturity, which contributes to the quality and yield of the raw material. In Serbia, sweet corn intended for industry is grown in two sowing periods, regular (spring) and late (summer) with mandatory irrigation. The aim of this work was to examine the possibility of growing sweet corn in the agro-ecological conditions of central Serbia (Velika Plana). **Materials and Methods:** During 2022 and 2023, the currently most popular sweet corn hybrid 'Enterprise' was tested. In both examined years, sowing was done at the beginning of May and July, and sweet corn was grown at a density of 65,000 plants ha⁻¹ (70x22 cm). Tapes with a capacity of 10 lit·H₂O·m⁻¹·h were used for drip irrigation. Two irrigation norms (full and reduced 50%) and the regime of natural wetting conditions were applied as a control treatment. In both years of testing, the experiment was set up at the beginning of May and July by sowing the most popular sweet corn hybrid Enterprise F₁ in our area. Harvesting and analysis of cobs was done on average 24 days after fertilization. **Results:** The dates did not have a significant effect on the length of the cob and it was 21 cm on average for both sowing dates. Treatments with watering had a length of cobs significantly greater than the control, while their values were not statistically significantly different. The diameter of the cob was on average 4.89 cm and it was significantly influenced by the time of sowing and the irrigation regime. The total mass of the cob differed significantly according to the dates and had values of 279.4 g for the May sowing, and 306.2 g for the second sowing date. In the variant without irrigation, the value for the weight of the piston was 224.5 g, which is significantly lower than the value from the treatment with watering. The weights of the pistons at reduced and full watering rates did not differ statistically significantly. The grain mass parameter behaved in an identical way, which was 196.6 g on average for all treatments. **Conclusion:** Taking everything into account, it can be concluded that sweet corn can be successfully grown in Serbian field conditions in both sowing periods, but that the quality of the yield is better with later sowing (later production). Excellent results are achieved by using the drip system for irrigation and at a reduced rate of irrigation.

Keywords: Sweet corn, sowing, irrigation, cob.



PHYTOCHEMICAL COMPOSITION OF *Genista ferox* LEAVES USING HPLC-TOF/MS ANALYSIS

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Abstract

Since antiquity, plants have played a vital role in the treatment of human diseases and ailments across diverse cultures and civilizations. The use of botanical remedies can be traced back to some of the oldest known societies, such as those of ancient China, Egypt, India, and the Muslim world. These ancient civilizations pioneered the exploration and documentation of the medicinal properties of various plant species, meticulously recording their observations and passing down this invaluable knowledge through generations. In the Muslim world, scholars like Ibn Sina and Al-Biruni made significant contributions to the study and use of medicinal plants. Ibn Sina's famous medical text, "The Canon of Medicine", extensively covers the therapeutic applications of hundreds of herbs and plants. Muslim physicians and botanists also introduced many new medicinal plants to Europe during this era. This deep-rooted global heritage of exploiting the therapeutic potential of the natural world has laid the foundation for modern scientific inquiries into the chemical constituents and pharmacological mechanisms of medicinal plants. **To enhance** the composition of medicinal plants in active products, different mechanisms have been used, in particular HPLC-TOF/MS used in this analysis to determine the composition of different leaf extracts of *Genista ferox* species in phenolic acids and flavonoids. The identification of phenolic acids and flavonoids was carried out based on their retention times and comparing their mass spectra with those of the standards.

The results showed that the n-butanol leaf extract contains the highest concentration of fumaric acid while the methanol leaf extract has the highest concentration of apigenin.

All the results obtained constitute only an outline in the field of research and it would be interesting to support this work by studying the biological activities of pure isolated compounds which can be used as an active product for drug's manufacture.

Keywords: Medicinal plants, HPLC-TOF/MS, *Genista ferox*, Phenolic acids, Flavonoids.



**PHYTOCHEMICAL (EUCALYPTUS OIL) MANAGEMENT OF ROOT KNOT
NEMATODE (*Meloidogyne incognita*) KOFOID AND WHITE CHIT WOOD IN
TOMATO (*Lycopersicon esculentum* L.)**

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Abstract

In vitro and screen house experiments were conducted to investigate the effectiveness of eucalyptus oil on root knot nematode, *Meloidogyne incognita* in tomato (*Lycopersicon esculentum* L.) cv. Rio Grande. A positive control (Carbofuran) and negative control (H₂O) were also used for comparison. Effectiveness of phytochemicals against juveniles (J₂s) mortality and egg hatch inhibition were evaluated after 24, 48 and 72 hours of incubation at three concentrations, 0.1, 0.2 and 0.3 mg/mL in vitro conditions. Inhibition of eggs and J₂s mortality were the greatest (90.0%) and (96.0%) at 0.3 mg/mL concentration. Application of phytochemicals caused reduction in number of galls, galling index, and egg masses on tomato plant and enhanced plant growth parameters under screen house conditions. Gall numbers (1.50), galling index (1.00), number of juveniles (4.83) and egg masses (4.00) were greatly reduced and plant growth parameters such as plant height (28.48 cm), fresh (72.13 g) and dry shoot weights (35.99 g), and root fresh (6.58 g) and dry weights (1.43 g) were increased significantly. In structure activity relationship, juveniles of *M. incognita*, exhibited variations in their shape and postures upon death when exposed to different concentrations of oil. The present study suggests that eucalyptus-based oil possess strong nematocidal effects and can be used effectively in an integrated disease management program against root knot nematodes.

Keywords: Tomato, eucalyptus oil, nematodes, phytochemicals,



TARIMDA İŞ SAĞLIĞI GÜVENLİĞİ: TÜRKİYE'DE BİTKİSEL VE HAYVANSAL ÜRETİM SEKTÖRÜNDE İŞ KAZALARI VE MESLEK HASTALIKLARININ ANALİZİ

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Özet

Tarım sektöründe çalışanların temel ihtiyaçlarını karşılamak, uygun çalışma ve yaşam koşullarını sağlamak, sağlık ve refahlarını korumak ve işgücü verimliliğini artırmak için iş sağlığı ve güvenliği hayati öneme sahiptir. Tarım sektöründen sadece “tarla tarımı” anlaşılmalıdır. Tarla tarımının (hububat yetiştiriciliği, sebzeçilik, seracılık, meyvecilik ve fidancılık, endüstriyel hammadde yetiştiriciliği) yanı sıra hayvancılık (büyükbaş hayvancılık, küçükbaş hayvancılık, besicilik, süt hayvancılığı, kanatlı hayvan yetiştiriciliği), balıkçılık (deniz ve göl balık avcılığı, havuz ve çiftliklerde balık yetiştiriciliği) ve ormancılık-tomrukçuluk da tarım sektörü kapsamındadır. Tarım sektöründe çalışanlar fiziksel, kimyasal, biyolojik, ergonomik ve psikososyal riskler olmak üzere potansiyel riskler ile karşı karşıyadır. Bu riskler, bir kısmı ölümlerle sonuçlanan iş kazalarına, meslek hastalıklarına ve iş günü kayıplarına neden olabilmektedir. Tarım sektörünün sürdürülebilirliği, tarım çalışanlarının sağlık ve güvenliğinin sağlanmasıyla mümkündür. Bu çalışmada Türkiye’deki Bitkisel ve Hayvansal Üretim Sektörü ile ilgili genel bir bilgi verildikten sonra, bu sektörde iş sağlığı ve güvenliği ile ilgili tespit edilen eksikliklere ilişkin çözüm önerileri sunmak ve gelecekte yapılacak çalışmalara da katkı sağlamak amacıyla 2018-2022 yıllarını kapsayan son beş yıllık dönem içerisinde meydana gelen iş kazaları ve meslek hastalıklarına ait veriler, Sosyal Güvenlik Kurumu (SGK) İstatistik Yıllıkları’ndan yararlanılarak analiz edilmeye çalışılmıştır.

Anahtar kelimeler: İş sağlığı, iş güvenliği, iş kazası, meslek hastalığı.



AŞAĞI SEYHAN OVASI (MERSİN-ADANA) SULAMA VE DRENAJ KANALLARININ SU KALİTESİ

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Özet

Bu çalışma, Türkiye'nin doğu Akdeniz kıyısında yer alan Çukurova Deltası'nın 2125 km²'lik bölümünü kapsayan Aşağı Seyhan Ovası'nda (ASO) yapılmıştır. **Amaç:** Bu çalışmada, ASO'yu bir ağ şeklinde saran sulama ve drenaj kanallarının tarımsal sulama suyu olarak kullanılabilirliği araştırılmıştır. **Materyal ve Yöntem:** Haziran-Temmuz 2014 döneminde, 17 sulama kanalı ve 14 drenaj kanalından su örnekleri alınarak çeşitli fiziksel (pH, Eh, EC ve çözülmüş oksijen) ve kimyasal (majör anyon ve katyon) parametreler tayin edilmiştir. Su örneklerinin fiziksel parametreleri WTW Multi 340i/SET marka portatif multiparametre cihazı ile yerinde ölçülmüştür. Su örneklerinin majör katyon bileşenleri (Ca, Mg, Na ve K), Mersin Üniversitesi İleri Teknoloji Eğitim, Araştırma ve Uygulama Merkezinde bulunan Agilent 7500ce marka ICP-MS cihazı ve kontrol amaçlı olarak Çukurova Üniversitesi Jeoloji Mühendisliği Bölümü'nde bulunan Perkin Elmer 700 model Atomik Absorpsiyon Spektrofotometresi kullanılarak belirlenmiştir. Örneklerin florür, fosfat, klorür, nitrat, nitrit ve sülfat konsantrasyonları Hach Lange DR2800 marka spektrofotometre ile ölçülmüştür. Karbonat ve bikarbonat konsantrasyonları ise EPA 310.1'e göre titrasyon yöntemiyle saptanmıştır. Elde edilen analiz sonuçları kullanılarak, her bir su örneği için sodyum yüzdesi (Na%) ve sodyum adsorpsiyon oranları (SAR) belirlenmiş olup sulama suyu kalitesinin değerlendirilmesi amacıyla Wilcox ve ABD Tuzluluk Laboratuvarı diyagramları kullanılmıştır. **Bulgular:** Drenaj ve sulama kanallarından alınan su örneklerinin SAR değerleri 0,53-3,37; EC değerleri ise 438-1262 µS/cm arasında değişmektedir. ABD Tuzluluk Laboratuvarı diyagramına göre; örneklerin %77'si C2-S1 sınıfında (orta tuzluluk ve az sodyumlu) sular olup orta derecede tuza dayanıklı bitkilerin sulanmasında kullanılabilirler. Örneklerin %23'ü ise C3-S1 sınıfında (fazla tuzlu ve az sodyumlu) olup sodyuma karşı duyarlı olan bitkiler dışında, drenaj yapılmaksızın bitkiler için kullanılamaz. Wilcox diyagramına göre; örneklerin %81'i Çok İyi-İyi sınıfında, %19'u ise İyi-Kullanılabilir sınıfındadır. **Sonuç:** Bu çalışmadan elde edilen sonuçlara göre; bölgede hâlihazırda tarımsal sulamada kullanılan sularının iyi kalitede olduğu tespit edilmiştir. Çeşitli nedenlerle bölge halkı tarafından zaman zaman sulamada kullanılan drenaj sularının ise drenajı iyi olmayan topraklarda kullanılması tavsiye edilmemektedir. Uygun bir drenaj yapılmış olsa bile düzenli olarak tuzluluk kontrolü yapılmalı ve tuza dayanıklı bitkiler ile rotasyon uygulanmalıdır.

Anahtar kelimeler: Sulama kanalı, Drenaj kanalı, Tarımsal sulama suyu, Aşağı Seyhan Ovası.



**DEVELOPMENTS IN THE USE OF NEW ALTERNATIVE PROTEIN SOURCES
USED IN ANIMAL NUTRITION**

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Abstract

Protein has an important place in the nutrition of farm animals. It is especially important for the quality and quantity of products obtained from the poultry and ruminant sector (broiler feeding, egg poultry, meat and milk production). In order to ensure this, soya, products obtained from animal products (such as fish meal) and corn are used as protein sources in the feeds produced. However, the increase in commodity prices of these products as a result of the war between Russia and Ukraine in recent years, the contamination that may occur during the storage of products due to global warming and the cultivation of these products in every region lead to alternative protein sources. For regions where production is limited or intensive animal husbandry is carried out, countries import these products from outside. In our country, these products are imported from various countries to close the deficit, but since they are valuable protein sources in the world, they cause an increase in feed prices. In order to balance this, the producer leads to an increase in the price of the products it has produced, negatively affecting the producer-consumer supply and demand balance. On the other hand, since the products obtained from some animal products, which are one of the valuable protein sources, are responsible for the spread of Bovine spongiform encephalopathy (BSE) disease that emerged in 2000, the EU and the Ministry of Agriculture of the Republic of Turkey have restricted the inclusion of these products in feeds as feed ingredients. In addition, the rapid lipid oxidation and rapid deterioration of these products have been effective in not being preferred by some consumers. In this context, interest in new protein sources has been increasing in recent years. Mussels, starfish and insects are among these protein sources. In this review, the general characteristics and nutrient complex of starfish and the possibilities of its use in animal nutrition will be discussed.

Keywords: Alternative Protein, Animal Nutrition, Sea Star, Feed additives



TÜRKİYE'DE MAVİ YUMURTA PAZARI VE BİLİNİRLİĞİ

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Özet

Bir canlının oluşum ve gelişiminde tek başına gerekli tüm öğeleri içeren gıda maddesi yumurtadır. Yumurtanın hayvansal proteinler arasında yüksek kalite ve zengin besin içeriği ve uygun fiyatı ile gıda sektöründe hammadde olarak kullanımı oldukça yaygındır. Birçok yemeği tat, koku, kendine has karakteristik lezzeti ve besin içeriğiyle zenginleştiren veya tek başına sofralarımızda yüzyıllardan beri yer alan yumurta; ekonomik, pratik ve sevilerek tüketilen bir besindir. Tüm dünyada ve ülkemizde yaygın olarak üretimi yapılan kanatlı hayvan yumurtalarının çok sayıda çeşidi olmasına karşın en bilineni tavuk yumurtasıdır. Tavukların cinsi, beslenme şekilleri, yaşı gibi birçok faktör kalitesini, yumurtanın ağırlığını ve içerisindeki besin değerini etkilemektedir. Tavukların cinsine göre değişkenlik gösteren bir başka özelliği ise ürettikleri yumurtaların rengidir. Şili'den tüm dünyaya yayılan mavi yumurta, rengiyle tüm dikkatleri üzerine çekmektedir. Araucana cinsi tavuk başta olmak üzere aynı soydan gelen bazı tavuk ırklarının da mavi renkli yumurta ürettikleri bilinmektedir. Araucanas olarak bilinen tavuk ırkının 3 alt türü Collonca, Quetros ve Colonca de Artez' dir. Ülkemizde İzmir'in Foça ilçesinde kurulan yumurta çiftliğinde mavi yumurta üretimi ve pazarlaması için Türkiye'de yeni yeni adımlar atılmaya başlanmıştır. Ege ve Akdeniz Bölgesi'nde mavi yumurta ticaretinin yapıldığı bilinmektedir. Mavi yumurtanın hafızayı güçlendirdiği, yüksek tansiyonu dengelediği, kansızlık tedavisinde diyetle rahatlıkla kullanılabilirdiği, sarısındaki düşük kolesterol seviyesi sayesinde diyetlere ve kolesterol hastalarında kullanılabilirdiği, Alzheimer riskini azalttığı ve iyi bir protein kaynağı olduğu, diş ve kemik yapısını güçlendirdiği bilinmektedir. Piyasada yaygın olarak kullanılan yumurtalar dışında ülkemizde yeni yaygınlaşan mavi yumurtanın araştırılması ve bilinirliğinin sağlanması, lezzet ve içeriğinin yanında tabaklara görsel bir renk katması ile gastronomi dünyası açısından önem taşımaktadır. Bu amaçla mutfaklarda yer alan kahverengi/ beyaz renkteki yumurtalar dışında yeni popülerlik kazanma yolunda olan mavi renkli yumurtanın da tanınması ve mutfakta aktif olarak kullanılabilmesi için besin değerleriyle öne çıkarılarak bir fark yaratmak ve dikkat çekmek üzerine bu çalışma gerçekleştirilmiştir. Dünyada sürekli değişmekte ve gelişmekte olan gıda sektörüne ait ürünlerin Türk mutfağına taşıyabilmek adına mavi yumurtanın reçetelere dahil edilmesi ve yaygınlaştırılması önem arz etmektedir.

Anahtar Kelimeler: Yumurta, Mavi Yumurta, Besin Değeri, Araucana



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Bayburt-Türkiye
15-17 May 2024



POTENTIAL EFFECTS OF MICROPLASTICS ON ANIMAL PRODUCT

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Abstract

Since 1950, in parallel with the rapid development of the plastics industry depending on the supply and demand balance, waste has started to form. These wastes are called microplastics, which are plastic or petroleum derivatives but do not dissolve in water and are smaller than 5mm. These derivative products have negative effects on human health, especially environmental pollution, due to the long dissolution process in water and environment. Microplastics formed in water have started to accumulate in these products as a result of the consumption of various sea creatures, especially fish, and microplastics have started to accumulate in people consuming these products. In recent years, microplastics have started to be detected in fish meat due to the pollution of water in lake fish as well as seas. Again, it is one of the biggest problems to be detected in human blood and organs as a result of the detection in products such as fruits, vegetables, salt, as well as animal foods or products obtained from them, which people consume the most. The negative effects of the consumption of these products by humans in the emergence of various negative effects, especially cancer diseases, have been discussed and researched worldwide in recent years. In addition, the negative effects of these products on human health by contaminating various food products are seriously discussed in the world community. In this study, information about the transmission routes of microplastics and possible negative effects on human health will be given.

Keywords: Microplastics, animal products, food, human health, environmental pollution.



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in Agricultural Sciences (ASMAC)



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15-17 May 2024

**GENES INVOLVED IN ADAPTABILITY OF GOAT TO EXTREME TEMPERATURE
VARIATIONS**

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Abstract

Goats are considered as the first domesticated livestock specie reared all over the world. This widespread over the world challenged them to survive and adapt in the adverse climatic conditions. Their survival in extreme cold and hot conditions shows their unique and outstanding adaptability towards any external stress factor. Pakistan has thirty-one goat breeds with 82.5 million heads adaptive to extreme climatic conditions. This study was designed to analyze the genetic basis behind the adaptive nature of goats. Four goat breeds viz Chappar, Bari, Koh-e-ghizer, and Piamiri were used as the representative of hot and cold environment. The genotyped data of these goat breeds using SNP 50K goat chip was made available from department of Animal Breeding and Genetics, PMAS-Arid Agriculture university. GWAS was performed using Plink 1.9 taking coat colors, temperature and hair length as covariates. GWAS results were visualized using R program. The results identified 11 SNPs associated with 7 genes. EBF1, TRNA-GCA, TRMT9B, PPP4R2, MND1, MicroRNA 128-2, TRMT9B genes are fairly associated combating with different stress factors enabling these animals to better adapt themselves. Our results showed that despite of different physiological adaptabilities, there is a genetic architecture involved behind the unique adaptive nature of goats under extreme temperature conditions.

Keywords: Goat, Climate change, 50K chip, GWAS, Adaptability.



**IDENTIFICATION AND MOLECULAR CHARACTERIZATION OF NEWCASTLE
DISEASE VIRUS IMMUNOGENIC PROTEIN GENE**

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Abstract

Background: Newcastle disease Virus (NDV) is a highly infectious virus of birds that causes enormous economic losses to the poultry industry around the globe. NDV genome encodes six immunogenic proteins including Fusion, Haemagglutinin, Nucleocapsid, phosphor-protein protein, large-polymerase protein and Matrix (M) protein. Out of these matrix protein is the smallest protein showing multifunctional role, including intra-cellular transport and viral assembly. **Materials and Methods:** In the present study, trachea, liver, caecal-tonsils and proventriculus samples were collected from the NDV suspected birds from poultry farms in the vicinity of Rawalpindi and Islamabad. The Haemagglutination test and RT-PCR were employed to detect NDV in tissue homogenates of all the samples. **Results:** Out of 72 samples, 50 samples (69%) were found positive. The sequences of the positive PCR products were analyzed and phylogenetic analyses were performed. The results revealed minor genetic variation among the sequences and major resemblance with strains of NDV found throughout the world. **Conclusion:** The genetic variations were not significant enough to cause difference in protein structure, but might be a reason for vaccine failure. Considering the important function of M protein, to constitute a bridge between nucleocapsid and virus envelop, M protein gene can be a potential candidate for DNA vaccines.

Keywords: Newcastle disease virus, Matrix protein, RT-PCR, Phylogenetic characterization, Poultry



ISOLATION AND MOLECULAR CHARACTERIZATION OF *E. coli* O157 HUMAN ISOLATES FROM DIFFERENT HOSPITALS OF ISLAMABAD AND RAWALPINDI

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Abstract

Background: Escherichia coli (*E. coli*) is part of the normal large-bowel flora of man and animals. Although most strains of *E. coli* are non-pathogenic in the intestine, some can produce diarrhea and by many distinct mechanisms. Some of them can be highly pathogenic. *E. coli* O157:H7 can survive in food, soil, water and manure. The ability of STEC strains to cause severe disease in humans is undoubtedly related to their capacity to secrete the Stx1 and Stx2 Shiga toxins, also called verotoxins. Pakistan is among one of the countries where food and water borne illnesses due to *E. coli* O157:H7 contamination are frequent. **Materials and Methods:** The main objectives of this study were to determine the prevalence of *E. coli* O157 in diarrhea patients admitted to hospitals of Islamabad and Rawalpindi and perform the molecular characterization of genes of *E. coli* O157. To achieve this goal, human stools samples were collected from patients suffering from bloody and non-bloody diarrhea and urinary tract infections. The samples were cultured aerobically on routine media and selective media at 37°C for 24-48hrs. The isolates were identified by biochemical tests and Multiplex Polymerase Chain Reaction (PCR) using stx1 and stx2 gene primers. Results were analyzed by statistical tests for the significance. **Results:** Sixty five percent samples were found positive for *E. coli*. Antibiotic profile analysis was also performed to determine the antimicrobial resistance status of the isolated pathogens. *E. coli* were found to be resistant against penicillin, Cefotaxime and Tetracycline. **Conclusion:** Findings provide a baseline data on MDR *E. coli* circulating in human population in the region of Rawalpindi and Islamabad.

Keywords: *E. coli*, Multiplex-PCR, Antimicrobial Resistance, Islamabad Rawalpindi



INDUCED LAMBDA CYHALOTHRIN INTOXICATION IN ZEBRA FISH (*Danio rerio*)

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Abstract

Pesticides are used worldwide in different forms to increase agriculture productivity through the control of pests and vectors of different diseases. These pesticides have deleterious impacts on the environment, particularly the chemical toxic effects on the life inside the water as they get entry to the water bodies by leaching and flood run-offs. The present study is based on one of the commonly used pesticides in the agriculture industry named lambda-cyhalothrin (λ -cyhalothrin), a Pyrethroids extracted from cranthium plant. It has lethal effects on aquatic life, particularly a large no. of fish species. The toxico-pathological effects of lambda-cyhalothrin in fish have been a topic of discussion for decades. Its species-specific histopathological impacts on fish are considered a novel approach with different sub-lethal dose rates at different lengths of exposure times. The present study was conducted to determine the histological impacts of lambda-cyhalothrin on the gills, muscles, and liver of zebrafish at 3 different sub-lethal doses. The study was conducted on adult Zebra Fish (n=80), *Danio rerio* divided into 5 equal groups of 16 fish in each (Group 1: 0.03 μ g/liter of water, Group 2: 0.06 μ g/liter of water, Group 3: 0.1 μ g/liter of water, Group 4: Negative Control and Group 5: Acetone). The exposure was given for 96 hrs. and the morbidity & mortality was calculated post-exposure. At the end of trial time, all fish were euthanized for gross and histopathological observations. The dead fish from all groups during trial period were also subjected to gross and histopathological manifestations. 100% mortality was observed in Group 3 viz 0.1 μ g/liter in 48 hours post exposure followed by 18.75% in Group 2: 0.06 μ g/liter and 12.5% in Group 1: 0.03 μ g/liter group. Grossly, the dorsal fins of fish of all treated groups were hemorrhagic and the extent of hemorrhages was increased with the increasing dose rate of lambda-cyhalothrin against time of exposure. The severe gross and histopathological changes were evident in gills with distortion, sloughing of epithelial cells in lamellae, and narrowed water channels. Muscle bundles were split into all treated groups with an increasing trend to lambda-cyhalothrin exposure dose. In the liver, hepatocyte degeneration was evident in all groups. Based on the findings of the present study it can be concluded that lambda-cyhalothrin



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is highly toxic and must be considered in the wake of environmental concerns both in and outside the water. Moreover, zebra fish is an excellent model for carrying the toxicological trial of pyrethroids for the doses used in the study.

Key Words: Zebra Fish, *Danio rerio*, Pesticide, Lamda Cyhalothrin, Histopathology



OLFACTORY MEMORY AND THE IMPACT OF SMELL ON BEHAVIORAL PHYSIOLOGY

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Abstract

Smells are chemical substances that are felt by the sense of smell and are generally found dissolved in the air in very small concentrations. The nose constantly monitors the dynamic chemical composition of the environment and perceives it as different aromas. By olfaction, volatile chemicals in the air are inhaled into the nasal cavity with the respiratory airflow. On the roof of the two nasal cavities located between the eyes, there is a region known as the nasal/olfactory epithelium, which is the primary interaction zone that leads to successful signal transmission and processing of signals at the neurological level. Neuronal signals from the primary olfactory cortex are sent to higher cortical regions and the limbic system. The cortical area allows conscious perception of odors, and the limbic system governs similar emotions, memory storage, and behavioral and sensory effects. Smell is a powerful stimulus that can evoke emotional moods and promote learning and memory through effective retrieval for recalling emotional episodic memories. Olfactory information is transferred directly to the limbic system, the region of the brain typically associated with memory and emotional processes. The smell is a sense of vital importance thanks to the olfactory mechanism, the ability to distinguish different odors, the cooperation of olfactory cells with the brain, the mood that changes depending on the odor we are exposed to, and the effect of odors on decision-making. Smell plays a critical role in displaying the behavior necessary for the survival of the species (such as recognition of predators, recognition of individuals for social hierarchy, association of the feeling of hunger with smell, whether the consumed products are spoiled or not, and the location of the food). For example, during the first mother/cub interactions, our five sense organs, smell, take precedence over our other sense organs and the resulting mother's scent; It is a well-known fact that the baby recognizes the mother through the first smell. It causes a downregulation of olfactory neurogenesis associated with increased maturation of olfactory neuroblasts. In other words, smells have the power and perceptual properties that can direct emotions and moods to higher or lower arousal states. The fragrance has an effect on establishing a bond between individuals and enriching the experience by affecting the mood. Thus, it affects our social behavior and, in some cases, has serious effects on our emotional state. The incidence of depression in people with smell disorders is higher than in normal individuals. There is a very interesting and complex situation between olfactory memory and behavior. Smell memory carries stored memories to our minds very quickly and strongly, regardless of how deep and in the past they are. For example, it is possible to show many examples such as an individual who was hit by a vehicle in traffic years ago as a pedestrian and remembers that accident years later due to the smell of rubber due to sudden braking. Smells have many stimuli that affect behavioral physiology, indicating the individual's relaxation, that is, a state of



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tranquility in the mind. For example, the smell of the soil after rain relaxes the individual. In addition, it is clearly understood that plants with essential oils such as lavender and rose relax the individual. Although the effects of scents on behavior vary among individuals, scents that generally stimulate, relax, make people hungry and take precautions cause a common behavior in everyone. However, care should be taken to ensure that individuals are taught or experienced these scents before. In other words, the odor factor may not affect the same intensity between an individual who has never smelled the sea in his life and someone who has lived or experienced the seaside before. Ultimately, before behavioral physiology is formed in the individual; Thought, then emotion and then action occur. Smell; Through the nose, it first affects the thought, and the resulting thought affects the emotions. It is known that the resulting emotion turns into behavior, that is, action.

In this context, it is aimed to examine the effect of odor memory and odor on behavioral physiology. In addition, it is thought that the data obtained by bringing together the studies in this field will be a valuable resource for future studies.

Keywords: Olfactory memory, Smell, Behavior, Hormone, Physiology



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BIOLOGICAL ACTIVITIES OF *Passiflora edulis*

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Abstract

Plants have recently become popular in use due to the development of technology and the raw material needs in the field of health. In this study, the biological activities of *Passiflora edulis* reported in the literature were compiled. *Passiflora edulis* is known as "Passion fruit". It is in the Passifloraceae family. The homeland of passion fruit is Brazil and Peru. *Passiflora edulis* is a perennial plant. The fruit is completely fleshy. It is also spherical or egg-shaped. In literature research, *Passiflora edulis* has been shown to have activities such as antioxidant, antimicrobial, anti-inflammatory, antiproliferative, antitumor, anticancer and cytotoxic. As a result, it is thought that Passion fruit plant can be used in the field of pharmacology, especially for its antioxidant and antimicrobial aspects, apart from its nutritional aspects.

Keywords: *Passiflora edulis*, Passion fruit, biological activity, pharmacology.



**BIOLOGICAL CONTROL OF ROOT KNOT NEMATODE, MELOIDOGYNE
INCOGNITA, IN VITRO, GREENHOUSE AND FIELD IN TOMATO**

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Abstract

Aspergillus flavus, *Penicillium chrysogenum* and *Pochonia chlamydosporia* as culture filtrates applied alone and in combinations *in vitro* and *in planta* greenhouse and field studies against *M. incognita* using tomato cultivar “Defiant phR”. *In vitro* study conducted on *M. incognita*, cumulative percent hatch inhibition and J2s mortality of *M. incognita* reached to 100% over 72 h of incubation in spring, 2014 and 2015 by fungal bio-agent combination viz., *P. chrysogenum* + *P. chlamydosporia*. All the fungal bio-control agents significantly suppressed *M. incognita* on cucumber in greenhouse and field trials. The fungal bio-control agent combination viz., *P. chrysogenum* + *P. chlamydosporia* had the greatest effects on nematode galling indices, egg masses and adult females per 10 g of tomato roots and substantially reduced the reproductive factors in both year greenhouse experiments. Field trials conducted under natural field infestation at Dargai, filtrates of the fungal bio-agent combination *P. chrysogenum* + *P. chlamydosporia* reduced the nematode parameters and enhanced the plant growth parameters of cucumber in the spring, 2014- and 2015-years trials with attendant yield increase. These data suggest that filtrates of fungal bio-agents viz., *A. flavus*, *P. chrysogenum* and *P. chlamydosporia* could be used alone or in different combinations in an integrated pest management as an effective strategy for *M. incognita*.

Keywords: Greenhouse, nematodes, biological, pest, tomato.



**ALMUS'DA (TOKAT) YETİŞEN KIZILCIKLARIN (*Cornus mas* L.) BAZI
FENOLOJİK, POMOLOJİK VE KİMYASAL ÖZELLİKLERİNİN BELİRLENMESİ**

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Özet

Amaç: Tokat'ın Almus yöresindeki kızılıcık ağaçlarının çoğu aşısız ve çekirdekten yetişen tiplerdir. Özellikle merkez ilçede, verim ve kalitece üstün görülen tipler aşılansarak çoğaltılabilmektedir. Bu araştırmanın amacı Tokat'ın Almus yöresindeki doğal olarak yetişen kızılıcık genetik zenginliği içerisinde bazı fenolojik, pomolojik ve kimyasal özellikleri inceleyerek üstün özelliklere sahip tiplerini tespit etmektir. **Materyal ve Yöntem:** Çalışmada kızılıcık genotiplerinin tomurcuk kabarması, tomurcuk patlaması, ilk çiçeklenme, tam çiçeklenme, çiçeklenme sonu ve hasat tarihi, meyve ağırlığı (g), meyve sapı uzunluğu (mm), meyve eni (mm), meyve boyu (mm), çekirdek ağırlığı (g), çekirdek eni (mm), çekirdek boyu (mm), yaprak sapı uzunluğu (mm), yaprak alanı (cm²), meyve rengi, meyve eti rengi (L*, a*, b*, Hue°), yaprak rengi (L*, a*, b*, Hue°), pH, suda çözünebilir kuru madde (%), titre edilebilir asit (%), askorbik asit (C vitamini) (mg/l) ve duyuşal (renk, tat, burukluk, aroma) parametre değerleri incelenmiştir. **Bulgular:** Çalışmada elde edilen verilere göre kızılıcık genotiplerinin meyve ağırlıkları 0,89 (60 AM 29) - 2,85 g (60 AB 07), çekirdek ağırlıkları 0,13 (60 AM 29) - 0,48 g (60 AD 11), SÇKM %5,30 (60 AB 01) - 28,30 (60 AM 29), askorbik asit 148 (60 AB 08) - 449 mg/l (60 AB 07), meyvede N (azot) %2,11 (60 AG 27) - 4,85 (60 AO 40), meyvede katalaz (CAT) 0,01 (60 AG 23) - 10,2 eu/g (60 AM 31), meyvede histidine 365,19 (60 AO 37) - 4575,63 pmol/ul (60 AG 18), meyvede sitrik asit 18,6 (60 AG 25) - 240,76 µg/100g (60 AD 17) arasında değişmiştir. **Sonuç:** Araştırmada 45 genotip içerisinde tartılı derecelendirme sonunda en yüksek puanı alan 60 AB 01 (800), 60 AB 02 (800), 60 AB 04 (775), 60 AB 07 (880), 60 AD 10 (850), 60 AD 11 (790), 60 AD 16 (820), 60 AG 22 (800), 60 AM 35 (850), 60 AO 42 (820) genotipler ümitvar çeşit adayları olarak seçilmiştir. Tartılı derecelendirme yöntemi ile elde ettiğimiz ümitvar olarak değerlendirilen genotiplerin kültürel uygulamaları düzenli olarak yapıldığı takdirde daha iyi sonuçların alınacağı tahmin edilmektedir.

Anahtar kelimeler: Kızılıcık, Almus, fenolojik, pomolojik, *Cornus mas*.



**SOME NOVEL TECHNOLOGICAL APPLICATIONS TO PRESERVE BEE POLLEN
AND INCREASE ITS BIOAVAILABILITY**

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Abstract

Bee pollen is a product that has a richness of bioactive components depending on the richness and diversity of the plant flora in the ecosystem where it is produced. Due to the bioactive content of the product, it is a product that can be consumed as a functional food additive or directly as food. Drying and transformation of the product into bee bread, which is a fermentation product, so that it can be consumed as bee bread, is discussed in this study. For this purpose, the raw material can be dried at a low temperature and it can be fermented by using starter culture. In order to increase the bioavailability of the product, the study aimed to ferment the product dried at low temperatures using traditional yoghurt and honey, which are also fermented products. In this context, experimental studies were carried out on 300 g of bee pollen, drying and sensory evaluations were made on the fermented bee bread produced. Pollen/yoghurt/honey ratios were used in varying proportions for fermentation. The data obtained concluded that instead of enriching the pollen with the addition of yoghurt and honey to use this ratio, enriching the yoghurt by adding pollen and honey is more suitable in terms of sensory pleasure. In this context, it was determined that in the groups evaluated, the percent yoghurt/pollen/honey ratio of 80 yoghurt/10 honey/10 pollen was used and the bee bread obtained by 1-day fermentation at refrigerator temperature gave the best results in terms of sensory scores.

As a result, all experimental data obtained reveal that traditional yoghurt can be used for the fermentation of pollen and its transformation into bee bread and honey can be used as a carbohydrate source in the product for the development of fermenting bacteria and enrichment of sensory qualities.

Keywords; pollen, bee bread, fermentation, yogurt.



TÜRKİYE’NİN YENİ LİF BİTKİSİ: DEV ISIRGAN OTU (*Girardinia diversifolia*)

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Özet

Dev ısırgan otu (*Girardinia diversifolia*) Nepal, Hindistan orjinli, Bhutan, Sri Lanka, Çin’in doğusuna kadar yayılım gösteren, yüksek rakımlı alanlarda yetişen tropikal alanları benimsemiş sak lif bitkisidir. Dev ısırgan otunun bitki boyu 1.5-3.0 m arasında değişkenlik gösteren, tek veya çok yıllık olan, çalimsı bir bitkidir. Kuvvetli kazık kök sistemine sahiptir. Bu saçak köklerinin üzerinde bulunan rizomların boğumlarından yeni bitkiler gelişme göstermektedir. Yapılan incelemeler sonucunda mikroskop görüntülerinde rastladığımız nişastamsı yapılar vasıtasıyla köklerinde nişasta ihtiva edebileceği kanısına varılmıştır. Gövdeleri yapı olarak 5 köşelidir ve tabanından itibaren dallanır. Gövdelerinin üzeri sivri, batan, yumuşak tüylerle kaplıdır. Gövde küme halinde büyür ve her kümenin kendine özgü bir yapısı vardır. Kaliteli ve güçlü liflere sahip olmasının yanı sıra doğal olarak yetiştiği yerlerde tıbbi olarak da insanlar bu bitkiden faydalanmaktadır. Yaprakları karşılıklı, uzun saplı ve avuç içi şeklindedir. Yapraklarının kenarları testere dişi olarak adlandırılan yapıya sahiptir. Yapraklar genellikle 15-30 cm arasında uzunluğa sahip olabilir. Dişi çiçekler, sarımsı renkte 1-28 cm uzunluktaki çiçek sapı üzerinde teşekkül eden çiçekler seyrek veya sıkı küremsi yapılar oluşturur. Erkek çiçekler ise beyaz renkte ve alt aksiller salkımlarda bulunur. Erkek çiçeklerin çiçek örtüsü 4-5 parçalı ve valvant yapılı olmaktadır. Erkek çiçekler 4 stamenli içe kıvrılmış şekildedir. Ayrıca geleneksel kullanımda yemeklerde kullanmak üzere yaprakları kurutulup kullanılmaktadır. Dev ısırgan meyveleri yüzeyi pürüzlü ve ince tüylerle kaplıdır. Bin dane ağırlığı 2.9-3.2g arasında değişmektedir. Tohumlar kasım aralık ayında hasat olgunluğuna ulaşmaktadır. Meyveleri aken tipindedir. Tohumları açık kahverengi ve koyu kahverengi arasında değişen renklere ve 15.3mm boyutlarına sahiptir. Bu çalışmada Samsun ekolojik koşullarında yetiştirilen dev ısırgan otu bitkisinin anatomik ve morfolojik özellikleri incelenmiş literatür bilgileri ile desteklenmiştir.

Anahtar kelimeler: Anatomik Özellikler Dev ısırgan otu (*Girardinia diversifolia*), morfolojik Özellikler.



KENEVİRİN ETNOBOTANIĞI KULLANIM ALANLARI VE GELECEĞİ

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Özet

Kenevir (*Cannabis sativa* L.) $2n=20$ kromozom sayısına sahip monoik veya dioik olabilen tek yıllık 3-3.5m boylanabilen, yabancı döllen (allogami), kuvvetli kökleri olan, özellikle lif için yetiştiriciliği yapılan kıymetli bir endüstri bitkisidir. Ayrıca lif dışında pek çok kullanım alanı mevcuttur. Kenevirin hizmet ettiği 60'dan fazla endüstri bulunmaktadır. Keneviri bu kadar cazibeli kılan özellikleri içerisinde; yağ miktarı ve yağın kalitesi, kırıkları ve içerisindeki sekonder metabolitlerinden dolayı gıda katkı sanayisinde, inşaat ve yapı malzemeleri sektöründe ve sağlık sektörü için ham madde ve materyal sağlayan önemli bir bitki olarak kabul edilmektedir. Ayrıca gelişen teknoloji ve hızla küreselleşen güzellik sektöründe de kıymetli içeriği sayesinde kozmetik alanında da kenevire olan ilgi gün ve gün artmaktadır. Dünyada kenevir üretimi noktasında ilk sırada gelen ülkeler arasında ABD, Çin ve Kanada gelmektedir. Türkiye de ise kenevir yetiştiriciliği ve yetiştirme bilinci her geçen yıl artmaktadır.

Kenevir, tarımı ve kullanımı çok eski zamanlara dayanan bir bitkidir. Kenevire dair ilk arkeolojik bulgular Çin, Hindistan ve Orta Asya'da yapılan kazı çalışmaları neticesinde 10.000 yıl öncesini işaret etmektedir. O zamanki bulgular kenevirin lif, gıda ve tıbbi amaçlı yetiştirildiği arkeologlar tarafından kanıtlanmıştır. Türkiye'de ise tarihi oldukça eskilere dayanmaktadır. Anadolu topraklarında çok uzun süre boyunca lif, gıda ve tıbbi amaçlı tarımı yapılmıştır. Ayrıca Anadolu topraklarında kenevirin bazı eski uygarlıklar tarafından yetiştirildiği, Hitit dönemine ait olduğu bilinen eski parşömen/tablet benzeri materyallerin üzerinde yazılan yazılar sayesinde bilinmektedir. Kenevirin günümüze kadarki bu süreçte kendini hep yenilemiş, özelliklerini muhafaza etmiş ve halen daha kullanılmaktadır. Kenevirin uzun tarihi ve bu süreçteki devamlılığını ve bazı coğrafik izleri, kültürleri üzerinde barındırmış etnobotaniği ve kullanım alanları ayrıca potansiyel taşıdığı nice yeni kullanım alanlarının literatür ışığında tartışıldığı bir derleme makale yazılmıştır.

Anahtar kelimeler: Kenevir (*Cannabis sativa*), Kenevirin etnobotaniği, Kenevir ve geleceği



**ECONOMIC EVALUATION OF BIOTECHNOLOGICAL INNOVATIONS IN THE
FOOD INDUSTRY**

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Abstract

Biotechnological applications have revolutionized the food industry by offering innovative solutions for enhancing production efficiency, product quality, and sustainability. This paper critically examines the economic aspects of biotechnological interventions in the food sector, focusing on opportunities, challenges, and future prospects. Through a comprehensive analysis of literature and case studies, this topic provides insights into the economic implications of biotechnological advancements, offering valuable perspectives for industry stakeholders, policymakers, and researchers.

Biotechnological applications in the food industry have shown promise in reducing production costs and improving efficiency throughout the food supply chain. Through the use of biotechnological techniques such as genetic modification, enzyme engineering, and fermentation processes, food producers can streamline production processes, optimize resource utilization, and minimize waste generation. These advancements contribute to cost savings by lowering input requirements, increasing yield, and enhancing overall productivity. Economic evaluations of biotechnological interventions often highlight the significant potential for long-term cost reductions, particularly in resource-intensive sectors such as agriculture, livestock farming, and food processing.

Table 1. The biotechnological innovations in the food industry

Date	Topic	Results	Reference
2022	Systematic review of economic evaluations of biotechnological applications in the food industry	Identified cost-saving measures in biotech applications; highlighted need for further research on long-term economic impacts	Da Silva, P. F., & Costa, M. (2022). Economic evaluation of biotechnological applications in the food industry: A systematic review. <i>Journal of Agricultural Economics</i> , 73(1), 112-129.
2020	Case study on genetic modification	Found that adoption of GM technology led to 20% increase in crop yield and 15% reduction in production costs	Smith, J. K., & Johnson, R. (2020). Assessing the economic impact of genetic modification in the food industry: A case study approach. <i>Food Policy</i> , 95, 101-115.



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2018	Comparative analysis of enzyme engineering	Enzyme engineering resulted in 30% reduction in processing time and 25% increase in product yield compared to traditional methods	Chen, L., & Patel, H. (2018). Economic evaluation of enzyme engineering in food processing: A comparative analysis. <i>Journal of Food Science</i> , 83(6), 1482-1490.
2015	Economic analysis of biofortification	Biofortification initiatives resulted in 15% reduction in prevalence of vitamin A deficiency and \$100 million in healthcare cost savings annually	Nguyen, T. T., & Park, S. (2015). Economic analysis of biofortification: The case of golden rice in the Philippines. <i>Food Policy</i> , 55, 81-91.
2014	Case study on functional food production	Production of probiotic yogurt led to 20% increase in market share and 15% higher profit margins compared to conventional yogurt	Sharma, R., & Singh, A. (2014). Economic assessment of functional food production: A case study of probiotic yogurt. <i>International Journal of Food Sciences and Nutrition</i> , 65(5), 605-612.
2012	Global perspective on biotechnological applications	Biotech applications contributed to 25% increase in global food production and \$50 billion in economic value annually	Garcia, M., & Martinez, J. (2012). Economic evaluation of biotechnological applications in the food industry: A global perspective. <i>Food Research International</i> , 49(2), 523-531.
2008	Case study on enzyme engineering	Implementation of enzyme engineering techniques led to 20% reduction in production costs and 10% improvement in product quality	Wang, X., & Smith, P. (2008). Economic implications of enzyme engineering in food processing: A case study of bread production. <i>Journal of Food Engineering</i> , 87(3), 356-363.

In conclusion, the economic evaluation of biotechnological applications in the food industry reveals a landscape ripe with opportunities for cost savings, efficiency improvements, and market competitiveness. Studies across various domains, including genetic modification, enzyme engineering, and biofortification, consistently demonstrate the potential of biotechnology to enhance productivity, reduce production costs, and improve product quality. For example, genetic modification has been shown to increase crop yields and decrease pesticide use, leading to significant economic benefits for farmers and society. Similarly, enzyme engineering and other biotechnological techniques have enabled food producers to streamline production processes, optimize resource utilization, and introduce innovative products with enhanced nutritional profiles and consumer appeal.

Keywords: biotechnology, engineering techniques food industry.



**MOLECULAR EPIDEMIOLOGY OF EMERGING MECA GENE POSITIVE
METHICILLIN-RESISTANT *Staphylococcus aureus* ISOLATES FROM BOVINE MILK
IN POTHOHAR REGION, PAKISTAN: A CROSS-SECTIONAL STUDY**

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Abstract

Introduction: A highly prevalent Methicillin-resistant *Staphylococcus aureus* (MRSA) in both animals and humans is a major causative agent for different infectious diseases including heart valve disease, bone-related diseases, and pneumonia. The increasing incidence of MRSA has posed a major challenge in the production of infectious disease medicine. **Material Methods:** A cross-sectional study was conducted in Pothohar region of Pakistan to understand the molecular epidemiology and risk factors of MRSA isolates from bovine milk and environmental samples, using a predesigned questionnaire. In-vitro antibiotic sensitivity of PCR-confirmed MRSA isolates was determined against locally used antibiotic classes. The DNA sequence of *mecA* gene of MRSA isolates was analyzed through Geneious software and results were presented in the form of phylogenetic tree and amino-acid alignment. **Results:** The overall prevalence of subclinical mastitis was found 68.6% through CMT, whereas *mecA* gene positive MRSA prevalence was 66.8% among the *S. aureus* positive cultures from bovine milk samples. In environmental samples, *mecA* gene MRSA prevalence was 30.3% with the highest percentage of 62.0% for *mecA* gene positive MRSA in samples originated from milker hands. Moreover, the isolated strains were found highly resistant to penicillin group (92.5%) while sensitive to quinolone (91.7%). The sequence analysis showed that the isolates used in this study were best matched to previously reported strains GXF14-9 and ATCC12600 from pork (Accession # KY788637) in China and humans (Accession # HM067707) in India. Furthermore, unique substitutions were observed in bovine isolates compared to environmental and other reference strains sequences. **Conclusions:** The current study indicates a high prevalence of *mecA* gene of MRSA and molecular similarity of observed isolates between humans and animals is a threat to both animal and public health.

Keywords: Subclinical mastitis, Epidemiology, *mecA* gene, MRSA, Bovines, and Pakistan.



**GUAR GUM, *Ulva lactuca* L. BIOMASS, AND XANTHAN GUM-BASED
COPOLYMER NOVEL BIOSORBENT FOR ADSORPTIVE REMOVAL OF ACID
ORANGE10 WATER**

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Abstract

The textile industry's wastewater discharge into water bodies has become a significant environmental concern due to its toxicity and adverse impact on the ecosystem. In response, this study presents the development of a highly effective adsorbent (GG@ULB@XG composites) by employing guar gum (GG), *Ulva lactuca* L. biomass (ULB), and xanthan gum (XG), using the ionic gelation method. Various characterization techniques including XRD, SEM, TGA, Zeta Sizer, Zeta Potential, BET, FTIR, and Point of Zero charge (pHPZC) were utilized to analyze the properties of the GG@ULB@XG composites. The removal efficiency of the composite for Acid Orange 10 dye was found to be exceptional, achieving a remarkable 93% removal rate. Optimal adsorption parameters were determined, including initial AO10 concentration (100 ppm), temperature (298K), pH (3), adsorbent concentration (100 mg), and contact time (15 min) at 480 λ_{max} . The thermodynamic analysis provided valuable insights into the thermal stability of the adsorbent. Additionally, a comprehensive investigation of adsorption isotherms (linear and non-linear), such as Elovich, Freundlich, D-R, Langmuir, and Temkin Isotherms, was conducted to better understand the adsorption behavior. Various linear and non-linear adsorption kinetics models, including Elovich, first-order, interparticle diffusion, and second-order kinetic models, were employed to gain deeper insights into the chemistry of the adsorption process. This study highlights the potential of GG@ULB@XG composites as an effective and environmentally friendly solution for water treatment and dye removal in industrial wastewater and sets a foundation for future studies in the field of environmental remediation.



PROXIMATE COMPOSITION OF NON-CONVENTIONAL FOOD PLANTS FROM AN ENDANGERED PLANT BIOME

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Abstract

Background: Non-Conventional Food Plants, known in the Portuguese language by the acronym “PANC,” refer to plant species that have one or more edible parts but are generally little known by the population of a region as sources of nutrients. The community of Serra Verde, located in the city of Lajes Pintadas-RN, Brazil, is the home of a rare and endangered biome, defined as a high-altitude marsh, which consists of a blend of Atlantic Forest and Caatinga vegetation. It is rich in native species; some were commonly used as food by past generations. In this work, we determined the proximate composition of two species of fruits from this area, aiming to encourage their preservation through knowledge about their nutritional value. **Materials and Methods:** Fruits from *Psidium schenckianum* Kiaersk and *Psidium sartorianum* (O.Berg) Nied, popular called “Cumati” and “Cumati Branco”, respectively, were collected in the rural area. Classical methods were applied to analyze the moisture, ash, fiber, protein, and lipid contents; carbohydrates and energy were calculated. **Results:** Both fruits had a high moisture content (80,5 g/100g in Cumati and 79,8 g/100g in Cumati Branco), which may indicate greater susceptibility to deterioration. The most abundant organic compounds are carbohydrates (11,5 g/100g of Cumati and 13,3 g/100g of Cumati Branco). They could contribute to fiber intake since this nutrient varied from 5,68 g/100g (Cumati) to 4,57 g/100g (Cumati Branco); thus, their consumption should be encouraged. The proximate composition of the studied species varied from those described for other species from the *Psidium* genus, such as guava. **Conclusion:** Fruits from the *Psidium* genus can be rich sources of nutrients. The scientific data about *Psidium schenckianum* Kiaersk and *Psidium sartorianum* (O. Berg) Nied is scarce; therefore, studies are needed to better characterize them, especially regarding the presence of bioactive compounds and look for functional and technological properties. This type of information helps to add value to native species, raising awareness among the population about the importance of preserving native vegetation and biomes.

Keywords: Native species, Edible fruits, Sustainability, Biodiversity conservation.



PANOSTEITIS IN A BUCOVINA SHEPHERD DOG. CASE REPORT

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Abstract

Panosteitis is a disease found in young dogs, aged 6-18 months, of medium and large breeds, more commonly diagnosed in large, fast-growing breeds: German Shepherd, Giant Schnauzer, Mastiff, Basset Hound, Shar-Pei, Golden Retriever, Saint Bernard, Airedale Terrier, Doberman, Great Dane, Afghan Hound, Cocker Spaniel, Irish Setter, Labrador Retriever, Mastiff, Rottweiler etc. We report a case of panosteitis in a 16-month-old Bucovina Shepherd dog with intermittent lameness. This is the first report of the disease in the breed in Romania. The disease was initially mistaken considered as rickets, following the clinical exam performed at a previous clinic. On radiological examination there was obvious opacification of the medullary canal of the ulna and discrete opacification of the medullary canal of the radius and humerus in both forelimbs. At the same time, incongruence of the articular heads of the humerus and radius and ulna, respectively, was found in both forelimbs due to asynchronous development of the three bony rays, which may be an additional reason for pain and lameness.

Keywords: panosteitis, dog, Bucovina Shepherd, radiology



EFFECT OF REDUCIBILITY ON THE CATALYTIC ACTIVITY OF NIAL-SPC-DERIVED HYDROTALCITE IN THE DRY METHANE REFORMING PROCESS

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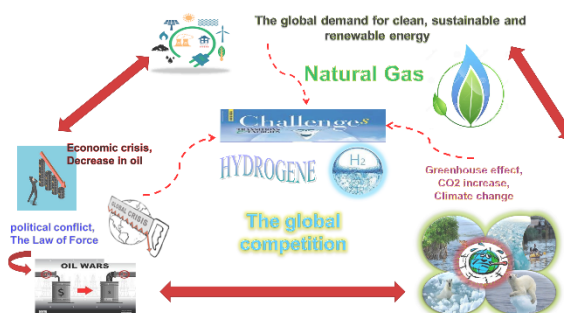
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Abstract

Over the last decades, the impact of greenhouse gas emissions has been well identified and measured over the years by country and by sector. Moreover, it has become a societal issue in many countries, as it is considered essential for our future generations. The quantity of greenhouse gases (CO₂, CH₄, NO_x) has increased considerably due to a combination of factors: i) industrialization and process intensification, ii) increase of the population, iii) increase in mobility and needs of individuals. Currently, the atmosphere is warming due to the effects of greenhouse gases, particularly the increase in CO₂ concentration, which is causing climate change. In addition, the reduction in oil prices, the economic crisis and political conflicts are all factors that are increasing the global demand for clean, sustainable and renewable energy. In the downstream of the oil and gas industry, catalysts are needed to improve the processes for converting crude oil products into useable refined products. Hydrotalcites are lamellar compounds of the general formulation $[M_{1-x}^{2+} M_x^{3+} (OH)_2]^{x+} [A^{n-}]_{x/n} \cdot m H_2O$ where the ionic or cationic character can be tuned by the choice of the nature of the metal and the degree of oxidation. They possess promising catalytic performances, they are much cheaper than noble metals, and are less sensitive to carburizing and poisoning during operation. Especially, NiAl-HT derived hydrotalcite is a candidate catalyst for syngas production in the dry methane reforming process.

NiAl-HT samples were prepared by co-precipitation at a constant basic pH, then the product was calcined at 450°C for 6h. The samples before and after calcination were characterized by various physico-chemical methods such as XRD, ICP, BET, FTIR, SEM, TEM, RTP, TGA/TDA and Raman. The catalysts were tested in the dry reforming of methane with CO₂. The main objective of this work was to study the effect of reduction temperature on the catalytic performance of the hydrotalcite catalyst derived from NiAl-SPC. The catalyst was reduced at 500°C, 600°C, 700°C, 800°C and 900°C for 1h to evaluate the effect of its morphology changes on the reforming of carbon dioxide from methane carried out at 700°C as a function of time on the flow. It was shown





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that the reduction conditions strongly influence the activity and selectivity of the catalyst for the methane CO₂ reforming process. The optimum reduction temperature was 700°C, which accounts for the formation of the metallic active phase without the formation of mixed oxide, which hinder the synergies between the catalyst and the support.

Keywords: Natural Gas, hydrotalcite catalyst, hydrogen, energy, climate change, environment interest, energy



GLUTENSİZ BAKLIYAT ÇEREZLERİ

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Özet

Bu araştırma, küresel düzeyde hızla artan glutensiz beslenme ihtiyaçları ve talepleri bağlamında, sağlıklı ve lezzetli alternatif glutensiz bakliyat unları kullanılarak üretilen bakliyat çerezlerinin üretim süreçlerini detaylı bir şekilde incelemeyi hedeflemiştir. Glutensiz ürünlere olan talebin artmasıyla birlikte, bu talebi karşılamak için yenilikçi üretim yöntemlerinin incelenmesi büyük önem arz etmektedir. Çalışma, alternatif glutensiz bakliyat çerezlerinin sağlık açısından önemini vurgulayarak, bu ürünlerin yüksek lif, protein ve besin değeri gibi özelliklerini öne çıkarmayı amaçlamıştır. Glutensiz bakliyat çerezleri, sadece glutensiz tüketiciler için değil, aynı zamanda genel sağlıklı beslenme trendlerine uygun alternatif "protein kaynağı" ve "yüksek lifli" ürünler olarak da dikkat çekmektedir. Ayrıca, bu çalışma glutensiz bakliyat çerezlerinin üretiminde sıkça kullanılan ekstrüzyon pişirme teknolojisinin ülkemizdeki uygulamalarını analiz etmekte ve bu teknolojinin bakliyat çerezleri üretimindeki potansiyelini belirlemeyi amaçlamıştır. Ekstrüzyon teknolojisinin çerez üretim sürecindeki rolü ve çerez üretim parametrelerinin belirlenme süreci detaylı bir şekilde ele alınmıştır. Bu çalışma, glutensiz çerezlerin üretimindeki teknolojik ve besinsel yönlerin anlaşılmasına önemli katkılar sağlayacaktır. Ek olarak, ekstrüzyon teknolojisinin cips üretimindeki kullanımı da dikkate alınarak, bakliyat çerezleri üretimindeki yenilikçi yöntemler üzerinde daha kapsamlı bir analiz yapılacaktır. Çalışmada nohut unu, bezelye unu ve pirinç unları farklı nemlendirme parametreleri ile denenmiş olup 150°C- 160°C- 170°C namli sıcaklıklarında 2-3 cm kesme boyutunda ürün eldesi ile yürütülmüştür. Yapılan duyusal analizler sonucunda elde edilen cipsler arasında %16 nem ve 150°C namli sıcaklığında elde edilen ürünlerin duyusal olarak daha yoğun ve panelistler tarafından daha çok tercih edilen tekstür özelliklerine sahip olduğu tespit edilmiştir. Bu araştırmanın, glutensiz çerezlerin üretimindeki teknolojik ve besinsel yönlerin anlaşılmasına önemli katkılar sağlayacağı, aynı zamanda ekstrüzyon teknolojisinin cips üretimindeki kullanımının da dikkate alınarak, bakliyat çerezleri üretimindeki yenilikçi yöntemlerin daha kapsamlı bir şekilde analiz edileceği öngörülmektedir.

Anahtar kelimeler: Alternatif, Besin Değeri, Ekstrüzyon Pişirme Teknolojisi, Glutensiz Beslenme, Glutensiz Bakliyat Unları, Protein Kaynağı, Sağlık, Yüksek Lifli