CONGRESS ABSTRACTS BOOK

EMU International Pharmaceutical Sciences Congress (IPSC 2025)

Famagusta, TRNC
14 May 2025

https://ipsc.emu.edu.tr/en

EMU IPSC 2025

Sponsors

EMU International Pharmaceutical Sciences Congress (IPSC 2025)

CONGRESS ABSTRACTS BOOK

EDITORS
Prof. Dr. H. Ozan GÜLCAN
Assist. Prof. Dr. E. Vildan BURGAZ
Sr. Inst. Sultan ÖĞMEN

DATE & VENUE
14 May 2025, Famagusta/TRNC
Rauf Raif Denktaş Culture and Congress Center

ORGANIZER
Faculty of Pharmacy, Eastern Mediterranean University (EMU)

PARTICIPATING COUNTRIES
Algeria, Azerbaijan, Burundi, Cameroon, Cyprus, Egypt, Iran, Iraq, Jordan, Morocco, Namibia, Nigeria, Pakistan, Ruwanda, Sudan, Thailand, Tunisia, Türkiye, Uganda, Zimbabwe

OFFICIAL LANGUAGE
English

ISBN: 978-605-9595-70-4

Welcome Message

Dear Colleagues,

It is a great pleasure and honor to invite you to participate in the "EMU International Pharmaceutical Sciences Congress 2025 (IPSC 2025)", which will be hosted by the Faculty of Pharmacy, Eastern Mediterranean University, on May 14, 2025, in Famagusta, TRNC.

IPSC 2025 aims to gather a diverse group of international scientists, researchers, and students from pharmaceutical sciences and related disciplines. The congress will serve as an important international platform to discuss and exchange ideas on the latest developments, innovative concepts, and research progress in pharmaceutical and related disciplines. This event offers an exceptional opportunity to connect with leading experts in the field, share your own cutting-edge research, and build lasting professional relationships.

The program will feature highly technical sessions, with plenary presentations available both online and face to face. Participants will have the chance to present their work through oral or poster presentations, showcasing the latest advancements.

We are confident that your participation in EMU IPSC 2025 will contribute to the scientific success of the congress and offer an enriching experience, both professionally and socially. Attendees will have the opportunity to engage with colleagues all around the world while enjoying the unique charm and hospitality of Famagusta.

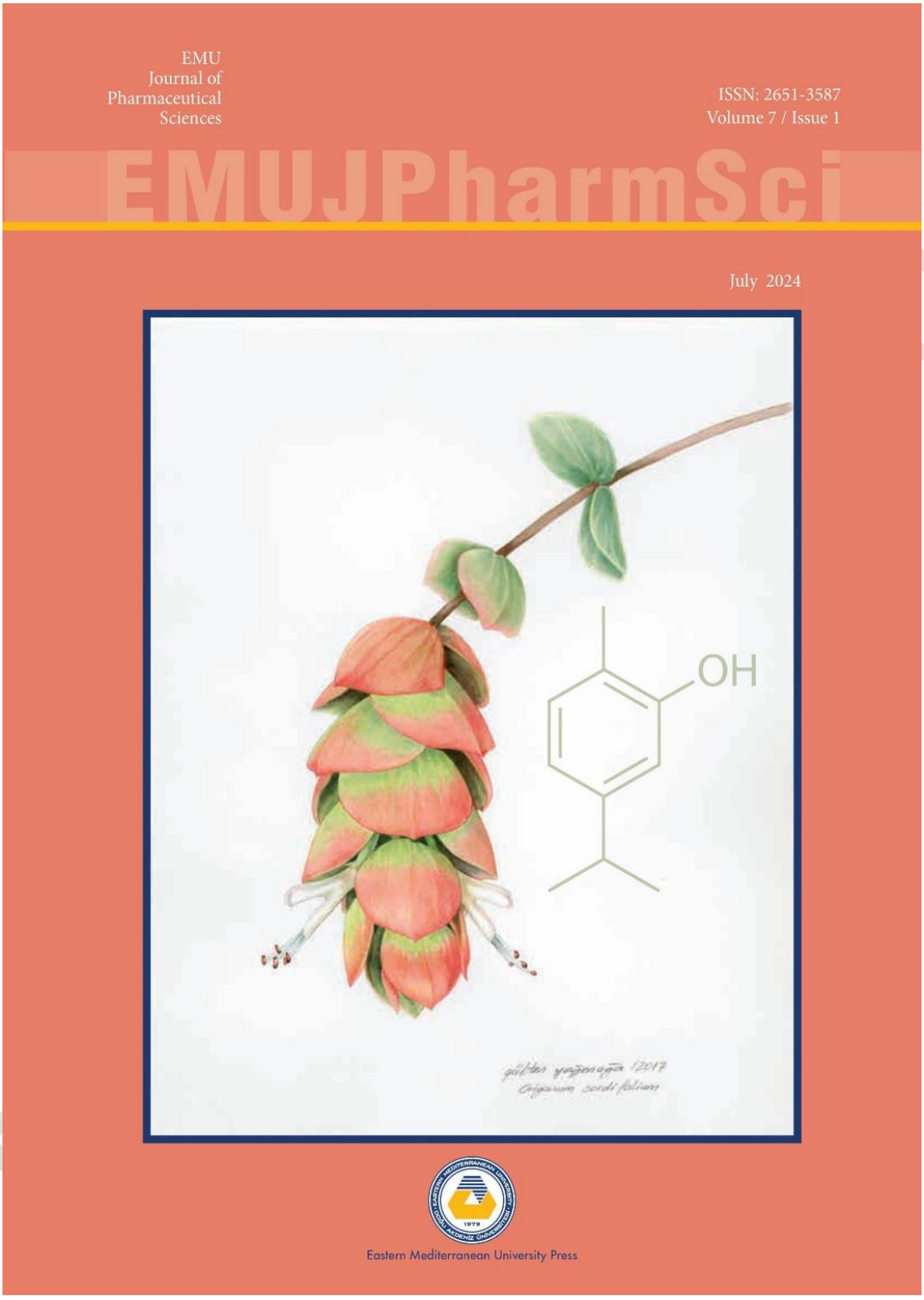
We sincerely look forward to welcoming you to EMU IPSC 2025 in May 2025, and we are excited about the opportunity to meet you in person.

Prof. Dr. H. Ozan Gülcan

IPSC 2025 Congress Chair
Dean
Faculty of Pharmacy Eastern Mediterranean University (EMU)

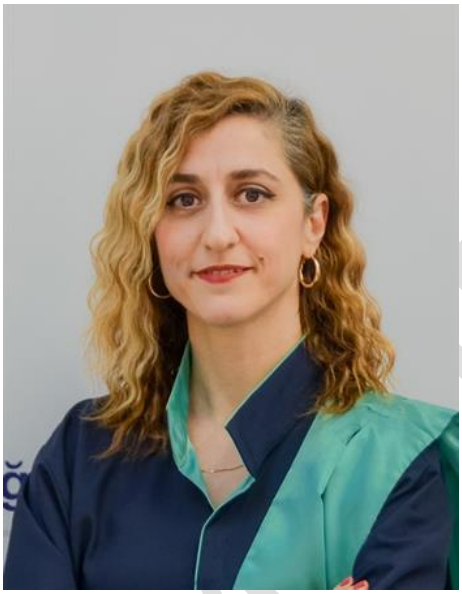
Contracted Journal

https://dergipark.org.tr/tr/pub/emujpharmsci



IPSC Executive Committee

Prof. Dr. H. Ozan Gülcan
Congress Chair
Dean
Faculty of Pharmacy Eastern Mediterranean University (EMU)



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Chair, Organizing Committee
Faculty of Pharmacy, Eastern Mediterranean University (EMU)

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Prof. Dr.	Soodabeh Davaran	Tabriz University of Medical Sciences, Faculty of Pharmacy	Iran
Prof. Dr.	Tansel Çomoğlu	Ankara University, College of Pharmacy	Türkiye
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Prof. Dr.	Yalçın Özkan	Gülhane Health Sciences University, College of Pharmacy	Türkiye
Prof. Dr.	Zahit Pranjol	University of Sussex, Biomedical Sciences	England

IPSC Organizing Committee

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Assist. Prof. Dr. Leyla Beba Pozharani	EMU Faculty of Pharmacy

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Mehmet Kumral	EMU Faculty of Pharmacy
Prof. Dr. Nazim Şekeroğlu	Gaziantep University Faculty of Arts and Sciences
Dr. Mehmet Erdem Güney	Gazi University Vocational School of Health Services

Invited Speakers

Prof. Dr. Alireza Foroumadi
Tehran University of Medical Sciences
'Advances in the Development of Tyrosine Kinase Inhibitors for Cancer Therapy'

Assoc. Prof. Dr. Aziz Eftekhari
Ege University
'Green-synthesized Nanoparticles as a Potent Radiosensitizer against Triple-negative Breast Cancer (TNBC)'

Assoc. Prof. Dr. Bilge Sözen Şahne
Hacettepe University
'The Need to Integrate Social and Pharmaceutical Sciences for Sustaining Innovative Pharmacy-Related Services'

Assoc. Prof. Dr. Farida Tatardar
Khazar University
'Electrospun Nanofibers: Pharmaceutical and Biomedical Applications'

Prof. Dr. Fikrettin Şahin
Yeditepe University
'Development of Boron Based Novel Drugs Used in Regenerative Medicine'

Assoc. Prof. Dr. Javid Ojaghi
Khazar University
'Genetic Variation and Health Benefits of β-Glucan and Resveratrol in Barley and Grape Wine'

Dr. Mustafa Köktürk
Biofarma Pharmaceuticals
'Quality by Design (QbD) Approach in Pharmaceutical Product Development'

Prof. Dr. Nazım Şekeroğlu
Gaziantep University
'A Novel Natural Sustainable Source for Pharmaceutical Industry: Crop-By-Products'

Dr. Omid Mashinchian
Nestlé Research, Institute of Health Sciences
'Organoid and Organ-on-a-Chip: A Novel Platform for Studying Dietary Nutrients and Bioactives in Health and Disease'

Prof. Dr. Sarmad H. Kathem Al-Khateeb
University of Baghdad
'Primary Cilium as a Dynamic and Diverse Signaling Hub'

Prof. Dr. Soodabeh Davaran
Tabriz University
'Surface Modified Metal Nanoparticles and Quantum Dots as a Potential Multifunctional Biomaterial for Cancer Imaging and Chemoradiation Therapy'

Prof. Dr. Tansel Çomoğlu
Ankara University
'Liposomes and Their Use in Pharmaceutics'

AKADEMİK TEŞVİK YÖNETMELİĞİ

EMU IPSC 2025 Kongresinde toplam 93 bildiri sunulmuştur, bunlardan 42'si sözlü, 51 tanesi ise poster sunum şeklinde olup; sunulan sözlü bildirilerin %58'lik kısmı yabancı katılımcılar tarafından sunulmuştur. Sempozyuma yaklaşık 20 farklı ülkeden bilim insanı katılım sağlamıştır.

Katılım Sağlayan Ülkeler: Cezayir, Azerbaycan, Burundi, Kamerun, Kıbrıs, Mısır, İran, Irak, Ürdün, Fas, Namibya, Nijerya, Pakistan, Ruanda, Sudan, Tayland, Tunus, Türkiye, Uganda, Zimbabve. Sempozyuma katılan araştırmacılar ve sunum başlıkları 'EMU IPSC 2025 Abstracts & Proceedings Book' kitabının içindekiler kısmında sunulmuştur. EMU IPSC 2025 Kongresinde aşağıda yer alan YÖK Akademik Teşvik ve Yükselme kriterlerini sağlamaktadır.

İlgili YÖK akademik teşvik yönetmeliği;

17/1/2020 tarihli ve 31011 sayılı Resmî Gazete'de yayımlanan 16/1/2020 tarihli ve 2043 sayılı Cumhurbaşkanı Kararı uyarınca: (9) (Değişik: RG-17/1/2020-31011-CK-2043/3 md.) Tebliğlerin sunulduğu yurt içinde veya yurt dışındaki etkinliğin uluslararası olarak nitelendirilebilmesi için Türkiye dışında en az beş farklı ülkeden sözlü tebliğ sunan konuşmacının katılım sağlaması ve tebliğlerin yarıdan fazlasının Türkiye dışından katılımcılar tarafından sunulması esastır. Ayrıca etkinliğin uluslararası niteliği haiz olup olmadığı hususunda, ödemeye esas teşkil etmek üzere üniversite yönetim kurulu kararının olması gerekir. Tebliğlerin değerlendirilmesinde tebliğin ilgili etkinlikte sunulmuş ve bunun belgelendirilmiş olması (etkinlik programı ve etkinliğe tebliğde ismi yer alan en az bir araştırmacının katılım sağladığını gösterir belge) esastır. Ayrıca değerlendirme için tebliğin elektronik veya basılı olarak etkinlik tebliğ kitapçığında yer alması ve yayımlanmış tam metninin sunulması gerekir.

Doğu Akdeniz Üniversitesi
Eastern Mediterranean University

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Rektörlük Ofisi / *Rector's Office*

Tarih:13 Mayıs 2025

İlgili Makama,

Doğu Akdeniz Üniversitesi öncülüğünde, 14 Mayıs 2025 tarihinde Doğu Akdeniz Üniversitesi Eczacılık Fakültesi ev sahipliğinde Rauf Raif Denktaş Kültür ve Kongre Sarayı'nda düzenlenecek olan "EMU International Pharmaceutical Sciences Congress 2025" kongresi, Üniversitelerarası Kurul Başkanlığı Doçentlik başvuru şartları Rektörlük onayı ile gerçekleştirilecektir. Kongre Başkanlığını ve organizasyon komitesi başkanlığını sırasıyla Doğu Akdeniz Üniversitesi Eczacılık Fakültesi öğretim üyeleri Prof. Dr. Hayrettin Ozan Gülcan ve Yrd. Doç. Dr. Emine Vildan Burgaz yapacaktır.

Bilgi ve gereğini saygılarımla rica ederim.

Prof. Dr. Osman M. KARATEPE

Rektör Vekili

Doğu Akdeniz Üniversitesi

MEDİPOL UNV-İSTANBUL
İSTANBUL MEDİPOL ÜNİVERSİTESİ

T.C.
İSTANBUL MEDİPOL ÜNİVERSİTESİ REKTÖRLÜĞÜ
İnsan Kaynakları ve Planlama Daire Başkanlığı

Sayı : E-45250738-952.3.6.03-7397 04/12/2024
Konu : Akademik Temsilci Hk.

DOĞU AKDENİZ ÜNİVERSİTESİ REKTÖRLÜĞÜNE

İlgi : 28.11.2024 tarih ve E-6386 sayılı yazınız.

İlgi yazı kapsamında, Üniversiteniz Eczacılık Fakültesi tarafından 14.05.2025 tarihinde yapılacak olan "EMU International Pharmaceuticel Sciences Congress 2025" konferansına Üniversitemiz Eczacılık Meslek Bilimleri Bölümü, Farmasötik Kimya Anabilim Dalı öğretim üyesi Prof. Dr. Mine YARIM YÜKSEL'in üniversite dışı akademik temsilci olarak katılımı ilgili Dekanlığımızın görüşleri doğrultusunda uygun bulunmuştur.

Bilgilerinize arz ederim.

Prof. Dr. Ömer CERAN
Rektör V.

Dağıtım:
Üniversitemiz Eczacılık Fakültesi Dekanlığı

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Tel: 2047 **E-Posta**: zehra.demir@medipol.ed

Congress Schedule

14.05.2025 Rauf Raif Denktaş Culture and Congress Center

MAIN HALL

Registration		**07:30-08:30**
Moment of Respect, National Anthem		**08:30-08:45**
Opening Ceremony		**08:45-09:45**
Coffee Break		**09:45-10:00**
Session 1 – Session Chair: Prof. Dr. Mustafa Aslan		
Primary Cilium as a Dynamic and Diverse Signaling Hub	Prof. Dr. Sarmad H. Kathem Al-Khateeb University of Baghdad	**10:00-10:25**
Development of Boron Based Novel Drugs Used in Regenerative Medicine	Prof. Dr. Fikrettin Şahin Yeditepe University	**10:25-10:50**
Coffee Break		**10:50-11:15**
Session 2 – Session Chair: Prof. Dr. Ayla Balkan		
Surface Modified Metal Nanoparticles and Quantum Dots as a Potential Multifunctional Biomaterial for Cancer Imaging and Chemoradiation Therapy	Prof. Dr. Soodabeh Davaran Tabriz University	**11:15-11:40**
Advances in the Development of Tyrosine Kinase Inhibitors for Cancer Therapy	Prof. Dr. Alireza Foroumadi Tehran University of Medical Sciences	**11:40-12:05**
A Novel Natural Sustainable Source for Pharmaceutical Industry: Crop-By-Products	Prof. Dr. Nazım Şekeroğlu Gaziantep University	**12:05-12:30**
Poster Presentations / Lunch Break		**12:30-13:50**
Session 3 – Session Chair: Prof. Dr. Müberra Koşar		
Liposomes and Their Use in Pharmaceutics	Prof. Dr. Tansel Çomoğlu Ankara University	**13:50-14:15**
Advances in Oral Drug Delivery by Nanopharmaceuticals	Prof. Dr. Yeşim Aktaş Erciyes University	**14:15-14:40**
Quality by Design (QbD) Approach in Pharmaceutical Product Development	Dr. Mustafa Köktürk Biofarma Pharmaceuticals	**14:40-15:05**
Organoid and Organ-on-a-Chip: A Novel Platform for Studying Dietary Nutrients and Bioactives in Health and Disease	Dr. Omid Mashinchian Nestlé Research, Institute of Health Sciences	**15:05-15:30**
Coffee Break		**15:30-15:45**

Session 4 – Session Chair: Prof. Dr. Tansel Çomoğlu		
The Need to Integrate Social and Pharmaceutical Sciences for Sustaining Innovative Pharmacy-Related Services	Assoc. Prof. Dr. Bilge Sözen Şahne Hacettepe University	**15:45-16:10**
Electrospun Nanofibers: Pharmaceutical and Biomedical Applications	Assoc. Prof. Dr. Farida Tatardar Khazar University	**16:10-16:35**
Green-Synthesized Nanoparticles as a Potent Radiosensitizer Against Triple-negative Breast Cancer (TNBC)	Assoc. Prof. Dr. Aziz Eftekhari Ege University	**16:35-17:00**
Genetic Variation and Health Benefits of β-glucan and Resveratrol in Barley and Grape Wine	Assoc. Prof. Dr. Javid Ojaghi Khazar University	**17:00-17:25**
Closing Ceremony		**17:30-18:00**

EMU HALL

Oral Presentations (In-person)

In Person Presentation Session 1 – Session Chairs: Assist. Prof. Dr. Jale Yüzügülen			
Title	**Author(s)**	**Affiliation**	**Time**
Spectrophotometric analysis of an injectable combination product by partial least squares regression	Zehra Ceren Ertekin Ozkan Erdal Dinç	Ankara University	**10:00-10:10**
The effect of dapagliflozin ointment on induced -psoriasis in mice	Waleed Khaled Younis Al bahadly Ahlem Bdiou Moaed Al-Gazally Haider Al-Saedi Sihem Hmissa Belhaj Salah Mukhallad Ramadhan	University of Karbala	**10:10-10:20**
Assessment of venous thromboembolism prophylaxis in surgical patients using the Caprini risk assessment model in North Cyprus	Nardin Sedghizadeh Emre Hamurtekin Ahmet Sami Bosnak Kimia Zabihi Faraz Norouzi Bonab Seyyed Matin Razavi Movahhed	Eastern Mediterranean University	**10:20-10:30**
In Person Presentation Session 2 – Session Chairs: Assist. Prof. Dr. Leyla Beba Pozharani			
Title	**Author(s)**	**Affiliation**	**Time**
Development and characterization of colon-targeted nanoparticulate drug delivery system for IBS	Aylin Deljavan Ghodrati Tansel Çomoğlu	Ankara University	**10:30-10:40**

Formulation and design of rhamnolipid-based liposomes for butyrylcholine esterase delivery in organophosphate toxicity	Gizem Rüya Topal Özgür Eşim	University of Health Sciences	**10:40-10:50**
A comparative study on liquisolid compacts of quetiapine fumarate via quality by design and prediction of oral pharmacokinetic performance	Ayşe Nur Oktay Ayhan Savaşer	University of Health Sciences Gülhane	**10:50-11:00**
Enhancing gastric retention of Clopidogrel: Formulation and evaluation of floating GRDDS tablets using a compaction simulator	Sarmad Hama Nailla Jiwa	Near East University	**11:00-11:10**
Coffee Break			**11:10-11:20**
In-person Presentations Session 3 – Session Chairs: Assoc. Prof. Dr. Mehmet İlktaç			
Title	**Author(s)**	**Affiliation**	**Time**
Natural colourant from *Saccharum officinarum* L. peels: An assessment of its antioxidant and antibacterial activities and Its stability as colourant in paracetamol syrup	Emmanuel Mshelia Halilu Lara Alhajj	Cyprus International University	**11:20-11:30**
Antimicrobial hydrogel development	Kudra Hamza Kyambadde Musaab Saada Achim Passian Dushime Emrah Güler Jedidiah Sekaabe	European University of Lefke	**11:30-11:40**
Antiviral activity of cranberry exosome and synthetic melittin in 3D skin organoid model	Sevda Demir Eda Nur Canbaz Fikrettin Şahin	Yeditepe University	**11:50-12:00**
Evaluation of antimicrobial activity of Centaurea calcitrapa cream formulations	Achim Passian Dushime Musaab Saada Najat Agiel Emrah Güler	European University of Lefke	**12:00-12:10**
In-person Presentations Session 4 – Session Chairs: Assist. Prof. Dr. Aybike Yektaoğlu Şahali			
Title	**Author(s)**	**Affiliation**	**Time**
Targeting dopaminergic enzymes: docking-based analysis of guaianolides isolated from *Psephellus pyrrhoblepharus*	Akile Tuncal Pelin Tastan Kerem Terali	Cyprus Health and Social Sciences University	**12:10-12:20**
Targeting carbonic anhydrase in glioblastoma: Design and evaluation of novel 1,3,4-thiadiazole derivatives	Faika Başoğlu Sevgi Karakus Elif Bascil Fatih Tok Ömer Erdogan Özge Cevik	European University of Lefke	**12:20-12:30**

First derivative spectrophotometric method for the simultaneous determination of clopidogrel and aspirin in tablet formulation	Asiye Ucer Erdal Dinc	Ankara Yıldırım Beyazıt University	**12:30-12:40**
Novel imidazo[2,1-b]thiazoles trigger apoptosis rather than necroptosis on HEPG2 cell line	Jedidiah Sekaabe Faika Başoğlu Eda Becer Hilal Kabadayi Ensarioglu Nuray Ulusoy Guzeldemirci Seda Vatansever	European University of Lefke	**12:40-12:50**
Lunch Break			**12:50-13:50**
In-person Presentations Session 5 – Session Chairs: Assoc. Prof. Dr. İmge Kunter			
Title	**Author(s)**	**Affiliation**	**Time**
Exploring the genetic diversity and pharmacological properties of Azerbaijani tea accessions	Jamala Eldarova	Khazar University	**13:50-14:00**
Genotoxicity assessment of *Ruscus aculeatus* L. extracts: Safety evaluation of a traditional medicinal plant	Gülşah Esen Dilan Talu Etil Guzelmeric Muhammed Hamitoglu Hasan Kırmızıbekmez	Yeditepe University	**14:00-14:10**
Synergistic evaluation of *Inula viscosa* combined with chemotherapeutic drugs: an integrative approach via synergy modeling	Hananeh Kordbacheh Gülşah Esen Muhammed Hamitoglu	Eastern Mediterranean University	**14:10-14:20**
Toxicological assessment of *Marrubium vulgare* L.: An Ames test-based study	Büşra Benkli Gülşah Esen Hananeh Kordbacheh Muhammed Hamitoglu	Yeditepe University	**14:20-14:30**
In-person Presentations Session 6 – Session Chairs: Assist. Prof. Dr. Emine Dilek Özyılmaz			
Title	**Author(s)**	**Affiliation**	**Time**
Advancing drug discovery with artificial intelligence: A Review of tools, techniques, and translational applications	Aysan Davatgarantaghipoor	Eastern Mediterranean University	**14:30-14:40**
Stepwise formulation development of lipid nanocarriers for targeted capecitabine delivery in cancer therapy	Armineh Deljavan Ghodrati Gülin Amasya Ceyda Tuba Sengel Turk	Ankara University	**14:40-14:50**
Smartphone digital image colorimetry combined with deep eutectic vs supramolecular solvents microextraction for cleanup and preconcentration of zinc in fish and vegetable samples	Salihu Ismail Bashir Ismail Ahmad Isa Baba Koki Aliyu B. Abdullahi Yahya A. Danmaraya	Near East University	**14:50-15:00**

Coffee Break			**15:00-15:15**
In-person Presentations Session 7 – Session Chairs: Assist. Prof. Dr. Tuğba Erçetin			
Title	**Author(s)**	**Affiliation**	**Time**
A Cloud Point Extraction for the Inhibiton of Iron-Loaded Ferroptosis Using Spectroanalytical Techniques	Odile Twizere Kudra Hamza Kyambadde Abdelrahman Hassan Şermin Tetik	European University of Lefke	**15:15-15:25**
Determination of parabens in food and pharmaceutical products by edible oil-based switchable hydrophilicity solvent liquid-liquid microextraction prior to HPLC-DAD	Jude Caleb Mais Al-Nidawi Salihu Ismail Aliyi B. Abdullahi Suad E. Abughrin	Near East University	**15:25-15:35**
Investigation of antimicrobial activities of mouth wash formulations containing essential oils	Kambarami Ellinah Agiel Najat	European University of Lefke	**15:35-15:45**
In-person Presentations Session 8 – Session Chairs: Assist. Prof. Dr. Canan Gülcan			
Title	**Author(s)**	**Affiliation**	**Time**
Survival analysis of breast cancer patients: A multivariate approach	Titilayomi Adewusi Abdulrahman Abdullateef Bello Sirajo Esther Omolola Ayodele	Cyprus Health and Social Science University	**15:45-15:55**
Pharmaceutics factory at home 2050: Redefining personalized medicine and the future of healthcare in a transdisciplinary era	Peyman Keyhanvar	Tabriz University	**15:55-16:05**
Pharmaceutical startups in Turkey and Cyprus: A SWOT analysis inspired by the WEF future of jobs report 2025	Solmaz Hazratgholizad Peyman Keyhanvar Soudabeh Davaran	Khazar University	**16:05-16:15**
In-person Presentations Session 9 – Session Chairs: Assoc. Prof. Dr. Emre Hamurtekin			
Title	**Author(s)**	**Affiliation**	**Time**
Balancing pain relief and patient safety: A MCDM approach to opioid evaluation	Miracle Ibekwe Mubarak Taiwo Mustapha	Near East University	**16:15-16:25**
Importance of plant tissue culture techniques in pharmaceutical sciences	Tuğba Erçetin	Eastern Mediterranean University	**16:25-16:35**

Online Hall

Oral Presentations (Online)

Online Presentations Session 1 – Session Chair: Assoc. Prof. Dr. İmge Kunter			
Title	**Author(s)**	**Affiliation**	**Time**
Prevalence of anxiety and depression among Iraqi employees	Taiba Faris Alathami Nihad Ismail Taha Fadwa Ghassan Hameed	Kirkuk University	**10:00-10:15**
Network pharmacology combined with molecular docking and in-vitro experimental verification to elucidate the effect of *Mitragyna speciosa*on Alzheimer's disease	Rahni Hossain Jitbanjong Tangpong	Walailak University	**10:15-10:30**
Community pharmacists faced drug shortages: A pilot study in Algeria	Amal Helali Khadidja Benchachou Nazim Bellifa	Abou Bekr Belkaid University	**10:30-10:45**
Survey on the use of ChatGPT in daily practice among community pharmacists	Amal Helali Khadidja Benchachou Nazim Bellifa	Abou Bekr Belkaid University	**10:45-11:00**
Online Presentations Session 2 – Session Chair: Assoc. Prof. Dr. Emre Hamurtekin			
Title	**Author(s)**	**Affiliation**	**Time**
Anti-inflammatory activity and phytochemical profiling of two galls extract of *Pistacia terebinthus*L.	Nazim Bellifa Ismail Benhaddou Yassine Merad Abedallah Berber Amal Helali	Djillali Liabes University of Sidi-Bel-Abbes	**11:00-11:15**
Role of EHRs as a Digital Transformation Instrument for Healthcare In Jordan: Capabilities, Opportunities, and Challenges	Taha Al-Hayali Saja Khaldoon Salma Al-Daher Fadi Saqallah Bara'a Shawaqfeh	Al-Zaytoonah University of Jordan	**11:15-11:30**
Molecular docking study of microwave-assisted synthesized furan-fused chalcones as potential proapoptotic agents	Bahareh Noshadi Emine Erdag Emine Vildan Burgaz	Near East University	**11:30-11:45**
Nanomolar quantitative detection of L-tryptophan in the presence of uric acid on electrochemically pretreated pencil graphite electrode in complex samples	Ceren Yıldız Dilek Eskikoy Bayraktepe Zehra Yazan	Ankara University	**11:45-12:00**

Online Presentations Session 3 – Session Chair: Assist. Prof. Dr. Leyla Beba Pozharani			
Title	**Author(s)**	**Affiliation**	**Time**
The role of artificial intelligence in Iraqi healthcare education: A KAP study among medical students	Layth Khalid Qays Walid A. Al-Qerem Bara'a Shawaqfeh	Al-Zaytoonah University of Jordan	**14:15-14:30**
Evaluation of phenolic composition and antioxidant activity of ethanol extracts from apple juice processing waste	Seçil Karahüseyin Betül Uçar	Cukurova University	**14:30-14:45**
Cyclodextrin-drug complexes in topical gels: Rheological, mechanical, and release insights	Pelin Pelvanoglu Hilal Nalbant Emine Kahraman	Istanbul University	**14:45-15:00**
0Evaluation of natural acacia gums from Algerian herbal markets	Askeur Yasmine Helali Amal Bellifa Nazim Dali-Yahia Mustapha Kamal	Abou Bekr Belkaid University	**15:00-15:15**
Online Presentations Session 4 – Session Chair: Assoc. Prof. Dr. Mehmet İlktaç			
Title	**Author(s)**	**Affiliation**	**Time**
Evaluation of anticonvulsant activities of Lactuca sativa seeds and Asperugo procumens leaves in mice	Marjan Talebi Rouzbeh Almasi Ghale Seyedali Hashemi Faraz Mojab	Shahid Beheshti University of Medical Sciences	**15:15-15:30**
Development of topical nanofiber formulations containing antimicrobial drug for neonatal umbilical cord infections	Imren Esenturk-Guzel Luceyn Abdo Asli Gurbuz Yurtsever Derya Buyukkayhan Hurmus Gursu Yucel Sahin Cemre Ozkanca Sibel Dosler	University of Health Sciences	**15:30-15:45**
Awareness of third-hand smoke and attitudes toward smoking cessation methods among taxi drivers in Istanbul: A survey study	Yigitcan Sar Dilara Bayram-Ozgur Rengin Reis	Istanbul University	**15:45-16:00**

Poster Presentations

Poster No	Title	Authors
PP-01	Plants that increase nitric oxide and their uses	Amina Bashir Mustafa Akpınar
PP-02	Growth hormone and how to use it	Alaaeddine Chennouf Mustafa Akpınar
PP-03	Plants and supplements that increase growth hormone and testosterone	Ecem Yildiz Mustafa Akpınar
PP-04	Tailored medicines in pharmacognosy	Pembe Sadikoglu Müberra Koşar
PP-05	Pharmacognosic investigation of *Lycium ferrocissimum* Miers	Sayeh Ghahramani Müberra Koşar
PP-06	Multi-step synthesis of anti-inflammatory drug molecules	Rozh Merakhor E. Vildan Burgaz
PP-07	Herbal supplements that affect reproductive hormons	Melisa Isimtekin E. Vildan Burgaz
PP-08	Hazardous chemicals in cosmetic	Eylem Yur E. Vildan Burgaz
PP-09	Predicting the next pandemic: Preparation for the next pandemic	Erinc Betmezoglu Mehmet İlktaç
PP-10	Preservatives used in cosmetics	Zeynep Bardak E. Vildan Burgaz
PP-11	Cell signaling mechanisms in health and disease	Ege Uysal İmge Kunter
PP-12	Reemergence of vaccine preventable diseases	Eylül Dalkılınç Mehmet İlktaç
PP-13	Fluorescent chemosensors and bioactive natural products	Aylin Mansouri Aybike Yektaoğlu Şahali
PP-14	The relationship between health expenditures and health outcomes in OECD countries	Syed Sohaib Ahmed Canan Gülcan
PP-15	Synthesis of potentially biological active coumarin fused compounds	Ibrahim Ciftci E. Vildan Burgaz
PP-16	Drugs used due to their mucilage	Batuhan Agoren Tuğba Erçetin
PP-17	Iron preparations in the treatment of iron-deficiency anemia	Elif Efendioglu Emre Hamurtekin
PP-18	Cost effectiveness analysi's role in medicine and health care	Emre Ozturk Canan Gülcan
PP-19	Medicinal plants for the treatment of Sinusitis	Bugra Herdem Ogut Tuğba Erçetin
PP-20	Nanoparticles and their usage in cancer targeting	Mohammad Ahmad İmge Kunter
PP-21	Plants that play a role in women's health	Sinem Civri Tuğba Erçetin
PP-22	The economic benefits of clinical pharmacy services	Muhammed Taha Bosnak Canan Gülcan
PP-23	Molecular pharmacognosy and applications	Eren Berk Yilmaz Tuğba Erçetin
PP-24	Bioproduction process of natural products and biopharmaceuticals	Salih Baris Hazir Tuğba Erçetin
PP-25	The elements of pharmacy services and customer satisfication	Sıla Gulderen Canan Gülcan

PP-26	The effects of health on economics	David Oghenero Canan Gülcan
PP-27	Multi-functional cosmeceutical formulations	Habiba Tarfa Leyla Beba Pozharani
PP-28	*Entamoeba histolytica*infections- microbiology, epidemiology, and pathogenesis review	Abdul-Azeez Abubakar Aliyu Mehmet İlktaç
PP-29	Synthesis characterization and cytotoxic of novel naphthoquinone-N- phenyl acetamide hybrid derivatives for the new anticancer leads	Pouriya Hassan Zade Bazneshin Hayrettin Ozan Gülcan
PP-30	Polymeric scaffolds for 3D culturing and organ on chips systems	Rahaf Basheer Abdulraheem Al-Hadidi İmge Kunter
PP-31	Searching synergistic drug combinations in cancer	Hamza Vardar Jale Yüzügülen
PP-32	Gene therapy, its importance and limitations	Chelsea Gospel Obolo Tuğba Erçetin
PP-33	Sustainable and biodegradable materials in cosmetic formulations	Rana Abdelnaeem Leyla Beba Pozharani
PP-34	Formulation and efficiacy of collagen-based cosmetic products	Ilayda Metin Leyla Beba Pozharani
PP-35	Novel antimicrobial drugs approvals between 2020-2024	Ranya Eleyan Emre Hamurtekin
PP-36	Drug-induced lupus	Aya Abdelbagi Mohamed Abdelrahim Emre Hamurtekin
PP-37	Treatment of hyperthyroidism in elderly patients	Seyedehromina Vakilalsadati Emre Hamurtekin
PP-38	Drugs used for neurological diseases in 2023	Ailin Kor Emre Hamurtekin
PP-39	Cell regenerative plants and their uses	Perpetua Wagapne Mustafa Akpınar
PP-40	Preparation and characterization of a surfactant-stabilized nanosuspension of bipyridine-coordinated Zn(II) complex	Alireza Zarrin Hayrettin Ozan Gülcan
PP-41	What is biomimetic chemistry?	Emmanuel Chukwuemeka Ezemba Aybike Yektaoğlu Şahali
PP-42	The evaluation of oxidation stress in thyroid disease	Syrine Ayari Emre Hamurtekin
PP-43	Drug induced hypothyroidism	Osman Cancuri Emre Hamurtekin
PP-44	Nanotechnology in cosmetics	Rania Guedira Yeşim Aktas
PP-45	Box-Behnken design for innovative spanlastics carrier for optimized rizatriptan benzoate transport	Rajaa A. Dahash Mowafaq M.Ghareeb
PP-46	Evaluation of the antibacterial activity of *Rosmarinus officinalis* L. essential oil and hydrosol	Gizem Sanlıtürk Amirali Jalilvand Mahmoud Abdelfatah Göksu Oduncuoğlu Ayla Balkan

PP-47	Supramolecular solvent liquid-liquid microextraction (SMS-LLME) to determine trace aluminum in green tea prior to HPLC	Tabarek Shah Hanan Rashid Jude Caleb Mais Al-Nidawi
PP-48	Cistus species of Cyprus: Phytochemicals, adaptation, and therapeutic potentials	Demet Genç Karadeniz Ladan Dindoust
PP-49	Medicinal plants used in wound healing	Beste Atli Sara Hakimzadeh Müberra Koşar
PP-50	Essential oils and blood-brain barrier interaction	Ezgi Ak-Sakalli Isik Kerem Fatih Demirci Müberra Koşar
PP-51	Natural colorants used in cosmetic and pharmaceutical industry	Nesrin Oztinen Oyku Sila Kurt Müberra Koşar
PP-52	Preliminary study on the formulation and characterization of solid lipid nanoparticle (SLN) bases for topical application via high-shear homogenization	Mustafa Alhadi Leyla Beba Pozharani
PP-53	Preliminary study on the impact of hyaluronic acid on powder flow and compressibility properties	Seyed Armin Houshmand Kia Nardin Sedghizadeh Yesim Aktas Leyla Beba Pozharani
PP-54	Pharmacognostical study of the endemic *Centaurea calcitrapa* subsp*. angusticeps* (H.Lindb.) Meikle	Kazohua Vepurua Agiel Najat

Photo Gallery


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Welcome


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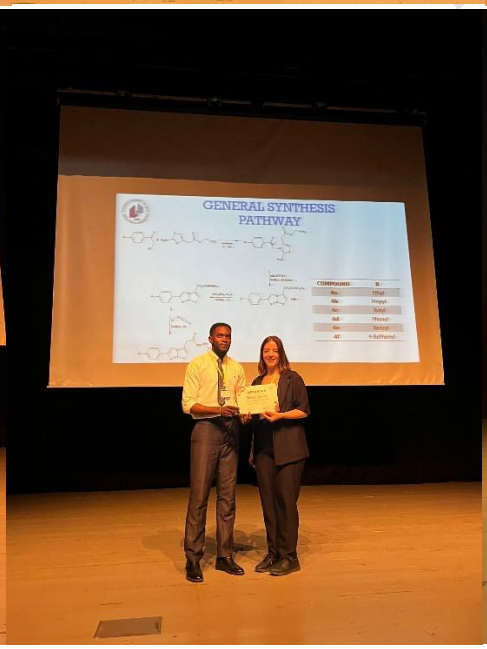
ALPET


THANK YO


Method


RECOMMENDATION


Research Team


GENERAL SYNTHESIS PATHWAY


Thank you all for Listening.


Thank you!
Questions??
CERTIFICATE


Thank you for your attention !
Any Questions


Thanks for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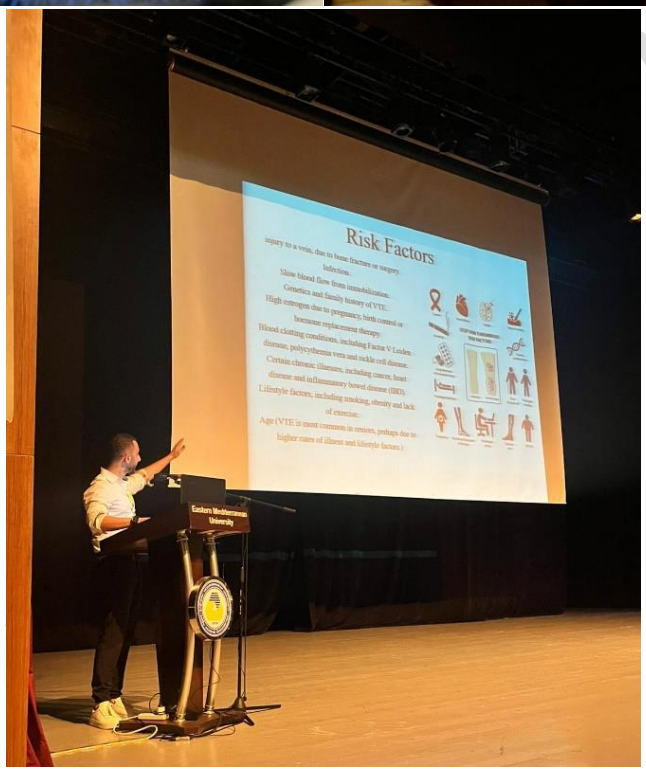
Welcome


Risk Factors


Thank you!


ALPET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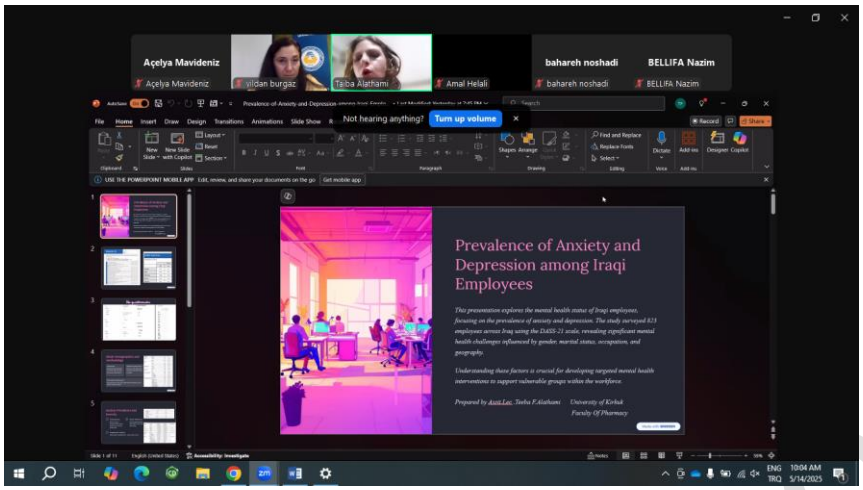
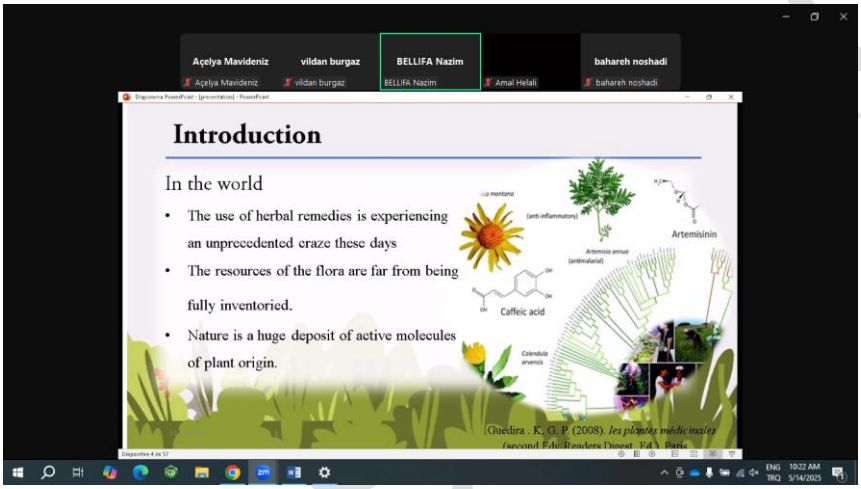

Açelya Mavideniz
vildan burgaz
Taiba Alathami
Amal Helali
bahareh noshadi
BELLIFA Nazim
Not hearing anything?
Turn up volume
Prevalence of Anxiety and Depression among Iraqi Employees


Açelya Mavideniz
vildan burgaz
BELLIFA Nazim
Amal Helali
bahareh noshadi
Introduction
In the world
The use of herbal remedies is experiencing an unprecedented craze these days
The resources of the flora are far from being fully inventoried.
Nature is a huge deposit of active molecules of plant origin.
Artemisinin
Caffeic acid
Guédira . K. G. P. (2008). les plantes médicinales


Açelya Mavideniz
vildan burgaz
BELLIFA Nazim
Amal Helali
bahareh noshadi
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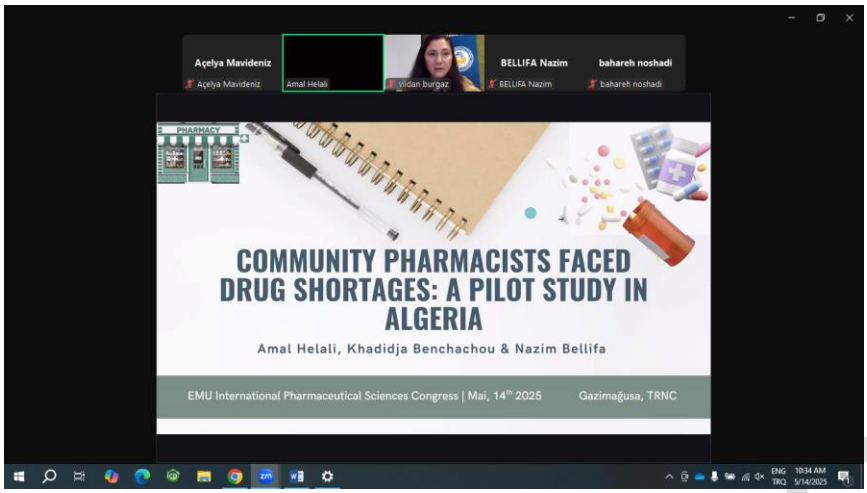
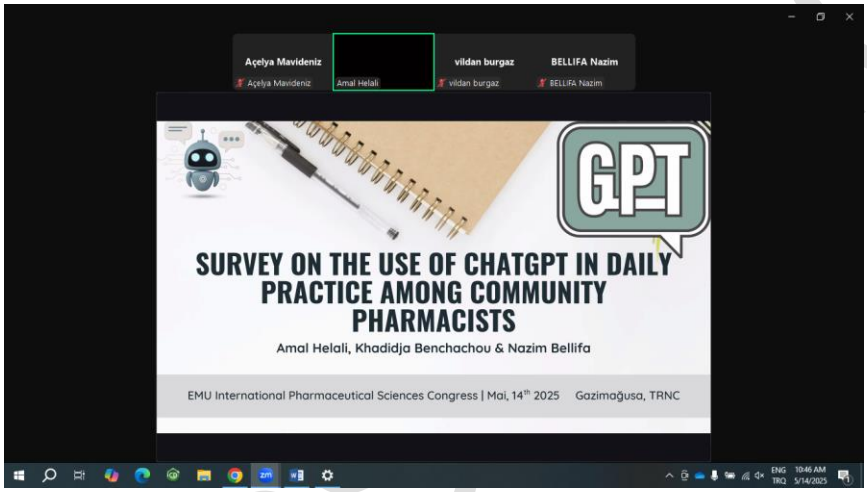

Açelya Mavideniz
Amal Helali
vildan burgaz
BELLIFA Nazim
bahareh noshadi
COMMUNITY PHARMACISTS FACED DRUG SHORTAGES: A PILOT STUDY IN ALGERIA
Amal Helali, Khadidja Benchachou & Nazim Bellifa
EMU International Pharmaceutical Sciences Congress | Mai, 14th 2025 Gazimağusa, TRNC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Amal Helali
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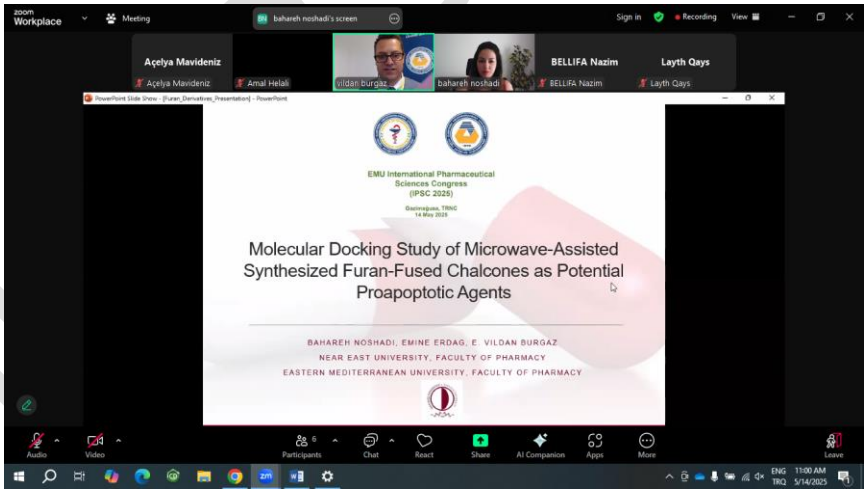
GPT
SURVEY ON THE USE OF CHATGPT IN DAILY PRACTICE AMONG COMMUNITY PHARMACISTS
Amal Helali, Khadidja Benchachou & Nazim Bellifa
EMU International Pharmaceutical Sciences Congress | Mai, 14th 2025 Gazimağusa, TRNC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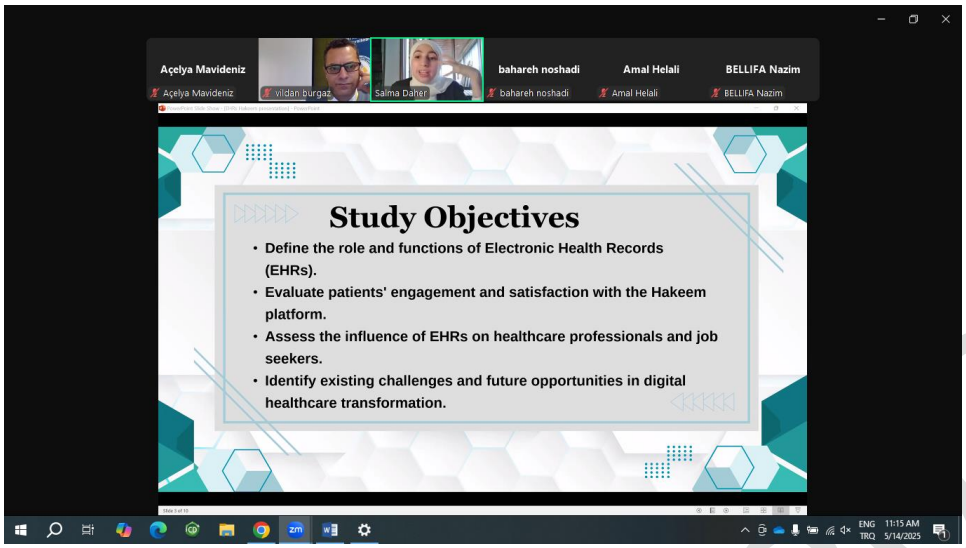
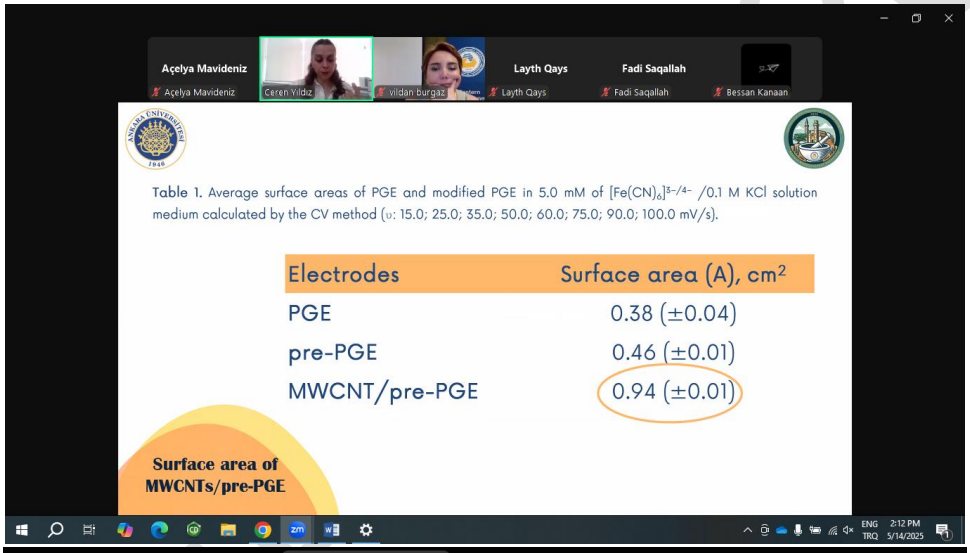
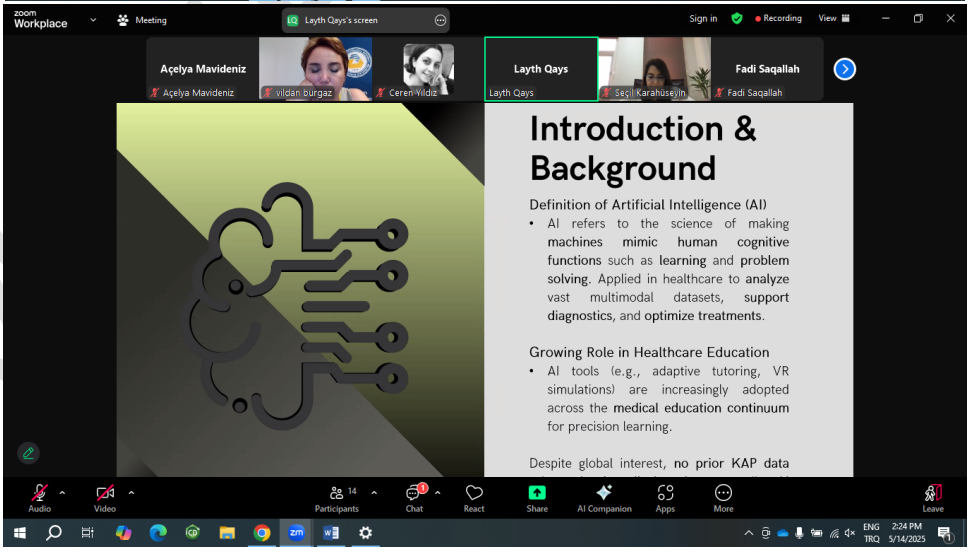
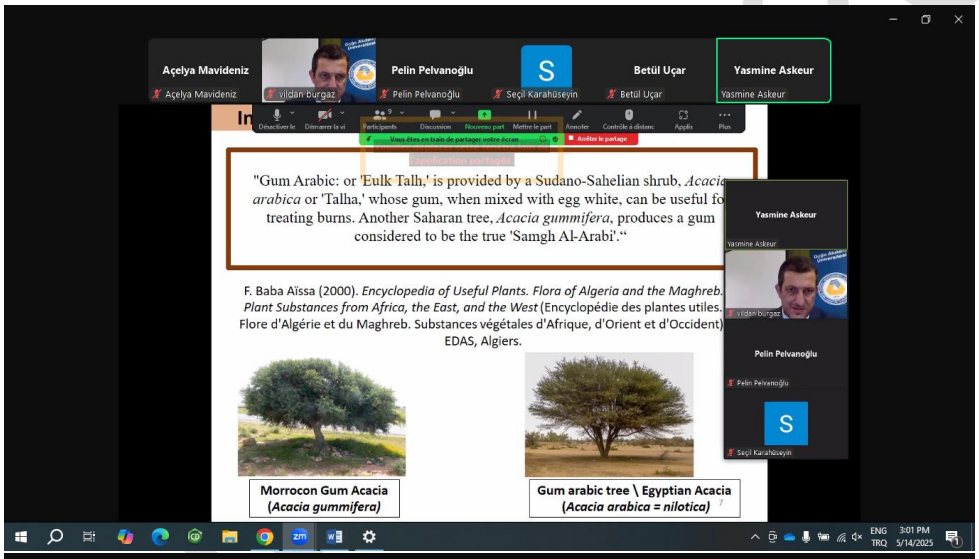
Amal Helali
vildan burgaz
bahareh noshadi
BELLIFA Nazim
Layth Qays
EMU International Pharmaceutical Sciences Congress (IPSC 2025)
Molecular Docking Study of Microwave-Assisted Synthesized Furan-Fused Chalcones as Potential Proapoptotic Agents
BAHAREH NOSHADI, EMINE ERDAG, E. VILDAN BURGAZ
NEAR EAST UNIVERSITY, FACULTY OF PHARMACY
EASTERN MEDITERRANEAN UNIVERSITY, FACULTY OF PHARMACY


Açelya Mavideniz
vildan burgaz
Salma Daher
bahareh noshadi
Amal Helali
BELLIFA Nazim
Study Objectives
• Define the role and functions of Electronic Health Records (EHRs).
• Evaluate patients' engagement and satisfaction with the Hakeem platform.
• Assess the influence of EHRs on healthcare professionals and job seekers.
• Identify existing challenges and future opportunities in digital healthcare transformation.

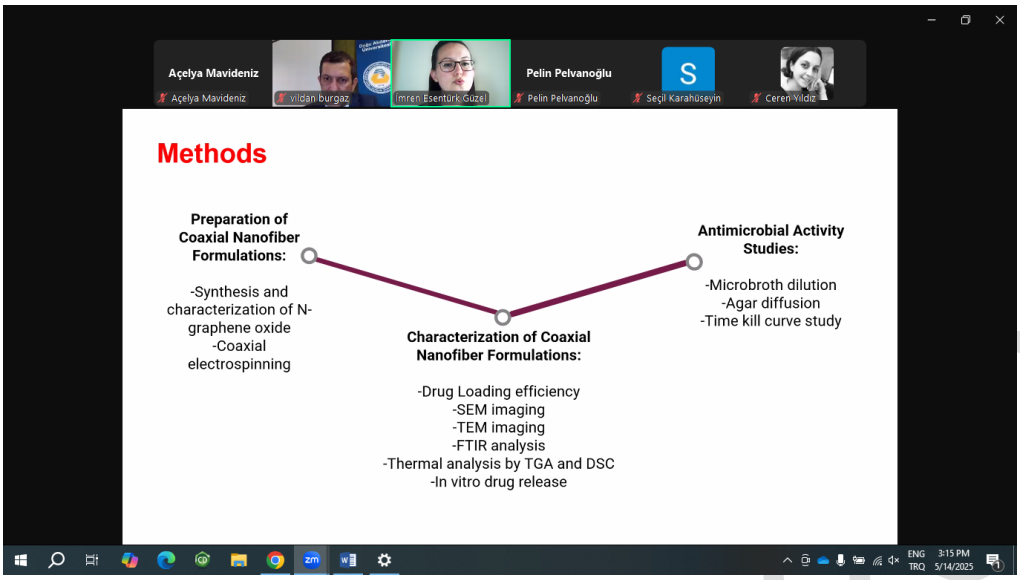

Açelya Mavideniz
Ceren Yildiz
vildan burgaz
Layth Qays
Fadi Saqallah
Bessan Kanaan
Table 1. Average surface areas of PGE and modified PGE in 5.0 mM of $[Fe(CN)_6]^{3-/4-}$ /0.1 M KCl solution medium calculated by the CV method (υ: 15.0; 25.0; 35.0; 50.0; 60.0; 75.0; 90.0; 100.0 mV/s).
Electrodes
Surface area (A), cm²
PGE
0.38 (±0.04)
pre-PGE
0.46 (±0.01)
MWCNT/pre-PGE
0.94 (±0.01)
Surface area of MWCNTs/pre-PGE

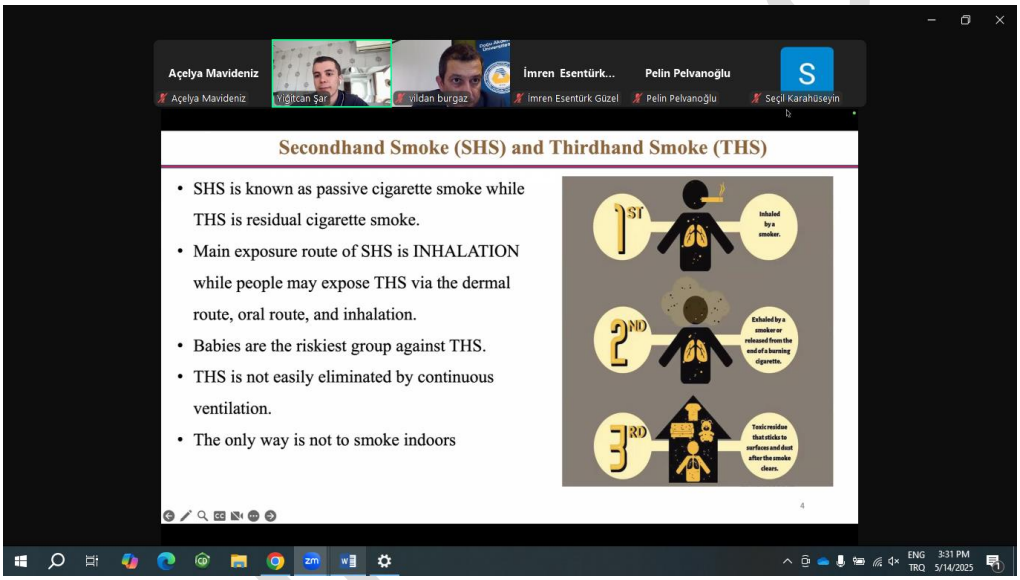

Açelya Mavideniz
vildan burgaz
Ceren Yildiz
Layth Qays
Seçil Karahüseyin
Fadi Saqallah
Introduction & Background
Definition of Artificial Intelligence (AI)
• AI refers to the science of making machines mimic human cognitive functions such as learning and problem solving. Applied in healthcare to analyze vast multimodal datasets, support diagnostics, and optimize treatments.
Growing Role in Healthcare Education
• AI tools (e.g., adaptive tutoring, VR simulations) are increasingly adopted across the medical education continuum for precision learning.
Despite global interest, no prior KAP data


Açelya Mavideniz
Pelin Pelvanoğlu
Seçil Karahüseyin
Betül Uçar
Ceren Yildiz
Cyclodextrin-Drug Complexes in Topical Gels
Rheological, Mechanical, and Release Insights
Hilal Nalbant, Pelin Pelvanoğlu, Emine Kahraman
Istanbul University, Faculty of Pharmacy, Department of Pharmaceutical Technology, Istanbul, Türkiye


Açelya Mavideniz
Pelin Pelvanoğlu
Seçil Karahüseyin
Betül Uçar
Yasmine Askeur
"Gum Arabic: or 'Eulk Talh,' is provided by a Sudano-Sahelian shrub, Acacia arabica or 'Talha,' whose gum, when mixed with egg white, can be useful fo treating burns. Another Saharan tree, Acacia gummifera, produces a gum considered to be the true 'Samgh Al-Arabi'."
F. Baba Aïssa (2000). Encyclopedia of Useful Plants. Flora of Algeria and the Maghreb. Plant Substances from Africa, the East, and the West (Encyclopédie des plantes utiles. Flore d'Algérie et du Maghreb. Substances végétales d'Afrique, d'Orient et d'Occident) EDAS, Algiers.
Morrocon Gum Acacia (Acacia gummifera)
Gum arabic tree \ Egyptian Acacia (Acacia arabica = nilotica)


Açelya Mavideniz
Pelin Pelvanoğlu
Seçil Karahüseyin
Ceren Yildiz
Introduction
Umbilical Cord Care
Umbilical cord care is the most important part of newborn skin care. Especially in developing countries, omphalitis accounts for a significant portion of newborn deaths.
Omphalitis is the name given to bacterial infection of the umbilical cord stump.
The World Health Organization has reported that 4 million children die each year in the neonatal period in developing countries, and 460,000 of these are due to serious bacterial infections, of which umbilical cord infections are a significant source.


Açelya Mavideniz
yildan burgaz
İmren Esentürk Güzel
Pelin Pelvanoğlu
Seçil Karahüseyin
Ceren Yildiz
Methods
Preparation of Coaxial Nanofiber Formulations:
-Synthesis and characterization of N-graphene oxide
-Coaxial electrospinning
Characterization of Coaxial Nanofiber Formulations:
-Drug Loading efficiency
-SEM imaging
-TEM imaging
-FTIR analysis
-Thermal analysis by TGA and DSC
-In vitro drug release
Antimicrobial Activity Studies:
-Microbroth dilution
-Agar diffusion
-Time kill curve study


Açelya Mavideniz
Yiğitcan Şar
yildan burgaz
İmren Esentürk...
Pelin Pelvanoğlu
Seçil Karahüseyin
Secondhand Smoke (SHS) and Thirdhand Smoke (THS)
• SHS is known as passive cigarette smoke while THS is residual cigarette smoke.
• Main exposure route of SHS is INHALATION while people may expose THS via the dermal route, oral route, and inhalation.
• Babies are the riskiest group against THS.
• THS is not easily eliminated by continuous ventilation.
• The only way is not to smoke indoors
1ST
Inhaled by a smoker.
2ND
Exhaled by a smoker or released from the end of a burning cigarette.
3RD
Toxic residue that sticks to surfaces and dust after the smoke clears.


Açelya Mavideniz
Amal Helali
yildan burgaz
bahareh noshadi
BELLIFA Nazim
Layth Qays
Content of the presentation
1- Introduction
2- Experimental & Methodology
3- Results & Discussion

CONTENTS

EMU International Pharmaceutical Sciences Congress (IPSC 2025)

14 MAY 2025, FAMAGUSTA/TRNC

Rauf Raif Denktaş Culture and Congress Center

INVITED SPEECHES

ABSTRACTS

Advances in the Development of Tyrosine Kinase Inhibitors for Cancer Therapy

Prof. Dr. Alireza Foroumadi

Tehran University of Medical Sciences,
Department of Medicinal Chemistry, Faculty of Pharmacy, Tehran

aforoumadi@yahoo.com

Abstract

Kinase inhibitors have transformed the landscape of targeted cancer therapies, offering a precise approach to treating malignancies driven by dysregulated kinase signaling. Since their introduction, the field has progressed from the development of non-selective inhibitors with broad activity to highly specific compounds designed to minimize off-target effects while maximizing therapeutic benefit. This evolution has been driven by advancements in structural biology, high-throughput screening, and computational drug design, enabling the creation of inhibitors tailored to unique kinase targets. However, a major challenge remains the emergence of resistance mutations, which often reduce the efficacy of existing therapies. To address this, researchers have explored innovative strategies, such as modifying the chemical structure of inhibitors to improve binding affinity and circumvent resistance, demonstrating the dynamic interplay between drug design and cancer biology. This presentation will provide an overview of the historical development of kinase inhibitors, emphasizing key breakthroughs and the strategies employed to overcome resistance mutations.

Additionally, I will briefly present my recent research on the development of furanopyrimidine-based compounds targeting the FLT3-ITD and FLT3-ITD-F691L mutations in acute myeloid leukemia (AML). These mutations pose significant challenges to current therapies, and my work seeks to develop novel inhibitors that can overcome resistance and improve patient outcomes.

Keywords: Kinase, cancer therapy, tyrosine kinase.

Green-Synthesized Nanoparticles as a Potent Radiosensitizer against Triple-Negative Breast Cancer (TNBC)

Assoc. Prof. Dr. Aziz Eftekhari

Nanotechnology and Biochemical Toxicology Center at Azerbaijan State University of Economics.

eftekhari.aziz@gmail.com

Abstract

Triple-negative breast cancer (TNBC) is an aggressive subtype of breast cancer. Radiation therapy (RT) is a modality for TNBC management. Radiosensitizers can mitigate the adverse effects of RT. Applying green-synthesized silver nanoparticles (Ag-NPs) from biological sources such as plants is a potential strategy to sensitize cancer cells to radiotherapy due to the low toxicity. Therefore, identifying novel natural sources for synthesizing stable and broadly applicable green-Ag-NPs has gained more attention in cancer therapy. In the present study, *we* synthesized green- Ag-NPs from pumpkin peel extract and elucidated the impact of green-synthesized Ag-NPs as a radiosensitizer in MDA-MB 231 cells (a model of TNBC). The prepared Ag-NPs had a spherical shape with an average size of 81 nm and a zeta potential of − 9.96 mV. Combination of green-synthesized Ag-NPs with RT exhibited synergistic anticancer effects with an optimum combination index (CI) of 0.49 in MDA-MB-231 cells. Green-synthesized Ag-NPs synergistically potentiated RT-induced apoptosis in MDA-MB-231 cells compared to the corresponding monotherapies. Morphological features of apoptosis were further confirmed by the DAPI–TUNEL staining assay. HIF-1α expression was decreased in cells subjected to combination therapy. Bax and p53 expression increased, whereas Bcl-2 genes decreased. Combination therapy significantly increased the protein level of PERK and CHOP while decreasing cyclin D1 and p-ERK/total ERK levels compared to monotherapies.These findings indicate the potential effect of green-synthesized Ag-NPs as a radiosensitizer for TNBC treatment.

Keywords: Ag-NPs, triple-negative breast cancer.

The Need to Integrate Social and Pharmaceutical Sciences for Sustaining Innovative Pharmacy-Related Services

Assoc. Prof. Dr. Bilge Sözen Şahne

Department of Pharmacy Management, Faculty of Pharmacy, Hacettepe University

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Abstract

Pharmacy, as one of the most essential health sciences, directly impacts human lives. The integration of social sciences into pharmaceutical research is crucial for ensuring the accessibility, equity, and sustainability of pharmaceutical services aligned with the core principles of the right to health. This study aims to emphasize the unique role of social pharmacy as a bridge between pharmaceutical and social sciences, focusing on its potential to address contemporary challenges and improve professional education.

Social pharmacy plays a pivotal role in fostering evidence-based practices, using advancing technologies, and identifying societal needs to sustain positive outcomes in pharmaceutical services. Collaborations with educational sciences are particularly significant in designing and implementing effective teaching methods, which are essential for training future pharmacists to meet societal needs and excel in their profession.

Moreover, social pharmacy is indispensable in addressing emerging global issues such as digitalization, climate change, and sustainability. It enables the exploration of these challenges' implications for pharmaceutical services while supporting the development of interdisciplinary collaborations. Recent studies have highlighted the importance of sustainability, underlining its transformative impact on pharmacy practices.

Aligned with the FIP Development Goals, this study underscores the critical need for research and initiatives in social pharmacy to shape the future of the profession. By acting as a dynamic bridge between social sciences and pharmaceutical sciences, social pharmacy not only fosters interdisciplinary collaboration but also ensures that pharmaceutical advancements are effectively translated into meaningful societal benefits.

Keywords: Innovative pharmacy, social pharmacy, social sciences, pharmaceutical sciences.

Electrospun Nanofibers: Pharmaceutical and Biomedical Applications

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Abstract

Electrospinning is a widely utilized technique for fabricating nanofibers, offering several advantages due to the high surface area, tunable porosity, and small diameter of the resulting fibers. These unique characteristics make electrospun nanofibers highly suitable for a range of pharmaceutical and biomedical applications. In the pharmaceutical industry, electrospun nanofibers are particularly valuable for drug delivery systems, where they can encapsulate active pharmaceutical ingredients and provide controlled, sustained, or targeted release profiles. The ability to modulate the release rate and the bioavailability of drugs has led to their use in improving therapeutic efficacy, especially for poorly soluble drugs. Electrospun nanofibers have demonstrated considerable potential in tissue engineering, wound healing, and regenerative medicine. Because of their structural similarities to the extracellular matrix, they are excellent candidates for developing scaffolds that promote cell adhesion, proliferation, and differentiation. This makes electrospun nanofibers an important component in the construction of scaffolds for tissue regeneration, such as skin, bone, and nerve tissues. Furthermore, the high porosity and surface area of electrospun fibers aid in the absorption of exudates in wound dressings, which speeds up the healing process. Despite the potential, obstacles such as electrospinning scalability, fiber alignment, repeatability, and the inclusion of functional biomaterials must be overcome before widespread clinical application. Nanofibers have been employed for drug-loaded scaffolds in biomedical, tissue engineering, and wound healing applications for decades. Scaling up nanofiber manufacture for commercial use is necessary, as is improving electrospinning techniques.

Keywords: Electrospun nanofibers, electrospinning.

Boron Based Formulations Used in Regenerative Medicine

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Abstract

Regenerative medicine is an exciting, emerging discipline that aims to develop new therapeutic methods to repair and regenerate damaged and diseased organs. These therapeutic methods use stem cells, gene therapy products, biomaterials, engineered tissues, and biologically active compounds (boron compounds, proteins, peptides, MABs, NA, oligonucleotides). Boron is a trace element of interest in various biomedical research areas, including regenerative medicine. Previous studies have suggested that boron may affect stem cell behavior, cell proliferation, and differentiation. It may help maintain stem cell pluripotency or promote differentiation, which is crucial for tissue engineering and regenerative therapies. Boron is also known to play an important role in regenerative medicine approaches focused on bone repair and regeneration.

Current studies conducted at Yeditepe University have focused on many boron compounds, and among the inorganic borate compounds tested, the one with the lowest toxicity and highest biological significance was Sodium pentaborate pentahydrate (SPB). Later, some SPB-based novel drug formulations were developed and used in different applications of regenerative medicine such as antimicrobial and antiviral activities, obesity, cancer and wound healing using in vitro and in vivo experimental models.

The results showed that boron compounds, especially SPB, have antimicrobial, antioxidant, anti-inflammatory, antiangiogenic, antiadipogenic and anticancer effects. SPB can facilitate regeneration by enhancing cell attachment, proliferation and differentiation.

The present study demonstrated that SPB formulations offer multiple potential benefits in regenerative medicine, especially in the context of cartilage and bone tissue regeneration, anti-aging, wound healing, antimicrobial and antiviral therapy, obesity and cancer therapy, and development of advanced biomaterials. However, further research is needed to fully elucidate their mechanisms of action and optimize their application in clinical settings.

Keywords: Regenerative medicine, boron compounds, cancer, obesity, wound healing.

Genetic Variation and Health Benefits of β-glucan and Resveratrol in Barley and Grape Wine

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Abstract

In cell cultures, resveratrol has been shown to inhibit the growth of several human cancer cell lines, including those associated with breast, prostate, colon, pancreatic, and thyroid cancers.

Recent studies have shown that β-glucan has a positive impact on mammalian health by enhancing the immune system, preventing tumor growth, and reducing harmful substances such as cholesterol and triglycerides in the bloodstream. Furthermore, medical professionals have acknowledged the advantages of β-glucan for human health, including its ability to lower blood sugar levels and maintain youthful skin.

To achieve this, we conducted molecular analyses of β-glucan and resveratrol concentrations in a diverse set of 63 naked barley cultivars and 65 grape wine varieties, aiming to assess the genetic variation and potential health benefits associated with these bioactive compounds. This study provides valuable insights into the genetic basis of these beneficial traits and their potential applications in agriculture and human health.

Our analysis revealed specific DNA fragments that are strongly correlated with high concentrations of β-glucan and resveratrol in various barley and grape genotypes. These molecular markers provide a powerful tool for marker-assisted selection (MAS), enabling the development of barley and grape varieties with optimized levels of these bioactive compounds. By incorporating these markers into breeding programs, it is possible to accelerate the breeding process and produce crops with enhanced nutritional and health-promoting properties. Furthermore, these findings not only hold promise for improving agricultural production but also have significant implications for human health. The increased concentrations of β-glucan and resveratrol in these crops could pave the way for the development of functional foods and nutraceuticals, as well as novel therapeutic agents targeting conditions such as cardiovascular diseases, diabetes, and inflammation. Ultimately, our research contributes to both advancing agricultural biotechnology and enhancing the potential of plant-based products for disease prevention and health promotion.

Keywords: β-glucan, resveratrol in barley, grape wine.

Quality by Design (QbD) Approach in Pharmaceutical Product Development

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Abstract

A methodical, scientific approach to pharmaceutical development, Quality by Design (QbD) places a strong emphasis on process comprehension and variability control to guarantee predetermined product quality. QbD, which has its roots in the International Conference on Harmonization (ICH) standards, including ICH Q8(R2), Q9, and Q10, seeks to replace empirical methods in pharmaceutical development with knowledge-driven approaches. Determining a Quality Target Product Profile (QTPP), identifying Critical Quality Attributes (CQAs), comprehending the connection between formulation and process variables through risk assessment and Design of Experiments (DoE), and putting in place a strong Control Strategy are all essential components of the QbD framework. Manufacturers can improve product efficacy, safety, and consistency while enabling regulatory flexibility and lifecycle management by incorporating QbD into the drug development lifecycle.

Keywords: Quality by design, pharmaceutical, development.

A Novel Natural Sustainable Source for Pharmaceutical Industry: Crop-By-Products

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Abstract

Pharmaceutical industry needs a great deal raw material, especially for novel natural pharmaceuticals. Crop by-products that are residues of conventional crops are important sustainable raw materials in natural product production. These sustainable by-products include seeds (grape, pomegranate, fig, pepper, tomato), kernels (olive, date, cherry, melon, sweet melon), fruit stalks (cherry), fruit peels (pomegranate, citrus, apple) and other parts of conventional crops. These sustainable organic ingredients are by-products of conventional crops and have been used in the folk medicine for centuries. Therefore, new natural products can be produced from these agro-industrial wastes offering environmental, social and economic advantages through their reuse. Recently, scientific studies have rediscovered these materials with their rich phytochemical constituents such as fatty oils rich in unsaturated fatty oils, which are rare. In this context, some omega-7 and omega-9 fatty acids, like Paullinic acid and Nervonic acid, unique fatty acids, were first reported in olive kernels by Sekeroglu and Gezici (2021). In addition to fatty oils, these by-products may also contain other phytochemicals like essential oils, alkaloids, glycosides, tannins and flavonoids. While grape seeds have been widely used for pharmaceutical and nutraceutical products, pomegranate seed fatty oil rich in punicic acid and fig seed fatty oil rich in omega-3 and gamma tocopherol have been rediscovered in the cosmetic and pharmaceutical industries. Seed and kernel fatty oils with their distinct chemical compositions and bioactivities have been rediscovered in the food, pharmaceutical and cosmetic industries. After cold-pressing these seeds and kernels a large number of residues are generated. These residues as organic materials and by-products of crop by-products, have been used as fertilizer, animal feed and burned as homemade energy sources. Recent scientific studies have shown that these sustainable natural materials contain a significant number of bioactive compounds. Therefore, we have focused on the chemical analysis and bioactivities of these sustainable novel natural resources for the pharmaceutical and cosmeceutical industries, aiming for human welfare and zero waste in combating the climate crisis worldwide.

Keywords: By-products, zero waste, sustainable raw materials, natural products.

Organoid and Organ-on-a-Chip: A Novel Platform for Studying Dietary Nutrients and Bioactives in Health and Disease

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Abstract

The study of dietary nutrients and bioactives has advanced significantly with the development of organoid and organ-on-a-chip (OoC) technologies. These cutting-edge platforms mimic the structural and functional properties of human tissues, offering unparalleled opportunities to investigate nutrient absorption, metabolism, and bioavailability under physiologically relevant conditions. Organoids recreate the 3D architecture of organs, enabling detailed examination of cellular responses to dietary compounds. Similarly, OoCs integrate microfluidic systems to simulate tissue-tissue interactions and dynamic flow, closely resembling in vivo environments. Their application extends to understanding gut microbiota interactions, nutrient-driven signaling pathways, and their implications in metabolic disorders, and chronic diseases. By offering personalized research opportunities, organoid, and OoC technologies hold transformative potential for nutrition science, novel bioactive discovery, and precision nutrition. In our research, we employed a novel 3D intestinal organoid-based high-throughput microarray platform to evaluate the epithelial recovery potential of various lead bioactive compounds under conditions mimicking intestinal barrier disruption. This innovative approach enables precise quantification of bioactive efficacy, offering a robust tool for assessing therapeutic candidates targeting epithelial repair and regeneration.

Keywords: Organoid, organ-on-a-chip, dietary.

Primary Cilium as a Dynamic and Diverse Signaling Hub

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Abstract

The primary cilium is a microtubule-based, non-motile organelle that protrudes from the apical side of most mammalian cells. Owing to the unique localization of a variety of receptors, ion channels, transport proteins and signaling proteins, primary cilia serve a broad range of functions. Primary cilia detect and transmit extracellular cues (mechanical and chemical) to regulate diverse cellular processes during development and to maintain tissue homeostasis. Defects in cilia structure and function lead to a class of diseases termed ciliopathies. Therefore, dysfunctional primary cilia can cause various diseases, including congenital anomalies, cardiovascular disorders, neurodevelopmental disorders among others. Accordingly, it is remarkably promising to target cilia-specific proteins or cilia-regulated pathways in the aim to treat ciliopathies.

Keywords: Primary cilium, signaling hub.

Surface Modified Metal Nanoparticles and Quantum Dots as a Potential Multifunctional Biomaterial for Cancer Imaging and Chemoradiation Therapy

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Abstract

Quantum dots and metallic nanoparticles represent cutting-edge advancements in drug delivery and cancer combination therapy. Their integration into clinical practice could revolutionize oncology by enabling personalized and minimally invasive treatments. Quantum dots (QDs) and metallic nanoparticles (MNPs) have emerged as promising nanotechnology tools in the field of cancer nanomedicine, offering innovative approaches for targeted drug delivery and combination cancer therapies. Their unique physical and chemical properties enable precise targeting, controlled release, and multifunctional applications, making them highly effective in combating cancer. QDs can generate reactive oxygen species (ROS) upon light activation, inducing localized cell death in tumors. Metallic nanoparticles, such as gold, and iron oxide nanoparticles, are known for their biocompatibility, surface plasmon resonance (SPR), and magnetic properties. Combination Therapy by combining chemotherapy with radiation therapy, can enhance the overall therapeutic effect. The integration of QDs and MNPs offers synergistic advantages for combination therapies. However, their effective application in biomedical systems requires precise surface modifications to enhance their biocompatibility, stability, and targeted delivery capabilities.

We have developed a multimodal surface-modified nanoplatform based on quantum dots or hybrid metal nanoparticles conjugated with biocompatible polymers for cancer imaging and chemoradiation therapy. This system is designed for simultaneous applications in targeted drug delivery of chemotherapeutics, synergistic therapeutic agents, radiosensitizers, and imaging agents. The targeting capability of this nanoplatform minimizes off-target effects an enhances the therapeutic efficiency of drug delivery systems and their surface engineering enables the attachment of drug molecules in a controlled manner, ensuring sustained and localized release. Stimuli-responsive surface modifications, which react to environmental changes such as pH or temperature, provide additional control over drug release profiles. These multimodal functionalized nano-systems demonstrated high potential in enhancing chemotherapy efficacy for cancer treatment especially or the treatment of multidrug-resistant cancers.

Keywords: Metal nanoparticles, quantum dots, cancer imaging, chemoradiation therapy.

Liposomes and Their Use in Pharmaceutics

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Abstract

Liposomes are spherical vesicles composed of one or more phospholipid bilayers, which encapsulate an aqueous core. Due to their biocompatibility, biodegradability, and versatility, liposomes have become a significant tool in pharmaceutical sciences. Their structure allows the encapsulation of both hydrophilic drugs in the core and lipophilic drugs within the bilayer, making them suitable carriers for a wide range of therapeutic agents.

Liposomes offer several advantages in drug delivery. They enhance the solubility of poorly soluble drugs, protect drugs from enzymatic degradation, and improve pharmacokinetics by extending drug circulation time. Furthermore, they can target specific tissues or cells, reducing off-target effects and enhancing therapeutic efficacy. This is achieved through passive targeting, such as enhanced permeability and retention (EPR) effects in tumors, or active targeting by attaching ligands like antibodies or peptides to their surface.

In pharmaceutics, liposomes have been widely applied in cancer therapy, antimicrobial treatments, gene delivery, and vaccine formulations. Notable examples include liposomal doxorubicin (Doxil®) for cancer treatment and liposomal amphotericin B for fungal infections. Their ability to encapsulate RNA and DNA has also made them essential in the development of mRNA vaccines, such as those for COVID-19.

Despite their benefits, liposomes face challenges such as stability during storage, potential for rapid clearance by the immune system, and high production costs. Advances in liposome technology, such as PEGylation (adding polyethylene glycol), have addressed some of these issues, improving their stability and circulation time.

In summary, liposomes represent a versatile and promising drug delivery system in pharmaceutics. Ongoing research continues to expand their potential, paving the way for more effective and targeted therapies.

Keywords: Liposomes, pharmaceutics.

EMU International Pharmaceutical Sciences Congress (IPSC 2025)

14 MAY 2025, FAMAGUSTA/TRNC

Rauf Raif Denktaş Culture and Congress Center

ORAL PRESENTATION ABSTRACTS

OP - 1

Spectrophotometric Analysis of an Injectable Combination Product by Partial Least Squares Regression

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Abstract

Combination pharmaceutical products are widely used in both human and veterinary medicine. Ensuring their quality requires accurate and robust analytical methods that are preferably simple, low-cost and environmentally friendly. However, the simultaneous quantitation of multiple active compounds presents a challenge, especially in spectrophotometric analysis due to overlapping spectra.

The aim of this study was to develop a fast, accurate, and simple spectrophotometric method for the simultaneous quantitation of clorsulon and ivermectin in a veterinary injectable formulation, without requiring separation steps or complex sample preparation.

The injectable combination of clorsulon and ivermectin is used in cattle to treat internal and external parasites. As their UV spectra overlap extensively, their spectrophotometric analysis requires the use of a suitable chemometric model. In this work, a partial least squares (PLS) regression model was developed using a training set of 25 binary mixtures of ivermectin (3.0–40.0 µg/mL) and clorsulon (2.5–36.0 µg/mL), designed via a 5^2 factorial design. The model was constructed using absorbance data in the 200–350 nm range (601×25 matrix) and corresponding concentration data (2×25 matrix). Cross-validation procedure indicated that three latent variables were optimal for both analytes.

Analytical method validation was performed by analyzing independent test mixtures in various concentrations, as well as intra-day, inter-day and standard addition samples. Recovery results for ivermectin and clorsulon in the test set were reported to be 100.11% and 101.38%, respectively. After validation, the model was applied to commercial injectable formulations, resulting in mean assay values of 10.25 mg/mL for ivermectin and 98.95 mg/mL for clorsulon, consistent with the labeled content.

Keywords: Chemometrics, clorsulon, ivermectin, partial least squares, simultaneous analysis, UV-Vis spectroscopy.

OP - 2

Assessment of Venous Thromboembolism Prophylaxis in Surgical Patients Using the Caprini Risk Assessment Model in North Cyprus

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Abstract

Venous thromboembolism (VTE) is a significant cause of morbidity and mortality in surgical patients, with orthopedic procedures posing a particularly higher risk. This study aimed to evaluate VTE risk stratification using the Revised Caprini Risk Assessment Model (RAM) and assess the adherence to thromboprophylaxis in a state hospital in North Cyprus. A total of 49 surgical patients meeting the inclusion criteria were enrolled in this prospective observational study. Caprini risk scores were calculated, and thromboprophylaxis applications were assessed. The results indicated that 66% of patients were classified as high or highest risk for VTE, with orthopedic patients demonstrating statistically significant higher Caprini scores. Age, type of surgery, and the number of chronic medications were found to be statistically significant predictors of higher Caprini scores. Although patients with two or more chronic comorbidities demonstrated higher Caprini scores compared to those with none or only one chronic disease, the difference was not statistically significant.Notably, female patients and patients who underwent orthopedic surgery revealed statistically significant higher caprini scores exhibited higher risk scores, likely due to age and the frequency of major orthopedic procedures. While some patients received prophylaxis in accordance with guidelines, instances of both overuse and underuse of anticoagulants were observed. These findings emphasize the need for precise adherence to evidence-based thromboprophylaxis protocols to optimize patient safety and outcomes.

Keywords: Caprini risk assessment, orthopedic surgery, surgical patients, thromboprophylaxis, venous thromboembolism.

OP - 3

Development and Characterization of Colon-Targeted Nanoparticulate Drug Delivery System for IBS

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Abstract

In this study, a colon-targeted mucoadhesive nanoparticulate drug delivery system was developed and optimized for the effective treatment of Irritable Bowel Syndrome (IBS), a chronic gastrointestinal disorder characterized by abdominal pain, bloating, and altered bowel habits. Chitosan, a natural, cationic, biocompatible, and biodegradable polysaccharide, was selected as the mucoadhesive polymer owing to its favorable interaction with the negatively charged mucosal surfaces and its ability to prolong gastrointestinal residence time. The mucoadhesive nature of chitosan significantly enhanced the retention of nanoparticles at the colonic mucosa, which is critical for improving localized drug concentrations in the affected site. Rifaximin, a non-systemic, broad-spectrum antibiotic approved for IBS with diarrhea (IBS-D), was encapsulated into chitosan-based nanoparticles using the ionic gelation method with sodium tripolyphosphate (TPP) as the crosslinker. The aim was to ensure localized drug release in the colon, thereby enhancing therapeutic efficacy while minimizing systemic absorption and associated adverse effects. The nanoparticles were extensively characterized in terms of particle size, zeta potential, polydispersity index (PDI), encapsulation efficiency (EE%), and in vitro drug release profiles under simulated gastrointestinal conditions. The results confirmed the formation of uniformly distributed nanoparticles with appropriate physicochemical properties and, sustained drug release at colonic pH. In conclusion, the developed rifaximin-loaded chitosan nanoparticulate system represents a promising strategy for colon-specific drug delivery in IBS management. The optimized formulation exhibited a particle size in the range of 200–300 nm, a polydispersity index (PDI) between 0.3-0.4, indicating a narrow size distribution, a zeta potential of approximately +10 mV, and an encapsulation efficiency (EE%) exceeding 90%, demonstrating efficient drug loading. These favorable physicochemical properties, combined with sustained drug release and enhanced mucoadhesion, support the potential of this formulation to improve local drug availability in the colon, reduce systemic side effects, and ultimately enhance therapeutic outcomes in patients with IBS.

Keywords: Chitosan, colon targeted drug delivery system, irritable bowel syndrome (IBS), nanoparticles, rifaximin.

OP - 4

Formulation and Design of Rhamnolipid-based Liposomes for Butyrylcholine Esterase Delivery in Organophosphate Toxicity

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Abstract

Organophosphate poisoning affects around 3 million people annually, with 10% requiring intensive care. Drug delivery to the Central Nervous System (CNS) has emerged to improve treatment efficacy and reduce side effects. However, enzymes face low barrier permeability. Using nanoparticle-based drug carriers for enzymes delivery enhances treatment success. Within the scope of the study, it was aimed to increase both the passage of the butyrylcholinesterase enzyme (BChE) to the CNS with biomimetic nanoparticles prepared using glycolipids, which is a biological structure, and to increase the effectiveness of the active substance by utilizing the neuroprotective properties of glycolipids. Rhamnolipid liposomes were prepared by film hydration method using Box-Behnken design. Lecithin, rhamnolipid and cholesterol content were used as independent variables. Particle size (PS), polydispersity index (PDI), zeta potential (ZP) values and encapsulation efficiencies (EE%) were selected as dependent variables. BChE quantification was performed with the help of ELISA kit. In-vitro release studies were maintained by dialysis bag method. For optimum formulation, FTIR, DSC, TEM and mucin interaction tests were carried out. The PS of the prepared particles was found between 62.0 nm and 276.1 nm, PDI between 0.19 and 0.82, ZP between -73.0 and -9.0 mV and EE (%) between 9.0 and 58.0 In release studies, pure-BChE was released more than 95% at 24h, while this value was at most 74% in liposomes. According to FTIR and DSC, it was thought that the active substance was encapsulated in the nanoparticle since the active substance peak could not be detected. TEM images confirm that appropriate liposomes are formed in the formulations. The particles were stored at -20°C for 3 months and the increase in PS was not significant. The results of the liposomes obtained are promising for organophosphate poisoning treatment.

Keywords: Butyrylcholine esterase, liposomes, organophosphate poisoning, rhamnolipid.

OP - 5

A Comparative Study on Liquisolid Compacts of Quetiapine Fumarate via Quality by Design and Prediction of Oral Pharmacokinetic Performance

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Abstract

Liquisolid compact technique can potentially increase the solubility/dissolution rate of poorly soluble drugs, such as quetiapine fumarate (QTP), via amorphization of the drug**.** The objective was to evaluate the liquisolid compact technique on the solubility, tablet dissolution and predicted oral pharmacokinetics (PK) of QTP compared to the marketed immediate-release (IR) 25mg tablet. Liquisolid compacts (i.e. tablets) of QTP (QTP-LSC; 25mg QTP/tablet) were prepared using PEG600, in the context of a 2^3 full factorial design to elucidate optimal formulation parameters. Pre-compaction parameters and final tablet properties (including in vitro dissolution) were characterized. Tablet dissolution profiles were compared to the marketed product of QTP (Ketya® IR 25mg tablet). Favorable results inspired additional pre-formulation characterizations (e.g. DSC, FTIR, solubility), as well as fabrication of additional test QTP-LSC using other non-volatile solvents (i.e. PEG200, PEG400, and PPG). Favorable dissolution results inspired prediction of in vivo PK of test formulations, based on literature PK of marketed product.

Results indicate that several optimized QTP-LSCs with PEG 600, PEG 400, PEG 200 and PPG were successfully prepared. DSC and FTIR analysis supported QTP's amorphization in all LSCs. PEG200 provided the most favorable processing, as well as the highest drug solubility (7.34 mg/mL). The hardness and disintegration of the LCT compacts were lower and faster than Ketya® tablets. Optimized QTP LSC-based tablets, especially with PEG 200, showed a faster *in vitro* dissolution rate than Ketya® tablets. PK C_{max}, a measure of rate of absorption, was predicted to be highest for compacts using PEG200 (52.60 ng/mL), compared to Ketya (46.9 ng/mL). T_{max} of the LCSs (1h) was also lower than the Ketya (1.5 h). Overall, LCS formulations provided higher QTP c_{max} and lower t_{max} by means of the liquisolid formulations affording improved solubility, amorphization, dissolution, disintegration via better flowability and compressibility properties for QTP.

Keywords: Quetiapine fumarate, liquisolid, tablet, pharmacokinetic, prediction.

OP - 6

Enhancing Gastric Retention of Clopidogrel: Formulation and Evaluation of Floating GRDDS Tablets Using a Compaction Simulator

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Abstract

Clopidogrel containing Floating gastro-retentive drug delivery system (GRDDS) tablets were produced to enhance retention time in stomach. Two different polymers (HPMC and pectin) were used to determine optimum formulation by evaluating tablet properties. Compaction Simulator is a single station tablet press that records all parameters during a compaction cycle. Compaction simulators allow scientists to conduct experiments for in-depth analysis of compaction characteristics as well as optimize formulations with great efficiency in terms of time, expense, and knowledge gained. Gastro-retentive drug delivery system (GRDDS) as novel dosage form plays an important role in pharmaceutical field and pharmaceutical industry by promoting retention duration of drugs. Formulation studies were carried out, 9 different formulations of Clopidogrel bisulfate (25%) as API, HPMC as synthetic polymer and pectin as natural polymer were used at 3 different concentrations. Alongside, with API and polymers, Gas-generating excipient, diluent, compression aid, lubricant, and glidant were also used in the study. Direct compression method was used to compress tablets by using STYLCAM 200R High Speed Rotary Press Simulator. The tablets diameter was 8mm and compaction force was fixed at 15KN.Quality control tests were carried out; weight variation, thickness, hardness, friability, floating lag time and total floating time, dissolution, and swelling to determine the optimized formulation. All formulations had total floating time more than 7 hours. F1 had average hardness value of 47N, and F7 had an average hardness value of 111N, F7 had more HPMC concentration in comparison to F1. As the concentration of HPMC increases, the tablet hardness generally increases as well. This is because HPMC forms a strong network of polymer chains that bind the tablet particles together, resulting in a more rigid structure. This research successfully determined the optimized GRDDS formulation containing clopidogrel bisulfate as floating tablet. The study showed a better understanding of the effect of different concentrations of polymers on hardness, dissolution, floating lag time and floating time, swelling index of various formulation.

Keywords: Clopidogrel, compaction simulator, grdds, hpmc.

OP - 7

Natural Colourant from Saccharum officinarum L. Peels: an Assessment of its Antioxidant and Antibacterial Activities and Its Stability as Colourant in Paracetamol Syrup

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Abstract

A colorant is any dye that imparts colour to food, drink, pharmaceuticals and cosmetics. Synthetic colourants have been used for this purpose and some have been reported to have adverse effects on human health. *Saccharum officinarum* L. (sugarcane) belongs the Poaceae family and its purple-brownish peels is considered as a potential source of colourant. The study was aimed to evaluate the stability of the colourant in paracetamol syrup and to investigate its phytochemical, antioxidant and antibacterial activities. The powder peel was assessed for its macroscopic, physicochemical and phytochemical properties. The colorant was extracted by maceration in methanol and it was evaluated for antibacterial (disk diffusion) and antioxidant (DPPH & H_2O_2 assays) activities, and accelerated stability study in paracetamol syrup. The powder was purple-brownish, odourless and tasteless. The moisture content was 0.867±0.288 %, total ash (3.01±0.054 %), acid insoluble ash (1.37±3.975 %); the hexane, alcohol and water-soluble extractive values were: 0.483±0.085 %, 7.583±3.279 % and 8.35±1.46% respectively. The phytochemical screening revealed the presence of flavonoids, tannins and others. The colourant demonstrated antioxidant (DPPH assay) with IC_{50} of 4.456 mg/mL while the ascorbic had IC_{50} of 4.456 mg/mL. In the H_2O_2 assay, the colourant showed IC_{50} of 2.864 mg/mL while the ascorbic acid had IC_{50} of 3.934 mg/mL. The zone of inhibition of growth produced on the microorganisms at 15, 30 and 60 (mg/mL) ranged between 1-7 mm on *Escherichia coli* (Gram negative) and *Streptococcus pneumoniae*. The ciprofloxacin (reference) at 2 mg/mL produced zone diameter of inhibition of growth between a range 29-32 mm on the test organisms. The study has revealed the stability of the colourant in the paracetamol syrup and has provided preliminary evidence of the presence of phytochemicals in the colorant that can be studied for their antibacterial and antioxidant activities.

Keywords: Antibacterial, antioxidant, natural colorant, paracetamol, phytochemicals.

OP - 8

Antimicrobial Hydrogel Development

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Abstract

Chronic wounds remain a significant clinical burden, often complicated by infections that delay healing and impair patient outcomes. Hydrogels, owing to their high water content, flexibility, and similarity to biological tissues, have gained increasing attention as wound dressings. In this study, an antimicrobial hydrogel was formulated using a blend of chitosan, polyvinyl alcohol (PVA), and glycerol, selected for their complementary mechanical and biological properties. Antimicrobial agents including iodine, rose oil, and menthol were incorporated into the polymer matrix, followed by crosslinking with citric acid and freeze-drying. Physicochemical characterization assessed mechanical strength, swelling behavior, and morphology. Antimicrobial efficacy was evaluated through agar well diffusion assays against *Escherichia coli*, *Staphylococcus aureus*, *Enterococcus faecalis*, and *Candida albicans*. Hydrogel 8 demonstrated the most potent antimicrobial activity, with inhibition zones of 26 mm against *Staphylococcus aureus*, 28 mm against *Enterococcus faecalis*, 24 mm against *Escherichia coli*, and 32 mm against *Candida albicans* respectively, outperforming the fluconazole control against *C. albicans*. These results suggest that the hydrogel system developed herein offers a promising platform for enhancing wound healing through a combination of structural support and broad-spectrum antimicrobial activity.

Keywords: Antimicrobial hydrogel, chitosan, infection control, polyvinyl alcohol, wound healing.

OP - 9

Antiviral Activity of Cranberry Exosome and Synthetic Melittin in 3D Skin Organoid Model

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Abstract

Viral infections pose significant global health challenges, necessitating the development of alternative antiviral agents. This study evaluated the antiviral potential of cranberry leaf-derived exosomes (C-Exo) and synthetic melittin against Herpes simplex type-1 (HSV-1), Adenovirus type 5, and Poliovirus type 1, utilizing a biomimetic 3D skin organoid model.

Cranberry exosomes were isolated through sucrose-gradient ultracentrifugation and characterized via transmission electron microscope (TEM) and nanoparticle tracking analysis (NTA). Melittin was produced synthetically. Cytotoxicity was assessed using the MTS assay in HaCaT and HDF cell lines. A 3D skin organoid model was constructed with co-cultured fibroblasts and keratinocytes in a collagen matrix under air-liquid interface (ALI) conditions. Infection models were generated using TCID50 titers for each virus, followed by treatment with C-Exo, melittin, and their combination. Quantitative reverse transcription-polymerase chain reaction (qRT-PCR) was used to analyze viral inhibition.

C-Exo showed >90% inhibition for HSV-1 and Adenovirus, but less effect on Poliovirus. Melittin alone demonstrated 90%, 99%, and 99.99% inhibition against HSV-1, Adenovirus, and Poliovirus, respectively. The combination exhibited synergistic efficacy with >90% inhibition for HSV-1, 99% for Adenovirus, and >99.99% for Poliovirus. Cytotoxicity assays confirmed safety at determined doses in 3D cultures.

The study demonstrates that the combination of cranberry-derived exosomes and synthetic melittin exerts a potent synergistic antiviral effect against both DNA and RNA viruses in a 3D skin organoid model. These results highlight the potential of this combinatorial approach as a promising natural-based therapeutic strategy. The integration of plant-derived nanovesicles with membrane-active peptides may pave the way for developing next-generation antiviral agents. Further in vivo studies are warranted to substantiate the translational applicability of these findings.

Keywords: Adenovirus, antiviral, cranberry exosome, melittin, 3D skin organoid, HSV-1, poliovirus.

OP - 10

Evaluation of Antimicrobial Activity of Centaurea calcitrapa Cream Formulations

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Abstract

The use of plant-derived extracts in topical antimicrobial formulations offers a promising alternative for combating resistant microorganisms. This study assessed the antimicrobial efficacy of creams formulated with *Centaurea calcitrapa* extract against *Staphylococcus aureus*, *Enterococcus faecalis*, *Escherichia coli*, and *Candida albicans*. Four distinct cream formulations were prepared: a base cream alone, a base incorporating *C. calcitrapa* extract, a base containing zinc oxide and salicylic acid, and a formulation combining both the plant extract and the inorganic additives. Antimicrobial activity was evaluated using the agar well diffusion method. The results demonstrated that creams containing *C. calcitrapa* extract exhibited notable inhibitory effects, particularly against Gram-positive bacteria and *E. coli*. Moreover, the formulation combining the plant extract with zinc oxide and salicylic acid produced the largest inhibition zones, suggesting a synergistic enhancement of antimicrobial activity. Gram-positive bacteria were generally more susceptible than Gram-negative and fungal strains, a finding consistent with known differences in cell wall composition. These observations support the potential application of *Centaurea calcitrapa*-based topical formulations as natural alternatives for antimicrobial therapy.

Keywords: Antimicrobial cream, *Centaurea calcitrapa*, formulation, natural therapy, topical application, zinc oxide.

OP - 11

Targeting Dopaminergic Enzymes: Docking-based Analysis of Guaianolides Isolated from Psephellus Pyrrhoblepharus

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Abstract

Psephellus pyrrhoblepharus (Boiss.) Wagenitz, a Turkish endemic species, has previously demonstrated neuroprotective and antioxidant properties, particularly in MPP^+-induced dopaminergic toxicity models. In our earlier phytochemical study, six guaianolide-type sesquiterpenes—chlorojanerin, 19-deoxychlorojanerin, 15-hydroxyjanerin, aguerin B, cynaropicrin, and eleganin—were isolated from its chloroform extract. To better understand the molecular basis of its neuroprotective activity, we investigated the inhibitory potentials of these compounds against two key enzymes involved in Parkinson's disease pathophysiology: catechol-*O*-methyltransferase (COMT) and monoamine oxidase B (MAO-B), using molecular docking calculations. Docking results indicated that none of the compounds exhibited meaningful binding at the active site of MAO-B, with only eleganin attaining a poor docking score. In contrast, several compounds showed varying degrees of predicted binding affinity for COMT. Among them, cynaropicrin demonstrated the most favorable interaction, binding at the COMT active site with a predicted affinity close to that of the native inhibitor 3,5-dinitrocatechol. Additionally, aguerin B, 15-hydroxyjanerin, and eleganin also showed moderate binding potential, though with lower docking scores compared to cynaropicrin. Key interactions with catalytic residues and the essential Mg^{2+} cofactor were observed, suggesting a possible role in COMT inhibition. These *in-silico* findings suggest that the neuroprotective effects of *P. pyrrhoblepharus* may be partially mediated through COMT inhibition. While MAO-B inhibition appears unlikely, this study highlights the potential of guaianolide-type sesquiterpenes as natural scaffolds for dopaminergic enzyme modulation. Further experimental studies are warranted to validate their bioactivity and therapeutic relevance in neurodegenerative disease contexts.

Keywords: Catechol-*O*-methyltransferase, docking, guaianolide-type sesquiterpenes, monoamine oxidase B, parkinson's disease.

OP – 12

Targeting Carbonic Anhydrase in Glioblastoma: Design and Evaluation of Novel 1,3,4-Thiadiazole Derivatives

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Abstract

Glioblastoma (*GBM*) is the most aggressive and lethal type of primary brain tumor, with limited treatment options and a median survival of less than 15 months. The need for novel therapeutic agents remains critical. In this study, a new series of *1,3,4-thiadiazole* derivatives was rationally designed and synthesized with the aim of targeting *carbonic anhydrase IX* (*CA IX*), a hypoxia-induced isoenzyme overexpressed in glioblastoma tissues. The synthetic route began with the formation of key intermediates (*thiosemicarbazide* derivatives), followed by the introduction of various substituents to yield final derivatives (***4a–4i***). The structures of all synthesized compounds were confirmed via spectroscopic techniques including *^{1}H-NMR*, *^{13}C-NMR*, and *FT-IR*. Following structural characterization, the derivatives were evaluated for their potential as *CA IX* inhibitors. Among the series, compound ***4e*** exhibited the most potent inhibition with an IC_{50} value of *0.03 ± 0.01 μM*, significantly outperforming the reference drug acetazolamide (IC_{50} *= 0.58 ± 0.02 μM*). Molecular docking simulations revealed a high binding affinity of ***4e*** within the active site of *CA IX*, supported by favorable interactions with key amino acid residues. The synthesized *1,3,4-thiadiazole* derivatives were tested for their cytotoxic effects on human glioblastoma (*U87*) and normal fibroblast (*L929*) cell lines using the MTT assay. Compounds ***4d*** and ***4e*** showed significant antiproliferative activity against *U87* cells, and were further evaluated for their *carbonic anhydrase IX* (*CA IX*) inhibitory potential. Among them, ***4e*** emerged as the most potent *CA IX* inhibitor (IC_{50} *= 0.03 ± 0.01 μM*), indicating its strong potential as a dual-acting agent for glioblastoma treatment.

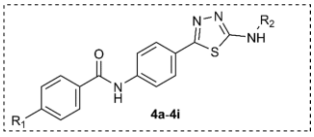

Figure 1. Core structure of the designed 1,3,4-thiadiazole-based CA IX inhibitors (4a–4i)

Keywords: Carbonic Anhydrase IX inhibition, *1,3,4-thiadiazole*, glioblastoma.

OP – 13

First Derivative Spectrophotometric Method for the Simultaneous Determination of Clopidogrel and Aspirin in Tablet Formulation

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Abstract

In this study, a first-derivative spectrophotometric approach was proposed for the simultaneous quantitative analysis of two-component pharmaceutical preparations containing clopidogrel (CLO) and aspirin (ASP) drugs. This method doesn't require a preliminary separation procedure for the relevant drugs in tablets. First-derivative spectra of the zero-order spectra of calibration and sample solutions were obtained by using dλ = 5 nm and scale factor = 5 nm. Calibration curves for CLO (r=0.9993) and ASP (r=0.9999) were obtained by measuring dA/dλ at 226.0 nm and 287.0 nm, respectively. The proposed first derivative spectrophotometric method was validated by analyzing the independent test samples containing CLO and ASP in different concentration compositions. Recovery results were found to be 99.8% for CLO and 102.7% for ASP. Then, the validated derivative spectrophotometric method was applied to the simultaneous determination of the related drugs in the commercial tablets, and a good agreement was reported between the label claim assay results.

Keywords: Aspirin, clopidogrel, first-derivative spectrophotometry, simultaneous determination, quantitative analysis.

OP – 14

Novel Imidazo[2,1-b]thiazoles trigger Apoptosis Rather than Necroptosis on HEPG2 Cell Line

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Abstract

In this study, five novel imidazo[2,1-*b*]thiazole derivatives were designed and synthesized to evaluate their potential anticancer activity against hepatocellular carcinoma (HepG2) cells. The target compounds were obtained via the reaction of 2-[6-(4-methoxyphenyl)imidazo[2,1-*b*]thiazole-3-yl]acetohydrazide with various alkyl and aryl isothiocyanates using a well-established synthetic approach. Structural confirmation was achieved through IR and ^{1}H-NMR spectroscopy, which revealed characteristic N–H and C=S bands, supporting the formation of thiosemicarbazide moieties. The cytotoxic activities of the compounds were assessed via MTT assay on HepG2 (HB-8065; ATCC) and ECV-304 (CRL-1998; ATCC) cell lines. Among the series, the propyl-substituted derivative displayed the most significant anticancer effect, with an IC_{50} value of 25 µM against HepG2 cells. The ethyl-substituted compound showed moderate activity, whereas the butyl and phenyl analogues were inactive. Immunohistochemical analysis revealed that the propyl derivative induced the reactivity of FASL and caspase-3, indicating activation of apoptotic pathways. Therefore, it is likely that this compound triggers apoptosis rather than necroptosis. These findings suggest that shorter alkyl chains may enhance anticancer efficacy, potentially due to improved cellular uptake or favorable molecular interactions. Overall, the synthesized imidazo[2,1-*b*]thiazole derivatives represent promising scaffolds for future development as anticancer agents.

Keywords: Apoptosis, imidazo[2,1-*b*]thiazole, liver cancer.

OP – 15

Exploring The Genetic Diversity and Pharmacological Properties of Azerbaijani Tea Accessions

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Abstract

Advancing pharmaceutical development depends on genetic variety in medicinal plants. Studying genetic diversity in plants with therapeutic qualities helps researchers understand how genetic profiles affect the strength and safety of pharmaceutical chemicals. Azerbaijani medicinal plants are particularly significant. A fundamental component of Azerbaijani culture, tea (*Camellia sinensis*) has polyphenolic compounds shown to have neuroprotective, anticancer, and cardiovascular features.

In this study, using two different marker systems—IRAP (Inter-Retrotransposon Amplified Polymorphism) and REMAP—we examined the population structure of 40 Azerbaijani tea accessions. REMAP markers have higher PIC values compared to IRAP markers, indicating that REMAP (Retrotransposon-Microsatellite Amplified Polymorphism) may provide more polymorphic and informative loci for genetic diversity studies. The highest PIC value for IRAP is 0.27, while for REMAP it is 0.43, suggesting REMAP markers might be more effective in distinguishing genetic variation. The use of both markers resulted in a high level of heterogeneity among the tea accessions studied, as revealed by cluster analysis. This shows that the markers were successful in detecting significant genetic variation within the tea plant population, emphasizing the genetic diversity of the different accessions. Our chemical analysis of Azerbaijani tea accessions indicated considerable quantities of bioactive components, such as chlorophyll a (1.28-3.65 mg/L), chlorophyll b (0.1-0.58 mg/L), caffeine (3.95-7.58%), polyphenols (3.3-9.56%), and extractive molecules (43.9-60%). These molecules have a variety of therapeutic advantages, including antioxidant, anti-inflammatory, neuroprotective, and cardioprotective characteristics, making them useful in pharmacology, drug development, and human health research.

These results confirm the genetic diversity of Azerbaijani tea and its potential medicinal benefits. Researchers can improve the selection of medicinal strains by using molecular markers, which will benefit the pharmaceutical industry as well as agricultural sustainability.

Keywords: Bioactive components, genetic diversity, molecular markers, pharmacology, tea accessions.

OP – 16

Genotoxicity Assessment of *Ruscus aculeatus* L. Extracts: Safety Evaluation of a Traditional Medicinal Plant

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Abstract

The genus *Ruscus*, (Asparagaceae) is represented by four species in Türkiye, with *Ruscus aculeatus* being the most widespread. Its underground parts (roots and rhizomes) have traditionally been used as decoctions to treat kidney stones, nephritis, colitis, hemorrhoids, and skin disorders. Pharmacological studies show that *R. aculeatus* possesses diuretic, laxative, antipyretic, and appetite-stimulating effects, mainly attributed to steroidal saponins like ruscogenin and neoruscogenin, along with flavonoids. Despite its long-standing use, toxicological data, particularly genotoxicity, remain limited.

This study evaluated the genotoxicity and antimutagenic activity of *R. aculeatus* collected from İstanbul using *in vitro* toxicology assays. Plant material was analyzed for ruscogenin and neoruscogenin (expressed as ruscogenins) contents via a validated HPLC method in line with the European Pharmacopoeia. Decoction (lyophilized) and ethanol (EtOH) extracts were prepared. Mutagenic and antimutagenic properties were assessed using the Ames test with *Salmonella typhimurium* strains TA98 and TA100, with and without metabolic activation. Genotoxicity was further evaluated using micronucleus and comet assays in CHO cells.

Total ruscogenins content was determined as 0.7%. Neither extract showed mutagenicity (mutagenic index < 2). EtOH extract demonstrated strong antimutagenic activity at 5000 µg/plate under S9-activated conditions. No genotoxic effects were observed in micronucleus or comet assays. These findings suggest *R. aculeatus* extracts are non-genotoxic and exhibit notable antimutagenic activity, supporting their safe traditional use and potential for further pharmacological and toxicological studies.

This study was supported by the Scientific and Technological Research Council of Türkiye (TÜBİTAK BİDEB 2209A, Project No: 1919B012323297).

Key words: *Ruscus aculeatus*, ames test, antimutagenicity, micronucleus assay.

OP – 17

Synergistic Evaluation of Inula viscosa Combined with Chemotherapeutic Drugs: An Integrative Approach via Synergy Modeling

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Abstract

Combining plant-derived compounds with chemotherapeutic agents is a promising strategy to enhance anticancer efficacy while minimizing toxicity. This study investigated the cytotoxicity and synergistic effects of *Inula viscosa* (IVS) methanolic extract in combination with two chemotherapeutic agents, doxorubicin (DOX) and 5-fluorouracil (5-FU), on MCF-7 breast cancer cells. IC50 values were determined using the MTT assay after 72 hours of exposure. Based on these values, combination matrices were constructed at concentrations of 2×IC50, IC50, IC50/2, and IC50/4. Combination effects were evaluated using the Chou–Talalay method and the SynergyFinder platform.

The IVS+DOX combination demonstrated strong synergy across all models, with the highest HSA score (32.93) observed at 19.58 µg/mL IVS + 0.23 µg/mL DOX. Consistently, combination index (CI) values were <1, confirming synergism. In contrast, the IVS+5-FU combination produced model-dependent results. While CI values remained < 1, indicating synergism, model-based synergy varied: The Loewe and HSA models indicated synergy (scores of 16.88 and 20.47, respectively), whereas the ZIP model suggested an additive effect, particularly at 39.17 µg/mL IVS +0.23 µg/mL 5-FU. These discrepancies highlight known inconsistencies among synergy assessment models due to differences in curve-fitting algorithms and underlying assumptions.

These findings emphasize the importance of employing multiple synergy evaluation when analyzing drug interactions. IVS exhibits strong potential as a co-treatment to enhance the anticancer effect of DOX and 5-FU, while potentially reducing their side effects. The Consistent synergy observed in the DOX+IVS combination further supports the potential role of *Inula viscosa* as an effective adjunct in chemotherapy.

Keywords: Chemotherapy adjuvant, doxorubicin, 5-flourouracil, *inula viscosa*, synergyfinder.

OP – 18

Toxicological Assessment of Marrubium vulgare L.: An Ames Test-Based Study

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Abstract

Marrubium vulgare L., a perennial medicinal herb from the Lamiaceae family, is widely utilized in traditional medicine due to its rich content of phenolic compounds, flavonoids, and essential oils. While its therapeutic properties are well documented, its genotoxic safety profile remains inadequately investigated. This study aimed to assess the mutagenic and antimutagenic potential of a methanolic extract obtained from the aerial parts of *M. vulgare* using the Ames test. The plant material was collected in June 2023 from Eskişehir, Türkiye. Methanolic extracts were tested on *Salmonella typhimurium* strains TA98 and TA100, both with and without metabolic activation (S9 fraction). No mutagenic activity was detected under any tested conditions, suggesting a favorable genotoxic safety profile. However, co-treatment with the extract and known mutagens resulted in a significant reduction in the number of revertant colonies, particularly in TA100 with S9 activation. These findings indicate strong antimutagenic potential, which may be attributed to metabolic biotransformation of the extract into active antimutagenic metabolites or potential inhibition of cytochrome P450 enzymes. Furthermore, the extract exhibited more pronounced antimutagenic activity in TA100 compared to TA98, suggesting higher efficacy against base-pair substitution mutagens than frameshift mutagens. In conclusion, *M. vulgare* demonstrates promising antimutagenic effects, particularly following metabolic activation, implying that its metabolites may offer protective effects against genetic damage. These results emphasize the importance of toxicological evaluation in the development of herbal medicinal products and support the potential of M. vulgare as a chemopreventive agent in pharmaceutical formulations.

Keywords: Antimutagenicity, genotoxicity, herbal drug safety, *Marrubium vulgare.*

OP – 19

Advancing Drug Discovery with Artificial Intelligence: A Review of Tools, Techniques, and Translational Applications

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Abstract

Artificial intelligence (AI) is revolutionizing pharmaceutical innovation by enhancing drug discovery through data-driven models and computational efficiency. This review explores the integration of AI tools and deep learning architectures into the drug development pipeline, with emphasis on molecular encoding, toxicity prediction, drug-target interaction, and structure–activity relationship modeling. A notable case study is DLEPS, a deep learning-based efficacy prediction system that predicts chemically induced transcriptional profiles (CTPs) using SMILES encoding. By coupling predicted CTPs with disease-specific gene signatures via gene set enrichment analysis (GSEA), DLEPS identifies promising therapeutic compounds, even for diseases lacking well-defined molecular targets. Applications in obesity, hyperuricemia, and nonalcoholic steatohepatitis illustrate its translational potential. Furthermore, tools such as AlphaFold, DeepTOX, and ORGANIC showcase how AI models enable accurate protein folding, toxicity forecasting, and de novo molecule generation. While AI accelerates drug development and reduces experimental costs, challenges remain in generalization, validation, and ethical data handling. Future directions emphasize hybrid models and collaborative platforms integrating multi-omics data, enhancing precision medicine initiatives. This review underscores AI's transformative impact on drug discovery, providing a foundation for more efficient and targeted therapeutic innovation.

Keywords: Artificial intelligence, deep learning, drug discovery, gene expression, in silico screening, transcriptional profiling.

OP – 20

Stepwise Formulation Development of Lipid Nanocarriers for Targeted Capecitabine Delivery in Cancer Therapy

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Abstract

In this study, solid lipid nanoparticles (SLNs) and nanostructured lipid carriers (NLCs) were successfully developed using the high shear homogenization-ultrasonication method for the delivery of capecitabine, a chemotherapeutic prodrug widely used in the treatment of colorectal and breast cancers. Capecitabine is enzymatically converted to 5-fluorouracil (5-FU) within tumor tissues, allowing for targeted cytotoxic effects and reduced systemic side effects.

The primary aim of this work was to identify the Critical Quality Attributes (CQAs) and Critical Process Parameters (CPPs) essential for achieving the desired quality profile of the nanoparticle formulations. Various SLN and NLC formulations were prepared and systematically evaluated for key parameters, including particle size, polydispersity index (PDI), zeta potential, and encapsulation efficiency (EE%). Based on these criteria, the most favorable formulations were selected for further development.

To enhance tumor-targeting efficiency, cetyltrimethylammonium bromide (CTAB) and Dioleoyl-3-trimethylammonium propane (DOTAP), a cationic surfactant and lipid, was incorporated into the selected formulations. The inclusion of CTAB and DOTAP successfully converted the surface charge of nanoparticles from negative to positive. This modification is expected to improve cellular uptake and tumor affinity due to enhanced electrostatic interactions with the negatively charged membranes of cancer cells.

Future studies will involve in vitro cell culture experiments to evaluate the cytotoxicity, cellular uptake, and overall therapeutic potential of these SLN and NLC formulations. The results of this study suggest that lipid-based nanocarrier systems, when properly optimized and surface-modified, offer a promising strategy for the targeted and efficient delivery of capecitabine in cancer therapy.

Keywords: Cancer treatment, capecitabine, nanostructured lipid carriers, solid lipid nanoparticles.

OP – 21

Smartphone Digital Image Colorimetry Combined with Deep Eutectic vs Supramolecular Solvents Microextraction for Cleanup and Preconcentration of Zinc in Fish and Vegetable Samples

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Abstract

Smartphone digital image colorimetry (SDIC) was combined with deep eutectic and supramolecular solvent liquid-liquid microextractions for the determination of zinc chelating with 1-(2-pyridylazo)-2-naphthol. A colored extract contained in a UV cuvette was placed in a locally designed colorimetric box, and the image was captured and processed using a mobile phone at optimum SDIC parameters. Sample cleanup and preconcentration were achieved at optimum complexation and extraction conditions. The proposed method has a limit of detection (LOD) between 3.46 and 19.43 ng mL^{-1},which is in agreement with the legal standard, an enrichment factor (EF) between 10.9 and 15.5, and a linear dynamic range between 100 and 500 ng mL^{-1}. Good linearity is indicated by the coefficient of determination (R^2) ranging from 0.9955 to 0.9998, while the precision of the method calculated based on percentage relative standard deviation (%RSD) for intraday and interday was 1.4 to 4.2 and 3.4 to 6.3, respectively. The percentage relative recoveries were recorded between 83.1 and 108.3%. The proposed method was employed for the determination of zinc in fish and vegetable samples where the analyte was detected in such samples. Moreover, the finding was evaluated by employing another independent analysis with UV-visible spectrophotometry and the both the results matches with each other.

Keywords: Smartphone digital image, supramolecular solvent, deep eutectic solvent, food samples, zinc.

OP – 22

A Cloud Point Extraction for the Inhibiton of Iron-Loaded Ferroptosis Using Spectroanalytical Techniques

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Abstract

Ferroptosis plays a central role in tissue damage driven by iron overload and lipid peroxidation. Iron chelators have been shown to limit ferroptosis in vitro. The aim of this study was to validate a simple and sensitive spectrophotometric method for evaluating iron-triggered reactive oxygen species (ROS) production via the Fenton reaction, as well as the inhibition of ferroptosis by commercial α-tocopherol in healthy plasma in vitro.

Ten healthy volunteers from the European University of Lefke, Faculty of Pharmacy, participated in the study (Ethics Committee Number: BAYEK048,48). Blood samples were collected, and plasma was obtained by centrifuging the samples at 3,000 rpm for 10 minutes at 4 °C. Supernatants were aliquoted and stored at -20 °C until further use. Quantitative determination of the α-tocopherol preparation was carried out using the maximum absorbance value measured at 290 nm. Calibration graphs were constructed by plotting absorbance against the concentrations of α-tocopherol samples at five different concentrations (10-100 µg/mL). A rapid colorimetric assay for ferroptosis in blood plasma was developed through a simple procedure involving cloud-point extraction upon heating, followed by measuring the inhibition of ferroptosis with α-tocopherol in plasma, with absorbance measured at 715 nm.

The absorbance values obtained from cloud point extraction for ferroptosis in plasma were measured at 715 nm. The UV spectrum of α-tocopherol exhibited maximum absorbance at 290 nm. For the spectrophotometric determination, linearity was established with ranges of 10-100 µg/mL in methanol, yielding a correlation coefficient (r) of 0.999. The regression equation for α-tocopherol was determined to be ($y = 0.0058x + 0.2198$). The inhibition effect of α-tocopherol on ferroptosis in blood plasma was found to be significant ($p < 0.05$).

Conclusion: The detection of ferroptosis inhibition by α-tocopherol in blood plasma suggests its potential utility in monitoring the beneficial effects of pharmaceutical treatments.

Keywords: Analytical biochemistry, ferroptosis, α-tocopherol.

OP – 23

Determination of Parabens in Food and Pharmaceutical Products by Edible Oil-Based Switchable Hydrophilicity Solvent Liquid-Liquid Microextraction prior to HPLC-DAD

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Abstract

The utilization of green sustainable solvents and miniaturized sample preparation procedures are two of the driving forces behind green analytical chemistry. Edible oils have recently been demonstrated to have switchable-hydrophilicity properties, making them ideal candidates for analyte extraction and preconcentration. The purpose of this study is to investigate their suitability for preconcentrating parabens in food and pharmaceutical samples before determining them using HPLC-DAD. At optimum conditions, linear calibration graphs had coefficients of determination (R^2) ranging from 0.9950 to 0.9993. The limit of detection (LOD) was between 0.2 and 0.5 µg/mL (0.2-0.4 µg/g). The method's precision based on percentage relative standard deviations (%RSD) was less than 6.8%, with percentage relative recoveries (%RR) ranging from 90.4% to 106.0%. Enrichment factors were achieved between 6.6 and 41.5-fold, which improved the sensitivity of the method to enable detection limits within the recommended limits set by regulatory bodies for parabens in the investigated samples. Finally, the greenness of the method was evaluated using Analytical GREEnness (AGREE) and Green Analytical Procedure Index (GAPI) calculators.

Keywords: Chromatography, edible oil, food, green analytical chemistry, parabens.

OP – 24

Investigation of Antimicrobial Activities of Mouth Wash Formulations Containing Essential Oils

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Abstract

Phytotherapy offers considerable usability and benefits within dentistry, because of its low market value, and mostly owing to its antibacterial, anti-inflammatory, antihemorrhagic, anaesthetic, and other functions. This study aimed to formulate mouthwash formulations with plant-derived essential oils and test their antibacterial properties highlighting the growing interest in phytotherapeutics for oral health and their feasibility as natural substitutes for traditional chemical-based oral care products. Essential oils including clove oil, cinnamon, lavender, orange, and chamomile oil were extracted from herbal remedies via hydro distillation with Clevenger apparatus. The essential oils obtained were used to prepare mouthwash formulations. The mouth washes were formulated, with different concentrations of each essential oils. The total amount of essential oil in mouth washes varied between1.5% and 4.5%. The prepared mouth washes were evaluated for their effectiveness against prevalent oral pathogens, such as *Streptococcus mutans*, *Candida albicans*, *Escherichia coli*, and *Staphylococcus aureus*. The evaluation of antimicrobial activity was conducted using disk diffusion method. The results indicated that the essential oils exhibited notable antimicrobial effects. Especially, the formulation with high concentration of clove oil showed the most significant results against *Candida albicans*. The findings imply that mouthwashes formulated with essential oils could function as effective natural alternatives to standard antiseptic mouthwashes, providing both antimicrobial and therapeutic advantages for oral health maintenance.

Keywords: Antimicrobial activity, essential oils, hydro-distillation, mouthwash.

OP – 25

Survival Analysis of Breast Cancer Patients: A Multivariate Approach

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Abstract

Breast cancer has been found to be a leading cause of mortality globally. This research aims to evaluate the discriminatory ability of patient variables in predicting adverse outcomes. The study comprises a dataset of 1,207 breast cancer patient records involving 11 distinct clinical features. An extensive exploration data analysis and Cox Proportional Hazards modeling were performed, to assess survival rate while quantifying risk factors clearly. The average age of the patient was 56 years. Most patients had significant variability in tumor sizes and lymph node positivity. Survival duration showed a broadly distributed follow-up period having a mean of 47 months. Visualization analyses showed patients with larger tumors (>5 cm) and higher histological grades were linked to an increase in mortality. Correlation analyses also demonstrated strong interdependencies (r = 0.8) between the tumor size and lymph node involvement, indicating a higher risk of mortality. Cox regression survival analysis underscored pathological tumor size (HR = 1.70) and positive lymph nodes (HR = 1.08) as statistically significant predictors (P=<0.05) of low survival rate. Although age, hormone receptor status, and histological grade did not reach statistical significance, they also exhibited patterns suggesting possible clinical relevance. This study, therefore, highlights the significance of pathological tumor size and lymph node involvement as critical indicators in predicting breast cancer survival. These insights showcase the critical role of early detection and targeted treatments in improving patient survival outcomes, which also serves as a guide for future clinical research and exploration in enhancing patient survival.

Keywords: Breast cancer, cox proportional hazards, logistic regression, machine learning outliers, survival analysis, tumor and lymph node.

OP – 26

Pharmaceutics Actory at Home 2050: Redefining Personalized Medicine and the Future of Healthcare in a Transdisciplinary Era

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Abstract

The future of pharmaceutics is anticipated to undergo a significant transformation by 2050, driven by technological advancements and societal needs. Pharmaceutics will evolve from traditional drug development to an integrated model encompassing artificial intelligence (AI), nanotechnology, synthetic biology, and personalized medicine. Central to this evolution is the "Pharmacy at Home" concept, enabling personalized, patient-centric healthcare through comprehensive digital health profiles that integrate genetic, environmental, and lifestyle data, allowing for precision medicine like never before.

AI-driven platforms will predict drug responses, optimizing treatment efficacy and minimizing adverse effects. The future of drug discovery will leverage AI and machine learning to streamline clinical trials and identify novel drug candidates. Additionally, nanotechnology will facilitate targeted drug delivery systems, while 3D printing will enable the on-demand production of personalized medicines, tailoring dosages to patient needs. Pharmacogenomics will further refine therapies to align with individual genetic profiles, ensuring enhanced outcomes while pharmacogenetics will guide drug selection based on genetic predisposition. Manufacturing processes will shift towards sustainable practices, employing synthetic biology to create biologic drugs and reduce environmental impacts. A transdisciplinary approach, involving collaboration across scientific fields, will be essential to address global health challenges and incorporate ethical considerations. The interconnected nature of healthcare will utilize IoT devices for continuous health monitoring, while post-quantum cryptography will ensure data security.

By 2050, a revolutionary pharmaceutics landscape will empower patients through tailored, real-time treatments, emphasizing sustainability and equity in healthcare delivery, ultimately redefining how medicines are understood and distributed worldwide.

Keywords: AI, nanotechnology, personalized Medicine, pharmacy at home, sustainability, transdisciplinary approach.

OP – 27

Pharmaceutical Startups in Turkey and Cyprus: A SWOT Analysis Inspired by the WEF Future of Jobs Report 2025

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Abstract

This study conducts a SWOT analysis of pharmaceutical startups in Turkey and Cyprus, framed within the global landscape of Europe and Arab countries, as inspired by the WEF Future of Jobs Report 2025. Turkey exhibits considerable promise in adopting AI and robotics for drug discovery; however, it grapples with challenges related to skilled labor shortages and regulatory complexities. In contrast, Cyprus capitalizes on its proximity to the EU, fostering cross-border collaborations, yet is limited by inadequate domestic infrastructure and dependence on external talent. Both countries showcase an increasing commitment to climate-conscious practices, digital health integration, and decentralized clinical trials. Nonetheless, they face impediments, including skill gaps, funding shortages, and regulatory hurdles, which affect their competitiveness relative to Europe and emerging Arab economies. Europe maintains a leadership position with its advanced adoption of AI, big data analytics, and precision medicine, while Arab nations, particularly the UAE and Saudi Arabia, excel through effective public-private partnerships and sustainability initiatives. This research underscores the critical need for Turkey and Cyprus to pursue workforce reskilling, overcome innovation blocks, and implement regulatory reforms to enhance their standing in the rapidly evolving pharmaceutical sector. A comprehensive comparative table includes 50 key points relevant to pharmaceutical startups across Turkey, Cyprus, Europe, and Arab countries, addressing topics such as AI's impact, regulatory challenges, and sustainability goals, which will inform strategic initiatives in these emerging markets.

Keywords: AI, Cyprus, pharmaceutical startups, regulatory challenges, sustainability, Turkey.

OP – 28

Balancing Pain Relief and Patient Safety: A Mcdm Approach To Opioid Evaluation

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Abstract

Opioids remain central to pain management but pose significant safety concerns including respiratory depression, overdose, and dependence. Balancing therapeutic efficacy with patient safety is a critical challenge in clinical decision-making. This study employs a fuzzy PROMETHEE (Preference Ranking Organization Method for Enrichment Evaluation) framework to rank ten commonly prescribed opioids based on a set of weighted efficacy and safety criteria derived from the FDA Adverse Event Reporting System (FAERS). Ten side effect categories—ranging from nausea and dizziness to overdose and death—were normalized and weighted according to clinical significance. The fuzzy PROMETHEE II method provided a complete ranking, integrating data uncertainty with clinical judgment. Butorphanol and Meperidine ranked highest, demonstrating a favorable balance of moderate efficacy and low incidence of severe adverse events. Conversely, Methadone and Oxycodone ranked lowest due to high-risk profiles, despite potent analgesic effects. To validate these results, the TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) method was applied, emphasizing efficacy over safety. This resulted in divergent rankings, with Morphine and Fentanyl scoring higher. The methodological contrast highlights the influence of decision priorities in opioid selection. These findings support the use of multi-criteria decision-making tools in optimizing opioid therapy. The integration of fuzzy PROMETHEE offers clinicians a structured, transparent approach to selecting opioids based not only on efficacy but also on real-world safety data, ultimately enhancing personalized and risk-aware prescribing.

Keywords: Efficacy, mcdm, opioids, promethee, risk evaluation, topsis.

OP – 29

Importance of Plant Tissue Culture Techniques in Pharmaceutical Sciences

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Abstract

Plants are a great source for the discovery of new products of medicinal value for drug development. With the growing demand for natural medicines in recent years, the commercial cultivation of medicinal plants and the enhancement of their active ingredients have become increasingly important.

Plant tissue and cell culture techniques are an important field of study in plant biotechnology, utilized to enhance the propagation of medicinal plants and the production of active substances under controlled conditions. Plant tissue and cell cultures represent useful alternatives in the pharmaceutical industry because they signify standardized, pollutant-free, and bio-sustainable systems for the production of active pharmaceutical ingredients. Plant tissue and cell cultures can act as "bio-factories" for the production of secondary metabolites, which are typically synthesized in low quantities in plant tissues and are distributed differently in different parts of the plant (root, stem, leaf, fruit, etc.). Plant tissue culturing allows the propagation of undifferentiated plant cells either to regenerate a whole plant or to produce single cells in culture for further production of secondary metabolites. The plant tissue material (explant) used to initiate cell culture expansion at the injury site, begins to divide, and forms an unorganized cell mass known as a callus. If tissue culture studies that start with callus cultures and continue with suspension cultures are successful, bioreactors are used, and then rapid and standardized active substance production can be achieved.

Developing plant cell culture studies in the production of active ingredients in the pharmaceutical industry and increasing the variety of secondary metabolites produced in limited numbers will make great contributions.

Keywords: Bioreactors, pharmaceuticals, plant cell cultures, secondary metabolites.

OP –30

Prevalence of Anxiety and Depression among Iraqi Employees

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Abstract

Mental health issues are a growing concern worldwide, particularly in Iraq where decades of conflict have left lasting effects on individuals and communities. Despite this, limited research has been conducted to understand the mental health status oflraqi employees. To determine the prevalence of anxiety and depression among Iraqi employees and identify factors associated with these conditions. Across-sectional online survey of 823 adult employees in Iraq was conducted from Febmary 2023 to August2024. The Depression Anxiety Stress Scales (DASS-21) were used to measure anxiety and depression levels. Statistical analysis was performed to examine the relationships between various risk factors and mental health outcomes. The findings indicate that 43.5% of Iraqi employees experience anxiety, with moderate levels reported among the majority (49%). Depression was found in 28.7%, with mild levels reported among 42.4% of participants. Significantly higher risk differences were observed for females compared to males regarding anxiety (16.2%), and for single individuals compared to married individuals regarding depression (9.9%). Additionally, a 7.5%lower risk of depression was associated with having children. Being a business owner was significantly associated with a 15.6% higher risk of having anxiety compared to government employees. Notably, geographical variations were observed, with the highest prevalence of anxiety reported in Baghdad (55.2%) and lowest in Mosul (26.6%). The study highlights the need for mental health support services among Iraqi employees, particularly addressing the higher risk factors identified. Interventions targeting female employees, single individuals, business owners and those without children may be effective in reducing anxiety and depression.

Keywords: Anxiety, depression, Iraqi employees, dass scale, mental health.

OP – 31

Community Pharmacists faced drug shortages: A pilot study in Algeria.

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Abstract

The purpose of this pilot study was to investigate the impact of drug shortages on community pharmacies and to identify strategies implemented by pharmacists to effectively manage these shortages. This cross-sectional study was conducted using a 21-item questionnaire designed to assess pharmacists' experiences and strategies regarding drug shortages in Algeria. The questionnaire included demographic information about pharmacists and their pharmacies, as well as specific items on the frequency and extent of drug shortages, affected therapeutic classes, and pharmacists' approaches to addressing shortages. The questions covered topics such as communication with prescribers, the use of tracking tools for shortages, and proposed solutions for mitigating supply disruptions. Data were collected over a period of five months. The findings revealed that community pharmacies frequently encounter drug shortages, with over 70% of the respondents reporting at least one daily shortage. The most affected drug categories included antibiotics, analgesics, and medications for chronic diseases, particularly cardiac diseases. Pharmacists have reported various strategies to manage these shortages, such as sourcing alternative medications, enhancing communication with patients, and collaborating with healthcare providers to find solutions. However, challenges such as limited access to information regarding shortages and difficulties in sourcing alternatives have also been highlighted. This study underscored the significant impact of drug shortages on patient care, including treatment delays and increased anxiety among patients. The findings of this study can inform policymakers and pharmacy organizations in developing strategies to enhance the resilience of community pharmacies in the face of drug shortages, ultimately improving patient-care outcomes.

Keywords: Algeria, community pharmacist, drug shortage.

OP – 32

Survey on the Use of ChatGPT in Daily Practice among Community Pharmacists

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Abstract

The rapid advancement of artificial intelligence (AI) technologies has led to the integration of AI-powered tools into various healthcare settings. One emerging AI tool, ChatGPT, offers the potential to enhance communication and information exchange between pharmacists and patients. This study aims to investigate the adoption, utilization, and perceived impact of ChatGPT in the daily practice of community pharmacists. We conducted a survey among community pharmacists with a structured questionnaire addressing aspects related to ChatGPT usage. Additionally, demographic information such as age, years of practice, and practice setting were collected to understand the influence of these variables on ChatGPT utilization.

Preliminary findings reveal that a significant proportion of community pharmacists have not integrated ChatGPT into their daily practice. The most common application of ChatGPT is drug interaction checks. Pharmacists reported improved efficiency and accuracy in medication-related tasks when using ChatGPT. However, challenges such as trust in AI and the need for ongoing training were identified as barriers to adoption. Subgroup analysis suggests that age and years of practice influence the extent of ChatGPT integration, with younger pharmacists and those with fewer years of practice being more receptive to AI integration. The findings suggest that community pharmacists perceive ChatGPT as a competent aide, while acknowledging the necessity for additional improvements. The advancement of AI necessitates a thorough comprehension of its integration challenges and prospects to enhance patient care.

Keywords: Artificial intelligence, ChatGPT, community pharmacists, practice.

OP – 33

Anti-Inflammatory Activity and Phytochemical Profiling of Two Galls Extract of *Pistacia Terebinthus* L.

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Abstract

Pistacia terebinthus L. galls, also known as "cornicabra" or "gallnuts," have a long history of use in traditional medicine around the Mediterranean and the Middle East. Galls have been used by humans for various purposes for centuries, used as ingredients in medicines, dyes, ink, and soap and they have also been consumed by some cultures. *Pistacia terebinthus* L is a Mediterranean plant known for its medicinal properties. Recent scientific research has confirmed the presence of bioactive compounds in galls of several species. These compounds, mainly phenolic acids, flavonoids and tannins, have been shown to possess various biological activities. Despite these promising findings, a limited number of studies have compared the chemical composition of different types of galls formed on *Pistacia terebinthus* L and explored their specific anti-inflammatory activities. This is due to the complex nature of the galls, the variations caused by different insect species, and the influence of environmental factors. This study aims to characterize the chemical composition of different types of *Pistacia terebinthus* L galls using high-performance liquid chromatography (HPLC) and to evaluate the in vitro anti-inflammatory activity of these gall extracts using the protein denaturation method in order to valorize the use of galls in medicine and confirm its traditional use. Galls were collected at different stages of development from different parts of the plant from different stations of Tessala mountains. HPLC analysis was performed using a C18 column to separate and identify the phenolic compounds present in the gall extracts and the anti-inflammatory activity were estimated after dilution of each extract using the human serum albumin. The HPLC analysis showed a clear difference in the phenolic composition of the two types of galls extract The MeOH extract of the galls was predominantly dominated by phenolic acids, mainly hydroxycinnamic acids, caffeic acid, caffeoylquinic acid, and chlorogenic acid and tannin The results of the inhibition assay indicate that the extract of galls has anti-inflammatory activity. The extract was able to inhibit the denaturation of BSA by 50% at a concentration of 100 µg/ml. Overall, the results of our study suggest that *Pistacia terebinthus* L gall extracts possess significant anti-inflammatory activity and may offer a promising natural therapeutic approach for inflammatory diseases.

Keywords: Anti-inflammatory activity, galls, hplc, metabolite secondary active, *Pistacia terebninthus.*

OP – 34

Role of EHRs as a Digital Transformation Instrument for Healthcare In Jordan: Capabilities, Opportunities, and Challenges

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Abstract

The initiation of digital transformation across all sectors has led to significant changes in the quality of services provided. The research specifically examines the various forms of digital transformation within the healthcare sector, highlighting the substantial changes they have introduced to the nature of healthcare service delivery. This study aims to explore the impact of the digital transformation of electronic health records in Jordan on patients, the healthcare sector, and employment opportunities. It also investigates the challenges associated with this transformation, proposed solutions to address them, and the opportunities it creates. This study employed a qualitative descriptive approach using the case study method. Data was collected through interviews, guided by an interview protocol consisting of eleven questions. Thematic analysis of the responses yielded five main themes. The study revealed that patients' impressions of the program varied depending on their level of digital literacy. The COVID-19 pandemic played a significant role in accelerating the pace of digital transformation in institutional operations. Participants affirmed that electronic health records contribute to saving time, effort, and financial resources, while also ensuring equitable healthcare for individuals. However, the study identified several challenges facing electronic health records in Jordan, including the inability to manage family files collectively. The study also presented a set of recommendations for addressing the challenges of electronic health records in Jordan. These include diversifying awareness methods about the Hakeem program to ensure inclusivity and alignment with the needs of all patient groups and their companions, as well as integrating community pharmacies, private clinics, and health centers into the platform.

It can be concluded that patients' impressions and benefits from the system vary according to their level of digital literacy. Although digital transformation offers standardized healthcare for individuals, public awareness about it remains limited in Jordan due to insufficient awareness campaigns and the lack of certain essential resources.

Keywords: Digital transformation, electronic health records, hakeem, Jordanian healthcare sector.

OP – 35

Molecular Docking Study of Microwave-Assisted Synthesized Furan-Fused Chalcones as Potential Proapoptotic Agents

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Abstract

Furan-fused chalcones (FFCs) are a novel class of heterocycles with potential proapoptotic activity. In this study, five FFC derivatives were synthesized via manganese(III) acetate-mediated radical cyclization under microwave-assisted conditions, using various α,β-unsaturated and cyclic ketones. Structures were confirmed by ^{1}H-NMR, ^{13}C-NMR, LC-MS, and elemental analysis. Their anticancer potential was evaluated through molecular docking studies targeting caspase-3, a key executioner in apoptosis. The crystal structure of caspase-3 (PDB ID: 3DEI) was retrieved and prepared by water removal, hydrogen addition, and energy minimization. Docking was performed using AutoDock Vina, and binding energies were refined with Molecular Mechanics/Poisson–Boltzmann Surface Area (MM/PBSA) calculations. The fluoride-containing compound showed the strongest binding (ΔG_bind = –42.8 kcal/mol), likely due to enhanced π-conjugation and hydrogen bonding. The methoxy-phenyl derivative followed (–39.5 kcal/mol), and the diphenyl-substituted compound showed moderate binding (–36.7 kcal/mol). Compounds with extended phenyl conjugation and cyclohexanone moieties displayed weaker binding, likely due to steric effects and reduced aromaticity. As caspase-3 plays a central role in the intrinsic apoptotic cascade, high binding affinity may reflect proapoptotic potential. These results suggest that FFCs—particularly the fluoride-containing compound—can effectively target caspase-3 and may serve as promising anticancer leads. Integration of synthetic chemistry and computational modeling highlights their therapeutic relevance. Future studies should investigate caspase-3 activation in cell-based models to confirm these effects.

Keywords: Apoptosis, caspase-3, docking, heterocycles, microwave synthesis, MM/PBSA.

OP – 36

Nanomolar Quantitative Detection of L-Tryptophan in The Presence of Uric Acid on Electrochemically Pretreated Pencil Graphite Electrode in Complex Samples

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Abstract

L-Tryptophan (L-Try) is an essential α-amino acid involved in protein biosynthesis, which cannot be synthesized by the human body and must be obtained through diet or supplements. L-Try also plays a role in the synthesis of niacin, which is the precursor of important biomolecules such as melatonin and serotonin in the body. Knowing L-Tryptophan levels is very important because its deficiency can lead to metabolic and neurological disorders. High doses of L-Try can cause some side effects such as drowsiness, nausea, dizziness and loss of appetite. Considering this situation, it is vital to monitor the amount of L-Try in the biological fluids and complex samples. On the other hand, uric acid (UA), the primary metabolite of purine metabolism, is present alongside L-Try in blood and urine; therefore, developing an analyzing method for L-Try in the presence of UA is significant for diagnosing the diseases related to the level of L-Try in biological fluids. This work reports a sensitive and simple sensor based on an electrochemically pretreated pencil graphite electrode (pre-PGE) modified with multi-walled carbon nanotubes (MWCNTs) for electrochemical determination of L-Try detection in the presence of uric acid. The rapid, economical and simple differential pulse adsorptive stripping voltammetry method was developed for the determination of L-Try in the presence of UA using the electrode prepared. Electrochemical and morphological characterizations of the MWCNTs/pre-PGE were investigated using several techniques. With the determined optimum parameters, the linear working range was 0.030 – 200.0 µM with a limit of detection of 9.0 nM. The developed sensor showed good sensitivity, repeatability, reproducibility, and stability. Finally, the MWCNTs/pre-PGE were successfully applied to L-Try determination in real samples with good recovery and accuracy.

Keywords: Electrochemical pretreatment, L-Tryptophan, multi-walled carbon nanotubes, pencil graphite electrode, voltammetry.

OP – 37

The Role of Artificial Intelligence in Iraqi Healthcare Education: A KAP Study among Medical Students

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Abstract

The primary objective of this study was to assess the knowledge, attitudes, and practices of students in Iraq regarding artificial intelligence (AI). A cross-sectional design was employed, using an Arabic-language online questionnaire distributed to students from various health faculties between July and August 2024. Convenience sampling was used to recruit participants. The "Green" formula, with a 95% confidence level and a 5% margin of error, indicated that 98 respondents were required; ultimately, 214 students from different medical disciplines completed the survey. Given the limited sample size, this pilot study will be continued in subsequent research phases. Data were analyzed using SPSS version 28.0. Frequencies and percentages described categorical variables, while the median was used for continuous measures.

Findings reveal a direct influence of AI on medical education in Iraq, providing valuable insights into health professions students' readiness for and perceptions of AI. At present, there is no widespread agreement on which AI topics should be taught or how they should be incorporated into medical training. The insights gained here can inform the development of curricula in Iraq, helping to prepare future healthcare professionals better to adopt AI technologies. As AI continues to reshape the healthcare landscape, the knowledge, attitudes, and practices of health professions students will play a pivotal role in shaping its impact on patient care and medical education. This study recommends enhancing educational programs by integrating AI into curricula and offering comprehensive training that equips students to understand the technology and its diverse applications in healthcare and academia.

Keywords: Artificial intelligence, cross-sectional study, Iraq, medical education, medical students, survey research

OP – 38

Evaluation of Phenolic Composition and Antioxidant Activity of Ethanol Extracts from Apple Juice Processing Waste

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Abstract

Effective utilization of wastes generated during food processing is of great importance not only to prevent environmental pollution but also to create added value and diversify products. In the future, the number of food processing factories will continue to increase with the increasing population, and the amount of food waste will increase, and with it the waste problems. For this reason, the collection of waste and its use in the production of new products is of great importance in terms of human health, environmental pollution, and national economy. Apple (*Malus domestica* Borkh.; Rosaceae) is an economically and culturally important, nutrient-rich fruit grown in all temperate regions. Apple juice is one of the most popular fruit juices in the world. In addition to its vitamin and mineral content, apple juice contains high levels of phenolic compounds with antioxidant capacity. Apples have a high concentration of flavonoids and many other phytochemical compounds. The strong antioxidants found in apples include procyanidins, chlorogenic acids, flavonoids, hydroxycinnamic acids, anthocyanins, and quercetin, and most of these are found in the peel. Some of the best-known antioxidant compounds in apples are quercetin-3-galactoside, quercetin-3-glucoside, quercetin-3-rhamnoside, catechin, epicatechin, proanthocyanidin, cyanidin-3-galactoside, coumaric acid, chlorogenic acid, gallic acid, and phlorizin. In this study, we looked at the phenolic content of ethanol extract from apple waste from a juice factory, checking for compounds like cinnamic acid, caffeic acid, (-)-epicatechin, chlorogenic acid, (+)-catechin, apigenin, luteolin, quercetin, and ellagic acid using the LC-MS method, and we also assessed the antioxidant activities. In the phenolic analysis measurement conducted by LC-MS, it was determined that caffeic acid and ellagic acid were present in the ethanol extract of apple pomace. This indicates that it may show some DPPH activity. The total phenolic compound content determination result was found to be 4.8765 ± 0.2905 mg/gr extract in the ethanol extract of apple pomace.

Keywords: Antioxidant activity, apple pomace, LC-MS analysis, phenolic compounds.

OP – 39

Cyclodextrin-Drug Complexes in Topical Gels: Rheological, Mechanical, and Release Insights

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Abstract

Cyclodextrins (CDs) are widely utilized in pharmaceutical formulations to enhance the solubility and stability of poorly water-soluble drugs. In this study, inclusion complexes of flurbiprofen with α-, β-, and γ-cyclodextrins were prepared and characterized using DSC, XRD and SEM, confirming successful complex formation. These complexes were incorporated into Carbopol and HPMC-based gel matrices to investigate their effects on rheological, mechanical characteristics, and release performance. The rheological, texture profile analysis (TPA), and Franz diffusion cell studies were conducted to evaluate the formulations. Compared to non-complexed flurbiprofen gels, incorporation of flurbiprofen-inclusion complexes (α-, β-, and γ-CD) into Carbopol matrix did not lead to substantial changes in rheological behavior, although a significant increase in apparent viscosity was observed. In HPMC-based gels, a similar increase in apparent viscosity was observed with incorporation of α- and β-cyclodextrin inclusion complexes. TPA showed that the firmness was comparable between flurbiprofen and β-CD inclusion complex-Carbopol gels. Lower firmness values—and thus improved spreadability—were observed in α- and γ-CD inclusion complexes Carbopol gels. In HPMC formulations, the best spreadability was noted with γ-CD complexes. The stickness results—indicative of skin retention—were consistent with firmness data. In HPMC-based gel, drug release rates of β- and γ-CD inclusion complexes differed from those of flurbiprofen-HPMC gel, while the release rate of α-cyclodextrin complex was like that of flurbiprofen gel. In case of Carbopol gel, the drug release rate of β-CD inclusion complex was comparable to that of the control. This study provides a systematic comparison of α-, β-, and γ cyclodextrin complexes with flurbiprofen in Carbopol and HPMC-based gels—offering novel insights into their drug release behavior, and impact on the characteristics of gels—an aspect that has not been systematically explored in previous research. These findings contribute to the design of effective topical delivery systems utilizing cyclodextrin-based strategies.

Keywords: Cyclodextrin-Drug complexes, drug release, gel matrices, rheological measurements, texture profile analysis.

OP – 40

Evaluation of Natural Acacia Gums from Algerian Herbal Markets

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Abstract

In Algerian herbal markets, natural *Acacia* gum exudates are commonly sold under the vernacular names "Eulk Talh" and "Samgh Alrabi," terms often used interchangeably despite potential differences in botanical origin and quality. To investigate this ambiguity, five gum samples labeled as either "Eulk Talh" or "Samgh Alrabi" were collected from herbalists across different Algerian cities. Each sample underwent a series of physico-chemical analyses following the European Pharmacopoeia monograph for gum arabic. Tests included macroscopic and microscopic examination, solubility assessments in water, alcohol, loss on drying, tannin and starch determination, and measurement of insoluble matter. Results revealed notable differences among samples in the different tests, suggesting variability that may stem from differences in botanical sources, exudate quality, or storage conditions. This heterogeneity highlights the necessity for more advanced analytical techniques. As a next step, FTIR spectroscopy should be employed to characterize the chemical fingerprints of these gums, aiming to support their accurate identification, differentiation, and standardization in regional herbal markets.

Keywords: Acacia, phytotherapy, gum arabic, physiochemical properties.

OP – 41

Development of Topical Nanofiber Formulations Containing Antimicrobial Drug for Neonatal Umbilical Cord Infections

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Abstract

Umbilical cord care is the most important part of newborn skin care. Especially in developing countries, omphalitis accounts for a significant portion of newborn deaths. Graphene and its derivatives are two-dimensional materials with antimicrobial effects. The treatment efficacy of antimicrobial drugs can be increased by preparing nanosized drug delivery systems. Nanofibers are such systems of high surface area/volume ratio and porosity, and resemble the extracellular matrix structure of the skin. In this project, an antimicrobial dressing in the structure of graphene nanofiber loaded with chlorhexidine that can be used for umbilical cord care for newborns during the first week after birth was developed. Core-shell structured nanofibers containing polyvinyl alcohol (PVA), hyaluronic acid (HA) polymers and N-graphene oxide (NGO) in the outer shell and polycaprolactone (PCL) and chlorhexidine (CHX) drug in the inner core were obtained by the coaxial electrospinning method and then visualized by SEM and TEM. Polymer-drug interactions were examined using FTIR. The hydrophilic PVA and HA polymers in the outer part were aimed to have the ability to absorb excess water and moisture around the cut umbilical cord in newborn babies and also give HA nanofibers a structure more compatible with the baby's skin. The presence of NGO in the outer shell layer provided both thermal and mechanical stability according to TGA and DSC analysis and was found to be antimicrobial against omphalitis pathogens. The aim was to release the drug for a longer period by including the hydrophobic PCL polymer in the inner core layer. In addition, the NGO in the outer layer also constituted a barrier for drug release. According to the in vitro drug release results, sustained chlorhexidine release was obtained. As a result, the prepared chlorhexidine loaded co-axial graphene nanofibers could be potential systems for use in neonatal umbilical cord infections.

Keywords: Chlorhexidine, co-axial, delivery system, N-graphene oxide, umbilical cord infections.

OP – 42

Awareness of Third-Hand Smoke and Attitudes Toward Smoking Cessation Methods Among Taxi Drivers in İstanbul: A Survey Study

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Abstract

Taxi drivers are among the occupational groups with the highest physical contact with people in enclosed environments. Third-hand smoke (THS) is a significant public health issue due to the persistent accumulation of cigarette smoke (CS) residues on indoor surfaces and their transformation into toxic compounds over time. This situation leads to long-term adverse effects on human health. This study aims to evaluate taxi drivers' smoking habits, their attitudes toward quitting smoking, exposure to second-hand smoke (SHS), and awareness of THS. This study was conducted through face-to-face interviews with taxi drivers between December 2024 and March 2025. The survey consisted of 23 questions related to demographic characteristics, smoking habits, smoking cessation attempts, SHS exposure, and THS awareness. To assess THS awareness, the Beliefs About Third-Hand Smoke (BATHS) scale was used. A total of 381 participants were included in the study. Data were analyzed using SPSS-23 software. According to the findings, 60.4% (n=230) of the participants were smokers, while 39.6% (n=151) were non-smokers. Most participants had never heard of THS or SHS before; however, they were aware of passive smoking and its potential harms. The BATHS scale score was found to be 35.97 ± 7.38, indicating a moderate level of awareness. Taxis are among the most commonly used means of transportation in Istanbul. Although various measures have been taken by professional organizations and the government against smoking in public transportation, the public needs to be informed that smoke exposure is not limited to active and passive smoking alone. Our study reveals that THS awareness among taxi drivers is insufficient and emphasizes the need for preventive measures and educational initiatives to increase awareness.

Keywords: Second-hand smoke, passive smoking, taxi drivers, third-hand smoke.

EMU International Pharmaceutical Sciences Congress (IPSC 2025)

14 MAY 2025, FAMAGUSTA/TRNC

Rauf Raif Denktaş Culture and Congress Center

POSTER PRESENTATION ABSTRACTS

PP – 1

Plants That Increase Nitric Oxide and Their Uses

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Abstract

Nitric Oxide, or NO, is a crucial molecule that benefits both people and plants. In plants, NO influences growth and development. It also helps plants handle stress better. For example, it boosts a plant's ability to withstand harsh conditions like drought (lack of water) and high salinity (too much salt in the soil). NO aids in the blooming of flowers, the elongation of roots, and the germination of seeds. Plants generate NO through various methods, such as the phytoglobin-NO cycle, the conversion of nitric oxide to nitrous oxide, and the nitrate-nitrite-NO pathway. These processes play a vital role in nitrogen metabolism and how plants react to environmental changes. Nitric Oxide is suitable for the heart and blood vessels because it widens blood vessels, which improves blood flow and lowers blood pressure. It is also crucial for the immune system, nervous system, and physical activity. Researchers are studying how NO can help treat issues like erectile dysfunction and pulmonary hypertension. NO levels can be increased in our body by eating certain foods like leafy greens, beets, and dark chocolate. These foods support heart health and help with exercise. This comprehensive overview explains the important roles of nitric oxide in plants and humans. It shows how it is important for agricultural practices and health care. By understanding how nitric oxide is produced and how it works, we can make progress in biotechnology and medicine, which can result in better farming efficiency and improved health for people. Studying the functions of nitric oxide highlights its potential to solve problems in agriculture and health fields.

Keywords: Agriculture and health field, environmental changes, growth and development, nitric oxide (NO), nitrogen metabolism.

PP – 2

Growth Hormone and How to Use It?

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Abstract

Human growth hormone (hGH) is a peptide hormone secreted by the anterior pituitary gland that plays a central role in regulating growth, metabolism, and cellular regeneration. Since its discovery in the early 20th century, the understanding and therapeutic use of GH have evolved significantly, particularly following the development of recombinant DNA technology. The aim of this study is to gather and synthesize decades of scientific evidence to provide a comprehensive understanding of GH and its use in both approved medical settings and off-label contexts.

Following a historical overview, the thesis introduces core principles of hormone biology to contextualize GH within the broader endocrine system. It then details the physiological regulation of GH secretion, including the roles of GHRH, somatostatin, and ghrelin, and describes its systemic effects, many of which are mediated through insulin-like growth factor 1 (IGF-1). The GH-IGF-1 axis is explored in depth, focusing on receptor interactions, signaling pathways, and feedback mechanisms.

This thesis also examines the clinically approved indications for GH, as well as the associated safety concerns in both pediatric and adult populations. These indications include GH deficiency, Turner syndrome, Prader-Willi syndrome, Noonan syndrome, children born small for gestational age, idiopathic short stature, SHOX gene deficiency, chronic kidney disease (CKD), and other conditions. Pharmacokinetics, administration strategies, and common adverse effects are also discussed.

In addition to therapeutic applications, this study evaluates the off-label use of GH for athletic performance, anti-aging interventions, and physique enhancement, critically analyzing the scientific evidence and ethical implications surrounding such practices.

Keywords: GH deficiency, growth hormone, IGF-1, off-label use, recombinant DNA technology.

PP – 3

Plants and Supplements that Increase Growth Hormone and Testosterone

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Abstract

Testosterone and growth hormone (GH) are two important hormones that support muscle growth, bone strength, metabolism, and general health. In recent years, natural methods to increase these hormones have gained attention, especially the use of plants and dietary supplements. This thesis explores how certain herbs and nutrients may help raise testosterone and GH levels in the body. The study focuses on plants such as *Ashwagandha* (*Withania somnifera*), *Tongkat Ali* (*Eurycoma longifolia*), *Fenugreek* (*Trigonella foenum-graecum*), and *Ginseng*, which have been traditionally used for strength and vitality. It also examines important nutrients like zinc, magnesium, vitamin D, and amino acids such Arginine and Glutamine. These substances may support hormone levels by improving sleep, reducing stress, or helping the body produce hormones more efficiently. Scientific studies, including clinical trials and laboratory research, are reviewed to understand how effective and safe these natural options are. While some supplements show clear benefits in increasing hormone levels, others have mixed results depending on the dose, duration, and health of the individual. This thesis aims to provide a clear summary of current knowledge on natural ways to support testosterone and GH production. It also points out the need for more research to confirm long-term effects and safe use. Natural approaches may offer helpful tools for people looking to improve hormonal balance without medical treatments.

Keywords Growth hormone, herbal supplements, natural hormone regulation, testosterone.

PP – 4

Tailored Medicine in Pharmacognosy

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Abstract

Personalized medicine, also known as precision or tailored medicine, represents a significant advancement in healthcare by aligning treatments with an individual's genetic, epigenetic, and environmental characteristics. This approach has growing relevance in pharmacognosy, the scientific study of natural products for therapeutic use. The integration of personalized medicine into pharmacognosy holds promise for improving treatment efficacy and minimizing side effects by considering genetic variations that influence drug metabolism. Advances in pharmacogenomics, epigenetics, and biomarker research have enabled more targeted therapies. Key factors such as single nucleotide polymorphisms (SNPs), DNA methylation, and enzyme polymorphisms—particularly within the cytochrome P450 (CYP) enzyme family—play a central role in the metabolism of both synthetic drugs and herbal compounds. Enzymatic variability significantly affects how individuals process phytochemicals, highlighting the importance of enzyme profiling in the development of personalized herbal interventions. This is particularly relevant for medicinal plants like Withania somnifera, Curcuma longa, and Hypericum perforatum, whose efficacy may vary based on genetic predisposition to conditions such as anxiety, inflammation, and mood disorders. Despite its potential, the integration of personalized approaches in pharmacognosy faces challenges, including regulatory constraints, the complexity of natural compound interactions, and limited global accessibility. However, emerging technologies such as genomic sequencing, artificial intelligence, and machine learning are enhancing diagnostic accuracy and supporting personalized treatment design. In conclusion, the convergence of personalized medicine and pharmacognosy offers a novel framework for individualized, effective, and safer phytotherapy. Bridging traditional herbal knowledge with modern biomedical tools may unlock new possibilities in patient-centered care.

Keywords: Drug metabolism, herbal pharmacology, personalized medicine, personalized phytotherapy, tailored medicine.

PP – 5

Pharmacognostic Studies on *Lycium ferrocissimum* Miers. Leaves and Fruits

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Abstract

In this study, the microscopic structure, chemical composition, and antiradical potential of mature and ripe fruits and leaves of *Lycium ferocissimum* Miers were investigated. Plant materials were collected, air-dried at room temperature, and stored for analysis. Various extracts were prepared according to standard assay protocols for metabolite group analysis. For all tests, plant samples were extracted using 70% aqueous ethanol at room temperature, and decoctions were also prepared from each sample. Microscopic examinations were conducted on powdered samples of each plant part using chloral hydrate reagent. In leaf samples, stomata, epidermal cells, crystals, and secretory hairs were observed. In both mature and ripe fruits, parenchyma cells, pigment-containing cells, and stone cells were identified. Qualitative phytochemical analyses were conducted using various colorimetric reagents, including Fehling's, Molisch's, and Seliwanoff's reagents, to identify groups of secondary metabolites in the extracts. As a result of these tests, the presence of flavonoids, carotenoids, anthocyanidins, carbohydrates, and alkaloids was confirmed. Additionally, lipids were detected exclusively in both mature and ripe fruits. The antiradical potential of the extracts was evaluated using DPPH$^{\bullet}$ and ABTS$^{+\bullet}$ radical scavenging assays. The extract from mature fruits exhibited the highest antiradical activity in the ABTS$^{+\bullet}$ assay, indicated by the lowest absorbance values. All extracts showed dose-dependent scavenging activity in the DPPH$^{\bullet}$ assay as well. Overall, this study demonstrates and supports the antiradical potential of *Lycium ferocissimum* through the identification of bioactive compound groups responsible for the observed effects.

Keywords: Antiradical, *Lycium ferocissimum*, microscopic analysis, secondary metabolites.

PP – 6

Multi-step Synthesis of Anti-inflammatory Drug Molecules

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Abstract

The development of anti-inflammatory drug molecules plays a crucial role in managing chronic and acute inflammatory conditions. Multi-step synthesis is a foundational approach in medicinal chemistry that enables the design and construction of structurally complex, biologically active compounds with anti-inflammatory properties. This synthetic strategy typically involves sequential reactions including functional group transformations, protection-deprotection steps, selective oxidations or reductions, and the formation of key heterocyclic frameworks. Many non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen, naproxen, and diclofenac, are synthesized through multi-step routes starting from simple aromatic precursors. These syntheses often include Friedel–Crafts acylation, Grignard reactions, or esterification processes to introduce or modify pharmacophores that enhance bioavailability and receptor binding affinity. The complexity of multi-step synthesis demands precise control over reaction conditions, stereoselectivity, and intermediate purification, which are critical for ensuring reproducibility and yield optimization. Recent advancements in green chemistry, microwave-assisted synthesis, and catalytic methods have significantly improved the efficiency and sustainability of multi-step routes. Furthermore, structure-activity relationship (SAR) studies guide each step to enhance anti-inflammatory potency while minimizing toxicity. A well-designed multi-step synthesis not only ensures the targeted assembly of active compounds but also contributes to scalable and cost-effective drug production. Continued research in this area is vital to meet the growing therapeutic demands and overcome resistance or adverse effects associated with conventional anti-inflammatory therapies.

Keywords: Anti-inflammatory, drug synthesis, multi-step reaction, NSAIDs, SAR.

PP – 7

Herbal Supplements That Affect Reproductive Hormones

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Abstract

Focusing on their pharmacological qualities, historical uses, and therapeutic uses, this paper investigates how herbal supplements influence reproductive hormones. Herbal supplements' perceived natural origin and little adverse effects have led to much more global adoption. Though many supplements lack solid clinical proof and their hormonal interactions are not completely known, their popularity belies this fact. This thesis assesses frequently used herbal products such as fenugreek, red clover, sage, St. John's wort, wild yam, maca root, and others—examining their bioactive components, effects on female and male hormonal systems, and possible use as complementary treatments for diseases including menopause, PCOS, infertility, and hormonal imbalances. A thorough knowledge of each herb's efficacy is provided by the approach combining study of peer-reviewed clinical research with conventional ethnopharmacological data. The results imply that whereas some herbal extracts may help to regulate testosterone, progesterone, and estrogen levels, others could conflict negatively with traditional hormonal treatments like oral contraceptives. This thesis shows the significance of pharmacists' knowledge about their clinical use and potential interactions and stresses the necessity for more regulated human trials to assess the effectiveness and safety of herbal hormone modulators.

Keywords: Herbal supplements, hormonal balance, phytotherapy, menopause, PCOS, reproductive health.

PP – 8

Hazardous Chemical in Cosmetics

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Abstract

This study explores the possible health impacts of 20 hazardous substances that are increasingly found in cosmetic products. These chemicals, which are becoming more widespread in the cosmetics industry, pose significant risks to consumer health. The study provides a comprehensive examination of the toxicological properties of each substance, focusing on their potential to trigger hypersensitive reactions, cause hormonal disruptions, induce carcinogenic effects, and lead to other serious health problems. In addition to the toxicological evaluation, the study investigates how and why these substances are used in cosmetics, identifying the specific types of products in which they are most commonly found. It also discusses the short-term and long-term consequences their usage may have on human health. By addressing both the scientific and practical aspects of chemical exposure through cosmetic products, this work aims to highlight the pressing need for stricter controls and better consumer protection. Furthermore, this study evaluates the current national and international regulations aimed at limiting or banning the use of such dangerous substances. Provides constructive recommendations to enhance the safety of cosmetic goods. Special attention is given to consumer awareness, as one of the primary goals of this research is to inform and educate the public about the hidden dangers that may be present in everyday beauty and personal care products. Ultimately, this study seeks to contribute to the growing body of knowledge in the field of cosmetic safety and to support the development of safer, healthier alternatives for consumers worldwide.

Keywords: Carcinogenic, chemicals, cosmetics, health, hormone, toxicological.

PP – 9

Predicting the Next Pandemic: Preparation for the Next Pandemic

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Abstract

Pandemics have been a recurring challenge throughout human history, repeatedly testing the resilience of societies and healthcare systems. Historical outbreaks such as the Black Death in the 14th century, the waves of Cholera in the 19th century, the global spread of HIV/AIDS in the late 20th century, and the more recent pandemics like Influenza and COVID-19, have each left significant marks on public health, economies, and social structures. Effectively predicting future pandemics depends on the integration of scientific and technological methods. Surveillance systems such as ProMED-mail and the WHO's Global Outbreak Alert and Response Network (GOARN) enable early detection and rapid response to infectious threats worldwide. Data modeling tools such as Susceptible-Exposed-Infectious-Recovered (SEIR) models help simulate the spread of diseases and assess the impact of intervention strategies. Artificial intelligence applications like DeepMind's AlphaFold support rapid understanding of especially viral structures via protein characterization, aiding in the development of treatments. Additionally, environmental monitoring techniques, including wastewater surveillance and satellite-based observation of ecological changes, offer valuable early warnings of zoonotic spillovers. These tools collectively support a proactive, evidence-based approach to pandemic preparedness. For prevention, there are proactive measures that can be taken both at the governmental and individual levels. These include investment in healthcare infrastructure, international collaboration, vaccine stockpiling, public health education, and the promotion of hygiene and personal protective behaviors. In this multifaceted effort, the role of the pharmacist is vital not only in ensuring access to essential medications and vaccines but also in providing accurate public health information, supporting immunization efforts, and contributing to early detection and prevention through community-based surveillance. As accessible healthcare professionals, pharmacists stand at the frontline, bridging the gap between science and society during both preparedness and crisis phases of pandemics.

Keywords: Artificial intelligence, environmental monitoring, global health, pandemic prediction, SEIR models, surveillance systems.

PP – 10

Preservatives Used in Cosmetics

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Abstract

The rising demand for cosmeceutical-based personal care and beauty products has led to the increasing inclusion of various chemical compounds in cosmetic formulations, including preservatives, fragrances, and surfactants. Cosmetics are intended for external application without therapeutic claims, while cosmeceuticals blur the line by offering biologically active properties that can affect the skin beyond superficial effects. Due to their high-water content and organic nature, cosmetics are vulnerable to microbial contamination, which can degrade product quality and pose health risks to users. To mitigate this, preservatives are added to inhibit microbial growth and oxidative degradation. These include antimicrobial agents and antioxidant compounds, many of which also provide photoprotective benefits. However, concerns have been raised regarding the safety of certain preservatives, particularly formaldehyde-releasing agents, isothiazolinones, parabens, and other synthetic chemicals. Their use has been linked to allergic reactions, endocrine disruption, neurotoxicity, and genotoxicity. Approximately 6% of the population is estimated to be allergic to preservatives and fragrance allergens. The risk posed by these substances depends on their ability to penetrate, permeate, or be absorbed into the body through the skin. Consequently, there is growing interest in developing alternative preservative systems that are effective yet exhibit fewer toxic effects. Ensuring microbiological stability while preserving product safety remains a significant challenge in cosmeceutical research and formulation.

Keywords: Alternative preservation systems, cosmeceuticals, microbial contamination, preservatives, toxicity.

PP – 11

Cell Signaling Mechanisms in Health and Disease

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Abstract

Cell signaling is playing a vital role in maintaining cellular functions, homeostasis and general health of an organism. To facilitate these interactions, cells receive and respond to the extracellular cues. The signaling pathways include ligands, receptors, second messengers, kinases and transcription factors that regulate cell proliferation, differentiation, gene expression and apoptosis. In healthy state of the functions, cells maintain growth, immune response and tissue repair. However, in case of a dysregulation in these functions can cause immune dysfunctions, metabolic diseases, neurodegenerative disorders and even cancer. Key signaling pathways such as, MAPK/ERK, P13K/Akt, JAK/STAT and Wnt are closely related with maintaining cellular unity and changes during the disease states.

Key signaling pathways such as the MAPK, PI3K/Akt, JAK-STAT, and Notch pathways play crucial roles in maintaining cellular integrity and are important in disease states. For example, abnormal activation of PI3K/Akt signaling is implicated in tumorigenesis by promoting uncontrolled cell proliferation and cell survival, whereas a defect in insulin signaling can be a reason for metabolic disorders such as diabetes. Similarly, defects in Wnt and Notch signaling are associated with neurodegenerative diseases, effecting both neuronal and synaptic health. Knowing the molecular details of these signaling mechanisms provides valuable information into disease mechanisms and therapeutic targets.

Keywords: Cell signaling, disease mechanisms, signal transduction, signaling pathways.

PP – 12

Reemergence of Vaccine Preventable Diseases

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Abstract

Emerging diseases are diseases appearing in a population for the first time whereas reemerging diseases are those that once posed significant health threats, declined over time, but are now resurfacing as major public health concerns. As of April 2025, vaccines are available for 21 different infectious diseases. Over the years, the vaccines have prevented significant cases of disease. During the COVID-19 pandemic, national immunization efforts were significantly disrupted, affecting around 60 vaccination programs worldwide. The disruption led to a resurgence of various vaccine-preventable diseases such as tuberculosis, hepatitis B, diphtheria, measles, rubella, meningococcal disease, influenza, and pertussis. Measles outbreaks have been reported in many countries that have suspended their vaccination programs. Although measles was declared eliminated in the United States in 2000, sporadic cases and outbreaks continue to occur due to unvaccinated international travelers. In 2023, an estimated 10.3 million people were infected with measles. More than 22,000 cases were reported in Yemen in 2022, including 161 deaths, due to the widespread malnutrition and food/drug shortages. Tuberculosis is a reemerging disease that continues to be a global health threat. The rise in multidrug-resistant *Mycobacterium tuberculosis* strains and elevated prevalence in individuals living with human immunodeficiency virus have contributed to its resurgence. The finding that 1.9 million people around the world die because of tuberculosis annually highlights the urgent need for new drug development strategies and a deeper understanding of the pathogenesis. Continued research into more effective vaccines is especially critical, as current vaccines do not always offer a reliable protection. Due to an increase in anti-vaccine activities and increase in the antibiotic resistance, many infectious diseases are at risk of reemergence. Pharmacists play an important role in this challenging landscape to educate their patients about the importance of vaccination and antibiotic usage.

Key words: Emerging, measles, reemerging, tuberculosis, vaccine preventable diseases.

PP – 13

Fluorescent Chemosensors and Bioactive Natural Products

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Abstract

Fluorescent probes are vital instruments in biology, drug development, disease detection, and environmental assessment because of their simplicity, cost-effectiveness, and ability to identify biological materials, visualize cellular structures, and observe biochemical activities without harming samples. Recent studies have specifically concentrated on natural products as recognition components for new fluorescent probes, emphasizing their effectiveness in bioimaging and biochemical research. Progress in comprehending cellular and molecular biological events has propelled the creation of groundbreaking pharmaceuticals, with fluorescence offering essential imaging contrast in numerous applications, such as cell labeling, immunohistochemistry, and gene transcription. Fluorescent probes usually consist of a recognition component intended for interactions with cellular targets, attached to a fluorophore. Though the discovery of small molecules with strong affinity and specificity from both natural and synthetic origins is encouraging, the extensive application of natural products encounters difficulties like isolation complications and synthesis problems. However, natural substances incorporated into fluorescent probes show advantageous qualities such as biocompatibility. Fluorescence has transformed biomedical sciences, utilized in drug delivery, cellular imaging, and cancer diagnosis. Recent advancements enable the creation of customized fluorescent molecules, increasing their functional capabilities. This review examines the photophysical characteristics of natural and synthetic fluorescent compounds and their uses in biomedical sciences, especially in cancer research and analytical techniques, highlighting their importance in drug delivery and diagnostic advancements.

Keywords: Bioimaging, chemosensors, fluorescence, natural products, small molecules.

PP – 14

The Relationship between Health Expenditures and Health Outcomes in OECD Countries

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Abstract

The level of health expenditure is an ongoing challenge for many developed and developing countries. This gives arise to questions like “How much should my country spend on health, given our current epidemiological profile relative to our desired level of health status, considering the effectiveness of health inputs that would be purchased at existing prices, and taking account of the relative value and cost of other demands on social resources?”. The aim of this study is to examine the relationship between healthcare expenditures, access to healthcare services, and population health outcomes across OECD member countries. It seeks to evaluate the association between total healthcare spending as a percentage of GDP and key health indicators like life expectancy, infant mortality, and chronic disease prevalence. Additionally, it will assess how factors such as healthcare coverage, density of health professionals, and availability of facilities impact health outcomes in these nations. The study also aims to examine the potential mediating effects of healthcare system characteristics, such as emphasis on preventive care, primary care integration, and medical technology adoption. It endeavors to identify best practices from high-performing OECD countries that effectively translate resources into better population health to inform policies elsewhere. Furthermore, it will explore how socioeconomic and demographic factors like income inequality, education levels, and aging populations may moderate the relationship between expenditure and outcomes across OECD countries. Societies must have a healthy generation to sustain their existence. It is expected that societies of healthy individuals will make positive contributions to production power. Because of this, health services should be available when all segments of citizens need them.

Keywords: Expenditure, healthcare, life expectancy, mortality, OECD.

PP – 15

Synthesis of Potentially Biological Active Coumarin-fused Compounds

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Abstract

Coumarin was discovered in 1822 and synthesized in 1868. In this study, general properties and synthesis methods of coumarin are presented. Although the FDA classified coumarin as hepatotoxic and carcinogenic in the 1950s based on animal studies, subsequent research has questioned this assessment. Coumarins are organic compounds naturally occurring in plants, fungi, and some bacteria. Due to their sweet odor, they are used in the perfume, cosmetics, and food industries. When taken orally, coumarin is rapidly absorbed but undergoes first-pass metabolism in the liver, resulting in low bioavailability. Therapeutic uses of coumarins include anticoagulant, anticancer, antioxidant, antidepressant, antiviral, antibacterial, and antifungal properties. Although coumarin was initially considered hepatotoxic in some species, its toxicity to humans is comparatively lower. Coumarins can be synthesized via five different methods: Perkin, Pechmann, Knoevenagel, Reformatsky, and Wittig reactions. Among these, the Perkin, Pechmann, and Knoevenagel reactions are most commonly used.

Keywords: Coumarin, coumarin derivatives, coumarin synthesis, furanocoumarin.

PP – 16

Drugs Used due to Their Mucilage

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Abstract

This study provides up-to-date information on the usage of plant mucilages as both therapeutic agents and pharmaceutical additives. Mucilages are natural metabolic products formed in plant cells. They are not easily soluble in water but can form viscous or gel-like solutions due to their hydrophilic nature. The pharmaceutical industry values mucilages for their low cost, patient-friendly properties, and minimal risk of allergies. However, microbial contamination can limit their use, owing to their carbohydrate structure and moisture content. Mucilages can be sourced from land plants (e.g., gum arabic, gum tragacanth), animals (e.g., hyaluronic acid, chitosan), marine organisms (e.g., agar, alginate), fungi, and microbes (e.g., xanthan, dextran). Additionally, advancements in nanotechnology have opened new opportunities for using plant-based mucilages in gene delivery and novel drug delivery systems. Recently, plant-based polymers have gained significant attention for their wide range of pharmaceutical applications. They are used as binders, disintegrants, and diluents in tablets; thickeners in oral liquids; protective colloids in suspensions; gelling agents in gels; and bases for suppositories. The importance of various polysaccharide hydrocolloids for pharmaceutical purposes has a long historical background and has increased considerably during the last decades. While synthetic polymers are physically, chemically, and mechanically stable, they are often expensive, can cause toxicity, and may not be fully biocompatible, leading to side effects. In contrast, plant-derived polysaccharide hydrocolloids, like mucilages, are widely preferred for being non-toxic, biodegradable, biocompatible, affordable, and readily available. Natural mucilages can be used as effective tablet binders, improving tablet hardness, disintegration, and dissolution rates. They also have therapeutic benefits, such as antiulcer, wound healing, antidiabetic, immunostimulant, anticancer, antihypertensive, and antioxidant activities, and they are promising materials for future pharmaceutical developments.

Keywords: Drug, mucilage, pharmaceutical applications.

PP – 17

Iron Preparations in the Treatment of Iron-Deficiency Anemia

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Abstract

Iron-deficiency anemia (IDA) is the most prevalent type of anemia worldwide. It causes numerous illnesses and is especially prevalent in women and children. Iron is essential for various body processes, including hemoglobin production and oxygen delivery to tissues. The immune system, cognitive abilities, and overall life quality are all adversely affected when vital bodily processes are disrupted. Iron-deficiency (ID) treatment is possible, but first, the source of the condition needs to be looked at. Replenishing iron by using the appropriate iron form is the aim of the treatment. This study thoroughly investigates the pharmacological effects, side effects, absorption properties, and dosage types of parenteral and oral iron formulations. The primary treatment method for minor and moderate ID is oral iron medications (like ferrous sulfate). However, adverse effects (e.g., nausea, constipation, abdominal cramps, etc.) or challenges in taking them for specific individuals (e.g., difficulty swallowing) restrict their utilization. Moreover, individuals with severe ID, having issues with iron absorption, or who require immediate iron loading are treated intravenously. In such cases, intravenous iron medications like ferric carboxymaltose are administered. Higher costs, uncommon but dangerous side effects like anaphylaxis, and usage challenges are treatment's difficulties. This thesis aims to help identifying how to treat patients with IDA by highlighting the features of the preparations utilized in this condition. Consequently, by using the best treatment for each patient, it has been seen that the success rate of IDA treatment can be raised.

Keywords: Intravenous, iron-deficiency anemia (IDA), iron preparations, oral, treatment.

PP – 18

Cost-Effectiveness Analysis's Role in Medicine and Health Care

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Abstract

The increasing cost of health services and the decreasing resources used have greatly affected the economy in the health sector. Therefore, the cost-effectiveness analysis (CEA) method was preferred to determine economic activity in the health sector. This study aims to comprehensively examine the impact of CEA on medicine and health care by presenting many evaluations regarding its application areas, theoretical foundations, ethical issues and limitations. In this review, the history and main reasons of CEA are primarily investigated. Measures such as quality-adjusted life years (QALY), incremental cost-effectiveness ratios (ICER) and willingness to pay (WTP) thresholds are explained to create a methodological framework. Afterwards, it examines the applications of CEA to the pharmaceutical sector, health activities, and many other sectors. In addition, it considers the ethical dimensions of CEA, its effects on equality and access in services. The results show that CEA has an increasing effect on transparency, accountability and efficiency in health services. In order to obtain effective results in these analyses, it should also support decision-making based on ethical and social values. This study shows the suggestions and opportunities that CEA offers to managers and senior managers in the health sector and politicians to develop more equitable and sustainable health services.

Keywords: Cost-effectiveness analysis (CEA), health, health technology, pharmaceutical.

PP – 19

Medicinal Plants for the Treatment of Sinusitis

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Abstract

Sinusitis is an upper respiratory tract infection that results from the inflammation of the paranasal sinuses. It is commonly observed in the general population and significantly reduces the quality of life of affected individuals. This condition, which has a negative impact on daily functioning, is typically managed through conventional medical approaches, including the use of analgesics, decongestants, and antibiotics. However, the prolonged use of these medications may lead to various side effects and allergic reactions. In addition, it may contribute adversely to the development of antibiotic resistance. In recent years, with the increasing interest in natural and complementary therapies, medicinal plants have gained prominence as supportive or alternative treatment options for sinusitis. Notably, in certain cases, these plants have even demonstrated therapeutic effects. This study presents a comprehensive examination of medicinal herbs that may be utilized in the treatment framework of sinusitis. Through an extensive review of the literature, the anti-inflammatory, antimicrobial, and mucolytic properties of plants such as *Mentha piperita* (peppermint), *Thymus vulgaris* (Thyme), *Zingiber officinale* (ginger), *Nigella sativa* (black seed), *Eucalyptus sp*., and *Salvia officinalis* (sage) have been investigated. Furthermore, the active compounds of these plants, their mechanisms of action, and methods of application have been discussed in detail. The findings suggest that some herbal constituents may help reduce mucosal edema in the sinuses, facilitate drainage, and offer protective effects against infectious agents. Ultimately, this thesis aims to provide a scientific basis for the use of phytotherapeutic agents in the treatment of sinusitis.

Keywords: Inflammation, phytotherapy, medicinal plants, sinusitis.

PP – 20

Nanoparticles and Their Usage in Cancer Targeting

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Abstract

Nanoparticles are defined as fine particles with dimensions between 1 – 100 mm; these particles exist in nature and can be a result of human activities. Nanotechnology has long been studied and used in practical applications such as vaccine development, diagnosis, monitor, treatment, gene therapy and much more. NPs have a set of unique properties that differentiate them from conventional materials. Most important properties of NPs are there size, shapes and surface area. These characteristics are the highlights of the therapeutic efficacy of NP-drug delivery. They influence absorption, distribution, bioavailability, cellular toxicity, targeting, and elimination. The unique physicochemical properties of nanoparticles, including their very small size, large surface area-to-volume ratio, and ability to be functionalized with a wide array of biomolecules, render them ideal candidates for targeted drug delivery systems. These may be engineered to target the overexpressed receptors or antigens on cancer cells by conjugating specific ligands or monoclonal antibodies on the surface of nanoparticles so that the therapeutic payload is released right at the tumor site. Such targeted delivery mechanisms enhance not only the therapeutic index of anticancer agents but also reduce the adverse effects commonly associated with conventional chemotherapy.

Keywords: Anticancer agents, area-to-volume ratio, drug delivery, nanoparticles, nanotechnology, overexpressed receptors, surface area.

PP – 21

Plants That Play a Role in Women's Health

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Abstract

Women's health is one of the values that must be well-protected to preserve the quality of society in the developing world. In recent years, women's diseases have increased significantly due to reasons such as stress, radiation, environmental pollution, poor standard food sources, and unawareness. Modern medicine has different methods for the treatment or symptomatic relief of these gynecologic disorders. Medicinal plants, which have been used to heal since the beginning of humanity, also help treat women's diseases when used properly. Polycystic ovary syndrome (PCOS) is one of the most common endocrine disorders in women. *Aloe barbadensis* (Aloe vera) helps protect against PCOS by balancing ovarian hormone levels and influencing steroid production through compounds like phytosterols and phytophenols. It directly impacts key enzymes, such as 3β HSD, reducing their activity and modulating estradiol synthesis. In endometriosis, higher levels of estrogen can lead to more tissue growth and inflammation, which makes the condition increasingly painful. Curcumin in *Curcuma longa* helps reduce estrogen levels, endometriotic lesion size, angiogenesis, and lipid peroxidation. Phytoestrogens act as a human estradiol and bind to estrogen receptor so they can use hormone replacement therapy, especially for menopausal woman. *Trifolium pratense* (red clover), *Glycine max* (soybean) and *Actaea racemosa* (Black Cohosh), which can be used to reduce hot flashes in the symptomatic treatment of menopause, temporarily suppresses LH secretion by binding the terpene glycosides in its root to estrogen receptors. Additionally, isoflavones may help alleviate certain premenstrual symptoms due to their antioxidant properties, ability to inhibit angiogenesis, support neurobehavioral functions, and produce mild estrogenic and anti-estrogenic effects. While the usage of medicinal plants for symptomatic relief in women's health contributes to the improvement of daily life, it requires meticulous attention to dosage and interactions.

Keywords: Medicinal plants, phytotherapy, women's health, women's diseases.

PP – 22

The Economic Benefits of Clinical Pharmacy Services

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Abstract

Clinical pharmacy services (CPS), which provide significant financial advantages in addition to better therapeutic results, have become an essential part of contemporary healthcare systems. The financial benefits of implementing CPS in different healthcare contexts are examined in this abstract. Several studies have shown that pharmacists may save a lot of money by managing prescription treatment, preventing adverse drug reactions, and optimizing pharmacotherapy when they are directly involved in patient care. Drug-related morbidity and death are prevented, hospital readmissions are minimized, hospital stays are shortened, and medication mistakes are decreased in order to accomplish these savings. Additionally, it has been demonstrated that pharmacist-led interventions improve illness management and drug adherence, which further reduces healthcare consumption and costs. Economic assessments, such as cost-effectiveness and cost-benefit analysis, regularly show that CPS has a good return on investment (ROI). For example, estimations indicate that up to four dollars in healthcare savings can be obtained for every dollar spent on clinical pharmacy services. Notwithstanding these shown advantages, obstacles such a lack of finance, lack of knowledge among stakeholders, and regulatory limitations prevent CPS from being consistently incorporated into everyday practice. Policymakers and hospital managers must give the growth and institutional support of clinical pharmacy positions top priority if they are to fully realize the economic potential of CPS. In order to improve patient care and lessen the financial strain on healthcare systems throughout the world, this abstract emphasizes the necessity of ongoing investment in CPS.

Keywords: Clinical Pharmacy Services, economic Impact, cost-effectiveness, healthcare expenditure, pharmacist interventions, medication therapy management.

PP – 23

Molecular Pharmacognosy and Application

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Abstract

The discovery of the DNA structure marked a turning point in life sciences, fundamentally reshaping the perspective of researchers across related disciplines. This milestone enabled a deeper understanding of nature and governing principles of life at the macromolecular level. Subsequently, molecular biology advanced rapidly and became integrated into applied biomedical research, fostering the emergence of numerous interdisciplinary and frontier scientific fields. Technologies based on molecular cloning and recombination led to the development of genetic engineering tools, while tissue culture techniques particularly those involving molecular marker technologies based on polymerase chain reaction (PCR) gained widespread application. The advancement of these molecular tools significantly accelerated the progress of pharmacognosy, leading to broadening of its research scope and methodological approaches. The intersection and mutual integration of pharmacognosy and molecular biology ultimately gave rise to the novel interdisciplinary field known as molecular pharmacognosy. The field of pharmacognosy investigates the use of medical materials at the level of proteins and nucleic acids and provides the classification, identification, cultivation, preservation and production of components of medical materials at the molecular level. Molecular pharmacognosy has been rapidly developing in interdisciplinary areas in recent years and uses methods such as molecular cloning, genetic engineering, tissue culture and molecular markers. Based on current methods, it is important to diagnose disease agents in a short time and to apply appropriate treatment methods. Therefore, the application of current methods and the discovery of new methods are of great importance for this field. In short, molecular pharmacognosy is an important multidisciplinary field in the globalizing world every day.

Keywords: DNA, molecular biology, molecular pharmacognosy, pharmacognosy.

PP – 24

Bioproduction Process of Natural Products and Biopharmaceuticals

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Abstract

Natural products are chemical compounds produced from living organisms through either semisynthetic or synthetic processes. Throughout history, humans have relied on natural sources for essential needs such as food and medicinal treatments. In recent decades, extensive research has focused on natural herbs to discover and develop new therapeutic agents that promote human health with minimal or no side effects. Biopharmaceuticals are therapeutic preparations of proteins or nucleic acids produced through recombinant DNA technology, although smaller nucleotide assemblies are increasingly being synthesized using chemical methods. Bioproduction is a type of manufacturing or biotechnology that utilizes biological systems to produce commercially important biomaterials and biomolecules for use in medicines, food and beverage processing, and industrial applications. Decades of research have been put in place for developing sustainable routes of bioproduction of high commercial value natural products on the global market.

Keywords: Biopharmaceuticals, bioproduction, natural products, therapeutic.

PP – 25

The Elements Of Pharmacy Services and Customer Satisfaction

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Abstract

Pharmacies maintain the safety and effectiveness of medications while enhancing customer satisfaction through pharmacy services. Pharmacy services play a significant role in patients' experiences, including accessibility, pharmacist expertise, medication availability, quality of consultations, and customer service. Prescriptions should be filled promptly, communication should be clear, and patient-centered care should be provided. The ability of pharmacists to provide accurate medication counseling, address concerns, and tailor recommendations to the needs of their clients is an important factor for customer satisfaction. Furthermore, factors such as waiting time, convenience, digital services (for example, online prescription refills), and a warm environment contribute to positive experiences. Assurances of customer satisfaction are closely linked to the trust the patient has in pharmacists, the perceived quality of their services, and their general engagement with healthcare professionals. An effective pharmacy integrates technology, patient education, and efficient workflows to deliver quality services. A number of challenges can negatively affect the impression a pharmacy has on its customers, such as medication errors, long wait times, and a lack of interaction between pharmacists and patients. It is therefore imperative that staff training programs are continually improved, ethical standards are adhered to, and patient feedback mechanisms are added to maintain high-quality treatment. A customer-centered pharmacy service facilitates trust and leads to better health outcomes, as demonstrated by this research. By prioritizing professionalism, accessibility, and personalized care, pharmacies can enhance patient satisfaction, loyalty, and overall healthcare effectiveness. Future studies should explore innovative solutions, such as telepharmacy and artificial intelligence-driven customer support, to further optimize pharmacy services.

Keywords: Customer satisfaction, healthcare quality, medication counseling, trust in pharmacy, pharmacy services, patient-centered care.

PP – 26

The Effect of Health on Economics

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Abstract

Health is a fundamental driver of economic prosperity, influencing productivity, labor participation, and long-term growth. The World Health Organization defines health as a state of complete physical, mental, and social well-being, not merely the absence of disease. Health economics, an applied field of study, examines and finds systems-based solutions to make health care more equitable, accessible, and affordable for all. These studies indicate that better health increases labor market participation and worker productivity. Healthier populations tend to have higher life expectancies, which are associated with increased GDP per capita. Investments in health enhance human capital, fostering economic development. Conversely, poor health imposes significant economic burdens. For instance, in the world today, diseases have cost so many country billions of dollars annually. Such health challenges reduce workforce productivity and increase healthcare expenditures. Recognizing health as an economic asset underscores the importance of policy interventions. Policymakers must leverage data and economic modeling to design effective health policies that promote well-being and economic stability. By integrating health considerations into economic planning, societies can achieve sustainable growth and improved quality of life.

Keywords: Data modeling, GDP, health economics, life expectancy, policy interventions, workforce productivity.

PP – 27

Multifunctional Cosmeceutical Formulations

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Abstract

The evolution of modern skincare has created growing demand for products that provide therapeutic benefit and cosmetic beauty. Multifunctional cosmeceuticals combine moisturizing, photoprotection, anti-aging, and antioxidant activities in a single product, streamlining routines and addressing several skin concerns at once. In this study, the rationale and design strategies of multifunctional cosmeceuticals are thoroughly discussed. Formulation strategies entail strategic selection of complementing actives such as stabilized derivatives of vitamin C, palmitoyl tripeptide-1, and ultraviolet broad-spectrum protectants. The actives are stabilized and formulated by sophisticated delivery systems such as microencapsulation, nanoliposomes, and protective coatings to offer bioavailability and prevent degradation. Critical parameters such as solubility, pH compatibility, and synergistic interactions determine the formulation of stable formulations. Sensory characteristics of texture, spread, and odor are engineered to deliver enhanced consumer acceptability. Rigorous in vitro and in vivo testing establishes performance standards, with dramatic leaps in levels of hydration, collagen synthesis, and effective neutralization of reactive oxygen species. Everyday case examples such as multifunctional sunscreens, anti-wrinkle creams, and two-in-one shampoos illustrate everyday use and offer synergistic benefits without sacrificing single-active efficacy. This comprehensive review is a formula for future cosmeceutical advancement. The research proves that multifunctional cosmeceutical products have unique advantages to efficacy, convenience to consumers, and skin care through the combination of cosmetics and medicine. The application of more than one active ingredient and delivery vehicle makes best regimens easier and optimizes results. Continued innovation in customized skin care treatments and delivery platforms will realize the full potential of multifunctional products and increase satisfaction with a broad range of skin types.

Keywords: Anti-aging, antioxidants, cosmeceuticals, multifunctional, skincare, UV protection.

PP – 28

Entamoeba histolytica Infections: Microbiology, Epidemiology, and Pathogenesis

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Abstract

Entamoeba histolytica is a protozoan parasite causing significant morbidity and mortality worldwide, particularly in regions with poor sanitation. Epidemiological data indicate high endemicity in subtropical and tropical developing countries, with emerging cases in developed nations due to migration and travel. Pathogenesis involves mucin adhesion via the Gal/GalNAc lectin, cysteine protease–mediated mucosal degradation, and host-cell killing via trogocytosis and apoptosis, eliciting robust inflammatory responses. Clinically, infection manifests predominantly as intestinal amoebiasis, characterized by abdominal pain, diarrhea, and ulceration, and extraintestinal disease such as liver abscess especially in severe cases. Diagnosis relies on microscopy, antigen detection, serology, and molecular techniques such as PCR to distinguish pathogenic *E. histolytica* from non-pathogenic *Entamoeba* species. Treatment combines nitroimidazoles targeting trophozoites with intraluminal agents such as paromomycin to eliminate cysts. Preventive measures focus on improving water quality, sanitation, and personal hygiene. Understanding the complex interplay between parasite virulence factors and host immune responses is critical for developing improved diagnostics, therapeutics, and vaccines.

Keywords: Amoebiasis, cyst, epidemiology, *Entamoeba*, microbiology, pathogenesis.

PP – 29

Synthesis, Characterization and Cytotoxic of Novel Naphthoquinone-N-phenyl Acetamide Hybrid Derivatives for the New Anticancer Leads

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Abstract

Cancer is a complex disease representing the second leading cause of death worldwide, accounting for about 10 million deaths in 2020, as reported by the World Health Organization. Cancer is the abnormal growth of cells. Cancers arise from any organ or body structure and are composed of tiny cells that have lost the ability to stop growing. Transformation of a normal cell into a cancerous cell is probably not such a critical event in the genesis of cancer; rather it is the inability of immune cells of the body to identify and destroy the newly formed cancer cells when they are a few in numbers. Naphthoquinone derivatives, including N-phenyl acetamide, have garnered interest in cancer research due to their potential anticancer activities. Naphthoquinones are known for their ability to induce apoptosis (programmed cell death), inhibit cell proliferation, and exert cytotoxic effects on various cancer cell lines. • Various studies have shown that naphthoquinone derivatives exhibit cytotoxic effects against a range of cancer types, including breast, lung, and leukemia cells. The N-phenyl acetamide derivative has been explored for its ability to enhance the anticancer effects of other therapeutic agents or to overcome drug resistance in certain cancer types. For this thesis, the main chemical reaction that has been used is Amidation. Naphthoquinone attached to phenyl acetamide by Michael Addition reaction. Then new structure attach to an amine such as Benzyl amine by Amidation reaction. Then theproceed of purification starts. By recrystallization the unwanted products get eradicated.

Keywords: Amidation, cancer, naphthoquinone.

PP – 30

Polymeric Scaffolds for 3D Culturing

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Abstract

Current strategies in regenerative medicine focus on restoring damaged or pathologically altered tissue architectures through the transplantation of cells in combination with supportive scaffolds and bioactive molecules. Scaffolds, which serve as synthetic frameworks, matrices, or constructs, play a crucial role by providing a temporary structure that supports cell attachment, proliferation, and extracellular matrix (ECM) deposition until the tissue is fully regenerated. Recent advances emphasize biologically active scaffolds that mimic the native ECM and actively promote tissue synthesis and organ regeneration. These scaffolds have been applied in engineering a variety of tissues, including bone, cartilage, ligaments, skin, vascular and neural tissues, and skeletal muscle. They are also used as delivery vehicles for the controlled and targeted release of therapeutic agents such as drugs, proteins, and DNA. Over the past few decades, biomaterials science has evolved significantly, with growing interest in developing materials specifically for biomedical applications. Originally focused on mechanical performance and biocompatibility, modern biomaterials are now designed to actively interact with biological systems, enhancing their functionality in regenerative applications. Various technologies have been developed to fabricate porous scaffolds with desirable properties such as strength, degradation rate, porosity, and bioactivity, all of which are critical for effective tissue regeneration. Polymeric scaffolds, in particular, allow for precise control over these parameters. This thesis provides an overview of the different types of scaffolds used in tissue engineering, discussing their material properties and biological relevance. Furthermore, it outlines key fabrication techniques, ranging from conventional methods to more advanced approaches, aimed at optimizing scaffold performance for clinical applications.

Keywords: Biomaterials, extracellular matrix (ECM), regenerative medicine, scaffolds.

PP – 31

Searching Synergistic Drug Combinations in Cancer

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Abstract

There is a growing interest in using drug combinations to have increased effectiveness and reduced toxicity in cancer treatment. The goal is also to avoid drug resistance, which often serves as one of the important limiting factors in cancer treatment. Resistance to treatments forms a barrier for patients and could result in relapse and metastasis to other sites in the body. Considering the complexity and heterogeneity of cancer, targeting multiple pathways with synergistic drug combinations using drugs with different mechanisms of actions or drugs that target different aspects of cancer cell biology, enhance drug efficacy, potency and reduce toxicity. The key goal of this research is to review literature and provide an overview of drug combinations that resulted in synergistic effects. This would allow us to investigate especially classes are able to give such synergistic effects when used in combinations. There are promising results from the combination of chemotherapy with targeted therapies or immunotherapy. Studies have demonstrated that synergistic combinations can significantly enhance cancer cell apoptosis, inhibit tumor growth, and prevent metastasis which helps to reduce the risk of resistance and improve therapy efficacy. The combination of immune checkpoint inhibitors with chemotherapy demonstrated improved clinical outcomes in various cancers. For example, the combination of nivolumab and ipilimumab with chemotherapy in patients with metastatic lung cancer resulted in enhanced overall survival compared to chemotherapy alone. Additional benefit with combined use of drugs with different mechanisms of action is that their doses may be lower than monotherapy. Therefore, using combinations of anticancer drugs at lower doses could allow patients to continue their treatment, which could be disturbed due to occurrence of adverse effects or dose-limiting toxicity such as myelosuppression. Thus, use of agents at lower doses to reduce toxicity is an attractive approach to reach a successful treatment to reduce morbidity and mortality.

In conclusion, this review focuses to summarize synergistic drug combinations. These combinations have the potential to reduce resistance, improve efficacy, and decrease treatment-related toxicity. All in turn could lead to the increase in survival.

Keywords: Cancer, chemotherapy, efficacy, monotherapy, toxicity.

PP – 32

Gene Therapy, Its Importance and Limitations

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Abstract

Gene therapy is a currently evolving aspect of modern medicine, offering the promise of treating and even rectifying genetic defects at their very source—genes, through editing or replacing faulty genes, thereby revolutionising the treatment of inherited and acquired diseases. Using sophisticated technologies like CRISPR-Cas9, TALENs, ZNFs, viral and non-viral vectors, and RNA-based therapy, gene therapy has provided a multifaceted approach for the treatment of conditions previously deemed untreatable and incurable. Through precise targeting and gene modifications, gene therapy addresses the root causes of the disease at the molecular level, providing avenues for personalized medicine and pharmacogenomics. Nonetheless, despite its promising potential, this revolutionary field faces significant challenges. Limitations such as insertional mutagenesis, off-target genetic modifications, immune response, efficient and safe delivery methods, high cost, and ethical concerns, especially with germline editing, demonstrate the problems that militate against exploring the full potential of gene therapy. This thesis surveys the technologies driving gene therapy through insights from molecular biology and bioengineering, their significance, and examination of both preclinical and clinical findings and ethical challenges to present the current landscape of gene therapy what must be addressed to realize its full potential. This work argues that although groundbreaking, a balanced understanding of both its potentials and constraints is essential for navigating prospects in this field.

Keywords: Gene therapy, germline editing, non-viral vectors, somatic therapy, viral vectors.

PP – 33

Sustainable and Biodegradable Materials in Cosmetic Formulations: Challenges, Innovations, and Future Perspectives

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Abstract

The cosmetics sector has become increasingly sustainable as both consumers and regulation have insisted on it. The synthetic ingredients in the classical sense, such as petrochemical derivatives and microplastics, have caused tremendous environmental problems through their destructive impact on ecosystems. There has therefore been a significant shift towards biodegradable and green products. This research examines the role of green chemistry and biodegradable ingredients in contributing to cosmetic formulations, with a special emphasis on plant-based materials, biosurfactants, and agricultural waste upcycling. The use of plant-derived materials like Aloe Vera and coconut oil, along with biosurfactants derived from microbial fermentation, has gained widespread popularity due to their green benefits. These materials offer biodegradability, reduced toxicity, and a reduced environmental footprint. In addition, upcycling agricultural by-products like fruit peels and coffee grounds is a feasible alternative for waste reduction while providing useful bioactive compounds for cosmetic use. Despite these environmental advantages, the use of biodegradable materials is confronted with a number of challenges, including increased production costs, formulation stability and large-scale implementation issues. Case studies give the evidence of viable biodegradable material uses, such as poly(lactic acid) (PLA) in cosmetic packaging and anti-ageing creams made from plant-based sources. These cases show that while switching to green cosmetics is difficult, there is great potential for minimizing environmental impacts and consumer demand for lower-impact cosmetics. Subsequent work must focus on improving manufacturing techniques, making green products more cost-effective, and discovering new sustainable materials. The beauty market will be forced to continue evolving to meet shifting consumer demands and comply with regulatory needs.

Keywords: Biodegradable, cosmetics, green chemistry, innovation, sustainability.

PP – 34

Formulation and Efficacy of Collagen-Based Cosmetic Products

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Abstract

The purpose of this study is to evaluate the types and efficacy of collagen-based cosmetics. Collagen is an important ingredient in many of the products, as it is known to enhance skin elasticity and moisture retention. With the rising demand for anti-aging products, the use of collagen in dermatology and cosmetic applications has drawn attention. Various types of collagen (marine, bovine, synthetic) were investigated in this study in an attempt to determine their function in different formulations. The study also tested co-addition of collagen stabilizers (with/without skin penetration enhancing ingredients). The study was also aimed at the delivery systems (liposomes, nanoemulsions) that allow the penetration of the collagen to underlying skin layers. Such systems not only protect collagen but increase the overall efficaciousness of the product. Per the studies and customers who use the products, “A lot of collagen products make an aesthetic difference almost immediately,” like a glowing complexion or lessening fine lines, in the short term. But as with most skincare claims, such results depend much on diligence and on the product being well-formulated. In summary, the results of this study suggest that the efficacy of collagen cosmetic products depends on intrinsic qualities of the ingredients as well as the method of delivery to the skin.

Keywords: Collagen, cosmetics, delivery systems, elasticity, skin care.

PP – 35

Novel Antimicrobial Drug Approvals between 2023-2024

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Abstract

Antimicrobial resistance has become a growing global health concern, necessitating the urgent development and application of novel antimicrobial agents. This study focuses on newly approved antimicrobial drugs between 2023 and 2024, analyzing their mechanisms of action, indications, and potential roles in combating resistant infections. The research highlights several recently authorized agents including Beyfortus (Nirsevimab) for RSV prophylaxis, Xacduro (Sulbactam–Durlobactam) and Exblifep (Cefepime–Enmetazobactam) for multidrug-resistant Gram-negative infections, Paxlovid for COVID-19 treatment, and Zelsuvmi for molluscum contagiosum. These drugs were evaluated based on their pharmacodynamic properties, administration routes, target pathogens, and therapeutic advantages. The methodology involved literature review from clinical trials, FDA approvals, and pharmacological databases. Drugs were selected based on recency (2023–2024), novelty of mechanism, and relevance to current clinical needs. Emphasis was placed on agents offering new modes of action or improved efficacy against resistant organisms. The study concludes that these novel antimicrobial agents represent significant advancements in infectious disease therapy. Their integration into clinical protocols offers hope in the fight against resistant pathogens, provided they are accompanied by responsible antimicrobial stewardship. Continued innovation, combined with global regulatory and clinical collaboration, is essential to sustain progress in this field.

Keywords: 2023 approvals, 2024 approvals, antimicrobial resistance, drug development, infectious diseases, novel antibiotics.

PP – 36

Drug Induced Lupus

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Abstract

Long-term exposure to certain medications can cause drug-induced lupus (DIL), a reversible autoimmune disease bearing clinical and serological characteristics similar to but distinct from systemic lupus erythematosus (SLE). The basis of DIL results from compromised immune regulation and a breakdown in self-tolerance, which can be attributed to genetic factors such as complement components, specific HLA alleles, and rapid acetylator phenotypes. Particularly when used with medications like procainamide and hydralazine. Drugs are metabolically converted into reactive intermediates, frequently by hepatic cytochrome P450 enzymes or neutrophil-mediated oxidation; these attach to self-macromolecules, creating neoantigens. Dendritic cells present these neoantigens to autoreactive T-helper cells, triggering B cell activation and autoantibody formation, especially anti-histone antibodies .In terms of clinical manifestations, DIL is marked by symptoms like fever, serositis, myalgia, malaise, and arthralgia, unlike severe organ involvement and malar rash (a classic SLE feature). Laboratory tests usually show positive antinuclear antibodies (ANA), particularly anti-histone antibodies, while specific SLE antibodies (like anti-dsDNA and anti-Sm) are rare. DIL differs from idiopathic SLE in that its symptoms go away when the offending medication is stopped. Procainamide and hydralazine pose the highest risk of drugs that cause DIL. The mainstay of DIL management is stopping the causing medication, which results in improving symptoms. Although some severe cases require short-term immunosuppressives. Eventually, this study aims to shed light on how abnormalities in immunity and drug metabolism may lead to loss of self-tolerance, providing additional details about the genesis and pathogenesis of systemic autoimmunity.

Keywords: Autoantibodies, autoimmune disease, drug-induced lupus, drug metabolism, immune tolerance, pathogenesis.

PP – 37

Treatment of Hypothyroidism in Elderly Patients

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Abstract

Hypothyroidism is an endocrine condition that affects a considerable percentage of elderly people. Its management in elderly patients poses special difficulties because of age-related changes, comorbidities, and polypharmacy. The levothyroxine, used as a routine therapy, needs titration with caution to avert potential complications like cardiovascular events and osteoporosis. This thesis discusses the pathophysiology, diagnosis, management strategies, and difficulties in treating hypothyroidism in elderly patients. Subclinical hypothyroidism, monitoring protocols, and new trends in therapy to achieve maximum benefit for patients receive special consideration.

Keywords: Elderly, hypothyroidism, treatment.

PP – 38

Drugs used for Neurological Diseases in 2023

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Abstract

Alzheimer's disease (AD) has been identified as a progressive brain disorder associated with memory dysfunction and Key pathological features include with the earliest phase of (cellular phase), accumulation of amyloid-beta plaques, parallel with neurofibrillary tangles composed of hyperphosphorylated tau protein, cholinergic neuron degeneration, and glutamate-induced. Memantine is a non- competitive NMDA receptor antagonist.in Alzheimer disease excess glutamate overstimulates NMDA receptors and excess calcium enter the nerve, which damage and kills brain cells. Galantamine is an oral acetylcholinesterase inhibitor and works by increasing the level of acetylcholine in the brain which helps to improve communication between nerves.Duchenne muscular dystrophy is a severe, progressive, muscle-wasting disease that leads to difficulties with movement and, eventually, to the need for assisted ventilation and premature death. Duchenne muscular dystrophy (DMD) is caused by mutations in the DMD gene, which result in the absence or severe deficiency of dystrophin, a cytoskeletal protein located on the inner surface of muscle fibers. Dystrophin connects the cytoskeleton of a muscle fiber to the surrounding extracellular matrix through the dystrophin-associated glycoprotein complex. Vamorolone is a corticosteroid drug and works by binding to the glucocorticoid receptor and modulating gene expression to reduce inflammation.

Keywords: Alzheimer diseases, duchenne muscular dystrophy, galantamine, vamorolone.

PP – 39

Cell Regenerative Plants and Their Uses

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Abstract

Cell regenerative plants are characterized by their remarkable ability to regenerate damaged tissues and organs. They have garnered significant attention in the field of plant biology and regenerative medicine. This thesis explores the mechanisms underlying plant cell regeneration, examining the biological processes, molecular pathways, and environmental factors that influence plant tissue regeneration. Additionally, the potential applications of these plants in various fields, including agriculture, biotechnology, and medicine, are discussed. By harnessing the regenerative properties of certain plants, it is possible to develop sustainable agricultural practices, improve crop resilience, and create innovative approaches to tissue repair and regeneration in both plants and animals. Through an in-depth review of case studies and experimental research, this work highlights the promising uses of cell regenerative plants and provides a framework for future exploration and application in regenerative technologies. Ultimately, the findings of this thesis contribute to a greater understanding of plant regenerative capabilities and their potential to revolutionize both the agricultural and biomedical sectors.

Keywords: Biological processes, environmental factors, molecular pathways, plant cell regeneration, potential applications and uses.

PP – 40

Preparation and Characterization of a Surfactant-Stabilized Nanosuspension of Bipyridine-Coordinated Zn(II) Complex

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Abstract

Following the discovery of cisplatin as a metal-based anticancer drug, metal coordination complexes have become widely studied for cancer therapy. However, a significant limitation in their clinical development is poor water solubility, which restricts oral bioavailability and therapeutic efficacy. As a result, formulation strategies such as nanosuspensions have gained interest due to their ability to improve solubility and delivery. Nanosuspensions are colloidal dispersions containing the active compound and stabilizing agents with particle sizes below 1000 nm. In this study, we synthesized a zinc(II) complex coordinated with 4,4'-dimethoxy-2,2'-bipyridine (Zn(2MeObpy)32) and developed a nanosuspension formulation using the antisolvent precipitation method. Various surfactants, including non-ionic (Tween® 60, Tween® 80) and ionic (SDS), were evaluated to optimize stability. The final formulation was characterized by FT-IR, UV-Vis spectroscopy, dynamic light scattering (DLS), zeta potential, and FE-SEM. This approach aims to enhance the solubility and delivery potential of poorly water-soluble metal-based compounds.

Keywords: Bipyridine, metal complex, nanosuspension, surfactant, zinc(II).

PP – 41

What is Biomimetic Chemistry?

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Abstract

Biomimetic chemistry operates as an interdisciplinary research area to reproduce natural design processes and principles for creating inventive solutions for scientific and industrial challenges. This research examines biomimetic chemistry from theoretical standpoints while investigating actual implementations together with potential advancements toward sustainable energy phenomena and medical breakthroughs including environmental sustainability. Chemical synthesis received a breakthrough from biomimetic catalysts which use natural enzyme mechanisms to achieve selective reactions at reduced energy requirements. Bioinspired structural and self-healing materials developed in materials science enable the continued development of aerospace engineering and robotics as well as biomedical engineering applications. The sustainable energy solutions find their way through artificial photosynthesis while bioinspired energy storage systems contribute to this advancement. The development of superior drug delivery networks, restorative treatments, and medical diagnostic capabilities stems from biomimetic chemical research in medicine. The wide prospects of biomimetic chemistry encounter obstacles because of complex biological system imitation and economic constraints for commercial usage and insufficient connections between scientific disciplines. Scientists plan to direct future research efforts towards using computational modelling with artificial intelligence and biohybrid materials to boost the efficiency and practicality of biomimetic innovation. Biomimetic chemistry brings nature's efficient adaptive behaviour to solve national problems in sustainable development and healthcare while advancing technological progress.

Keywords: Biomimetic chemistry, bio-mimetic catalyst, sustainable energy, biohybrid materials, biological imitation, chemical synthesis.

PP – 42

The Evaluation of Oxidation Stress in Thyroid Disease

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Abstract

The thyroid gland plays a critical role in regulating metabolism through hormones such as triiodothyronine (T3) and thyroxine (T4). Emerging research highlights a significant association between thyroid dysfunction and oxidative stress—a condition arising from an imbalance between reactive oxygen species (ROS) and antioxidant defenses. This study evaluates oxidative stress levels in individuals with hypothyroidism, hyperthyroidism, and autoimmune thyroiditis in comparison to healthy individuals. In hypothyroidism, slowed metabolism leads to mitochondrial inefficiency, increasing ROS and decreasing levels of key antioxidants like superoxide dismutase (SOD) and glutathione peroxidase (GPx). Hyperthyroidism, with its heightened metabolic rate, also results in elevated ROS production due to increased energy output. Both conditions exhibit a marked rise in oxidative stress markers. Autoimmune thyroiditis, including conditions such as Hashimoto's and Graves' disease, is characterized by chronic immune activation. Immune cells such as macrophages and neutrophils release excessive ROS during inflammation, further contributing to oxidative damage and thyroid tissue deterioration. Comparative analysis reveals that all thyroid disorders are linked to elevated oxidative stress, with autoimmune thyroid diseases showing the highest ROS levels and most pronounced antioxidant depletion. These findings underscore the central role of oxidative stress in thyroid disease pathology. Evaluating oxidative stress biomarkers may enhance diagnostic accuracy and inform more targeted treatments. Strategies aimed at boosting antioxidant capacity could offer therapeutic benefits and reduce long-term complications. Further research into oxidative stress dynamics in thyroid disorders may provide deeper insights for improving patient outcomes.

Keywords: Antioxidants, hyperthyroidism, hypothyroidism, oxidative, stress reactive, oxygen, species (ROS), thyroid disease.

PP – 43

Drug Induced Hypothyroidism

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Abstract

Thyroid gland synthesize Thyroxine (T4) and Triiodothyronine (T3) hormones which regulates the metabolism of the human body. Hypothyroidism is a clinical state which results from inadequate thyroid hormone synthesis and can be classified as primary (peripheral; defective thyroid tissue) and secondary (central; defective hypothalamus-pituitary axis) based on the impaired hormone synthesis level with primary hypothyroidism being far more common. While autoimmune thyroiditis and iodine deficiency are leading causes of primary hypothyroidism, drug-induced cases represent an increasingly recognized etiology in clinical practice. Some well known agents can interfere with thyroid hormone production through mechanisms such as impaired hormone synthesis, iodine uptake inhibition, or thyroidal cytotoxicity. Therefore, regular monitoring of patients receiving these treatments is essential. Some common examples of drugs that may cause hypothyroidism as an adverse effect are anti-neoplastic agents, immunotherapy agents, lithium carbonate, amiodarone, quetiapine, phenytoin and gabapentin. In contrast, thionamides and radioactive iodine are therapeutically used to suppress thyroid function in hyperthyroid conditions. Hypothyroidism may manifest itself in a variety of clinical signs and symptoms including fatigue, weakness, depression, memory loss, cold intolerance, cardiovascular effects, peripheral edema. However, it may be overlooked in patients with complex co morbidities or polypharmacy. Awareness of adverse effects is important for prompt diagnosis and treatment. Therefore, clinical vigilance is crucial. Definitive diagnosis is made bylaboratory tests including blood levels of TSH, free T4. Treatment typically involves levothyroxine through individualized dosing and monitoring. Unfortunately, rising use of medications, specifically in aging populations with multiple co morbidities may result in drug-induced thyroid dysfunction. Raising awareness among healthcare providers about drugs that may cause thyroid imbalance, familiarity with clinical manifestations, regular monitoring are crucial for prompt diagnosis and treatment. Additionally, the growing number of new drugs in the market, pharmacovigilance is also important for early detection and effective management of this preventable condition. Considering the era of overwhelmed healthcare system, the pharmacist's role as front line healthcare professionals is critical.

Keywords: Drug induced hypothyroidism (DIH), hypothyroidism, pharmacists role.

PP – 44

Nanotechnology in Cosmetics

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Abstract

Nanotechnology represents a promising advancement in cosmetic science, offering innovative solutions to enhance product efficacy, stability, and consumer satisfaction. This poster explores the application of nanotechnology in cosmetics, detailing its potential to overcome limitations associated with traditional formulations. Nanomaterials such as niosomes, liposomes, nanocapsules, and dendrimers have been widely utilized in skincare, haircare, lip care, and nail care products. The integration of nanoscale materials allows for controlled, targeted delivery, improved dermal penetration, better bioavailability, and enhanced aesthetic appeal. However, concerns regarding nanoparticle toxicity, environmental impact, and long-term safety persist, emphasizing the need for careful regulatory oversight. A timeline highlights key developments in the field, from the introduction of niosomes in 1975 to the emergence of nanoparticle-based products in the 2000s. A notable milestone is Dior Capture Totale, the first cosmetic product to utilize nanotechnology. It features lipid-based nanocapsules containing active ingredients like Longoza extract and hyaluronic acid for improved skin penetration and anti-aging effects. Furthermore, the global nanocosmetics market is experiencing significant growth, projected to reach $17.73 billion by 2029 with a CAGR of 16.2%. Despite its advantages, nanocosmetics face regulatory challenges, consumer concerns, and toxicity risks, particularly involving materials like TiO_2 and ZnO under UV exposure. This poster presents a balanced overview of nanotechnology's potential in cosmetics, its advantages, drawbacks, and future market outlook.

Keywords: Consumer safety, nanocosmetics, nanomaterials, skincare, targeted delivery.

PP – 45

Evaluation of the Antibacterial Activity of *Rosmarinus officinalis* L. Essential Oil and Hydrosol

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Abstract

Rosmarinus officinalis L. is a medicinal plant widely used in traditional medicine due to its bioactive compounds. This study aimed to evaluate the antibacterial activity of its essential oil and hydrosol against Methicillin-Resistant *Staphylococcus aureus* (MRSA).

The aerial parts of *R. officinalis* were air-dried, powdered, and subjected to hydro-distillation using a Clevenger apparatus to extract essential oil and hydrosol. Antibacterial activity was tested against MRSA using the well diffusion method on Mueller-Hinton Agar, and inhibition zones were measured in millimeters.

The essential oil and hydrosol demonstrated inhibition zones of 13.6 mm and 16.6 mm, respectively. This antibacterial effect is attributed to the presence of flavonoids, rosmarinic acid, and carnosol.

The essential oil and hydrosol of *R. officinalis* exhibited moderate to high antibacterial activity against MRSA. These natural products may serve as promising alternatives or complements to conventional antibiotics in treating resistant bacterial infections.

Keywords: Antibacterial, essential oil, MRSA*, Rosmarinus officinalis.*

PP – 46

Medicinal plants used in wound healing

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Abstract

A wound is defined as a disruption of the skin's epidermis, which can lead to infection and potentially sepsis. In other words, wounds may result in physical disabilities and can be caused by sharp objects, as well as physical, thermal, chemical, or microbial damage to tissues. Wounds not only affect an individual's physical and mental health but also impose a significant economic burden. The body has developed protective mechanisms to manage and heal such injuries. The wound healing process in the skin is complex and requires the coordinated efforts of various tissues. It generally occurs in three main stages: inflammation, new tissue formation, and remodeling. While many conventional therapeutic agents used for wound healing may have side effects or limited effectiveness, medicinal plants have been used since ancient times for their healing properties. Numerous plants have been reported to exhibit wound healing activity, and hypersensitivity reactions or other side effects are rarely observed. Herbal therapy represents a promising strategy for wound management. Therefore, the aim of this review is to provide reliable data on the wound healing potential of medicinal plants, highlighting their active constituents, significant biological activities, and the molecular or cellular mechanisms involved in the healing process through their extracts, fractions, and isolated compounds.

Keywords: Herbal therapy, medicinal plants, sepsis, tissue regeneration, wound healing, wound infection.

PP – 47

Essential Oils and Blood-Brain Barrier Interaction

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Abstract

Essential oils have been used in traditional and complementary medicine for their aromatic and therapeutic properties, and recent research suggests their potential in treating neurological and mental health conditions. This thesis explores how essential oils interact with the blood-brain barrier (BBB), focusing on their pathways, permeability, and therapeutic implications. The study begins with an overview of the BBB, which protects the central nervous system (CNS) and regulates the entry of substances into the brain. It then examines how essential oils cross the BBB through mechanisms such as passive diffusion, carrier-mediated transport, and modulation of BBB permeability. The methodology includes selecting essential oils and using both in vitro and in vivo models to evaluate their ability to penetrate the BBB, while addressing ethical considerations and research limitations. Key molecular components, especially terpenes, are studied to understand their influence on BBB permeability, highlighting their potential as neuroprotective agents. The therapeutic effects of essential oils on neurological and mental health conditions, such as Alzheimer's Disease, anxiety, depression, migraines, sleep disorders, epilepsy, cognitive function, and Parkinson's Disease, are explored. Evidence of their efficacy and mechanisms of action are reviewed. Safety concerns, such as skin irritation, photosensitivity, allergic reactions, respiratory issues, and toxicity, are also considered, and guidelines for safe use are provided. The thesis concludes that essential oils may serve as complementary treatments for neurological and mental health disorders, emphasizing the need for further research to confirm their safety and effectiveness. The findings support the integration of essential oils into holistic healthcare approaches, particularly in relation to their impact on the blood-brain barrier.

Keywords: Essential oil, blood brain barrier, terpenes, safety concerns, central nervous system.

PP – 48

Natural Colorants Used in Cosmetic and Pharmaceutical Industry

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Abstract

Coloring agents, which encompass all organic, inorganic, natural, and synthetic substances capable of imparting color, have played a significant role in human civilization since ancient times. These agents continue to be extensively utilized across various sectors, including pharmaceuticals, cosmetics, food, and textiles. Among these, natural colorants derived from biological sources such as plants, animals, and microorganisms have garnered increasing attention due to their eco-friendly nature and potential health benefits. Unlike synthetic colorants, which are often favored for their stability and lower cost but are associated with adverse health effects such as carcinogenicity and allergic reactions, natural colorants offer a safer alternative with fewer toxicological concerns. Natural pigments, including carotenoids, anthocyanins, chlorophylls, betalains, and melanin, can be extracted from various biological sources like roots, stems, leaves, flowers, insects, fungi, bacteria, and algae. These pigments not only serve as coloring agents but also exhibit significant pharmacological properties such as antioxidant, anti-inflammatory, antimicrobial, and anticancer activities, which contribute to their growing application in the pharmaceutical and cosmetic industries. The demand for natural colorants is further fueled by consumer preferences for safer, non-toxic, and sustainable products, as well as regulatory restrictions on the use of certain synthetic dyes.

Keywords: Colorants, Natural pigments, Synthetic dyes.

PP – 49

Preliminary Study on the Formulation and Characterization of Solid Lipid Nanoparticle (SLN) Bases for Topical Application via High-Shear Homogenization

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Abstract

Solid lipid nanoparticles (SLNs) represent a promising platform for topical drug delivery due to their biocompatibility, occlusive properties, and ability to enhance drug penetration, while possessing key advantages in shelf life and loading capacity compared to their nanoemulsion counterparts. This study aimed to develop plain SLN bases using high-shear homogenization and to evaluate the impact of lipid and surfactant concentrations on physicochemical properties. Witepsol® H15 (WH15) was used as the lipid matrix, PEG 4000 as a co-stabilizer (1% in all formulations), and Tween® 80 (TW80) as the surfactant. For each formulation, ingredients were first melted and mixed to obtain a uniform lipid phase, which was then dispersed in an aqueous phase using high-shear homogenization. Three formulations were prepared: Form.1 (0.5% WH15, 2% TW80), Form.2 (2% WH15, 4% TW80), and Form.3 (5% lipid, 6% surfactant). The formulations were characterized for particle size, polydispersity index (PDI), and Zeta potential. Results showed a reduction in particle size with increasing lipid and surfactant levels: 243.0 nm (Form.1), 151.1 nm (Form.2), and 78.83 nm (Form.3). The PDI values ranged from 0.481 to 0.370, indicating moderate to good homogeneity. Zeta potential values were negative across all formulations (Form.1: -7.03 mV; Form.2: -9.10 mV and Form.3: -13.0 mV), suggesting increasing physical stability with the increase in concentration. These findings indicate that the particle size and stability of SLN formulations can be effectively modulated by altering the composition, supporting their potential use as topical delivery bases.

Keywords: Nanoparticle characterization, solid lipid nanoparticles, topical delivery, tween 80, witepsol H15.

PP – 50

Preliminary Study on the Impact of Hyaluronic Acid on Powder Flow and Compressibility Properties

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Abstract

Hyaluronic acid (HA) possesses high molecular weight, intrinsic mucoadhesive affinity, and excellent biocompatibility for buccal applications. However, HA alone fails to meet pharmacopeia requirements for powder flow and compressibility in direct-compression tablets, rendering it unsuitable as a standalone excipient. In addition to its mucoadhesive function, HA actively promotes tissue healing by modulating inflammation, supporting re-epithelialization, enhancing angiogenesis, and facilitating extracellular matrix deposition, making it an ideal matrix for oral wound therapy. To overcome these handling limitations, three HA-based excipient blends were developed alongside an HA-free reference. Formulations were prepared by direct-compression, incorporating HA with combinations of mannitol, corn starch, Hydroxypropyl methylcellulose (HPMC), Polyvinylpyrrolidone (PVP), and Gelatin. Powder flow and compressibility were assessed via angle of repose, Hausner ratio, and compressibility index. Among all blends, the HPMC + gelatin binder system provided the most pronounced enhancement. By combining HA with HPMC, gelatin, corn starch, and lactose, powder cohesion was optimized, achieving an angle of repose of 17.5°, a Hausner ratio of 1.05, and a compressibility index of 5%, all well within pharmacopeia limits. Blends using only PVP or gelatin achieved only moderate improvements, underscoring the synergistic effect of HPMC's binding capacity coupled with gelatin's lubricating function. Comprehensive characterization, including powder flow metrics and tensile mucoadhesion assays on porcine buccal mucosa, confirmed that strategic excipient synergy imparts HA with the flowability and compaction profiles required for direct compression. These optimized tablets harness HA's mucoadhesive, healing, and sustained-release properties while ensuring manufacturability and dosage uniformity. This formulation approach establishes a novel platform for localized buccal therapies, such as ulcer management and wound healing, demonstrating HA's potential as a primary bioadhesive matrix in solid dosage forms.

Keywords: Bioadhesive buccal tablet, buccal drug delivery, formulation enhancement, hyaluronic acid, mucoadhesio.

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Pharmacognostical study of the endemic *Centaurea calcitrapa* subsp. *angusticeps* (H.Lindb.) Meikle

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Abstract

Due to their therapeutic qualities, medicinal plants have been utilized extensively throughout history to treat a range of illnesses. The anatomical investigation and phytochemical analysis of *Centaurea calcitrapa* subsp. *angusticeps*, an endemic member of the Asteraceae family growing in Cyprus with therapeutic properties, is the main subject of this work. Powdered aerial parts of *Centaurea calcitrapa* subsp. *angusticeps* were grounded and investigated for key botanical elements of the *Centaurea* genus including stomata, trichomes, pollen grains and cross section of leaf and stem. General phytochemical screening was performed to detect important bioactive secondary metabolites groups after extraction of powdered aerial parts with solvents of increasing polarity namely; hexane, chloroform and ethanol. The existence of tannins, flavonoids, steroids, alkaloids, glycosides, and coumarins were verified by the analysis in the ethanolic extract which are linked to anti-inflammatory, antioxidant, and other possibly therapeutic effects of the *Centaurea* species. Further analysis of the ethanol extract was carried with HPLC analysis to evaluate the important flavonoids in the ethanolic extract. These results highlight the importance of Asteraceae plants in both conventional and contemporary herbal medicine and add to the expanding corpus of study on their pharmacological characteristics. The biological activity and possible therapeutic uses of *Centaurea calcitrapa* subsp. *angusticeps* should be investigated further.

Keywords: Asteraceae, anatomical investigation, *Centaurea calcitrapa* subsp. *angusticeps*, hplc analysis, phytochemical screening.