ISTANBUL AYDIN UNIVERSITY
FACULTY OF PHARMACY

E-NEWSLETTER

1 JANUARY - 31 JANUARY 2026

ISTANBUL AYDIN UNIVERSITY
FACULTY OF PHARMACY

DEPARTMENTS

Department of Pharmaceutical Technology

- Pharmaceutical Technology

Department of Professional Pharmaceutical Sciences

- Pharmacology
- Pharmaceutical Chemistry
- Pharmacognosy
- Pharmaceutical Toxicology

Department of Basic Pharmaceutical Sciences

- Analytical Chemistry
- Biochemistry
- Pharmaceutical Microbiology

The Book Donation Campaign Launched with the Slogan “Hope on the Shelves, Smiles on the Pages” Successfully Completed

Under the leadership of Prof. Dr. Ayşe Nurten ÖZDEMIR, Dean of the Faculty of Pharmacy, and in cooperation with the Anatolian Education and Culture Foundation (AKEV), the 1000 Book Donation Campaign, carried out with the dedicated contributions of the faculty members and the faculty secretary, has been successfully completed. As part of the campaign initiated at the beginning of 2026 for Topkapı Primary/Secondary School located in the Kemaliye district of Erzincan province, which previously did not have a library, 1000 books were delivered to the students and a permanent library was established within the school. We would like to express our sincere gratitude to all academic staff, the faculty secretary, and the Anatolian Education and Culture Foundation (AKEV) for their valuable contributions to this meaningful campaign.

FACULTY OF PHARMACY

January

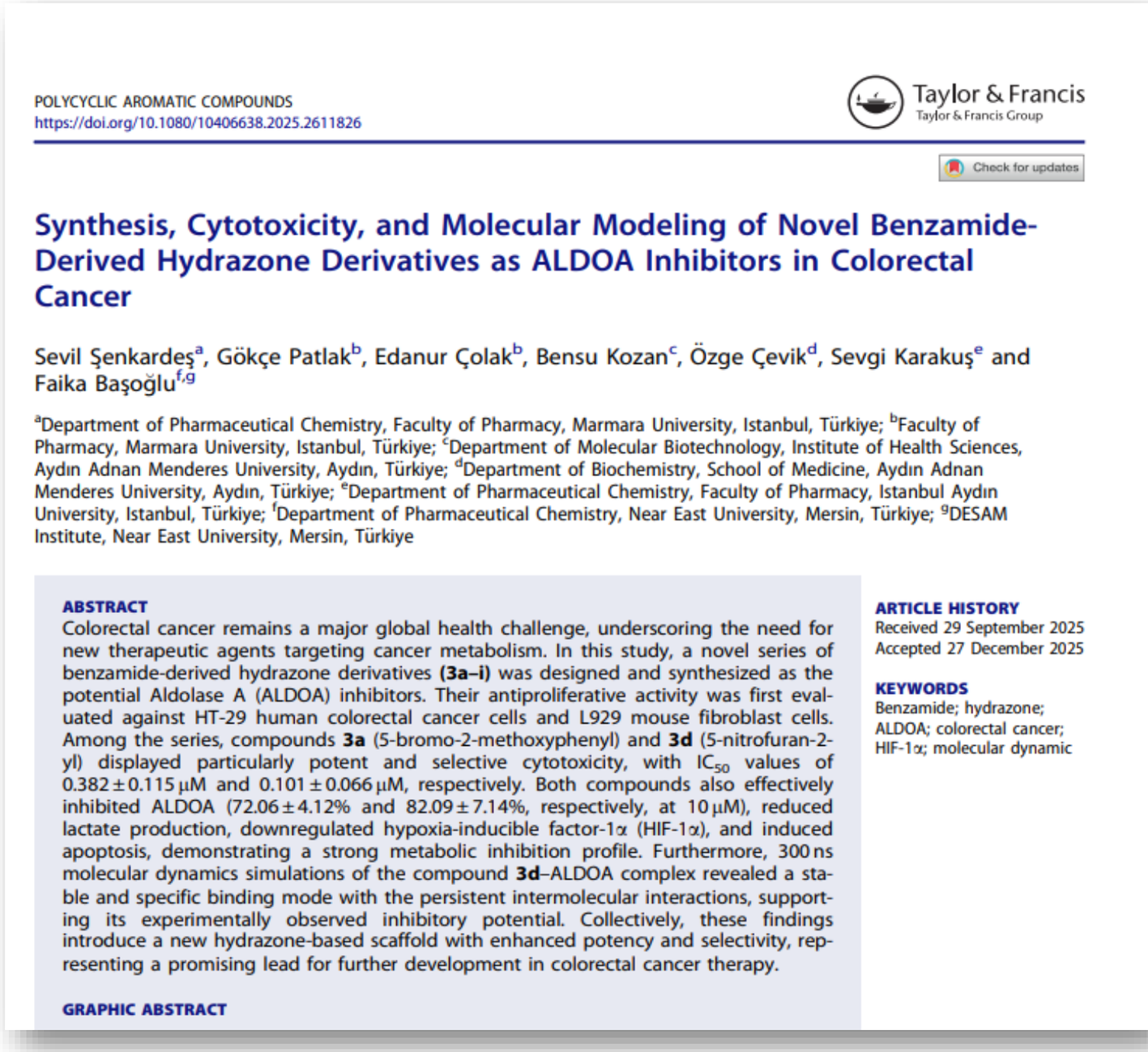
Recipient of the 2025 Health Sciences – Pharmacy Achievement Award: *Prof. Dr. Sevgi KARAKUŞ*

The **2025 Health Sciences Pharmacy Achievement Award**, presented by MÜMAD1883+ (Marmara University Alumni and Academics Association), has been awarded to our Faculty's Vice Dean, Prof. Dr. Sevgi KARAKUŞ, in recognition of her high-quality scientific research in the fields of health sciences and pharmacy, her academic productivity, her contributions to education and training, and the added value she has provided to the scientific community. Through her academic studies conducted at both national and international levels, Prof. Dr. Sevgi KARAKUŞ has made significant contributions to pharmaceutical sciences, while also adding value to the academic development of our faculty through her administrative roles. Her being deemed worthy of this meaningful award is a great source of pride for our faculty. We congratulate our esteemed professor and wish her continued and increasing success in her scientific and academic endeavors.

FACULTY OF PHARMACY

January

Our Vice Dean and faculty member of the Department of Pharmaceutical Chemistry, Prof. Dr. Sevgi KARAKUŞ, has published her study entitled "***Synthesis, Cytotoxicity, and Molecular Modeling of Novel Benzamide-Derived Hydrazone Derivatives as ALDOA Inhibitors in Colorectal Cancer***" in the Polycyclic Aromatic Compounds, a Q2-indexed journal.



POLYCYCLIC AROMATIC COMPOUNDS
https://doi.org/10.1080/10406638.2025.2611826

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Synthesis, Cytotoxicity, and Molecular Modeling of Novel Benzamide-Derived Hydrazone Derivatives as ALDOA Inhibitors in Colorectal Cancer

Sevil Şenkardeş[a], Gökçe Patlak[b], Edanur Çolak[b], Bensu Kozan[c], Özge Çevik[d], Sevgi Karakuş[e] and Faika Başoğlu[f,g]

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ABSTRACT

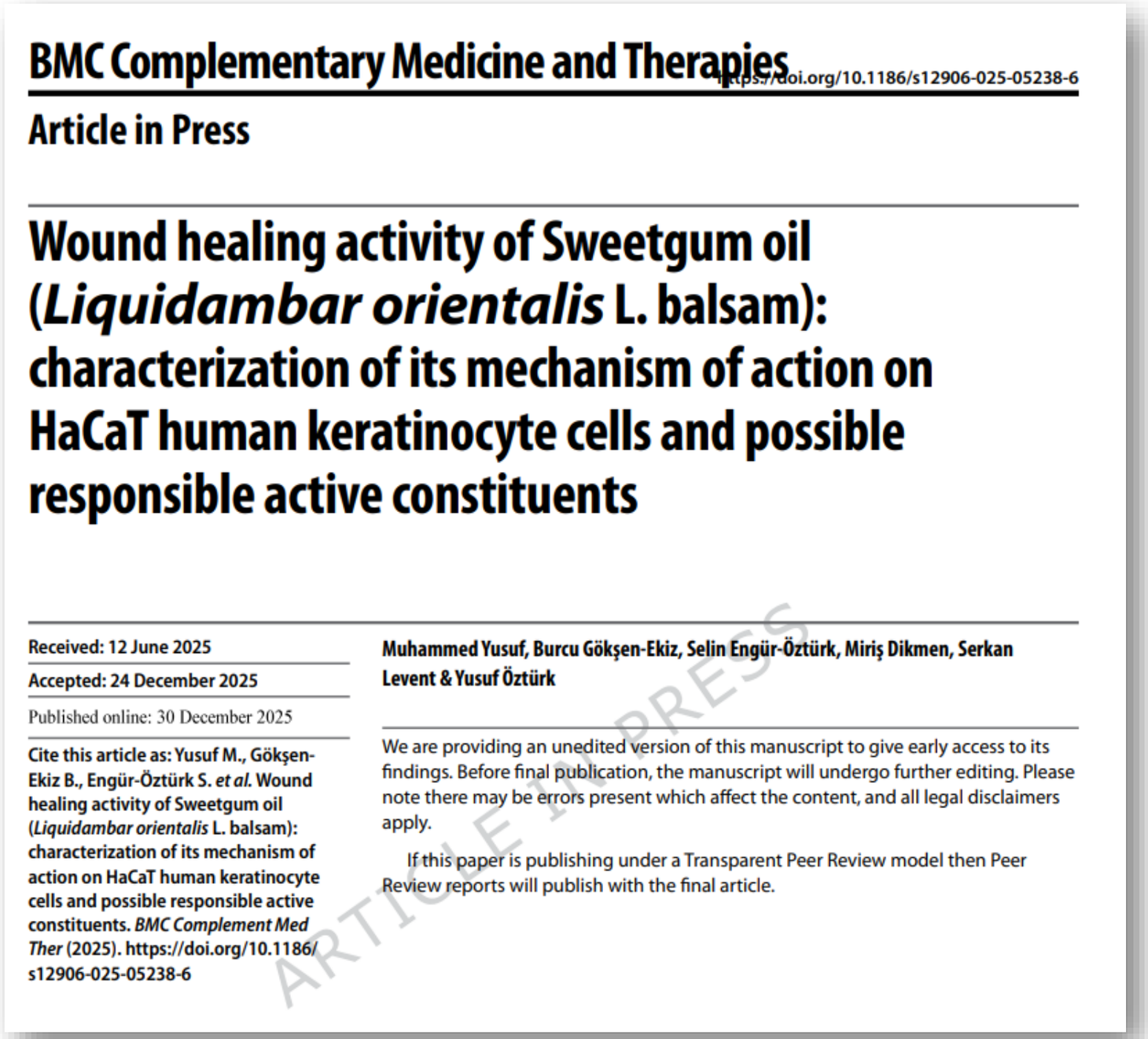
Colorectal cancer remains a major global health challenge, underscoring the need for new therapeutic agents targeting cancer metabolism. In this study, a novel series of benzamide-derived hydrazone derivatives **(3a–i)** was designed and synthesized as the potential Aldolase A (ALDOA) inhibitors. Their antiproliferative activity was first evaluated against HT-29 human colorectal cancer cells and L929 mouse fibroblast cells. Among the series, compounds **3a** (5-bromo-2-methoxyphenyl) and **3d** (5-nitrofuran-2-yl) displayed particularly potent and selective cytotoxicity, with IC_{50} values of $0.382 \pm 0.115\,\mu M$ and $0.101 \pm 0.066\,\mu M$, respectively. Both compounds also effectively inhibited ALDOA ($72.06 \pm 4.12\%$ and $82.09 \pm 7.14\%$, respectively, at $10\,\mu M$), reduced lactate production, downregulated hypoxia-inducible factor-1α (HIF-1α), and induced apoptosis, demonstrating a strong metabolic inhibition profile. Furthermore, 300 ns molecular dynamics simulations of the compound **3d**–ALDOA complex revealed a stable and specific binding mode with the persistent intermolecular interactions, supporting its experimentally observed inhibitory potential. Collectively, these findings introduce a new hydrazone-based scaffold with enhanced potency and selectivity, representing a promising lead for further development in colorectal cancer therapy.

GRAPHIC ABSTRACT

ARTICLE HISTORY
Received 29 September 2025
Accepted 27 December 2025

KEYWORDS
Benzamide; hydrazone; ALDOA; colorectal cancer; HIF-1α; molecular dynamic

Our faculty member of the Department of Pharmacology, Prof. Dr. Yusuf ÖZTÜRK, has published his study entitled "***Wound healing activity of Sweetgum oil (Liquidambar orientalis L. balsam): characterization of its mechanism of action on HaCaT human keratinocyte cells and possible responsible active constituents***" in the BMC Complementary Medicine and Therapies, a Q1-indexed journal.



BMC Complementary Medicine and Therapies

https://doi.org/10.1186/s12906-025-05238-6

Article in Press

Wound healing activity of Sweetgum oil (*Liquidambar orientalis* L. balsam): characterization of its mechanism of action on HaCaT human keratinocyte cells and possible responsible active constituents

Received: 12 June 2025

Accepted: 24 December 2025

Published online: 30 December 2025

Cite this article as: Yusuf M., Gökşen-Ekiz B., Engür-Öztürk S. *et al.* Wound healing activity of Sweetgum oil (*Liquidambar orientalis* L. balsam): characterization of its mechanism of action on HaCaT human keratinocyte cells and possible responsible active constituents. *BMC Complement Med Ther* (2025). https://doi.org/10.1186/s12906-025-05238-6

Muhammed Yusuf, Burcu Gökşen-Ekiz, Selin Engür-Öztürk, Miriş Dikmen, Serkan Levent & Yusuf Öztürk

We are providing an unedited version of this manuscript to give early access to its findings. Before final publication, the manuscript will undergo further editing. Please note there may be errors present which affect the content, and all legal disclaimers apply.

If this paper is publishing under a Transparent Peer Review model then Peer Review reports will publish with the final article.

ARTICLE IN PRESS

Our faculty member of the Department of Analytical Chemistry, Assist. Prof. Dr. Cem ERKMEN, has published his study entitled "***Catalyst-free synthesis of thiourea-linked dumbbell-shaped POSS for ultrasensitive determination of prilocaine in human blood with computational insights***" in the Microchemical Journal, Q1-indexed journal.

Microchemical Journal 221 (2026) 116978

Contents lists available at ScienceDirect

Microchemical Journal

journal homepage: www.elsevier.com/locate/microc

Catalyst-free synthesis of thiourea-linked dumbbell-shaped POSS for ultrasensitive determination of prilocaine in human blood with computational insights

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ARTICLE INFO

Keywords:
Prilocaine
POSS
Atom economy
Titanium dioxide nanoparticles
Voltammetry
Adsorptive stripping voltammetry

ABSTRACT

Although various electrochemical sensors have been reported for the determination of local anesthetic drugs, most existing platforms suffer from limited sensitivity, insufficient surface stability, or inadequate electron-transfer efficiency, particularly when applied to complex biological matrices. Moreover, the potential of hybrid polyhedral oligomeric silsesquioxane (POSS)-based nanostructures combined with metal oxide nanoparticles for improving electroanalytical performance has not yet been thoroughly explored. In this study, a high-sensitivity electrochemical nanosensor was developed for the determination of prilocaine (PC), an amide-type local anesthetic, using a glassy carbon (GC) electrode modified with POSS-titanium dioxide (TiO_2) nanoparticles (Nps). The combination of modifications provided a unique electrode surface by combining the high stability of POSS with the strong adsorption properties of TiO_2 Nps, thereby increasing both surface loading and adsorption capacity. To elucidate the structure of the modification combination, ^1H and ^{13}C nuclear magnetic resonance (NMR) and Fourier transform infrared (FTIR) spectroscopic techniques, as well as Brunauer–Emmett–Teller (BET), X-Ray diffraction (XRD), Electrochemical impedance spectroscopy (EIS), and high-resolution transmission electron microscopy (HRTEM) analysis techniques were used, respectively. The analytical performance of the developed nanosensor was systematically optimized using differential pulse voltammetry (DPV), adsorptive stripping differential pulse voltammetry (*Ad*SDPV), square wave voltammetry (SWV), and adsorptive stripping square wave voltammetry (*Ad*SSWV) techniques. As a result of the optimization studies, the lowest limit of detection (LOD) was 3.66×10^{-8} M with the *Ad*SSWV technique. DFT results corroborated the mechanism, indicating ring-centered electron donation (HOMO) and adsorption-favored N/O regions (MEP). Low LOD values were also recorded with other techniques, demonstrating the method's high sensitivity in analyte detection. In real sample analysis tests, PC recovery value in human blood samples was determined to be 98.69% using the AdSDPV technique. Despite the matrix effect, the nanosensor demonstrated high accuracy and reproducibility. The results indicate that the developed POSS-TiO_2 Nps modified GC electrode sensor offers a high-performance, reliable, and good electrochemical detection platform suitable for use in biological and clinical applications.

Our faculty member of the Department of Pharmaceutical Microbiology, Assist. Prof. Dr. Merve ATAMAN, has published her study entitled "***Exploring new thiosemicarbazide derivatives bearing imidazolidine ring as potential antimicrobial agents: design, synthesis, and molecular dynamics studies***" in the Chemistry & Biodiversity, Q3-indexed journal.

Chemistry & Biodiversity

CHEMISTRY & BIODIVERSITY

RESEARCH ARTICLE

Exploring New Thiosemicarbazide Derivatives Bearing Imidazolidine Ring as Potential Antimicrobial Agents: Design, Synthesis, and Molecular Dynamics Studies

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Received: 17 September 2025 | **Revised:** 5 December 2025 | **Accepted:** 8 December 2025

Keywords: antimicrobial | exo-β-(1,3)-glucanase | MD simulation | thiosemicarbazide

ABSTRACT

Extracellular exo-β-(1,3)-glucanase is among the cell-wall enzymes that play important roles in cell-wall synthesis. Many antimicrobial agents act by targeting those specific enzymes to inhibit bacterial or fungal cell wall formation. In this context, we aimed to synthesize a novel series of *N*-substituted-2-[3-(methylsulfonyl)-2-oxoimidazolidine-1-carbonyl]hydrazine-1-carbothioamide derivatives (**1**–**16**). The structures of the synthesized compounds (**1**–**16**) were elucidated by using spectroscopic methods such as IR, ^{1}H NMR, ^{13}C NMR, ^{13}C APT NMR, and 2D NMR, as well as elemental analysis data. All thiosemicarbazide compounds (**1**–**16**) were screened for antimicrobial activity against seven bacteria (*Staphylococcus aureus*, MRSA, *Staphylococcus epidermidis*, *Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, and *Enterococcus faecalis*) and three fungi (*Candida albicans*, *Candida tropicalis*, and *Candida parapsilosis*) strains. Among the compounds, **3** and **14** demonstrated the highest antibacterial activities against *S. aureus* with the MIC values in the range of 156.24–312.5 μg/mL. On the other hand, compound **9** showed the strongest antifungal activity in the series against all three fungi strains, with the MIC values in the range of 39.06–312.5 μg/mL. Furthermore, compound **9** was found to successfully bind to exo-β-(1,3)-glucanase using molecular docking and dynamics simulations run for 500 ns. The physicochemical, pharmacokinetic, and ADMET properties of compounds were also investigated and analyzed by in silico programs.

Our faculty member of the Department of Pharmaceutical Toxicology, Assist. Prof. Dr. Gizem Sena ELAGÖZ, has published her study entitled "***Pesticides and Food Residues***" in the book The Effects of Pesticides on Foods.

PESTİSİTLER VE GIDA KALINTISI

GİZEM SENA ELAGÖZ
MÜBERRA ÖZCAN

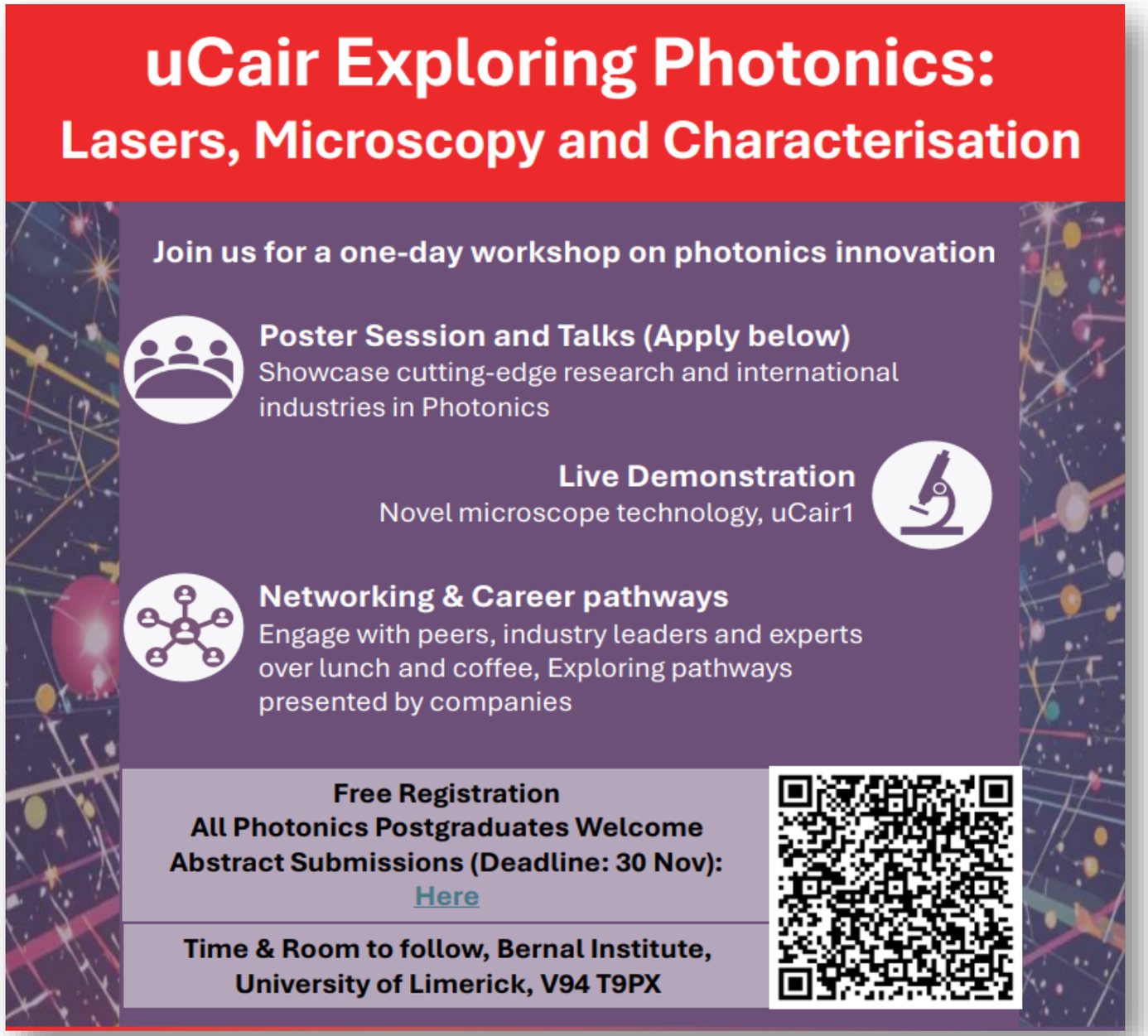
1. Giriş

Gıdayı, sağlığı veya yaşam konforunu etkileyen herhangi bir bitki, hayvan veya mikroorganizma zararlı (pest) olarak kabul edilir. Çevre Koruma Ajansı (Environmental Protection Agency-EPA) pestisitleri, zararlı popülasyonlarını kontrol etmek, azaltmak veya uzaklaştırmak amacıyla kullanılan kimyasal bileşikler sınıfı olarak tanımlamaktadır. Pestisitler ayrıca nematodlar, böcekler ve diğer eklembacaklılar gibi omurgasız canlılar ile gıda kaynaklarını tahrip eden omurgalı türlerin kontrolü için de kullanılmaktadır. Bu yönüyle pestisitler; bitkileri böcekler, yabancı otlar ve diğer zararlılardan koruyarak ürün verimliliğini artırmak için geniş bir yelpazede uygulanan kimyasallar olarak özetlenebilir (García vd., 2022; Rani vd., 2021)

Pestisitlerin kullanımına dair ilk örnekler 1500'lü yıllara kadar uzanmaktadır. Bu dönemde cıva ve arsenik bileşikleri erken dönem pestisitler olarak kullanılmış ve 1940 yılına kadar, özellikle II. Dünya Savaşı sırasında gıda kaynaklarını tahrip etmek amacıyla uygulanmıştır (Abubakar vd., 2020). 19. yüzyılda, pestisit geliştirme çalışmalarında önemli ilerlemeler kaydedilmiş; örneğin ABD'de patates tarlalarında "Paris Green" adlı arsenikli bileşik, Colorado böceğine karşı kullanılmıştır. Aynı dönemde, at çekişli püskürtücü, tekerlekli püskürtücü ve varil tipi püskürtücü gibi ekipmanlar geliştirilmiştir. 20. yüzyılın başlarında ise çalışmalar, bitkisel ekstreler ve bazı inorganik bileşiklerin pestisit olarak kullanımı üzerine yoğunlaşmıştır (Davis, 2019).

Our faculty member of the Department of Pharmaceutical Microbiology, Assist. Prof. Dr. Tuğçe TÜCCAR, attended the online meeting of Working Group 1, of which she is an active member, within the scope of COST Action CA23152 on January 20.

The three-month evaluation meeting of the European Union–funded project entitled "***Chemical Analysis Imaging with Raman (uCAIR)***," carried out within the scope of the HORIZON-CL4-2023-DIGITAL-EMERGING-01 call and in which our faculty member from the Department of Biochemistry, Assoc. Prof. Dr. Şebnem GARİP USTAOĞLU, serves as the principal investigator and work package leader, along with the "***Demo Day***" event where the prototype device developed within the project will be introduced, will be held on 28–29 January 2026 at the University of Limerick (Ireland). A presentation will be delivered by our faculty member during the event.



FACULTY OF PHARMACY

January

Gülsu Keleş, who was co-supervised by our faculty member from the Department of Analytical Chemistry, Assist. Prof. Dr. Cem ERKMEN, at the Department of Analytical Chemistry, Institute of Health Sciences, Ankara University, has successfully completed her thesis entitled "***Development of a Bimetallic Nanomaterial-Modified Molecularly Imprinted Polymer-Based Aptasensor for the Determination of Organophosphorus Pesticides***."