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5TH INTERNATIONAL CONFERENCE ON ADVANCED PHARMACOLOGY & TOXICOLOGY RESEARCH

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5TH INTERNATIONAL CONFERENCE ON ADVANCED PHARMACOLOGY & TOXICOLOGY RESEARCH

DAY-1 (NOVEMBER 14)

REGISTRATIONS & OPENING REMARKS (08:00 - 09:00)

SESSION CHAIR: DR. MARISA FREITAS

TECHNICAL SESSION-I (09:00-10:55)

09:00-09:40	**The true causes of the cancer diseases** **Dr. Rolf Dittli,** HVS - Swiss Homeopathy Association, Switzerland
09:40-10:05	**Overcoming Challenges in the Development of mRNA Therapeutics** **Dr. Andreas M Papas,** East Tennessee State University, Antares Health Products, United States
10:05-10:30	**Artichoke - source and availability of bioactive compounds. Clinical uses of artichoke leaf extract** **Prof. Andrzej Salata,** University of Life Sciences in Lublin, Poland
10:30-10:55	**Antiemetics sparring modality based on Adequacy of Anaesthesia guidance combined with different pre-analgesia techniques for head and neck surgeries – summary from four most recent studies** **Dr. Michal J Stasiowski,** Medical University of Silesia, Poland

GROUP PHOTO & REFRESHMENT BREAK (10:55-11:10)

TECHNICAL SESSION-II (11:10-12:50)

11:10-11:35	**Parabens and the Modulation of Inflammatory Mediators: Insights from Liver and Immune Cells** **Dr. Marisa Freitas,** University of Porto, Portugal
11:35-12:00	**Why CEOs need advanced education and training for optimizing decisions in the development of innovative medicinal products? Justification and recommendation** **Dr. Peter Jurgen Kramer,** Technical University Darmstadt, Germany
12:00-12:25	**Challenges and Strategies in the Formulation of Natural Bioactives from Plant Sources** **Dr. Ghania Degobert,** Claude Bernard University Lyon 1, France
12:25-12:50	**Knowledge, Attitudes, and Perceptions of Chronic Patients in Saudi Arabia Regarding the Use of Artificial Intelligence to Improve Medication Adherence** **Dr. Safaa Mohammed M Alsanosi,** Umm Al Qura University, Saudi Arabia

LUNCH @ RESTAURANT (12:50-13:50)

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TECHNICAL SESSION-III (13:50-17:55)

13:50-14:15	**Integrating advanced molecular dynamics simulations and AI to investigate and modulate ABC transporters involved in cancer multidrug resistance** **Dr. Ahmad Elbahnsi,** University Paris Cité, France
14:15-14:40	**Research progress in analytical methods and devices for some groups of pharmaceutical, food and environmental analytes** **Prof. Jan Labuda D.Sc,** Comenius University in Bratislava, Slovakia
14:40-15:05	**The Skin as a Reflection of Our Lifestyle** **Dr. Juergen Lademann,** Charite Berlin, Germany
15:05-15:30	**KDM6A/B Mediated Epigenetic Regulation of Constitutive Androgen Receptor Expression in Prostate Cancer** **Dr. Gokce Yildirim Buharalioglu,** Ege University, Turkey

REFRESHMENT BREAK (15:30-15:50)

15:50-16:15	**Neurosyphilis: A Rare Cause of Encephalitis in a Young Male** **Dr. William Cunningham,** NHS Greater Glasgow and Clyde, United Kingdom
16:15-16:40	**The Dual-active G9a inhibitor and Histamine H3 Receptor Antagonist A-366 Ameliorates Autism-Like Phenotypes, Neuroinflammation and Oxidative Stress in BTBR T+tf/j Mice** **Prof. Bassem Shaban Sadek,** United Arab Emirates University, UAE
16:40-17:05	**A self-adjuvanted protein nanoparticle that stimulates Ultra-High affinity antibodies** **Dr. Ming-Chung Kan,** VAXSIA Biomedical Inc., Taiwan
17:05-17:30	**The Therapeutic Role of Seaweeds in Disease Prevention and Health Promotion** **Dr. Ana Marta M. Gonçalves,** University of Coimbra, Portugal
17:30-17:55	**Plant and Marine Algae Extracts Against Hypercholesterolemia: Advances in Traditional Knowledge** **Prof. Rita Isabel Dias Pacheco,** University of Lisbon, Portugal
17:55-18:20	**Early Recognition and Management of Cercarial Dermatitis in Public Health** **Dr. Maria Teresa Bispo,** Global Health and Tropical Medicine (IHMT/UNL), Portugal

PANNEL DISCUSSIONS

END OF DAY-01

5TH INTERNATIONAL CONFERENCE ON ADVANCED PHARMACOLOGY & TOXICOLOGY RESEARCH

DAY-2 (NOVEMBER 15)

09:00-09:25	**Twinning and Individuation: An Appraisal of the Current Model and Ethical Implications** **Dr. Francis J. O'Keeffe,** The University of Notre Dame Australia, Australia
09:25-09:50	**Emerging Strategies for Cancer and Fibrosis Therapy that Exploit Fibroblast Activation Protein (FAP) Protease)** **Dr. Mark Douglas Gorrell,** The University of Sydney, Australia
09:50-10:15	**The application of cannabidiol brings new hope for treating Alzheimer's disease and delaying aging** **Prof. Yanying Liu,** Qingdao Huanghai University, China
10:15-10:40	**Homeopathy in Cancer Palliation: The Role of Nature's Healing** **Dr. Avi Sharma,** Nehru Homoeopathic Medical College and Hospital, India
10:40-11:05	**Repositioning of FDA-Approved Pharmaceuticals against Epstein–Barr Virus Nuclear Antigen 1 (EBNA1): A Molecular Docking and Molecular Dynamics Study** **Dr. Fatemeh karimzadeh,** Shahrekord University of Medical Science, Iran
11:05-11:30	**Reviving Nature's Rhythm: A Homoeopathic Perspective on Infertility through the Law of Similars** **Dr. Kanchan Upreti,** Nehru Homoeopathic Medical College and Hospital, India
11:30-11:55	**Pharmacological and toxicological perspectives in sperm cryobiology: Antioxidant strategies, cryoprotectants, and molecular biomarkers** **Dr. Cumali Kaya,** Ondokuz Mayıs University, Turkey
11:55-12:20	**Embracing the Curative Power of Nature: A Holistic Approach to Healing through Homoeopathy and the Doctrine of Signature** **Dr. Harshita Bansal,** Nehru Homoeopathic Medical College and Hospital, India
12:20-12:45	**In Cardiogenic Shock, Overweight and Obesity Have the Lowest, Whereas Cachexia Has the Highest Mortality** **Dr. Zahra Sadin,** Guilan University of Medical Sciences, Iran
12:45-13:10	**The Law of Similars: Nature's Own Physician** **Dr. Sneha Kumari,** Nehru Homoeopathic Medical College and Hospital, India
13:10-13:35	**Nanocellulose-collagen composites as advanced biomaterials for 3D in-vitro neuronal model systems** **Dr. Torresan Veronica,** University of Padova, Italy
13:35-14:00	**Optimizing the Routine Use of Clinical Guidelines by Addition of Supplements (Probiotics and/or Bismuth) to Helicobacter pylori Eradication Protocols in a Clarithromycin Resistant and Tetracycline/Bismuth Naive Area: A Real-World Data Retrospective Analysis of 402 Cases (2016–24) in a Single Gastroenterology Unit** **Dr. Ibolya Czegle,** Semmelweis University, Hungary

5TH INTERNATIONAL CONFERENCE ON ADVANCED PHARMACOLOGY & TOXICOLOGY RESEARCH

14:00-14:25	**Parent-Focused Psychological Counselling to Improve Sleep in School-Age Children (6-12 years): Evidence-informed Model for Paediatric Sleep** **Dr. Yugal kumar,** Nehru Homoeopathic Medical College and Hospital, India
14:25-14:50	**Healing Through Sound: Ancient Wisdom and Scientific Frontiers** **Dr. Elsa Ramos Elías,** Ayurvedic Practitioner, Herbalist, Spain
14:50-15:15	**Evolving Pharmacological Strategies in Feline Arterial Thromboembolism: From Antiplatelet Therapy to Novel Anticoagulants** **Dr. Cagatay Esin,** Ondokuz Mayıs University, Turkey
15-15:15:40	**A Next-Generation Magnetic Bead-Based Electrochemical Biosensor for Rapid and Ultra-Sensitive Cocaine Detection in Biological Fluids** **Dr. Mohamed Zouari,** University of Tunis El Manar, Tunisia
15:40-16-05	**Suzetrigine: a Non-Opioid NaV 1.8 Inhibitor for the Treatment of Moderate-to-Severe Acute Pain** **Dr. Scott G. Weiner,** Brigham and Women's Hospital, United States
16:05-16:30	**Implementation of a population health-based goal directed medical therapy program- Cardiac Kidney Metabolic Compass** **Dr. Mallika L Mendu,** Mass General Brigham, United States
16:30-16:55	**Design of novel therapeutic vaccines for antigen-specific immunotherapy of autoimmune diseases** **Dr. David Cameron Wraith,** University Of Birmingham, United Kingdom
16:55-17:35	**A Dynamic, Self-Assembling Antiviral Drug for Broad-Spectrum Viral Infections** **Dr. Boris Farber,** TRIZ Biopharma Innovations LLC, USA
17:35-18:00	**Strengthening Next Generation Risk Decision-Making** **Dr. Yadvinder Bhuller,** Health Canada, Canada
18:00-18:25	**Phytochemicals from selected ethno-medicinal plants interact with receptor-binding domains of SARS-CoV-2 spike protein** **Dr. Trizah K. Milugo,** The Technical University of Kenya, Gambia
18:25-18:50	**Early postnatal infections, genetic susceptibility, and autism: molecular targets for intervention** **Dr. Manuel F. López-Aranda,** University of Málaga, Spain

PANNEL DISCUSSIONS

END OF DAY-02

5TH INTERNATIONAL CONFERENCE ON ADVANCED PHARMACOLOGY & TOXICOLOGY RESEARCH

November 14-15, 2025 | Lisbon, Portugal

Andreas M Papas PhD

Adjunct Professor of the College of Medicine, East Tennessee State University CEO, Antares Health Products Inc.

OvercomingChallenges in the Development of mRNA Therapeutics

Development of novel, high potential mRNA therapeutics is associated with major challenges which include: Formulation for parenteral administration, the prevalent route for large molecule actives; stability in the formulation and after administration; transport, intracellular delivery, and uptake;safety, including immune-related, off-target binding and sequence-induced toxicity.

The presentation will discuss the use of vitamin E TPGS and other agents in liposomal, polymeric and other nanoparticle formulations for facilitating transport, release, targeted intracellular delivery, uptake and efficacy; support of formulation stability and reduction of oxidative damage, prior and after administration and metabolism of the actives; reduced toxicity and increased safety by regulation of reactive oxidative species which affect stability, by-products and immune- related and other toxicity;and interactions and potential synergies with actives using emerging technologies such conjugates, prodrugs, and nanomedicine formulation for increased efficacy and safety.

Biography

Dr. Papas is Adjunct Professorof the College of Medicine, East Tennessee State University and CEO and memberof the Board of Directors of Antares Health Products, Inc. A Fulbright Scholar, Dr. Papas is a graduate of the University of Illinois and author of The VitaminE Factor paperback and editor of the scientificbook Antioxidant Status,Diet, Nutrition and Health.

Dr Papas also foundedYASOO Health and led the company as President and Chair of the Board of Directors. He developedproduct concepts and managed successful commercialization including formulation, clinicalevaluation supported by the National Institutes of Health and the Cystic Fibrosis Foundation, stability and safety testing, pilot, and commercial production.

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Michał J Stasiowski [1,2,*], Nikola Zmarzły [6]

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[2]Chair and Department of Emergency Medicine, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, 40-055 Katowice, Poland
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Antiemetics sparring modality based on Adequacy of Anaesthesia guidance combined with different preanalgesia techniques for head and neck surgeries – summary from four most recent studies.

Background/Objectives

Postoperative nausea and vomiting (PONV) still keep on plaguing postoperative period, impairing quality of recovery reflected in patients' satisfaction, prolong hospital stay or lead to unexpected re-admissions, and impair economic frugality of provided medical service. PONV is mainly induced by intraoperative rescue opioid analgesia (IROA), anaesthetics and technique of operation. Adequacy of Anesthesia (AoA) guidance optimizes intraoperative IROA titration and dose of hypnotics. Preemptive analgesia (PA) using cyclooxygenase-3 (COX-3) inhibitors or local anaesthetics for regional blocks reduce the IROA dose, both sparr the use of antiemetics, that are not free from potential side effects observed in even healthy volunteers. In the recent studies we assessed the impact of AoA guidance of different anaesthesia modalities, on the rate of incidence of PONV, in patients undergoing vitreoretinal surgeries, eversion carotid endarterectomy (CEA)and endoscopic sinus surgeries (ESS)as secondary outcome measures.

Methods

A total of 165 patients scheduled for VRS were randomly assigned to receive AoA-guided GA combined with IPA at a single dose of 1 g of paracetamol (acetaminophen) or 2.5 g of metamizole or both (Clinical Trial Registry SilesianMUKOAiIT7, NCT03389243); 185 patients undergoing VRS - AoA-guided GA in addition with PA using paracetamol (P group) infusion in a single dose of 1 gram. or peribulbar block (PBB) using either 1% ropivacaine (RPV group) or 0,5% bupivacaine (BPV group) or 1:1 mixture of 0,5% bupivacaine/2% lidocaine (BL group). (Clinical Trial Registry SilesianMUKOAiIT8, NCT03413371), 31 patients received AoA-guided total intravenous anaesthesia (TIVA) for ESS with IPA using metamizole (SilesianMUKOAiIT2, KNW/0022/KB1/50/16); 114 patients received cervical plexus block with AoA-guided IROA for CEA (SilesianMUKOAiIT4; NCT04500249;), either with or without local infiltration of carotid sheath.

Results

AoA guidance of different anaesthesia techniques resulted in incidence of PONV in 4-6,5 % of all the patients undergoing different head and neck surgeries in the four recent studies.

Conclusions

We recommend AoA guidance of different anaesthesia modalities to reduce the rate of incidence of PONV and thus avoid antiemetics-related side effects, despite the fact that according to Fourth Consensus Guidelines for the Management of PONV 2020, the basis for every adult patient should be a standard prophylaxis with two antiemetics and in high risk patients, a third and potentially a fourth antiemetic prophylaxis with a different mechanism of action is recommended.

doi.org/10.51219/URForum.2025.Michal-J-Stasiowski

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Biography

Michał J. Stasiowski is affiliated with the Department of Anaesthesiology and Intensive Care at the 5th Regional Hospital in Sosnowiec, Poland. He also collaborates with the Chair and Department of Emergency Medicine at the Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice. His clinical and academic interests include anaesthesiology, critical care, and emergency medicine, with a focus on improving patient outcomes through evidence-based practices and interdisciplinary collaboration.

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Peter-Jürgen Kramer, Gerd Bode and Rolf Bass

Technical University of Darmstadt/Dept. of Chemistry, Darmstadt, Germany

Why CEOs need advanced education and training for optimizing decisions in the development of innovative medicinal products? Justification and recommendation

CEOs (chief executive officers) of innovative pharmaceutical companies usually are well educated and trained in business management, executive decision-making, marketing, finance and human resources. However, only seldom CEOs and upper management have been trained to specifically understand the skills and languages used by their R&D (research and development) and RA (regulatory affairs) staff. The lack of CEO training in R&D and RA can lead to miscommunication and inefficiencies in the drug development process, because in the world of pharmaceutical innovation, CEOs are required not only to steer organizational vision but also to navigate the complex scientific, regulatory, and commercial challenges that shape the development of novel medicines. Advanced education and continuous training in R&D topics may therefore equip CEOs with a nuanced understanding of the finesses inherent to medicinal product development—ranging from early-stage discovery, preclinical and clinical development to regulatory requirements. Such expertise enables CEOs to engage more effectively with multidisciplinary R&D and RA teams, critically evaluate the scientific validity and commercial potential of projects and make high-stakes decisions that balance scientific opportunity against financial and operational constraints. CEOs and upper management often take final decisions from the above. A better understanding of the language and foundations of RA people and R&D scientists would help them ease knowledge-based decisions. This is especially important regarding the well-founded start, the strong support or even the necessary discontinuation of innovative R&D projects. The final goal of advanced education and continuous training of CEOs would be to improve the overall success rate of internal R&D projects in the pharmaceutical industry, thereby improving the use of the tremendous investments made.

Keywords
CEO, upper management, training, education, R&D

Biography
PD Dr. Peter-Jürgen Kramer is a distinguished toxicologist with an extensive academic and industrial career. He earned his Biochemistry Diploma and completed his doctorate at the University of Tübingen in collaboration with ETH Zurich, Switzerland. Following a Postdoctoral Fellowship at the University Hospital Basel, he joined Merck Darmstadt's Institute of Toxicology, where he later became Head of the Institute. He subsequently served as Global Head of Toxicology and Safety Pharmacology and Vice-President at Merck.

Dr. Kramer is also an active academic lecturer, having taught at the Technical University Darmstadt, the University of Bonn, and Université Lyon. His expertise spans toxicology, safety pharmacology, and biochemical research, contributing significantly to both scientific education and industry innovation.

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Safaa M Alsanosi[1] , Asayel Q Aldajani[2], Hasnaa A Gheliwi[2], Manar M Alotibi[2], Ghadi S Bokhari[2], Orjuwan A Almatrafi[2], Abdulelah K.Alqawl [3],Jakleen Z Abujamai[3], Mohammed Shaikhomer[4], Yosra Z Alhindi[1] ,Asim M Alshanberi[3]

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Knowledge, Attitudes, and Perceptions of Chronic Patients in Saudi Arabia Regarding the Use of Artificial Intelligence to Improve Medication Adherence

Background

Artificial intelligence (AI) is advancing healthcare globally and in Saudi Arabia, enhancing patient care, diagnostics, and administrative efficiency, despite challenges such as data privacy and regulation. This study explores knowledge, attitudes, and perceptions (KAP) regarding AI in medication adherence among chronic patients in Saudi Arabia.

Method

A cross-sectional study was conducted among patients with chronic diseases in the Makkah region, Saudi Arabia, from 1 July to 31 December 2024. The study included adult patients with chronic diseases (≥18 years) receiving primary care. KAP levels were analyzed using descriptive statistics and composite scores, with demographic associations evaluated through Pearson chi-square tests ($p<0.05$).

Results

A total of 385 participants were included in the study. Most participants were women (60%), and those belonging to the 50 years or older group comprised the highest percentage (51.2%). The most reported chronic conditions were diabetes (30.7%), hypertension (19.7%), and asthma (14%). Knowledge levels were at a good level among 72.7% of the study participants, and 45.5% expressed a positive attitude towards AI's role. Perception was high among 50.9% of the respondents but low among 23.4%. Demographic factors, particularly age, significantly improved KAP (p-values of 0.048, 0.046, and 0.031, respectively). A positive attitude towards AI's role in medication adherence was observed in 58.2% of the participants with good knowledge levels compared to only 11.4% of those with poor knowledge ($p=0.001$). Variations in perception levels regarding AI's role in medication adherence were evident across demographics, with statistically significant associations found for age and overall knowledge level (p-values of 0.031 and 0.001, respectively).

Conclusion

AI should be positioned as a supportive tool that complements—not replaces—human care, with transparent governance and targeted education playing key roles.

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Keywords
CEO, upper management, training, education, R&D

Biography
Dr Safaa M. Alsanosi is an Associate Professor of Clinical Pharmacology and Therapeutics at the College of Medicine, Umm al-Qura University in Makkah. She earned her M.B.B.S. from UQU and completed both an M.Sc. and Ph.D. in Clinical Pharmacology at the University of Glasgow, where she also served as a postdoctoral fellow. Her research—spanning clinical pharmacology, AI-enabled polypharmacy management, medical education, and hypertension—has been published in high-impact journals and widely cited . She actively mentors students and holds leadership roles in academic development and quality assurance.

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Integrating advanced molecular dynamics simulations and AI to investigate and modulate ABC transporters involved in cancer multidrug resistance

ATP Binding Cassette (ABC) transporters are crucial for cellular detoxification and the transport of a diverse range of substrates, including drugs. Their roles in multidrug resistance (MDR), drug-drug interactions (DDIs), and severe genetic diseases make them key targets for therapeutic intervention. Structurally, they are organized into two halves, each consisting of a transmembrane domain (TMD) responsible for substrate transport and a nucleotide-binding domain (NBD) that binds and hydrolyzes ATP controlling the transport cycle. To ensure their function, these transporters switch between inward-facing- (IF, with separated NBDs) and outward-facing- (OF, with paired NBDs), open and occluded states.

We developed enhanced sampling methods to investigate these conformational transitions at molecular level. For ABCG2/BCRP (Breast Cancer Resistance Protein), involved in MDR and DDIs, our kinetically excited targeted MD (ketMD) simulations revealed key intermediates in the transport cycle, including a novel substrate-binding pocket between the two established cavities that regulates substrate progression. Furthermore, we demonstrated that substrate presence in the first cavity is essential for synchronizing the NDB-TMD movements, facilitating efficient substrate transport (Dudas et al. CSBJ 2022). For ABCB1/P-gp (P-glycoprotein), another MDR- and DDI-associated transporter, we implemented an adiabatic biased MD (ABMD) protocol to elucidate the ligand entry, translocation, and inhibition mechanisms. Our results demonstrated that the conformational transitions between IF-open, IF-occluded, and OF states are controlled by specific structural events,notably the kinkingand unkinking of particular TM helices. Inhibition of P-glycoprotein was suggested to occur by disrupting the communication between the TMDs and NBD2, preventing the conformational transitions necessary for substrate efflux (Elbahnsi et al. CSBJ 2024).

Building on these MD simulations, we are integrating the enhanced sampling data into machine learning and deep learning frameworks to develop predictive models for identifying potent inhibitors of BCRP and P-gp, aiming to address therapeutic challenges associated with MDR and transporter-related diseases.

Keywords
ABC transporters, Cancermultidrug resistance, moleculardynamics simulations, artificial intelligence

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Biography

Ahmad Elbahnsi is a postdoctoral researcher at Inserm (Université Paris Cité).

His research focuses on structural bioinformatics, molecular modeling and artificial intelligence applied to drug discovery. He develops integrative computational approaches combining molecular dynamics simulations, enhanced sampling techniques and machine learning to study the functions and modulation of membrane transporters, with a particular emphasis on membrane transporters. Ahmad actively collaborates with experimental teams to identify and optimize small-molecule modulators, aiming to improve therapeutic strategies targeting challenging biomedical targets.

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5TH INTERNATIONAL CONFERENCE ON ADVANCED PHARMACOLOGY & TOXICOLOGY RESEARCH

November 14-15, 2025 | Lisbon, Portugal

Ján Labuda [1,2], Zuzana Zelinková [1,3], and Peter Mikuš [1]

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[2] Institute of Analytical Chemistry, Slovak University of Technology in Bratislava, Bratislava, Slovakia
[3] Penta Hospital Bory Bratislava, Department of Gastroenterology, Bratislava, Slovakia

Research progress in analytical methods and devices for some groups of pharmaceutical, food and environmental analytes

The contribution presents novelty reflecting both sensitivity and selectivity as well as economic and environmental sustainability of the methods. For anti-inflammatory drugs from the group of Janus kinase inhibitors, in parallel to chromatographic and spectrometric methods, new cost-effective electrochemical sensors and procedures of their determination in pharmaceutical dosages and biological samples are developed reaching clinically relevant concentrations of ng/mL. Antioxidative effects of plant-derived extracts and products of pharmaceutical and medical interests are evaluated using tests with biomolecular interactions such as enzyme inhibition or nucleic acids and lipids competition at a pro-oxidant attack. Nanozymes attract interest for many advantages over natural enzymes, including extraordinary catalytic efficiency, tuneable activity, and excellent stability. are particularly treated being. For rapid assessment of food quality parameters such as nutritional components, additives, and contaminants, chemically modified electrodes become emerging as effective sensors. Trends in chemical modifiers (nano)materials and structure, sensors construction including 3D printing and flow analysis platforms are described and evaluated. Analysis automation is based on the implementation of liquid flow at injection analysis, devices with separation step, lab on chips, and paper-based analytical devices. Through miniaturization, platforms are designed with new recognition elements, coating chemistries, and signal amplification for multi-analyte sensing and portable equipments for on-site measurements. Analytical chemistry of engineered nanomaterials and their transformations in samples of complex composition is highlighted from the view of biological matrices, environmental systems, food, cosmetics and other consumer products. Future challenges cover methods validation and standardization. Funded by the EU NextGenerationEU through the Recovery and Resilience Plan for Slovakia under the project No. 09I03-03-V04-00157, the projects VEGA 1/0514/22, and IUPAC 2023-010-2-500.

Keywords
antioxidants, electrochemical sensors, flow-through systems, Janus kinase inhibitors, nanomaterials, portable assay

Biography
Jan Labuda occupied the Institute of Analytical Chemistry since 1978 being in 2009 to 2019 the director. His interests cover general analytical chemistry, electrochemical and bioanalytical methods of analysis, electrochemical sensors and biosensors, and analytical use of nanomaterials. He published 170 original and review journal papers with Science Citation Index >3500 and Hirsch index 33. Head is author of two editions of the textbook Analytical Chemistry. He was member and President of the Analytical Chemistry Division of International Union of Pure and Applied Chemistry (IUPAC), currently he is the Emeritus Fellow to the Division.

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J. Lademann*, M. Darvin*, W. Köcher**, B. Magnussen**

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** Biozoom GmbH, Kassel, Germany

The Skin as a Reflection of Our Lifestyle

A major cause of the aging process is the formation of free radicals in our skin and body due to solar radiation and stressful situations. Our human body has developed a protective system against these processes in the form of antioxidants. We cannot produce most of these antioxidants ourselves; instead, we must consume them through a healthy diet rich in fruits and vegetables.

These substances can neutralize free radicals before they can exert their damaging effects.

A Raman spectrometer was developed at the Charité that allows the first non-invasive, online detection of carotenoids in human skin, meaning without causing damage. Carotenoids are marker substances for the overall antioxidant potential. We tested the spectrometer on our employees for over a year.

It was shown that a healthy diet increases antioxidants in our skin and in our body. On the other hand, all types of stress processes lead to a reduction in these antioxidants in our body. This includes stress in professional and private life, excessive consumption of nicotine and alcohol, and excessive amounts of sun exposure.

The extent to which carotenoids affect skin aging was demonstrated in a study. For this study, participants were examined who were all 50 years old, thus already exhibiting a wrinkle or furrow, and who had not changed their lifestyle for decades. Both the skin surface structure, i.e., wrinkle density and depth, and the antioxidant potential were determined on a light-irradiated skin area—the forehead. It was found that subjects with high antioxidant potential had significantly fewer wrinkles and furrows than those with low values.

Biography

Prof. Dr. Dr.-Ing. Jürgen Lademann is an internationally renowned scientist researching at the interface between dermatology, pharmacology and biophysics. Since 1996 the physicist has been in charge of the Center of Experimental and Applied Cutaneous Physiology at the Department of Dermatology, of the Charité in Berlin up to 2020. In 2001 he was appointed Professor of Dermatology.

He authored and co-authored more than 800 articles in peer-reviewed scientific journals. He was the President of the "International Foundation of Societies of cosmetic Chemists – IFSCC" and he was the president of the IFSCC Congress 2018 in Munich and many other conferences.

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KDM6A/B Mediated Epigenetic Regulation of Constitutive Androgen Receptor Expression in Prostate Cancer

Elevated androgen receptor (AR) expression is a hallmark of resistance to androgen deprivation therapy, underscoring the need to elucidate mechanisms regulating basal AR expression independently of androgen signaling. Histone H3 lysine 27 tri-methylation (H3K27me3) demethylases KDM6A and KDM6B were found to be higher in lymph node–metastatic LNCaP but not in bone or brain–metastatic PC3 and DU145cells compared with benign BPH-1cells (1). AR is constitutively expressed only in LNCaP, raising the question of whether KDM6A/B maintain this expression. To model advanced disease, castration-resistant LNCaP 104-R2 cells were also analyzed, showing 29- and 2.5-fold increases in KDM6A and KDM6B mRNA, respectively, confirmed at the protein level. AR steady-state mRNA, pre-spliced mRNA, and protein levels decreased by 80%, 81%, and 74% in LNCaP, and by 64%, 59%, and 90% in 104- R2 upon KDM6 family selective inhibitor, GSK-J4. AR target genes KLK3, NKX3.1, and TMPRSS2 were similarly reduced. KDM6A or KDM6B knockdown decreased AR mRNA in LNCaP and LNCaP 104-R2, respectively, while GSK-J4 increased H3K27me3 enrichment at the AR promoter in both cell lines, as shown by Chromatin Immunoprecipitation (ChIP). To understand the role of KDM6A/B controlling AR expression in previously reported GSK-J4- induced reduction in proliferation (1), change in phospho Retinoblastoma (pRb), phospho Akt (pAkt) and pan Akt proteinlevels were measuredby Western Blot.GSK-J4 decreased pAkt,pan- Akt, and pRb levels by 43%, 22%, and 74% in LNCaP, and nearly abolished pAkt and pRb in LNCaP 104-R2. Importantly, AR overexpression rescued siKDM6A-induced AR loss in LNCaP. In summary, KDM6A/B regulate AR expression via an H3K27me3-dependent mechanism and modulate proliferation-associated signaling, revealing a novel mechanism for KDM6A/B in controlling PCa cell growth.

Keywords
androgen receptor, KDM6A, KDM6B,GSK-J4, epigenetic, prostate cancer,

Biography
Dr. Yıldırım-Buharalıoğlu graduated top of her class from Ege University Faculty of Pharmacy and completed her MSc in Pharmacology at the same institution. She received the Overseas PhD Scholarship from the Council of Higher Education of Turkey (YÖK) and completed her PhD in Molecular Pharmacology under the supervision of Prof. Andrew Newby at the University of Bristol, UK. Upon returning to Turkey, she established her independent research program focusing on cancer epigenetics. Her TÜBİTAK (The Scientific and Technological Research Council of Turkey) supported projects investigate epigenetic mechanisms associated with metastasis and the regulation of androgen receptor expression in prostate cancer.

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Dr. William Cunningham

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Neurosyphilis: A Rare Cause of Encephalitis in a Young Male

Background

Neurosyphilis remains a rare but important differential in patients presenting with cognitive change. Its clinical heterogeneity, ranging from psychiatric disturbance to stroke-like syndromes, often leads to diagnostic delay. Early recognition is essential, as appropriate antibiotic therapy can result in significant recovery.

Case

We report a 45-year-old man with unremarkable medical history presenting with seizure, and subacute cognitive decline. MRI brain revealed increased T2/FLAIR signal in the left temporal lobe. Cerebrospinal fluid (CSF) demonstrated lymphocytic pleocytosis with elevated protein. Infectious and autoimmune screens, including HSV PCR and NMDA receptor antibodies, were negative. Syphilis serology and CSF VDRL were strongly positive, confirming neurosyphilis.

Results

The patient received 14 days of intravenous ceftriaxone, leading to marked clinical improvement. His Addenbrooke's Cognitive Examination (ACE) score improved from 61 to 71 at 5-month follow-up. Neuropsychological testing showed recovery in language and visuospatial domains, though subtle deficits in processing speed and working memory persisted.

Conclusion

This case highlights neurosyphilis as a rare but treatable cause of encephalitis in immunocompetent patients. Clinicians should maintain a high index of suspicion in atypical encephalitis presentations. Early serological testing for syphilis is crucial to avoid misdiagnosis and ensure timely treatment.

Biography

Dr. William Cunningham is a dedicated medical practitioner with NHS Greater Glasgow and Clyde, United Kingdom. He has experience across acute and community healthcare settings, with a strong focus on evidence-based clinical practice and patient-centered care. Dr. Cunningham has contributed to clinical case reporting and shows ongoing interest in improving diagnostic accuracy and multidisciplinary care within the NHS system. His professional work reflects a commitment to service quality, continuing medical education, and supporting improved health outcomes across the Glasgow region.

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ISBN: 978-1-917892-28-5

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The Dual-active G9a inhibitor and Histamine H3 Receptor Antagonist A-366 Ameliorates Autism-Like Phenotypes, Neuroinflammation and Oxidative Stress in BTBR T+tf/j Mice

Autism spectrum disorder (ASD) is a prevalent combination of complex neurodevelopmental disorders characterized by repetitive stereotyped behaviours and impaired social communication. Although both epigenetic alterations and neurotransmitter imbalance are reported to contribute to ASD onset, almost no therapies targets both aspects simultaneously. This study investigated A-366, a selective histone H3K9 methyltransferase G9a inhibitor with additional histamine H3 receptor (H3R) antagonist properties, in BTBR T+tf/J mice. Chronic administration of A-366 (0.5, 1, or 2 mg/kg, i.p.) reduced repetitive behaviors, improved cognitive flexibility, and enhanced sociability and social novelty, with the highest dose restoring performance to near control levels. Enzymatic activity assays confirmed G9a inhibition in cerebellum and hippocampus, which was unaffected by coadministration with the H3R agonist RAMH. At dose 2 mg/kg, A-366 also significantly lowered cerebellar and hippocampal levels of TNF-α, IL-6, and IL-1β, and normalized oxidative stress by reducing malondialdehyde (MDA) and restoring superoxide dismutase (SOD) activity. Compared to the reference H3R antagonist Pitolisant, A-366 showed broader behavioral and biochemical improvements. Partial reversal of A-366's observed effects by coadministration with the centrally acting and selective H3R agonist RAMH indicated that H3R antagonism contributes to its mechanism of action, while G9a inhibition remained unaffected. These results suggest that A-366's dual modulation of epigenetic chromatin remodeling and G-protein coupled histamine H3 receptor signaling simultaneously addresses key pathological features of ASD. Although further pharmacological refinement is needed, the pharmacophore of A-366 offers a promising structural basis for the design of next-generation multi-target therapeutics for neurodevelopmental disorders.

Keywords
A-366, Autism spectrum disorder, G9a inhibitor, Histamine, H3R antagonist, BTBR mice.

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Biography

Bassem Sadek is Full Professor in the Department of Pharmacology & Therapeutics, College of Medicine & Health Sciences, United Arab Emirates University. He received his Bachelor of Pharmacy and later my PhD in Drug Design and Preclinical Drug Development from the Free University of Berlin/Germany. He is a member of several scientific societies, including European Histamine Research Society (elected society officer), German Society of Pharmacology and Toxicology, and German Pharmaceutical Society. Prof Sadek is an editorial board member of numerous peer-reviewed journals. His work in the field of drug design, pharmacological, and preclinical evaluation of ligands targeting cognitive as well as behavioral disorders has resulted in more than 110 publications in in the most prestigious journals in the world including Neuropharmacology, European Neuropsychopharmacology, Frontiers in Pharmacology, Behavioural Brain Research, Scientific Reports, Medicinal Research Reviews and many others. Also, his work is well recognized and as a result he is currently appointed as an honorary Research Associate in the Institute of Pharmaceutical and Medicinal Chemistry, Heinrich Heine University Düsseldorf, Germany.

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A self-adjuvanted protein nanoparticle that stimulates Ultra-High affinity antibodies

The extent of antibody affinity maturation is limited by the molecule diffusion rate and endocytosis of antigen-BCR complex from plasma membrane. B cell expressing BCR that has binding affinity in excess of these limits does not gain advantages during clonal selection. We have developed a self-adjuvanted protein nanoparticle platform, Vaccine Delivery system X for protein (VADEX-pro), that is able to incorporate a bacterial protein on the surface of protein nanoparticle through GFP strand complementation. In this study, we have expanded the application of VADEX-Pro by combining it with Spycatcher/Spytag technology. A receptor binding domain (RBD) from SARS-CoV2 was incorporated on the surface of VADEX by fusing with the spytag and formed covalent bond with spycatcher assembled on the surface of VADEX protein nanoparticle. After immunization, the antibody collected was subject to binding affinity measurement using surface plasma resonance (SPR). The results support the induction of ultra-high affinity antibodies that breaks the limit of both the rate constant of association and dissociation by a self-adjuvanted protein nanoparticle.

Keywords
self-adjuvanted protein nanoparticle (SAPN); superfolder green fluorescent protein (sfGFP); surface plasma resonance (SPR); Spycatcher/spytag technology; rate constant of association (ka); rate constant of dissociation (kd)

Biography
Ming-Chung Kan is a researcher and biotechnology professional at Vaxsia Biomedical Inc., Taipei, Taiwan. His work focuses on advancing biomedical innovation, with particular emphasis on vaccine technology, therapeutic development, and translational research. At Vaxsia Biomedical, he contributes to projects aimed at improving public health outcomes through cutting-edge biotechnological solutions. His expertise supports the development of novel biomedical strategies and drives progress in the life sciences sector.

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Mr Francis J. O'Keeffe

The University of Notre Dame Australia, Australia

Twinning and Individuation: An Appraisal of the Current Model and Ethical Implications

Discourses on human embryo experimentation often refer to monozygotic twinning and individuation. A criterion to establish regulations that guide human embryo research proposes that individuation is achieved once the embryo ceases to have the potential for dividing into two or more viable entities at about 15 days of gestational age. This standard is based on an updated version of a developmental model initially proposed by George Corner. A fundamental problem with this approach is the model's lack of sufficient evidence to explain adequately human embryo twinning and, consequently, to serve as a basis to establish appropriate ethical guidelines for embryo experimentation. In addition, subsequent formulations of Corner's model added an extension of blastomere totipotency to different moments of gestation, without a proper scientific basis. The model is also challenged by monozygotic twinnings that result in placental and amniotic arrangements incompatible with Corner's framework. Investigations into the physiology of fertilisation and of the zygote suggest that individuation may occur at a very early stage. An alternative description of monozygotic twinning may explain better sesquizygotic twinning events and serve to re-evaluate the individuation criterion. The study aims to investigate deficiencies in the embryology of this model and assess their ethical implications.

Biography

Dr. Francis J. O'Keeffe is a faculty member in the School of Medicine at The University of Notre Dame Australia, Sydney (NSW 2010). His scholarly work explores ethical dimensions of human development, with particular interest in twinning, individuation, and the moral challenges that arise at the intersection of biology and identity. Dr. O'Keeffe's research emphasizes critical ethical analysis, responsible clinical reasoning, and the integration of philosophical inquiry into contemporary medical education and practice.

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Mallika L. Mendu MD, MBA

Chief Population Health Officer, Mass General Brigham, Boston, MA

Implementation of a population health-based goal directed medical therapy program- Cardiac Kidney Metabolic Compass

The Mass General Brigham Population Health Services Organization (PHSO) is responsible for improving care for patients we serve through value-based care payment models, with the goal of enhancing quality and achieving better clinical outcomes. Hypertension, heart failure, chronic kidney disease and diabetes are chronic conditions and areas of focus to improve quality of care and clinical outcomes. We previously implemented pharmacist-led remote goal directed therapy medication management for hypertension and demonstrated improvements in hypertension control. In 2025 we adapted our model to include heart failure, chronic kidney disease and diabetes pharmacist-led remote monitoring and goal directed therapy medication management and have integrated care management supports for patients requiring in-person support during escalations of care. We are measuring over a 6-month period, pre-post intervention of impact on 1) hypertension and diabetes control; 2) admissions, readmissions and ED visits related to heart failure and chronic kidney disease; 3) implementation of goal directed therapy medication guidelines. We are also measuring total cost of care and patient experience with the chronic care management model, which aims to complement the care provided by frontline practices and expand access to guideline-based therapy across populations of patients with chronic conditions.

Biography

Mallika L. Mendu, MD, MBA, is Chief Population Health Officer for Mass General Brigham. Mallika leads the Population Health Services Organization, partnering closely with systemwide clinical and administrative leaders to set priorities and drive progress for the value-based care business. The PHSO identifies, develops, implements, and evaluates innovative care programs that improve quality, promote equity, and prevent avoidable hospitalizations, emergency department visits, and skilled nursing facility admissions or readmissions. We also provide patients with more choice in how and where they receive care. The PHSO works closely with frontline health care providers across the system, including care managers that help patients stay healthy and out of the emergency room, pharmacists that call patients to make sure they're taking the medications they need, and population health coordinators and community health workers that help patients manage chronic conditions.

Dr. Mendu completed her internal medicine residency at the BWH, her nephrology training at the BWH and MGH, and her MD and MBA degrees at the Yale School of Medicine and the Yale School of Management, respectively. She received her Bachelor's in Science from Brown University. She serves in the Department of Medicine, Renal Division, as a practicing nephrologist, clinical researcher, and associate professor, and conducts research related to quality, population health, equity and care delivery innovation. She has authored over 90 peer-reviewed publications and provides mentorship to trainees conducting research in health care delivery innovation.

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Fatemeh Karimzadeh, Seyed Abbas Mirzaei

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Repositioning of FDA-Approved Pharmaceuticals against Epstein–Barr Virus Nuclear Antigen 1 (EBNA1): A Molecular Docking and Molecular Dynamics Study

Epstein-Barr virus (EBV) is known as a malignancy-inducing oncovirus in cancers involving lymphoid and epithelial cells.Currently, there are no FDA-approved anti-EBV drugs on the market. On the other hand, the development of new molecules is a slow process with high costs. One promising strategy that has attracted widespread attention in recent years is the identification of new applications for clinically approved drugs. In this study, based on a review of previous studies, seven compounds identified as being able to block EBNA1-DNA binding were selected and used as templates in SwissSimilarity. Drugs were identified by SwissSimilarity based on their similarity score values to the templates, FDA-approved drugs were selected and then used for molecular docking analysis. A total of 204 drugs were identified based on structural similarity to the introduced patterns, of which 20 FDA-approved drugs were selected. The active binding sites of the EBNA1 protein, as well as the amino acids involved in their formation, were predicted using the online server PrankWeb. The molecular docking results were interpreted, and five ligands with the lowest binding energy (in kcal/mol) and the strongest binding affinity were selected. The stability behavior of selected docked complexes (drugs- EBNA1) was checked using MD simulations. Although some potential compounds related to other diseases have been identified, confirmation of their activity against EBV requires further investigation through in vitro, in vivo, and preclinical studies.

Keywords
Epstein–Barr virus (EBV), Malignancy, Drug repurposing, Molecular docking, MD simulations

Biography
Fatemeh Karimzadeh is presently a Ph.D. candidate in the Department of Medical Biotechnology at Shahrekord University of Medical Sciences. His research project is presently supervised by Prof. Seyed Abbas Mirzaei, focusing on the design of cell-penetrating peptides aimed at enhancing gene transfer using liposome nanoparticles to combat cancer drug resistance.

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The Therapeutic Role of Seaweeds in Disease Prevention and Health Promotion

There is a growing interestin bioactive compoundsproduced by seaweedsthat play a major therapeutic role in disease prevention in humans. Seaweed bioactives including polysaccharides, pigments,fatty acids, minerals, polyphenols and peptides have been proven to possess various beneficial biological properties that could potentially contributeto health benefits. These bioactives are explored for functional properties such as antioxidant, antibacterial, anticancer, antidiabetic, antitumor, antiviral, anti- inflammatory and anticoagulant properties, both in an in-vitro and in-vivo model system. Marine natural products have the potential to be a rich source of innovative multitargeted medications for the prevention and treatment of many diseases, as well as associated complications. Several studies have shown various remedial effects of seaweeds' species against non-communicable diseases such as inflammation, obesity,diabetes, hypertension and viral infection. Here is stated the existingscientific knowledge on primary and secondary metabolites from seaweed and their functional properties for health-related conditions. It presents the seaweeds' compoundsapplications. Future research should focus on the chemical variety of marine compounds as well as the mechanisms of action of marine-derived chemicals in order to find novel natural products to medicine and pharmacology sectors and maximize their therapeutic potential. Based on preclinical investigations, this study focuseson the next step for seaweed applications as potential multitargeted medicines contributing to human health and wellbeing.

Biography

Prof. Dr. Ana Marta Gonçalves completed her Ph.D. in Biology at the University of Coimbra (UC) in 2011. Currently, she is an auxiliary professor at the Department of Life Sciences of UC, Portugal. Since 2016, she has been a member of the Scientific Council of the Institute for Interdisciplinary Research, UC, headed the winning list in the last elections. She holds various administrative and management positions in international networks (e.g. Coordinator of UC Food Coordination – an Interdisciplinary Initiative of UC, Chair of SETAC Education Committee,eLTER Coordinator of the Working Group Sites and Platform Forum (SPF) Training Group, Coordinator of LTER Estuaries (Portugal), Board member in MARE, Portuguese representative in Training Working Group of LifeWatch), in societies (e.g., SETAC, AIL, SIBECOL, SPD) and associations (e.g., PROAQUA). Dr. Ana Marta Gonçalves also presents a vast research network, with national and international collaborations with Academia and aquaculture seaweed companies. Her research work has garnered extensive international media coverage across news outlets, journals, radio, and TV, owing to its significant impact and novelty which appeals to the international community and to society. Dr. Ana Marta Gonçalves s (co-)author of more than 130 publications with 6441 citations and a h-index of 41 (Scopus). She has participated as a member and/or coordinator in more than 37 national and international projects. During her research career, AMG obtained several grants and a MARS award for young scientists funded by the Royal Netherlands Institute for Sea Research (NIOZ). In 2021 AMG was awarded by UC with the Honorable Mention Award for the Impact of International Publications, according to Web of Science. She has expertise in biosafety, biochemical pathways, and the impacts of natural and chemical stressors on aquatic species. Her research focusses on the valorization of marine resources and their applications in the industrial sector, such as the food and pharmaceutical industries. Her studies also highlight the application of biomarker tools for monitoring and managing aquatic systems.

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Early Recognition and Management of Cercarial Dermatitis in Public Health

Cercarial dermatitis (CD), or swimmer's itch, is a parasitic skin condition caused by avian schistosome cercariae that accidentally penetrate human skin. Although the infection is generally not self-limiting, the disease causes intense pruritus, erythematous rash, and discomfort, with potential impacts on public health and tourism in freshwater recreational areas. Pharmacists frequently serve as the first point of contact for affected individuals, providing initial symptomatic relief through antihistamines, topical corticosteroids, or soothing formulations, and guiding patients on when further medical evaluation is required. Beyond frontline care, pharmacologists and other researchers may play a central role in the investigation and development of preventive and therapeutic measures. Research into novel topical barriers, protective creams, and antiparasitic formulations is essential to try to reduce skin penetration by cercariae and improve post-exposure management. Integrating pharmaceutical expertise into public health strategies not only enhances early recognition and symptomatic care but also advances innovation in protective products aimed at reducing and mitigating the broader impact of this emerging parasitic disease. In this context, Portugal is beginning to disseminate knowledge among medical doctors and pharmacists, generating relevant epidemiological data, with this type of work being closely linked to ongoing field investigations.

Keywords
cercarial dermatitis, clinic pharmacy, public health, one health, zoonotic disease,

Biography
Maria Teresa Bispo is a PhD student in Biomedical Sciences at IHMT-NOVA, specialising in Parasitology. She graduated in Biomedicine (2017) from the Federal University of Mato Grosso, Brazil, where she researched immune responses to Strongyloides venezuelensis. She completed a Master's in Tropical Parasitic Diseases (2019) at the University of Valencia, focusing on the distribution of the freshwater snail Planorbarius metidjensis. With experience in clinical diagnostics (2020–2022) and postgraduate training in Clinical Analysis (2021), she currently investigates snail-borne trematodes in Portugal under Project Alqueva, integrating molecular, ecological, and One Health approaches.

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Dr. Boris Farber[1], Dr. Artur Martynov[2]

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A Dynamic, Self-Assembling Antiviral Drug for Broad-Spectrum Viral Infections

Traditional antiviral drug development encounters a fundamental contradiction: drugs are inherently static, single- target molecules, whereas viruses, with their diverse nuclear import signals, are dynamic and necessitate a broad spectrum of treatments. Our research addresses this challenge by applying the principles of TRIZ (Theory of Inventive Problem Solving) to develop Albuvir, a pioneering dynamic antiviral composed of a mixture of acylated peptides. The objective of this work was to create a "smart" drug capable of self- adjustment to effectively treat various viral infections, including influenza, herpesviruses, and coronaviruses. The methodology for Albuvir' s design was grounded in TRIZ principles such as fragmentation (breaking down proteins into oligopeptides), dynamism (creating a substance that alters its characteristics for different viral targets), and most critically, self- organization. Albuvir' s mechanism of action involves the transient inhibition of nuclear import peptides, specifically alpha- and beta- importins. Carboxylated Albuvir peptides bind to the nuclear import signal, thereby obstructing both the entry of viral genomes into and the release of viral particles from the cell nucleus. The most innovative aspect lies in the active inhibitor' s self- assembly at the target site from various inactive Albuvir peptides, whereby a small number of high- affinity fragments associate with the specific importin signals of each virus, effectively creating a tailored drug on demand. This strategy enables a single drug to substitute for many, thereby resolving the core dilemma in antiviral drug design. Currently, Albuvir is employed as a veterinary medication, demonstrating excellent pharmacological indicators (LD 50 = 2880 mg/kg, ED 50 = 25 mg/kg, Ti = 115.2. 2). This work introduces a new paradigm for drug discovery and medicinal chemistry, illustrating how a dynamic, self- assembling system can transcend the limitations of static drugs and ensuring its adaptability in treating various viral infections.

Keywords
Drug Discovery, Development, Medicinal Chemistry, Antiviral, Peptides, Self-Assembly

Biography
Dr. Boris Farber, holding dual PhDs and an ScD, is a Professor and TRIZ Master specializing in the Theory of Inventive Problem Solving, which is based on evolutionary patterns. His expertise in pharmaceutical chemistry and molecular modeling, backed by more than 217 patents—including 10 U.S. patents on a new class of adaptive, dynamic drugs—and over 500 publications, has revolutionized antiviral treatment by addressing the limitations of static drugs. His pioneering research on self-assembling oligopeptides highlights nanotechnology's potential for resistance-proof therapies, earning him the Nikola Tesla Gold Medal. An active member of the American Chemical Society and AAAI, Dr. Farber works globally to promote nanotech-based healthcare and has spoken at numerous international congresses.

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Çağatay ESİN

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Evolving Pharmacological Strategies in Feline Arterial Thromboembolism: From Antiplatelet Therapy to Novel Anticoagulants

Feline arterial thromboembolism (FATE) is a serious cardiovascular emergency characterized by sudden limb ischemia, severe pain, and high mortality rates, often resulting from hypertrophic (HCM) or restrictive cardiomyopathy (RCM). The interaction between endothelial damage, blood flow stasis, and hypercoagulability plays a critical role in the pathogenesis of thrombosis. Evaluating the mechanisms of action, clinical applications, and future potential of existing and new therapeutic agents used in the pharmacological management of FATE is crucial for developing the best treatment protocol. In the acute phase, standard or low-molecular-weight heparins limit thrombus formation by inhibiting factor Xa and thrombin through antithrombin III. In secondary prophylaxis, clopidogrel blocks P2Y12 receptors on the platelet surface, reducing aggregation and reducing the risk of recurrence. In recent years, direct oral anticoagulants (DOACs) such as rivaroxaban, apixaban, and dabigatran offer a more predictable pharmacokinetic profile, minimal laboratory monitoring requirements, and a lower risk of hemorrhagic complications by directly inhibiting factor Xa and thrombin, respectively. Furthermore, recombinant tissue plasminogen activator (tPA) catalyzes the conversion of plasminogen to plasmin, dissolving fibrin clots. In clinical studies, tPA has shown promising results in restoring distal perfusion, preserving limb function, and reducing mortality rates. However, due to its high cost, short half-life, and potential bleeding risk, timing of administration requires careful attention. Newer-generation fibrinolytic agents, such as tenecteplase and alteplase, offer clinical advantages due to their longer half-life, increased fibrin selectivity, and ease of dosing. In conclusion, optimization of anticoagulant–antiplatelet combinations, pharmacogenomics-based individualized therapies, and development of next-generation targeted antithrombotic agents will provide significant advances in the future management of FATE.

Keywords
Anticoagulant, DOAC, Feline arterial thromboembolism, thrombolytic therapy, tPA

Biography
Dr. Çağatay Esin is an Dr. research assistant in the Department of Internal Medicine, Faculty of Veterinary Medicine, Ondokuz Mayıs University, Samsun, Türkiye. His research focuses on small animal internal medicine, veterinary cardiology, and ultrasonography. He has conducted advanced studies on cardiopulmonary diseases in cats and dogs, feline arterial thromboembolism, and ultrasonography. Dr. Esin has authored numerous peer-reviewed articles and serves as a reviewer and editorial board member for international veterinary journals.

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Cumali KAYA

Department of Reproduction and Artificial Insemination, Faculty of Veterinary Medicine, Ondokuz Mayıs University, SAMSUN, Türkiye

Pharmacological and toxicological perspectives in sperm cryobiology: Antioxidant strategies, cryoprotectants, and molecular biomarkers

Cryopreservation of sperm and testicular tissue is fundamental in assisted reproduction, animal breeding, and fertility preservation. Nevertheless, the freeze–thaw process inevitably induces toxicological effects, including oxidative stress, mitochondrial dysfunction, membrane destabilization, and DNA fragmentation, which compromise post-thaw sperm function. These adverse outcomes emphasize the need for pharmacological interventions to minimize cryoinjury.
Antioxidant compounds such as sodium selenite, selenium nanoparticles, curcumin, and melatonin have recently gained attention as promising strategies to counteract oxidative damage. Acting through free radical scavenging, membrane stabilization, and modulation of apoptotic pathways, these agents contribute to improved post-thaw outcomes. In parallel, advances in cryoprotectant formulations such as glycerol, DMSO, Ethylene glycol, and innovative combinations have sought to optimize osmotic protection while reducing cytotoxicity.

Integrating conventional spermatological parameters with molecular and biochemical analyses provides a comprehensive framework for understanding cryoinjury and its mitigation. Molecular biomarkers, particularly DNA repair and stress-response genes including PARP-1 and caspase-3, are valuable tools to assess the extent of cryodamage and the efficacy of protective interventions.

This review-based presentation will discuss current progress in sperm and testicular tissue cryobiology, integrating insights from my own research on antioxidant-based interventions and cryoprotectant optimization. In my studies, supplementing semen extenders with sodium selenite, selenium nanoparticles, curcumin, and melatonin significantly improved post-thaw sperm motility, viability, membrane integrity, and chromatin stability. Molecular analyses demonstrated modulation of DNA repair and stress-response genes, particularly PARP-1 and caspase-3, correlating with reduced cryoinjury. The insights gained from these studies are relevant for improving reproductive biotechnologies and provide a translational framework for toxicology models of cellular stress.

Keywords
Cryopreservation, Sperm, Testicular tissue, Antioxidants, Cryoprotectants

Biography
Dr. Cumali Kaya, born in 1995, is a veterinarian and completed his PhD in 2024. His research focuses on reproductive biotechnology, cryopreservation of sperm and testicular tissue, antioxidant-based interventions, and molecular biomarkers of cryoinjury. His work investigates the effects of cryoprotectants and various antioxidants on sperm motility, viability, chromatin integrity, and various sperm releated genes. He has contributed to improving cryopreservation protocols while exploring pharmacological and toxicological implications relevant to reproductive biology. He continues his research and professional career at Ondokuz Mayıs University, contributing to enhancing cryopreservation protocols while exploring pharmacological and toxicological implications pertinent to reproductive biology.

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David C. Wraith

Department of Immunology and Immunotherapy, University of Birmingham, Birmingham U.K.

Design of novel therapeutic vaccines for antigen-specific immunotherapy of autoimmune diseases

Our laboratory designs therapeutic vaccines for the prevention and treatment of autoimmune diseases. Autoimmune diseases arise from dysregulation of the adaptive immune system and the resulting hypersensitivity of the immune response to self-antigens. CD4-T cells play a central, orchestrating role in the adaptive immune system and for this reason we have designed a strategy to selectively 'switch off' T cells specific for the self-antigens associated with different autoimmune diseases. We have defined the rules governing design of therapeutic peptides based on the CD4 T-cell epitopes associated with disease. Furthermore, we have used experimental models to demonstrate the genetic and epigenetic mechanisms controlling cell anergy and the generation of regulatory T cells following treatment with our therapeutic peptide vaccines. This presentation will discuss our design approach and application of therapeutic peptide vaccines in autoimmune diseases including multiple sclerosis, Graves' disease and type 1 diabetes.

Keywords
autoimmune disease, CD4 T cell, vaccine, epitope, immunotherapy

Biography
David is an immunologist who has worked on infectious and autoimmune diseases. Between 2016 and 2023 was Director of the Institute of Immunology and Immunotherapy in Birmingham. His group recently defined the cellular and molecular basis of antigen-specific immunotherapy including definition of the genetic and epigenetic control of the approach. They successfully completed clinical trials of peptide immunotherapy in Multiple Sclerosis and Graves' hyperthyroid disease. Antigen-specific immunotherapy is designed to improve the safety and efficacy of immunotherapy by specifically targeting the cells involved in allergic and autoimmune diseases.

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Optimizing the Routine Use of Clinical Guidelines by Addition of Supplements (Probiotics and/or Bismuth) to Helicobacter pylori Eradication Protocols in a Clarithromycin Resistant and Tetracycline/Bismuth Naive Area: A Real-World Data Retrospective Analysis of 402 Cases (2016–24) in a Single Gastroenterology Unit

Background

The official current guideline for Helicobacter pylori (H. pylori) eradication is to use tetracycline–bismuth-based protocols as first line treatment due to the increasing incidence of clarithromycin resistance in the last decade. The unavailability of tetracycline and bismuth-containing medicines, however, is an issue in many countries, limiting the routine use of these protocols. The value of using additional probiotics in eradication protocols is also unclear. Direct comparison data on the effect of available bismuth compounds and different probiotic strains on eradication outcome are limited.

Goal

The aim of our investigation was to find optimal eradication protocols, supplementations and treatment duration for routine clinical use in our gastroenterology unit, located in a highly clarithromycin-resistant and tetracycline–bismuth-naïve area.

Materials and Methods

We conducted a retrospective real-world data analysis of 402 H. pylori positive patients between 2016 and 2024. H. pylori infection was diagnosed using histological examination of gastroscopy samples obtained from the gastric antrum. For the evaluation of treatment success or failure, 14C breath tests and stool H. pylori antigen tests were performed. Data on patient characteristics and treatment protocols were collected from our electronic patient record system, and treatment success was compared between the different treatment regimes.

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Results

Despite the regional clarithromycin resistance, supplementing clarithromycin-based regimens with bismuth and probiotic during the 14-day treatment duration showed a high and comparable cure rate when compared to tetracycline-based regimens, which are the current first-line therapies. When tetracycline-based combination is available, it is recommended to use it with an additional probiotic to achieve the best possible outcome. Comparison of the effect of available bismuth preparations on treatment success showed no significant difference. Generally, probiotic-containing protocols are more successful, compared to those treatments without this supplement. There was no statistical difference in the cure rates amongst the four probiotic strains used, where sample size allowed statistical analysis. Furthermore, supplementation with probiotics Lactobacillus reuteri ATCC PTA 6475 or Lactobacillus reuteri Protectis® DSM 17938 showed promising high treatment success rates (85.2% and 100.0%, respectively) in our study.

Keywords

Helicobacter pylori; clinical guideline; eradication protocol; bismuth; probiotics

Biography

Dr. Ibolya Czegle is an Internal Medicine, Clinical Oncology, Palliative Care, and Gastroenterology specialist with an MD (2005) and PhD (2007) from Semmelweis University. Since 2005, he has worked at the University's Department of Internal Medicine and Hematology, where he currently serves as Leader Consultant Specialist and Assistant Professor. He has extensive teaching experience across multiple faculties and has participated as opponent or consultant in numerous theses. His scientific work includes 77 publications, international collaborations, and principal/sub-investigator roles in 15 clinical trials. He speaks Hungarian (native), English (C2), and German (C2/native).

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Early postnatal infections, genetic susceptibility, and autism: molecular targets for intervention

There is increasing evidence that environmental factors, particularly immune activation, interact with genetic vulnerabilities to influence the onset and severity of neuropsychiatric disorders. Tuberous sclerosis complex (TSC), a genetic condition affecting approximately 1 in 6000 individuals, is associated with a markedly elevated risk of autism spectrum disorder (ASD), with prevalence estimatesof 40-60% comparedto 1-2% in the generalpopulation. Here, we examined the impact of early postnatal immune activation on social and cognitive phenotypes in a $Tsc2^{+/-}$ mouse model of TSC. We found that immune activation during early postnatal development induced profound impairments in social behavior, including deficits in social memory and alterations in communication patterns, selectively in male but not female $Tsc2^{+/-}$ mice. Mechanistically, these deficits were associated with abnormal mammalian target of rapamycin (mTOR)-dependent interferon signaling and microglial dysfunction. Notably, administration of rapamycin both prevented and permanently reversed the observed social memory deficits, and genetic deletion of IFNAR1 similarly protected male Tsc2+/- mice from the negative effects of early immune activation. Extending these findings to humans, analysis of medical records from more than three million children revealed that hospitalizations due to infections in early life were significantly associated with future development of ASD in males, but not in females. Together, our results provide novel mechanistic insight into how severe postnatal infections, acting synergistically with genetic susceptibility, contribute to socialand communication deficitsrelevant to ASD. Importantly, they highlight new therapeutic opportunities targeting mTOR and interferon pathways in neuropsychiatric disorders.

Keywords

autism, tuberoussclerosis, microglia, mTOR, interferon, immune activation

Biography

Manuel F. López Aranda,Ph.D., is a Distinguished Researcher at the University of Málaga (Spain) under the Beatriz Galindo Program. He earned his Ph.D. in Neuroscience from the University of Málaga and completed postdoctoral training at the University of California, Los Angeles (UCLA), where he later served as Assistant Project Scientist. His research investigates neurobiological mechanisms of learning and memory deficitsin disorders such asAutism Spectrum Disorder and Alzheimer's disease, with emphasis on microglia and immune activation. He has published in high-impact journals, including Science, Nature Reviews Neuroscience, and Science Advances.

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A Next-Generation Magnetic Bead-Based Electrochemical Biosensor for Rapid and Ultra-Sensitive Cocaine Detection in Biological Fluids

The rapid and accurate detection of illicit drugs in biological fluids is essential for clinical toxicology, forensic investigations, and roadside drug testing. This study aims to develop a highly sensitive and portable electrochemical biosensing platform for the detection of cocaine, addressing the increasing demand for rapid, low-cost, and reliable analytical tools. The proposed approach integrates functionalized magnetic beads (MBs) with screen-printed carbon electrodes (SPCEs) to form a competitive immunoassay system. In this configuration, cocaine present in the sample competes with cocaine–bovine serum albumin (BSA) conjugates immobilized on the MBs for the binding sites of horseradish peroxidase-labeled anti-cocaine antibodies (HRP-DAb). The enzymatic activity is quantified amperometrically through a hydrogen peroxide/hydroquinone (H_2O_2/HQ) redox system, providing a direct electrochemical signal proportional to the cocaine concentration. The developed biosensor exhibits excellent analytical performance, with a linear response between 0.3 and 300 ng mL^{-1} and a detection limit as low as 0.1 ng mL^{-1}. Validation in human saliva and urine confirmed its selectivity and robustness in complex biological matrices. With a total analysis time below 30 minutes and compatibility with disposable electrodes, the platform demonstrates great potential for field-deployable and point-of-care applications. This innovative system offers a promising step toward rapid, sensitive, and user-friendly cocaine detection for clinical and forensic settings.

Keywords

cocaine detection, magnetic beads, electrochemical biosensor, immunoassay, screen-printed electrode, point-of-care testing

Biography

Dr. Mohamed Zouari is an Assistant Professor of Analytical Chemistry at the University of Tunis El Manar, specializing in electrochemical biosensors and mass spectrometry-based analysis. His research focuses on developing integrated sensing platforms for biomedical and environmental applications, combining nanomaterials, immunoassays, and advanced analytical techniques. He has contributed to several international collaborations and publications in the field of bioelectrochemistry and analytical chemistry.

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Phytochemicals from selected ethno-medicinal plants interact with receptor-binding domains of SARS-CoV-2 spike protein

This study explored the potential of ethno-medicinal practice and molecular modelling of phytochemicals in informingdrug targets againstCOVID-19 infections. The study was conducted at four sites in western Kenya's Lake Victoria basin. Purposive sampling and snowballing was used to identifySeventeen (17) traditional health practitioners (THPs)with experience in COVID- 19 management. Of the 17 THPs identified, 92% had more than 10 years of experience in the practice of traditional medicine. A total of 43 medical plants were identified and documented, but only seven (7) plants, prescribed consistently by all the 17 THPs were investigated further. Phytochemical analysison GC-MS identified compounds belonging to different chemicalclasses: terpenes, alkanes, alkene,alcohols, acridone, pyrazine,and carboxylic acid esters. Furtheranalysis on Heatmap revealed the compounds to vary in quantity across different plant type. Importance ranking of the compounds using Mean Decrease in Accuracy (MDA) as estimated by random forest analysis revealed 17 compounds, mostly alkanes and terpenes. Molecular modelling revealed the SARS-CoV-2 S-protein to possess multipleactive sites. The phytochemicals studied showed potential multiple conformers, mainly terpenes interacting with each of the S-protein active sites including Aromadendrene, 9-epi-E-Caryophyllene, α-Bergamotene, α-Copaene, Cuparene, and α-Ylangene. Overall, the study underscores the beneficial contribution of traditional medicine in settings where accessto comprehensive healthcare services for COVID-19is limited. The identified plants and/or their phytochemicals could be targeted for conservation and future investigations including in-vivostudies targeting differentaspects of the virus replication process, followed by the development of drugs with novel mode of action.The phytochemicals can also be screened for activities against other viruses in the Coronaviridae family.

Keywords
Molecular modeling, spike-protein, human ACE-2,COVID-19, medicinal plants, traditional health practitioners (THPs)

Biography
Dr. Milugo is an educator, mentor and researcher. She has over a decade of teaching experience, having worked as an assistant lecturer and Tutorial Fellow at two universities, in Kenya. Presently, She is a Postdoctoral Fellow at the Medical Research Council Unit The Gambia at LSHTM. Her professional background is interdisciplinary spanningthe fields of disease vectorcontrol, ethno-medicine and public health. Trizah is also passionate about science citizenship and community service.For the past five years, she has conducted several mentorship programs in high school in Kenya with an aim of instilling a passion for science among the students.

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Yadvinder Bhuller, PhD, MSc.

University of Ottawa, Canada

StrengtheningNext Generation Risk Decision-Making

Over the last few years, advancesin science and technology have resulted in significant paradigm shifts in risk decision-making. The risk community has transitioned towards more modern approaches that build upon foundational elements in areas such as pharmacology, toxicology, medicine, and risk science while considering non-animal solutions, contemporary tools, and the incorporation of artificial intelligence. Consequently, the overall processfor these "nextgeneration risk decision-making" strategies is more complexand holistic. What seems to be lacking,however, are the underlying constructs and relevantconsiderations for developing or evaluating approaches to next generation risk decision-making. This includes a better understanding of the deeplyrooted risk and ethical principles that create the risk culture, governance, and mindset required for these fully integrated solutions. The kaleidoscope model addresses this limitation as it creates the right orientation to view the underlying constructs, attributes and best practices (i.e., considerations), and the intricate nature of how these various elements intersect and interact in the risk decision- making process. Evaluating existing, approaches provides additional insights designed to further strengthen the collective knowledge of all who are interested in next generation risk decision- making.

Biography

Dr. Yadvinder Bhuller, PhD, MSc, is a researcher and analyst specializing in advanced risk assessment, decision sciences, and strategic systems planning. His work focuses on developing next-generation risk-decision frameworks that integrate data-driven analysis, human factors, and emerging technologies. Dr. Bhuller is dedicated to improving how organizations identify, evaluate, and respond to complex risks, with an emphasis on building resilient systems and informed leadership. His research and professional contributions support stronger, more adaptive decision-making models for future challenges.

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The application of cannabidiol brings new hope for treating Alzheimer's disease and delaying aging

Cannabidiol(CBD), a non-psychotropic cannabinoid extracted from the Cannabis sativa, can regulate the cellular homeostasis and participate in many tissue metabolic processes by binding the CB1 and CB2 receptors to activate the endocannabinoid system. Although limited knowledge is available about the role of CBD, multiple studies have shown that CBD has a wide range of pharmacological effects in many aspects, including pain, inflammation, epilepsy, and anxiety, especially in the treatment of neurodegenerative diseases such as Alzheimer's disease (AD). AD is a common age-related neurodegenerative disease, characterized by progressive memory loss in early AD patients, ultimately leading to cognitive dysfunction and even life-threatening consequences due to neuronal loss and dysfunction, imposing a heavy burden on families and society. The enhanced aging population has increased the incidence rate of AD. If the goal of anti-aging and delaying the occurrence of AD to improve the cure rate of AD, there is an urgent need for screening new drugs, especially those from natural plants. This article systematically reviews the relationship between AD and aging, the current status of CBD in AD treatment and aging prevention, and summarizes their molecular mechanisms. These studies will provide new research ideas for the pharmacological development and application of CBD, as well as for the prevention and treatment of AD and anti-aging research in the future.

Keywords

Cannabidiol; Alzheimer's disease; Aging; Molecular mechanism;Neuroinflammation

Biography

Yanying Liu is a professor currently teaching Medical Pathogenic Microbiology and Parasitology, Immunology, and Biochemistry at Qingdao Huanghai University in China since 2021. She mainly engages in research in Neuroscience. Dr. Liu is currently a reviewer for journals such as the Journal of Neuroinflammation, Molecular Neurobiology, Neural Regeneration Research, and Journal of Neuroimmunopharmacology, and served as an editorial board member for more than 15 journals. Her current research interests are the mechanisms of the aging process, cerebral hypoxia, and stroke.

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In Cardiogenic Shock,Overweight and ObesityHave the Lowest, Whereas Cachexia Has the Highest Mortality

Introduction

Theobesity paradox has been observedin patients with cardiovascular dis- ease. The goal of this study was to evaluate whether obesity has a protective effect in pa- tients presenting with cardiogenic shock.

Method

Using a large Nationwide Inpatient (NIS) sample database, we evaluated mortality in patients with cardiogenic shock based on weight categories in adults.

Results

A total of 843,020 patientsover age 18 had a diag- nosis of cardiogenic shock in the database. We found that overweight and obesity had the lowest mortality using univariate or multivariate analysis (overweight mortality of 20.66% vs. obesity mortality of 26.6% vs. 34.8% of normal weights). In contrast, cachexia was associated with the highest mortality in univariate analysis (cachexia 40.4%). Using multivariate analysis adjusting for age, baseline characteristics, and comorbidities, these relations remainedunchanged (cachexia MVOR:1.13; CI: 1.21–1.13; $p < 0.001$; overweight MVOR: 0.52, CI: 0.43–0.65; $p < 0.001$; obesity MVOR: 0.76, CI: 0.73–0.79; $p < 0.001$). After multivariate adjustment, morbid obesity had similar mortality to patients with normal weight (morbid obesity MVOR: 0.99 CI 0.95–01.03; $p = 0.6$)

Conclusions

We observe a partial obesity paradox in patients with cardiogenic shock, showing that being over- weight, followed by obesity, has the lowest mortality, whereas cachexia has the highest mortality despite multivariate adjustment.

Keywords

obesity paradox; obesity; cardiogenic shock; shock; obesity; morbid obesity; cachexia; congestive heart failure

Biography

Zahra Sadin is a researcher with the Department of Medicine at the University of Arizona Sarver Heart Center in Tucson, Arizona. Her work focuses on advancing cardiovascular research, with interests spanning cardiac physiology, translational therapeutics, and patient-centered approaches to heart health. At the Sarver Heart Center, she contributes to interdisciplinary projects aimed at improving diagnostic methods, strengthening clinical outcomes, and supporting innovation in cardiovascular medicine. Zahra is committed to combining rigorous scientific inquiry with meaningful clinical impact.

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