



9th International Conference on Food and Nutrition-KL

ICFN 2026



29th & 30th May 2026



Kuala Lumpur, Malaysia

Organized by



IFERP Life Sciences-
Formerly BioLegues

Academic Partner



Center of Marine Ecology and Biomonitoring
for Sustainable Aquaculture (Ce-MEBSA),
Diponegoro University, Indonesia



9th International Conference on Food and Nutrition – KL (ICFN-2026), Kuala Lumpur, Malaysia

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Conference Theme

Innovative Food Systems and Sustainable Nutrition for Global Health

Preface

We are delighted to extend a warm welcome to all participants attending 9th International Conference on Food and Nutrition-KL (ICFN-2026) organized by Center of Marine Ecology and Biomonitoring for Sustainable Aquaculture (Ce-MEBSA) Diponegoro University, Indonesia and IFERP Life Sciences—Formerly Bioleagues on May 29th–30th, 2026. This conference provides a vital platform for researchers, students, academicians, and industry professionals from all over the world to share their latest research results and development activities in the field of Food and Nutrition. It offers delegates an opportunity to exchange new ideas and experiences, establish business or research relationships, and explore global collaborations.

The proceedings for ICFN-2026 contain the most up-to-date, comprehensive, and globally relevant knowledge in the field of Food and Nutrition. All submitted papers were subject to rigorous peer-reviewing by 2–4 expert referees, and the papers included in these proceedings have been selected for their quality and relevance to the conference. We are confident that these proceedings will not only provide readers with a broad overview of the latest research results in Food and Nutrition but also serve as a valuable summary and reference for further research in this field.

We are grateful for the support of many universities and research institutes, whose contributions were vital to the success of this conference. We extend our sincerest gratitude and highest respect to the many professors who played an important role in the review process, providing valuable feedback and suggestions to authors to improve their work. We also extend our appreciation to the external reviewers for providing additional support in the review process and to the authors for contributing their research results to the ICFN-2026.

We express our gratitude to the keynote and individual speakers and all participating authors for their dedication and hard work. We also sincerely appreciate the efforts of the technical program committee and all reviewers, whose contributions made this conference possible. Finally, we extend our thanks to all the referees for their constructive comments on all papers, and we express our deepest gratitude to the organizing committee for their tireless work in making this conference a reality.

About ICFN 2026

The 9th International Conference on Food and Nutrition (ICFN-2026) is a premier global forum dedicated to advancing food security, sustainable nutrition and innovative food systems. With the theme “Innovative Food Systems and Sustainable Nutrition for Global Health”, the conference emphasizes the urgent need to integrate science, technology, policy and community action to address challenges in food production, distribution and nutrition.

Held in Kuala Lumpur, Malaysia, ICFN-2026 will bring together scientists, nutritionists, policymakers, industry leaders, educators and sustainability advocates from across the globe. The conference provides a platform to showcase cutting-edge research, share best practices and foster partnerships that strengthen food systems and improve nutritional outcomes worldwide.

Objectives of the Conference

The 9th ICFN is designed to serve as a catalyst for innovation, collaboration and sustainability in food and nutrition systems. Its objectives are aligned with global priorities and the UN Sustainable Development Goals (SDGs).

Core Objectives

- **Advance Food Security & Sustainable Agriculture** Promote climate-smart farming, biodiversity conservation and resilient food systems to ensure global nutrition security.
- **Strengthen Public Health through Nutrition** Provide strategies to combat malnutrition, obesity and diet-related diseases, ensuring equitable access to healthy food.
- **Promote Food Innovation & Technology** Showcase biotechnology, smart food systems and sustainable food processing to transform global nutrition practices.
- **Enhance Policy & Governance Frameworks** Encourage strong institutions, food safety regulations and equitable policies that support sustainable food systems.
- **Empower Sustainable Diets & Consumer Awareness** Inspire communities to adopt responsible consumption practices and sustainable diets that improve health and reduce environmental impact.
- **Foster Global Partnerships & Collaboration** Build international networks among academia, industry, policymakers and civil society to drive collaborative solutions for food and nutrition.
- **Educate & Empower Future Leaders** Engage youth, students and early-career professionals in food and nutrition innovation, equipping them with knowledge and opportunities to lead.
- **Showcase cutting-edge research and technological advancements** that drive sustainable progress in fields such as biotechnology, medical research, environmental sciences, and public health.
- **Provide a nurturing environment** for early-career researchers and professionals to network, gain visibility, and receive constructive feedback from international experts.

ICFN-2026 aspires to bridge the gap between research and real-world impact, contributing meaningfully to global sustainability and improved health outcomes across diverse populations.

About IFERP Life Sciences

IFERP Life Science is a globally recognized professional association meant for research, innovation and development in the field of life sciences and medical sciences. It serves to propel and fuel all innovative works of research with immense potential in the fields of Healthcare, Life Sciences, Pharmaceutical Sciences, Medical Sciences, Food & Nutrition, Environmental Science, Oncology, Cardiology, Nursing, Microbiology, Physiotherapy, Dentistry and many more. IFERP Life Science has been directly responsible for a significant amount of the revolutionary developments that have taken place in these fields over the past few decades.

IFERP Life Science is a specialized platform that supports life science and medical professionals in advancing their careers and research impact. Our tailored solutions include international conferences, Faculty Development Programs, Webinars, author services, membership and scientific communications, designed to foster collaboration and knowledge-sharing within the global medical community.

Our Mission

- Promote global research, innovation and development in life science, medical science, environmental science, pharmaceutical science and health care, to attain sustainable development goals (SDG's) for universal benefit.
- Advance Life Science & Medical Science for societal service.
- To facilitate knowledge exchange and growth through our professional activities and scientific conferences.

Our Vision

- An inclusive global scientific community promotes excellence in life science and medical events, author services, membership, informed decisions, and actions worldwide.

Director's Message, IFERP



Managing Director, IFERP,
Technoarete Group, India

On behalf of IFERP & the organizing Committee, I express my hearty gratitude to the Participants, Keynote Speakers, Delegates, Reviewers and Researchers.

The goal of the 9th International Conference on Food and Nutrition (ICFN-2026) is to provide knowledge enrichment and innovative technical exchange between international researchers or scholars and practitioners from the academia and industries in various fields of Innovative Food Systems and Sustainable Nutrition.

This conference creates solutions in different ways and to share innovative ideas in the fields of green innovation, sustainable practices and climate resilience. ICFN-2026 provides a world class stage to the Researchers, Professionals, Scientists, Academicians, and students to engage in very challenging conversations, assess the current body of research and determine knowledge and capability gaps.

ICFN-2026 will explore the new horizons of innovations from distinguished researchers, scientists and eminent authors in academia and industry working for the advancements in Innovative Food Systems and Sustainable Nutrition from all over the world.

ICFN-2026 hopes to set the perfect platform for participants to establish careers as successful and globally renowned specialists in various fields of Innovative Food Systems and Sustainable Nutrition.

CEO's Message, IFERP



CEO, IFERP,
Technoarete Group, India

IFERP is hosting the 9th International Conference on Food and Nutrition (ICFN-2026) this year in month of May. The main objective of ICFN-2026 is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points, and experience enormous growth and development as a professional.

There will be no shortage of continuous networking opportunities and informational sessions. The sessions serve as an excellent opportunity to soak up information from widely respected experts. Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and become known as a thought leader.

I express my hearty gratitude to all my Colleagues, Staffs, Professors, Reviewers and Members of organizing committee for their hearty and dedicated support to make this conference successful.

I am also thankful to all our delegates for their pain staking effort to make this conference successful.

Director's Message, Ce-MEBSA



Director - Center of Marine Ecology
and Biomonitoring for Sustainable
Aquaculture (Ce-MEBSA)
Diponegoro University, Indonesia

Distinguished professors, researchers, scientists, industry professionals, honored guests, ladies and gentlemen,

It is my great pleasure to warmly welcome all of you to the 9th International Conference on Food and Nutrition - Kuala Lumpur (ICFN-2026). On behalf of the organizing committee, particularly the Center of Marine Ecology and Biomonitoring for Sustainable Aquaculture (Ce-MEBSA) and IFERP Life Sciences, I would like to express our sincere appreciation for your participation in this important international gathering.

This year's conference theme, "Innovative Food Systems and Sustainable Nutrition for Global Health," reflects our shared commitment to addressing global challenges related to food security, nutrition, sustainability, and human health. In today's rapidly changing world, collaboration across scientific disciplines and sectors is increasingly important to develop innovative and practical solutions for a healthier and more sustainable future. The ICFN-2026 brings together experts and participants from around the world to exchange knowledge, share research findings, discuss emerging technologies, and strengthen international collaboration in food science and nutrition. We believe that this conference will provide valuable opportunities to build meaningful partnerships, inspire new ideas, and encourage innovative approaches that contribute positively to society and global well-being.

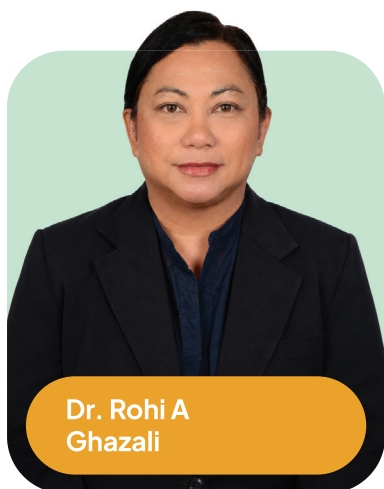
As the founder of Ce-MEBSA and part of the organizing committee, I am truly honored to welcome all distinguished participants to Kuala Lumpur, Malaysia. I sincerely hope that this conference will not only enrich our academic and professional perspectives, but also strengthen our collective commitment to advancing sustainable food systems and improving nutritional health worldwide.

Thank you for being part of ICFN-2026.

I wish you all a productive, inspiring, and enjoyable conference experience.

Thank you very much.

About Keynote Speaker



Professor,
Universiti Kebangsaan Malaysia,
Malaysia

Prof. Dr. Ahmad Rohi Ghazali is a Professor of Pharmacology and Toxicology at the Biomedical Science Programme, Centre for Toxicology and Health Risk Studies (CORE), Faculty of Health Sciences, Universiti Kebangsaan Malaysia. His current research focuses on cancer chemoprevention, particularly exploring the therapeutic potential of pterostilbene and other natural products with bioactive compounds.

In addition, he is actively involved in collaborative research with Polis DiRaja Malaysia (PDRM) on the toxicological profiling of New Psychoactive Substances (NPS), contributing to national efforts in public health and safety. Prof. Dr. Ahmad also serves as an expert panel member for the CODEX Food Additive Committee and speaker for the International Food Safety Training Centre (IFSTC) under the Ministry of Health Malaysia, and the Genetically Modified Advisory Committee (GMAC) under the Biosafety Department, Ministry of Natural Resources and Environmental Sustainability, Malaysia.

His work bridges academic research, public health policy, and regulatory frameworks, aiming to address emerging toxicological and pharmacological challenges.

About Keynote Speaker



Professor,
Universiti Putra Malaysia,
Malaysia

Professor Ts. Dr. Mohd Nasir Mohd Desa is a distinguished academic and researcher in health sciences at Universiti Putra Malaysia (UPM). He obtained his Bachelor's degree in Microbiology from the University of Arizona, USA, followed by a Master of Medical Science and a Ph.D. in Medical Microbiology from the University of Malaya, Malaysia.

He has held several leadership roles at UPM, including Head of the Laboratory for Halal Science Research, Head of the Department of Biomedical Science, and Director of the Halal Products Research Institute. Currently, he serves as a Professor at the Faculty of Medicine and Health Sciences, UPM, where he is actively involved in teaching and research in medical microbiology. Professor Mohd Nasir has established extensive interdisciplinary collaborations, contributing to a substantial body of work that integrates microbiology, biotechnology, and Halal science.

He is also a registered Professional Technologist (Ts.) in biotechnology with the Malaysia Board of Technologists (MBOT), where he serves as a member of the Technology and Technical Working Group. His research focuses on the molecular epidemiology of medically important bacteria within the One Health framework, employing DNA-based technologies for genotypic characterization and traceability studies.

Throughout his career, he has made substantial contributions to the scientific community through numerous publications, advancing knowledge with practical applications in public health, Halal product verification, and active engagement with both community and industry.

About Keynote Speaker



University "Dunarea de Jos" Galati
Romania

Vintila Iuliana is actually Associate Professor, PhD in Food Science and Engineering. She is author of 23 books and book chapters in international and national publishing houses (Elsevier, Wiley, Lambert, etc.), first author and co-author for 19 articles in ISI journals and relevant ISI proceedings, 107 BDI scientific papers indexed in recognized international databases, articles presented in national & international conferences and published articles reviews.

Also, she is member of prestigious international organization such European Federation of Food Science and Technology (2009), Co-Chair (since 2013) and Chair (since 2022) of Nutrition WG in Global Harmonization Initiative, International Society of Food Engineering (2010), Balkan Environmental Association (2008), Global Environmental Standard (GES) Community of Interest (2011), European Academy for Education and Social Research (2012). She acts as International projects Expert for European Science Foundation, Eurostar Program, EC « Expert area in the Participant Portal » and « Connecting Europe Facility », Horizon Europe Program, EU TAIEX, COST, EACEA, Erasmus Mundus (2010).

She is Guest Associate Editor and Research Topic Editor for "Frontiers in Food Science and Technology", Regional Editor "Advance Journal of Food Science and Technology", Academic Editor "European Journal of Nutrition and Food Safety", Editorial Board Member SciEdTech, Editorial Board Member "African Journal of Water Conservation and Sustainability", "EC Nutrition" Editorial Board, Editorial board "Clinical Journal of Nutrition and Dietetics", Editorial Board "Discoveries in Food Technology and Nutrition Sciences", etc.

About Keynote Speaker



Professor,
Universiti Putra Malaysia,
Malaysia

Professor Dr. Shahrim Karim is a distinguished figure in Malaysian Heritage, holding the prestigious position of Professor of Malaysian Heritage Food and Culture at the Department of Food Service Management within the Faculty of Food Science and Technology at Universiti Putra Malaysia.

With a profound passion for Malaysian culinary traditions, he has played a pivotal role in advancing the recognition and global dissemination of Malaysia's rich heritage cuisine. His significant contributions extend beyond academia, as he has actively participated in national committees dedicated to preserving and promoting Malaysia's food heritage. Through his efforts, he has been instrumental in documenting and refining the nation's culinary heritage, ensuring its perpetuation for future generations.

Professor Dr. Shahrim Karim's influence transcends academic circles, as he has been a prominent figure in various television programs that showcase Malaysia's vibrant food scene. Moreover, he is a prolific author, having authored more than 100 articles and five books on Malaysian cuisine, emphasising traditional culinary delights.

He also has published several publications on Malaysia and Brunei rich biodiversity, related to herbs and spices. In addition to his academic pursuits and advocacy work, Professor Dr. Shahrim maintains a diverse range of research interests, encompassing Destination Management, Culinary, Foodservice Management, Food Tourism, Food Culture, and Heritage Food.

His research methodologies span both quantitative and qualitative approaches, reflecting his comprehensive understanding of the subject matter. Beyond his professional endeavours, Professor Dr. Shahrim indulges in his passions during his leisure time, which include cooking, traveling for culinary exploration, food photography, and expressing his creativity through canvas painting. His multifaceted interests and unwavering dedication to Malaysia's culinary heritage continue to inspire and enrich the culinary landscape of the nation.

About Keynote Speaker



**Dr. Mohd Adzim
Khalili Rohin**

Universiti Sultan Zainal Abidin
(UniSZA), Malaysia

Assoc. Prof. Ts. Dr. Mohd Adzim Khalili bin Rohin is a distinguished Malaysian scientist and internationally recognised authority in functional foods and nutraceutical research at the Faculty of Health Sciences, Universiti Sultan Zainal Abidin (UniSZA). Holding a Ph.D. in Functional Foods and Nutraceuticals, he is at the forefront of advancing translational nutrition science through pioneering work on bioactive compounds derived from natural food sources, with a particular focus on antioxidant mechanisms, anti-proliferative effects against cancer cell lines, and nutrigenomic pathways in metabolic health.

His research, widely published in high-impact Scopus and Web of Science-indexed journals, is characterised by a rigorous integration of in vitro, in vivo, and functional food system approaches, positioning his contributions at the interface of molecular science and real-world health applications. His recent research breakthroughs on the phytochemical profiling and functional potential of Malaysian fragrant rice varieties (MRQ74 and MRQ76) underscore his commitment to unlocking indigenous resources for next-generation functional food innovation.

As a principal investigator of multiple competitive research grants and a mentor to postgraduate scholars, he continues to shape global discourse in precision nutrition and disease prevention.

About Session Speaker



Universiti Malaysia Sabah,
Malaysia

Ts. Dr. Mohd Nazri bin Abdul Rahman is an academic and researcher in the fields of food science, nutrition, and health sciences, with multidisciplinary training spanning food technology, nutritional biochemistry, and clinical health sciences. He is a registered Nutritionist with the Malaysian Allied Health Professions Council (MAHPC) and holds a valid Annual Practising Certificate.

In addition, he is professionally registered as a Professional Technologist (Food Technology) with the Malaysia Board of Technologists (MBOT) and as a Medical Assistant with the Board of Medical Assistants Malaysia.

His research focuses on the health effects of bioactive compounds and functional foods, particularly the modulation of adipogenesis and metabolic pathways by carotenoid-rich extracts such as gac aril, as well as the potential anti-obesity and anti-diabetic properties of fermented functional beverages including kombucha, mead/jun, and tepache.

His work integrates molecular mechanisms with nutrition and public health relevance, aiming to support evidence-based dietary strategies for the prevention and management of metabolic disorders. He is actively involved in teaching, postgraduate supervision, research, and academic service.

About Session Speaker



Universiti Malaysia Sabah,
Malaysia

Muhamad Firdaus Syahmi bin Sam-On is a dedicated and accomplished Senior Lecturer specializing in Microbiology, with a profound passion for research and academic excellence. He obtained his Bachelor of Science in Microbiology in 2020 and subsequently finished a PhD in the same field from Universiti Putra Malaysia in 2023.

Additionally, his expertise in farming and biotechnology has equipped him with valuable skills in pests and pathogens management, laboratory protocols, and problem-solving. Throughout his academic journey, Muhamad Firdaus Syahmi has exhibited a keen interest in exploring microbial pathogens and their potential applications in various fields, particularly in aquaculture and food safety. His doctoral research focused on evaluating the efficacy of *Bacillus* spp. as probiotics against pathogens causing Vibriosis and Aeromonosis, which culminated in several high-impact publications in esteemed journals like Microbial Pathogenesis and Food Bioscience.

Serving as a Senior Lecturer at Universiti Kebangsaan Malaysia, Muhamad Firdaus Syahmi continues to improve his passion for teaching and research. His interdisciplinary approach and innovative methodologies have earned him recognition in the field of microbiology, and his target is to make a lasting impact on scientific knowledge and understanding.

He is fluent in both Malay and English languages and always eager to learn more from his colleagues and peers in the industry. Please feel free to contact Muhamad Firdaus Syahmi Sam-on on this platform for any comments or questions related to microbiology and biotechnology.

About Session Speaker



**Ts. Dr. Teoh Kok
Ban**

National Higher Education Research
Institute, Universiti Sains Malaysia
Malaysia

Ts. Dr. Teoh Kok Ban is a Senior Lecturer at the National Higher Education Research Institute (IPPTN), Universiti Sains Malaysia, and an External Consultant for Shen Jai Education Group and ViTrox College. His scholarly work focuses on higher education, organizational behavior, and human development, with particular emphasis on advancing organizational wellbeing, academic resilience, and professional identity within higher education contexts.

He holds a PhD in Organizational Behavior and Development, complemented by Master's degrees in Statistics and Counseling. This interdisciplinary training enables him to integrate quantitative methodologies with counseling-informed, human-centered approaches in both research and practice. He is a Professional Technologist (Ts.) registered with the Malaysian Board of Technologists (MBOT) and a Registered Counselor (K.B.; P.A.) with the Malaysian Board of Counselors.

His research interests and contributions span burnout, emotional and behavioral dynamics in academia, and intervention-based approaches to enhancing wellbeing. He has served in editorial and peer-review capacities for indexed international journals in higher education and organizational behavior, contributing to the advancement of scholarly discourse in these fields.

As an HRD Corp Accredited Trainer, he supports evidence-based capacity building and academic-industry collaboration, translating research insights into professional and institutional development initiatives. Beyond academia, he maintains active engagement in humanitarian service, serving as a Commissioner with the Buddhist Tzu Chi Merit Society Malaysia and as a volunteer counselor with Than Hsiang Mitra Welfare Center Penang, with a focus on mental health and community wellbeing.

About Session Speaker



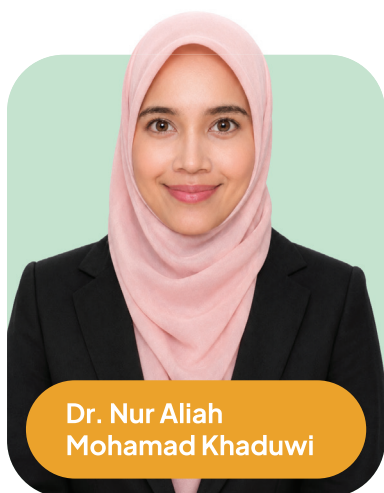
Universiti Kebangsaan Malaysia,
Malaysia

Dr. Mohamed Yusuf bin Mohamed Nazir is a Senior Lecturer at the Department of Food Science, Faculty of Science and Technology, Universiti Kebangsaan Malaysia (UKM). He holds a PhD in Microbial Biotechnology from Shandong University of Technology, China, with expertise in microbial biotechnology, fermentation, and sustainable bioprocess development.

His research centres on innovative microbial platforms for the sustainable production of high- value nutrients, particularly omega-3 polyunsaturated fatty acids (DHA), using marine protists such as *Aurantiochytrium* sp. Dr. Yusuf's work integrates green processing technologies and the valorisation of agro-industrial waste to develop cost-effective and environmentally responsible solutions for food and aquaculture systems. He has led and contributed to numerous funded projects, including collaborations with industry and international partners, and has published extensively in high-impact (Q1) journals.

At the 9th International Conference on Food and Nutrition, Dr. Yusuf will present on "Innovative Approaches to Global Nutrition and Sustainable Food Systems," highlighting cutting-edge microbial biotechnologies that enable the production of next-generation nutrients while addressing global challenges in food security, sustainability, and resource efficiency.

About Session Speaker



Universiti Kebangsaan Malaysia
(UKM), Malaysia

Dr. Nur Aliah Mohamad Khaduwi memperoleh Ijazah Doktor Falsafah (PhD) dalam bidang Botani dari Universiti Kebangsaan Malaysia (UKM). Penyelidikan beliau merangkumi kepelbagaian dan sistematik pteridofit di Semenanjung Malaysia, khususnya famili Athyriaceae dan genus Diplazium, dengan mengintegrasikan kaedah morfologi, filogenetik molekul, dan analisis ekologi. Antara projek penyelidikan semasa beliau ialah pengekodan DNA dan pemetaan kerentanan iklim paku-pakis tanah tinggi menggunakan penanda molekul (GGPM-2025-052).

Dr. Nur Aliah Mohamad Khaduwi obtained her Doctor of Philosophy (PhD) in Botany from Universiti Kebangsaan Malaysia (UKM). Her research encompasses the diversity and systematics of pteridophytes in Peninsular Malaysia, particularly the family Athyriaceae and the genus Diplazium, integrating morphological, molecular phylogenetic, and ecological approaches. Among her current research projects is DNA barcoding and climate vulnerability mapping of highland ferns using molecular markers (GGPM-2025-052).

About Plenary speaker



**Dr. Fatemehsadat
Mirmohammadmakki**

Shahid Beheshti University of Medical
Sciences, Iran

Dr. Fatemehsadat Mirmohammadmakki received her Ph.D. in Food Industrial Engineering and Science – Food Chemistry from the Islamic Azad University, Science and Research Branch, in 2021.

She is currently a Postdoctoral Researcher at the Medical Ethics and Law Research Center, Shahid Beheshti University of Medical Sciences. Her research focuses on food safety, agricultural products, edible oils, natural extracts, and biosorbents for the reduction of heavy metals in food, soil, and wastewater. In addition, she has extended her studies to food security ethics.

Dr. Mirmohammadmakki has published many articles, authored several books and book chapters, and presented at more than 50 national and international conferences.

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Development of Adlay Flour –Based Maguindanaon Traditional Product: Multigrain *Tipas*

Sapan, Nympha D.

Research Department, Upi Agricultural School, Upi, Maguindanao del Norte, Philippines

Silla, Jennifer F.

Research Department, Upi Agricultural School, Upi, Maguindanao del Norte, Philippines

Abstract:

Multigrain products combine diverse grains, enhancing their nutritional profile and contributing positively to health and lifestyle. This study explored the innovation of *tipas*, a traditional Maguindanaoan delicacy, by incorporating adlay flour into its formulation. *Tipas*, typically prepared from rice flour, were reformulated using varying proportions of adlay and multigrain flours (cowpea, mungbean, and peanut). Three formulations were developed: MG1 (25% adlay+75% multigrain), MG2 (50% adlay+50% multigrain), and MG3 (75% adlay+25% multigrain). Sensory evaluation was conducted with 1,160 semi-trained panelists using a 5–point Hedonic scale to assess appearance, aroma, taste, texture, and overall acceptability. Proximate analysis was performed to determine macronutrient and micronutrient composition. Results indicated that MG3 achieved the highest overall acceptability, with significant improvements in texture and appearance compared to other formulations. Nutritional analysis of MG3 revealed Ash (3.63 g/100 g), Moisture (9.66 g/100 g), Carbohydrates (62.24 g/100 g), and Protein (16.92 g/100 g). Findings suggest that adlay-based multigrain *tipas* are nutritionally superior, rich in protein and minerals, and present a healthier alternative to conventional rice-based *tipas*. This innovation demonstrates the potential of local grains in enhancing traditional delicacies while promoting community-based food diversification.

Index Terms:

Adlay, Multigrain, *Tipas*, Nutritional Analysis, Food Diversification

Vitamin D Deficiency and Its Association with Mental Health among Patients and Their Dietary Habits

Maisha Mehjabin

Faculty of Medicine, MAHSA University, Bandar Saujana Putra, Selangor, Malaysia

Momena Shirin

Institute of Public Health Nutrition, Mohakhali, Dhaka, Bangladesh

Abstract:

Vitamin D deficiency has been associated with musculoskeletal pain and a range of mental health problems, like depression, anxiety. The study describes the pattern of vitamin D status and related mental health outcomes. The cross-sectional study was done on 133 patients who were deficient of vitamin D and taking treatment from Bangladesh Center for Rehabilitation. A structured questionnaire and medical records were used to collect data from the patients. Most of the participants were women (57.9%), and a large number of them had insufficient vitamin D, 57.1%, and 15.8% had deficiency. 41 out of 133 patients reported to have depression, 15 of them had anxiety along, and some had dementia. But there was no association found between vitamin D and depression in this study (p value > 0.05). Their dietary habits were also checked in this study, and most of the respondents were found not having enough food. The study showed a high prevalence of vitamin D deficiency, with other physical symptoms like bone pain, joint pain, fatigue. So, risk factors like exposure to sunlight, clothing, supplementation, etc. should be considered to prevent the deficiency and associated health outcomes including the mental health problems.

Index Terms:

Vitamin D, Mental Health, Depression, Anxiety

Why One Diet Doesn't Fit Every Athlete: A Glimpse into the Exciting World of Sports Nutrigenomics

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Abstract:

Nutrition profoundly influences athletic performance, yet traditional dietary guidance often follows a “one-size-fits-all” model that fails to account for individual biological differences. Sport nutrigenomics explores how genetic variation shapes an athlete's response to nutrients and dietary strategies, offering the potential to optimize health, body composition, and exercise outcomes based on each person's unique genetic profile. Genetic differences can affect nutrient absorption, metabolism, utilization, and excretion, which in turn alter metabolic pathways relevant to performance. Although randomized controlled trials linking specific gene-diet interactions to athletic outcomes remain limited, a growing body of research demonstrates associations between genetic markers, biomarkers of nutritional status, and physical performance traits. Personalized nutrition harnessing genomic data may therefore improve individual responses to dietary interventions. By integrating nutrigenomic insights with conventional sport nutrition principles, practitioners can move beyond general recommendations toward tailored strategies that support optimal athletic performance.

The Effect of Different Technological Storage Methods on the Growth and Development of Bull Calves

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Abstract:

The article presents the results of scientific research aimed at determining the effect of various technological feeding methods on the growth and development of bulls. The research was conducted at the "Shukurdavlat" farm in the Kuvasoy district of the Fergana region. In the experiment, purebred Simmental bulls and F1 hybrid bulls obtained from Simmental cows crossed with Limousin and Charolais bulls were studied under the same feeding and care conditions. The experiment continued from the age of 15 days to 18 months, during which the live weight of the bulls, average daily growth rate, feed consumption and feed unit efficiency were regularly determined. According to the results of the study, F1 hybrid bulls crossed with Charolais bulls had a higher growth rate, greater live weight and better feed conversion efficiency than purebred Simmental and Limousin-Simmental hybrids. Their average daily gain was 9.8% higher than that of purebred Simmental bulls, and the feed unit consumed per 1 kg of live weight gain was 6.85, which was 6.3% lower. In addition, these hybrids had better adaptability to intensive feeding systems and higher slaughter yields. The results of the study show that industrial crossbreeding and scientifically organized feeding technologies play an important role in fully revealing the genetic potential of bulls and increasing the efficiency of meat production.

Index Terms:

Bulls, Breeds, Simmental, Limousin, Charolais, Crossbreeding, Industrial crossbreeding, Growth rate, Development, Average daily gain, Feeding technology, Feed unit, Intensive feeding, Slaughter yield, Meat yield

Scientific Bases of Propagation of Fig Plants (*Ficus Carica L.*) and Drying of Its Fruits by Various Methods in Uzbekistan

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Abstract:

This systematic investigation provides a comprehensive multi-regional analysis of *Ficus carica L.* cultivation and post-harvest processing within the Tashkent and Surkhandarya regions of Uzbekistan, focusing specifically on the optimization of phenological synchronization, vegetative propagation, and dehydration technologies across eight commercial cultivars. By evaluating developmental milestones through the rigorous calculation of effective temperature sums ($T\Sigma$), the study elucidates a significant phenological divergence, revealing that the enhanced thermal momentum of the southern Surkhandarya region initiates critical vegetative stages approximately 11 to 13 days earlier than the temperate Tashkent district. Investigations into nursery management demonstrate that utilizing a coarse sand and peat substrate, particularly when integrated with biostimulants such as Epen-Extra, significantly accelerates root nodule formation and shoot development, effectively reducing the regeneration window by 12 days. This physiological acceleration is supported by a near-perfect negative correlation ($r=-0.99$) between development speed and overall rooting success, establishing rapid metabolic activation as a primary determinant for maximizing nursery efficiency. Furthermore, the comparative analysis of dehydration methods indicates that while infrared drying at 50°C achieves industrial moisture stability 10–20% faster than convective techniques, traditional sun-drying enhanced by sulfur fumigation remains the superior protocol for preserving organoleptic excellence, yielding near-perfect quality scores of 4.8 on a 5–point scale. Ultimately, these findings advocate for a regionalized agricultural strategy that leverages southern climatic advantages for high-quality sun-dried exports while implementing advanced artificial drying and optimized substrates in central regions to ensure the structural integrity and global competitiveness of the Uzbek fig industry.

Index Terms:

Fig, Propagation, Seedling, Phenological Phase, Dried Fig, Drying Techniques

The Association of Dietary Diversity and Nutritional Status Among Children Aged 8–9 in Emilio Jacinto Elementary School: Basis for a Proposed Communication Plan

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Abstract:

Malnutrition remains a significant public health concern in the Philippines, particularly in low-income communities such as Tondo, Manila, where children experience undernutrition, micronutrient deficiencies, and overnutrition. This study aimed to examine the association between dietary diversity and the nutritional status of children aged 8–9 years in an economically challenged area. A total of 130 Grade 3–4 students were assessed using a 24-hour food recall to determine dietary diversity scores, alongside anthropometric assessment (Body Mass Index and mid-upper arm circumference), clinical assessment (Nutrition- Focused Physical Examination), and dietary assessment (Intake adequacy analysis). Results showed that 64.39% of participants had moderate dietary diversity, consuming 6–8 food groups, with limited intake of nutrient-rich foods such as fruits, seafood, and dairy. Moreover, while most students had normal BMI and MUAC, other findings revealed nutritional imbalances, particularly inadequate intake of Calcium, vitamin A, and Vitamin C. Significant associations were observed between dietary diversity and several nutritional indicators, including MUAC, clinical signs of micronutrient deficiencies in Nails, Fat loss in Thoracic and Lumbar region, and nutrient intake adequacy (protein, fat, energy, calcium, and iron). These findings suggest that higher dietary diversity is associated with improved nutritional outcomes, highlighting the importance of promoting varied diets among children in vulnerable communities. Results were used as the basis for formulating a nutrition communication plan tailored to promote healthier food choices and enhance the dietary diversity of students.

AUTOMED: Smart Medication Dispensing Assistance System for Caregivers in Elderly Homes

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Abstract:

Medication monitoring is necessary for tracking medicine stocks, time schedule and record individual patients in local elderly homes. Errors in medication timing, dosage, or identification can result in severe health complications, including hospitalization or even death (Alghamdi & Rahman, 2023). The traditional way relies on heavy manual administration by caregivers, which is labor intensive for caregivers that are lacking when many elderly patients are administered in an elderly care home. The AUTOMED: smart medication dispensing assistance system for caregivers in elderly care homes is developed as an alternative use for medication dispensing that can aid caregivers dispense medicine in the right patient, right time schedule and right amount. It uses Arduino MEGA and Raspberry Pi 4b to facilitate its functionalities, such as fingerprint scanning for authentication, dispensing mechanism, and simple inventory system. The testing showed that the components work together, and were able to perform the process of reading fingerprint scans, monitoring, dispense medicine and simple inventory system. Although the hardware needs more improvement in the field of dispensing, the smart medication dispensing assistance system for caregivers in elderly care homes can be an alternative way to solve and lessen the burden of the caregivers in local elderly care homes.

Index Terms:

IoT-based Healthcare, Smart Medication Dispenser, Biometric Security, Assistive Healthcare Technology, Medication Management System

Enhancing Cadmium Tolerance in Rice to Safeguard Food and Nutrition Security

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Abstract:

Heavy metal contamination, especially cadmium (Cd), reduces rice yield and threatens food safety. Effective strategies are needed to limit Cd uptake while maintaining productivity.

Rice cultivars (KazEr6, Kazvetta, KazNIIR5, Aysaule) were studied under Cd-stress, using commercial growth regulators (GRs): Zircon (hydroxycinnamic acids), Potassium Humate (PH) (humic/fulvic acid, NPK, minerals).

The aim of the work: To evaluate the effectiveness of GRs under Cd-stress at recommended by the manufacturers concentrations.

GRs were applied as seed priming/or added to the growth medium, at “+/-”150 µM Cd. Unified Stress Adaptation Index (USAI) was calculated, using formula: $USAI = (GSI + APSI)$, where GSI (Growth Stability Index) = $(SL\% + SM\% + RL\% + RM\%)/4$, SL = shoot length, SM = shoot mass, RL = root length, RM = root mass, $APSI$ (Antioxidant-Photosynthetic Stability Index) = $Chl,a\% + Chl,b\% + Car\%/3$.

Cd stress reduced biomass (23–34% of control) and chlorophylls content. GRs improved biomass and pigment stability. Zircon (in nutrient solution) produced the highest resilience, increasing USAI (up to 73.5, 71.5 in KazEr6, KazNIIR5). PH enhanced chlorophyll preservation, supported root development, contributing to improved physiological stability under Cd-toxicity. KazEr6 showed strong intrinsic tolerance, while KazNIIR5 demonstrated high adaptive plasticity with GRs. These results highlight the importance of combining tolerant genotypes with eco-compatible regulators to improve crop performance on contaminated soils.

Strengthening early physiological resilience supports sustainable rice production, improving yield stability, food safety under Cd-contamination.

Phytochemical Profiling and Adaptability of a High-Yielding Broad-Leaved *Stevia rebaudiana* Bertoni Genotype in Southeast Kazakhstan

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Abstract:

This study evaluates the phytochemical potential and agro-biological adaptability of a targeted broad-leaved *Stevia rebaudiana* genotype, developed through in vitro mutagenesis. Field experiments conducted in the Almaty region (soil pH 8.6) confirmed successful acclimatization, with plants reaching biological maturity by October.

A comprehensive analysis of secondary metabolites was performed using HPLC (Shimadzu LC-40). The results revealed a unique nutraceutical profile characterized by an exceptionally high accumulation of bioactive polyphenols and flavonoids. The identified compounds include Catechin (197.04 mg/L), Phloridzin (157.28 mg/L), Naringin (95.32 mg/L), and Epicatechin (32.96 mg/L). The analysis also confirmed the presence of target diterpene glycosides (Stevioside and Rebaudioside), which, in synergistic combination with the diverse flavonoid complex, significantly enhances the antioxidant and functional value of the raw material.

Furthermore, atomic absorption spectroscopy indicated a robust mineral profile, with potassium (177.7 mg/g) and calcium (98.2 mg/g) as the predominant elements. These findings position the investigated genotype as a superior source for the industrial production of functional beverages with dual antioxidant and hypoglycemic properties.

Index Terms:

Stevia rebaudiana, HPLC, Catechins, Phloridzin, Functional nutrition, Antioxidant activity, Adaptation

Promising Sources for Sesame Breeding from The National Genepond of Uzbekistan

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Abstract:

Scientific Research Goal: Selection of primary sources from the world sesame collection to create new high-yielding, export-oriented varieties suitable for the climatic conditions of Uzbekistan. Methods. Methodology International Convention for the Protection of New Varieties of Plants (UPOV 199), "Methodological Guidelines for the Study of the World Collection of Oilseed Crops" (1985), "Methodological Guidelines for the Study of the World Collection of Oilseed Crops" (2010) of the Research Institute of Plant Genetic Resources (Uzbekistan). statistical and dispersion analysis of the research results was carried out the method of B.A Dospekhov (1985). Issues today is the development of new, early-ripening, high-yielding, environmentally friendly sesame varieties with high oil content, the organization of primary seed production, and their introduction into production in order to provide the republic's population with affordable, high-quality vegetable oil. Based on this comprehensive study of the collected sesame accessions, promising sources for various breeding approaches were identified. Based on the conducted research, 5 early-ripening, 6 productive, 11 large-seeded, 16 high-oil and 6 sesame samples based on a set of characteristics were selected for various breeding directions. Compared to the local Tashkent-122 variety, these samples ripened 5–10 days earlier, the yield of one plant was 2–6 g, and the oil content of the seeds was 3.8–5.8% higher.

Conclusion: A collection of sesame seeds from different countries of the world was studied in the Khorezm region, the northern region of Uzbekistan, and 5 early-ripening, 6 high-yielding, 11 large-seeded, and 16 high-oil primary sources were selected according to various breeding directions.

Index Terms:

Sesame Gene Pool, World Collection, Local Varieties, High-Oil Content, Early, Ripening, High-Yield, Large-Seeded.

Size-Dependent and Organ-Specific Patterns of Microplastic Accumulation in Commercial Fish from Jepara, Central Java, Indonesia

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Abstract:

Microplastic contamination in marine environments poses a growing threat to aquatic food webs and human health. Fish, as key components of human diets and marine ecosystems, are particularly vulnerable to microplastic exposure through direct ingestion and trophic transfer. Once ingested, microplastics preferentially accumulate in digestive organs but can also translocate into muscle tissues, creating direct human exposure risks through seafood consumption. Despite this, evidence on how accumulation patterns differ between organs and vary with body size and species remains limited for commercially important fish in Indonesian coastal markets. This study assessed size-dependent and organ-specific microplastic accumulation across six commercial fish species from the Demaan Fish Auction Site, Jepara, Central Java. Intestinal and muscle tissues were digested using 30% hydrogen peroxide, separated by density with zinc chloride, and microplastics were identified microscopically by abundance, morphology, size, and color. Accumulation was consistently higher in intestinal organs than in muscle tissues across all species. *Plectorhinchus flavomaculatus* recorded the highest intestinal accumulation (984 particles), while *Hyporhamphus sajori* recorded the lowest (95 particles), with the same trend in muscle tissues. Larger individuals accumulated more microplastics, confirming a size-dependent pattern. Fragments dominated morphologically (up to 582 particles), suggesting plastic debris degradation as the primary source. Inter-species variation reflects differences in trophic level and feeding behavior. These findings underscore the need for organ-specific biomonitoring and strengthened food safety measures in coastal fish markets.

Index Terms:

Microplastics Accumulation, Fish, Size-Dependent, Intestinal and Muscle, Jepara

Spatial and Species-Specific Variation in Microplastic Accumulation in Bivalves from Karimun Coastal Waters, Indonesia

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Abstract:

Bivalves are sessile filter feeders recognized as effective bioindicators for microplastic pollution due to their continuous filtration of large seawater volumes, making them highly susceptible to microplastic ingestion and accumulation. Their widespread consumption by humans further raises concerns regarding food safety. This study aims to assess spatial and species-specific variation in microplastic accumulation across multiple bivalve genera from Karimun Coastal Waters, Indonesia, and to evaluate implications for human health through seafood consumption. Samples were collected from two contrasting zones—an aquaculture zone and a reference zone—and processed via tissue digestion using 30% H₂O₂ and density separation using 5M ZnCl₂. Microplastics were identified microscopically and characterized by polymer type, with data analyzed using the Kruskal-Wallis and Spearman Rank tests. The results showed that microplastics were found in all samples, where microplastic accumulation in the aquaculture zone tend to be higher in some genus, with the highest values being 44 particles, with *Malleus* containing the highest particles. Meanwhile, in the reference zone, microplastic accumulation was relatively more uniform, with values ranging from 20 to 28 particles for each observed genus. A significant positive correlation between body weight and particle count indicated that larger bivalves accumulate more microplastics. These findings establish bivalves as reliable sentinels of coastal microplastic contamination and highlight the need for bivalve-based biomonitoring in coastal management. As widely consumed organisms, their microplastic burden represents a direct exposure pathway for humans, underscoring the urgency of food safety and nutritional risk assessment.

Index Terms:

Microplastics, Biomonitoring, Bivalves, Filter feeder, Karimun Jawa

Application of Visible-Near Infrared Hyperspectral Imaging in Addressing Foreign Material Contamination in Inflight Meals

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Abstract:

Foreign Materials (FM) contamination in inflight meals is a huge concern for inflight catering industry as it impacts passenger safety and food's quality standard. Hence, effective and affordable approach is required to tackle the issue. Therefore, in this study, Visible and Near-infrared (VNIR) hyperspectral imaging technique was tested to distinguish several types and sizes (7mm & 5mm) of FM against three types of commonly served inflight meals. Furthermore, Partial Least Squares Discriminant Analysis (PLS-DA) model was also developed to check the ability of system to classify the FM into each class based on training model. The result show that hyperspectral are capable of detecting few FMs which were wood, flies, worms and stone. Smaller and clear FMs such as hair, glass fragments, plastic and stapler bullet (metal) were not identified. Similar trends were seen in all food types. Among the detectable contaminants, wood recorded the most consistent detection accuracy, with the highest average detection rate of 99.81% in porridge sample. Some inconsistencies in detection accuracy were observed among the detectable contaminants, due to unclassified pixels. In conclusion, the result provides an insight regarding the limitation of VNIR hyperspectral imaging that was only efficient to detect and identify certain FM. This could be due to limitation of VNIR wavelength, and the pixels size (512 x 512) used to detect small FM such as hair. Higher spectrum range (eg: SWIR) and spatial resolution of HSI camera may be applied in future for further improvements and optimization.

Development of Gummies with Garden Cress Seeds and Guava in Three Variations

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Abstract:

The present study aimed to develop functional gummies incorporating garden cress seeds powder and guava pulp in three variations and to evaluate their nutritional and sensory attributes. Garden cress seeds are known for their high iron, protein, and bioactive compound content, while guava is rich in vitamin C, dietary fiber, and antioxidants. Combining these ingredients in a gummy formulation offers a convenient and acceptable functional food product, particularly for improving micronutrient intake. Three variations of gummies were prepared by incorporating garden cress seeds powder at different levels (e.g., V1 – low, V2 – medium, and V3 – high concentration) with standardized guava pulp, sweetener, and gelling agent. The prepared gummies were evaluated for physicochemical properties, proximate composition, and sensory characteristics including color, texture, taste, flavor, and overall acceptability using a hedonic rating scale. Nutritional analysis indicated an increase in iron and dietary fiber content with higher incorporation of garden cress seeds powder. Sensory evaluation revealed that the medium-level incorporation (V2) achieved the highest overall acceptability, balancing nutritional enhancement with desirable sensory attributes. The study demonstrates that gummies fortified with garden cress seeds powder and guava can serve as a palatable functional snack with improved nutritional value. These findings suggest potential for the development of nutrient-dense confectionery products targeting populations at risk of micronutrient deficiencies.

