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8th Edition of
International Conference on

Nutrition and Food Sciences

&

4th Edition of
International Conference on

Probiotics and Prebiotics

March 26-28, 2026 | Singapore

IN-PERSON:

Village Hotel Changi
1 Netheravon Rd,
Singapore 508502

VIRTUAL:

Greenwich Mean Time (GMT)

8TH EDITION OF

International Conference on

NUTRITION AND FOOD SCIENCES

4TH EDITION OF

International Conference on

PROBIOTICS AND PREBIOTICS

HYBRID EVENT

26-28 MARCH 2026

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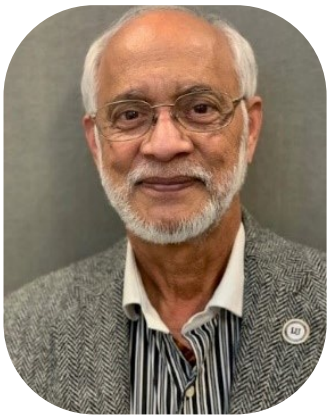

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Welcome Message

Antonio Cláudio Goulart Duarte

University of Genoa, Italy

Dear Conference Attendees,

I am a Brazilian Doctor and Professor of Medicine at The Federal University of Rio de Janeiro (UFRJ). I have been studying and teaching medical semiology, mainly in metabolic disorders such as Metabolic Syndrome (MS), for more than forty years.

I developed the Metabolic Map (MM) for understanding who is the patient with MS. There is a lot of different forms of presentation and the exam based on the evidence of the MS is not enough for planning an individual strategy for treatment. It is an honor and great pleasure to explain how it works. It will be a great opportunity for the participants, including young and senior researchers, scientists, clinicians and academicians to gain knowledge from up-to-date research in Metabolic Syndrome.

Welcome Message

David Pineda Ereno

DPE International Consulting, Belgium

Dear conference visitors, it is an honour and pleasure to write a few welcome notes to this 4th Edition of the International Conference on Probiotics and Prebiotics. The global market for probiotics and prebiotics continues to grow with increasing consumer demand over the years. Probiotics and prebiotics help individuals meet their optimum health goals, from boosting their immunity and digestive health to helping with allergies and weight management. Probiotics and prebiotics are at the top of the regulatory agenda resulting in more regulation. As regulatory divergences still persist, companies need to keep current with this evolving regulatory environment to develop successful marketing strategies and identify upcoming business opportunities.

Welcome Message

Prof. Dr. Dilip Ghosh

Western Sydney University, Australia

It's my immense pleasure to be associated again with this very significant international conference in nutrition, nutraceuticals, traditional medicines, probiotics and other natural products. Last year I delivered two keynote presentations in front of nearly 100 international attendants and many more virtual audiences. This Nutri 2026, I am planning to present two keynote presentation on two very important and time topics, "Ashwagandha: Potential Drug Candidate from Ancient Ayurvedic Remedy" and "Where West meets East? Time to Globalize Traditional, Complementary and Integrative Medicine".

This is established that the 'one disease-one target-one drug' concept does not always lead to successful disease control. The evidence-based natural medicine has tremendous opportunities to address this knowledge gap and focuses on multitarget therapeutic approach. The newly established WHO-Global Traditional Medicine Centre (WHO-GTMC) has strategic focus on research and evidence, strengthening health systems, sustainability and equity, and innovation and technology to optimize the contribution of traditional medicine to global health and sustainable development. My two presentations will support this mission from evidence-based clinical framework.

Please join me in March 26-28, 2026, in Singapore.

Welcome Message

Professor Esperanza Martinez Romero

Center for Genomic Sciences, National University of Mexico, UNAM, Cuernavaca, Mexico

Probiotics represent affordable means to enhance healthy life for us and for our agricultural cultures and livestock. How can we obtain and identify the best probiotics? We have as allies the large diversity of bacteria found in raw vegetables and in fermented products and the knowledge that is emerging from genomics and metabolomics. All this will help us to understand how can we make best use of probiotics, how they survive inside our bodies and what are their functions. In addition, considering the genetic differences among individuals, we might need personalized probiotics. Clearly, the field of probiotic research is still blossoming, rich with novel discoveries and potential applications.

I look forward to hear the advances in this relevant and vital field during this meeting.

Welcome Message

Dr. Henning Sommermeyer

Calisia University, Poland

Dear Congress Participants,

It is my great pleasure to welcome you to the 4th Edition of the International Conference on Probiotics and Prebiotics, taking place in the vibrant city-state of Singapore.

Products containing probiotic bacteria are gaining increasing popularity as complementary or stand-alone treatments for a variety of conditions, such as irritable bowel syndrome. While there is often a sound theoretical rationale for their use, robust scientific and particularly clinical evidence to support many of the claimed benefits has historically been limited.

In recent years, a growing number of comprehensive preclinical and clinical development programs focused on probiotics and prebiotics. Outcomes of these programs have generated results supporting the evidence-based use of these products in patient management.

The congress brings together leading experts from around the world to discuss the latest advances in the scientific understanding as well as the real-world applications of probiotics and prebiotics.

Welcome Message

Prof. Dr. Jacek Piatek

Department of Health Sciences, Calisia University, Kalisz, Poland

Dear congress visitors. It is my pleasure and honor to welcome you and write a few words of welcoming.

Irritable Bowel Syndrome (IBS) is a common, chronic disorder of the intestine, causing patients to suffer from digestive discomfort. Lead symptoms for IBS are abdominal pain or discomfort, bloating and gas, changes in stool form, bowel movement frequency, and a feeling of incomplete bowel movements. The condition is non-fatal, but the troublesome and unpredictable character of IBS symptoms harms patients' quality of life and work productivity. The cause of IBS is still not fully understood, and several mechanisms are potentially relevant to the disease. Among them are genetic factors (mutation of SCN5A), post-infectious changes, low-grade mucosal inflammation, immune activation, disordered bile salt metabolism, abnormalities in serotonin metabolism, alterations in brain function, and disturbances of the gut microbiota. We believe that the research conducted in recent years, including by our team, will contribute to improving the health of patients with IBS.

Welcome Message

Dr. Jack T. Rogers Ph.D

Neurochemistry, MGH, Harvard Medical School, United States

Dear congress visitors, it is an honor and pleasure to greet you with a few welcome notes. The role of nutrition in preventative medicine today has made unprecedented progress over a few years with new experimental-metabolic, bioinformatic and epidemiologic readouts. There are many new opportunities to adapt diet, usage of natural product and of repurposed FDA drugs towards prevention of common diseases calibrated to dietary adjustments. These efforts seek to offset a list of diseases that influence risks from hypertension, arterial and coronary damage, Type-2 diabetes, thyroid and parathyroid aberrations, depression, and conditions that cause neuro or psychiatric degeneration. To address such a risk to conditions of good health, for example, it has long been possible to undertake highly planned dietary reduction of excess fat and to control peripheral and brain oxidative stress driven ferroptosis.

Close to our own area of endeavor in the Neurochemistry Program at MGH, subcortical MRI-estimated brain iron has been associated with neurodegenerations (AD and PD and ALS), and with diabetes and coronary diseases. Iron-related treatments of malnutritional anemia are now standardized with more information available. There is whole treatment range for diseases of iron overloads such as those of hemochromatosis, transfusion iron overload and thalassemia and sickle Cell disease. We have contributed to shed light on the relationships between thyroid levels and iron. Nevertheless, further links between iron metabolism and hyperthyroidism warrant further investigation. The role of adiposity to reduce interventions with dietary changes to brain iron need to be evaluated while there is a defined the inter relationships between brain iron, osteoporosis, calcium, and hyperparathyroidism that needs further investigation.

In our own hands, we documented the potential and uses of urate (dietary inosine) to mitigate the onset of events of neural ferroptosis resulting from manganese and Lead (Pb) over-exposures. Excess Mn exposures causes as a known form of occupational Parkinsonism. We demonstrated urate as a possible low-cost method to avoid manganese and lead toxicity based on its antioxidant action to prevent ferroptosis. Thus, the mis-control iron levels by manganese and Lead in the adverse direction can be corrected by dietary means of enhancing brain urate production. These results have implications for diabetes, heart disease hypertension as well as PD and AD. Finally, we and others identified new targets relevant to mitigable diseases associated with fatigue and depression resulting from Long COVID (from SARS-CoV2). We have set ourselves the task to conduct metabolic and proteomic studies to discover of how diets (iron, purines, folate supplements) can be used to tone and modulate gene expression in targeted tissues associated with diseases. Overall, our goal remains to treat modalities such as those observed to cause damage from Mn and Pb neurotoxicity, AD, PD, anemia towards the right health outcomes for success.

Welcome Message

Dr. Jason Ryan

Sacco System, Brisbane, Australia

It is with great excitement that I write a welcome note to this vibrant conference dedicated to the science and promise of probiotics. We are witnessing a revolution—where traditional probiotic benefits are being expanded by next-generation strains offering precision, resilience, and targeted health outcomes like never before.

From gut and immune health to metabolic and neurological support, these remarkable microbes are reshaping our understanding of human biology. The opportunities ahead are immense—for innovation, for collaboration, and for translating ground breaking science into real-world impact.

This Congress is our chance to connect, challenge ideas, and catalyse the future of probiotic research. I encourage you to share boldly, ask deeply, and imagine widely.

Let's make this an inspiring and transformative event—welcome, and let the exploration begin!

Welcome Message

Małgorzata Mizgier PhD, DSc, Assoc. Prof.

Poznan University of Physical Education, Poland

Dear Attendees,

It is a great honor to welcome you to NUTRI 2026 in Singapore. This conference offers an invaluable opportunity to connect, share, and advance our understanding of nutrition's role in lifelong health.

My presentation will explore how nutrition and physical activity together shape reproductive health in adolescent and young adult women—highlighting both the risks of imbalance and the benefits of integrated, holistic care. This stage of life is critical, and our collective efforts in education, research, and clinical practice can make a meaningful difference in supporting healthy development.

I look forward to exchanging ideas and learning from your experiences throughout the conference.

Welcome Message

Neha Bhanusali MD FACR DipABLM

University of Central Florida, United States

It is a pleasure to join Nutri 2026 and connect with colleagues working at the forefront of nutrition research. As autoimmune diseases continue to rise globally, there is increasing urgency to understand how dietary patterns influence immune regulation and long-term health. While much of nutritional research has focused on isolated nutrients, clinical experience and emerging evidence suggest that whole dietary patterns may have meaningful effects on inflammatory markers and disease activity.

I look forward to exploring how we can better translate nutrition research into practical, evidence-based strategies for patients living with autoimmune rheumatic diseases. By strengthening collaboration between food scientists and clinicians, we can move toward more integrated approaches that complement standard therapies and improve patient outcomes.

Welcome Message

Prof. Dr. Raffaella Conversano PhD

Adjunct Professor, Laboratory of Special Needs Education For.Psi.Com., University of Bari, Italy
I.C. "Giovanni XXIII–Pascoli", Fasano (BR), Italy

Dear Participants,

It is a great honor and a sincere pleasure to welcome you to the Eighth Edition of the International Conference on Nutrition and Food Sciences (Nutri 2026), which will be held in Singapore from March 26 to 28, 2026.

Nutri 2026 takes place at a crucial historical moment, in which nutrition can no longer be considered merely as nutrient intake, but rather as a strategic driver for global health, sustainability, and the future of societies. The theme of this edition, "Food, Function, and Future: The Evolution of the Role of Nutrition," perfectly reflects this transformation. This conference represents an essential collaborative space where researchers, clinicians, technologists, educators, and decision-makers can engage with the major challenges of public health and contribute to the advancement of dietary research through innovative and multidisciplinary approaches. Food is science, culture, relationship, and responsibility: what we eat influences not only our present, but also the future of the next generations.

I therefore invite you to experience Nutri 2026 as an opportunity to share knowledge, build new synergies, and promote a vision of nutrition that is increasingly inclusive, functional, and oriented toward the well-being of individuals and communities.

I extend my warmest welcome to all of you and wish you a stimulating and fruitful conference.

Welcome Message

Safiullah Pathan

Lincoln University of Missouri, United States

It is a great honor and pleasure to welcome you to the vibrant city of Singapore for the 8th International Conference on Nutrition and Food Sciences (Nutri 2026). This year's theme, "Food, Function, and Future: The Evolving Role of Nutrition," reflects our shared commitment to advancing knowledge in nutrition and food science for a healthier world. Over the next three days, this hybrid event will bring together leading researchers, scientists, healthcare professionals, chemists, industry leaders, and entrepreneurs from around the globe to exchange insights, present cutting-edge research, and foster meaningful collaboration. As nutritional and food security grow increasingly interlinked, the importance of evidence-based innovation in this field cannot be overstated. May this conference inspire new ideas, foster partnerships, and renew our commitment to improving global health. Thank you for being part of this important gathering. I wish you a fruitful and engaging experience.

Welcome Message

Prof. Dr. M. Suriyavathana

Periyar University, Tamil Nadu, India

Dear congress invitees, it's my immense pleasure and privilege to welcome you all for such a mega scientific gathering where we will elucidate the cordial association in the probiotics platform with enlightening knowledge on plant bioactive potential source of probiotics. The comprehensive gathering and congress will immerse you in the realm of phytochemicals and their medicinal properties, highlighting the potentiating effects of probiotics in human health. Thorough expert insights and interactive discussions, we will gain a profound understanding of the intricate dynamics between probiotics and plant-based nutria potentials Join us on this enlightening journey to unlock the therapeutic potential of plant nutrients and discover novel approaches to promote human health and well-being.

Welcome Message

Tafere Belay PhD

Associate Professor in Food Science and Nutrition
Department of Health Sciences Central Washington University, United States

Welcome to the session, “Risk Factors for Neural Tube Defects in Conflict-Impacted Tigray, Ethiopia: Findings from a Case - Control Study”. We are truly honored to have you here today. Your presence reflects a shared commitment to understanding and addressing the challenges surrounding maternal and child health in vulnerable settings. This session is designed not only to present research findings, but also to foster dialogue, reflection, and collaboration. We invite you to engage fully, ask questions, share insights, and connect the evidence with your own experiences and expertise. Together, we will explore how conflict conditions can heighten the risk of neural tube defects by disrupting access to essential nutrition and maternal health services. Your active participation will enrich this discussion and help illuminate pathways toward meaningful solutions.

Thank you once again for joining us. We look forward to a thoughtful and engaging session with all of you.

Welcome Message

Thi Thu Hao Van

RMIT University, Australia

It is an honour and pleasure to write a few welcome notes. Probiotic research is moving forward at a remarkable pace, with advances in microbiome science and emerging technologies deepening our understanding of how beneficial microbes support human health. Today, we see how targeted strains and innovative formulations can enhance gut function, influence immunity, and contribute to holistic wellbeing.

The synergy of longstanding natural approaches and new scientific insights is unlocking exciting opportunities for personalised nutrition and preventive healthcare. By fostering collaboration and open exchange of ideas, we can push the boundaries of what probiotics can achieve to benefit communities worldwide.

I encourage you to engage actively, share your perspectives, and help shape the next generation of probiotic science.

Welcome Message

A/Prof. Dr. Vintila Iuliana

University “Dunarea de Jos” Galati/Global Harmonization Initiative Nutrition WG Chair, Romania

On behalf of the Scientific Committee, I take great pleasure to welcoming you to our 8th Edition of International Nutrition and Food, March 26-28, 2026, Singapore. The theme of Nutri 2026 international conference, “Food, Function, and Future: The Evolving Role of Nutrition”, creates a collaborative scientific forum for addressing global health challenges and advancing dietary research. I invite you to join us in our international conference to take advantages from this great scientific opportunity of exchanging knowledge and share your significant scientific insights toward all participants including young and senior researchers, scientists, clinicians and academicians.

Welcome Message

Assoc. Prof. Yasin Ozdemır

Ataturk Horticultural Central Research Institute Food Technologies Department - Yalova / Türkiye

Probiotics 2026 is an important platform where probiotics, prebiotics, dietary supplements, healthy nutrition, and next-generation food technologies converge. Together, we embark on a journey toward the future, guided by the light of science.

In today's world, the link between health and nutrition is becoming increasingly clear. The role of microbiota health in supporting immunity, cognitive performance, and even the prevention of chronic diseases has reached a scientifically undeniable level. In this context, probiotics, prebiotics, and functional foods are no longer just a trend—they have become essential components of public health strategies and sustainable nutrition systems.

Probiotics 2026 is more than a space for scientific exchange; it is an interactive platform where research, industry, and policy sectors come together to foster new collaborations, where young researchers can find opportunities to grow, and where ideas can evolve into tangible outcomes.

With our strong belief that knowledge, collaboration, and inspiration will flourish in this environment, I warmly greet you all and wish you a productive, enlightening, and inspiring symposium.

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Magnus Group

About

Magnus Group, a distinguished scientific event organizer, has been at the forefront of fostering knowledge exchange and collaboration since its inception in 2015. With a steadfast commitment to the ethos of Share, receive, grow, Magnus Group has successfully organized over 200 conferences spanning diverse fields, including Healthcare, Medical, Pharmaceutics, Chemistry, Nursing, Agriculture, and Plant Sciences.

The core philosophy of Magnus Group revolves around creating dynamic platforms that facilitate the exchange of cutting-edge research, insights, and innovations within the global scientific community. By bringing together experts, scholars, and professionals from various disciplines, Magnus Group cultivates an environment conducive to intellectual discourse, networking, and interdisciplinary collaboration.

Magnus Group's unwavering dedication to organizing impactful scientific events has positioned it as a key player in the global scientific community. By adhering to the motto of Share, receive, grow, Magnus Group continues to contribute significantly to the advancement of knowledge and the development of innovative solutions in various scientific domains.

About Accreditation

About

Nutri & Probiotics 2026 is officially accredited for Continuing Professional Development (CPD) by **The CPD Group (UK)**, a globally recognized provider of continuing education certification. CPD accreditation ensures that professionals continue to enhance their knowledge, skills, and competencies through structured learning activities.

At **Nutri & Probiotics 2026**, participants can earn **1 CPD credit for every hour of attendance** in conference sessions. These credits formally recognize the time spent in professional learning and support ongoing professional development across clinical, academic, and research fields.

Earning CPD credits demonstrates a commitment to maintaining high professional standards and staying updated with the latest developments in nutrition and probiotics. CPD participation can also support **career advancement, license renewal requirements, and academic or professional portfolios**, depending on the policies of individual institutions or regulatory bodies.

In addition to educational value, the conference provides opportunities to engage with experts, researchers, and peers from around the world, encouraging knowledge exchange and professional networking.

Attending **Nutri & Probiotics 2026** not only offers a high-quality scientific learning experience but also provides internationally recognized CPD credits that reflect participants' dedication to continuous professional growth.

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KEYNOTE PRESENTATIONS

Antonio Cláudio Goulart Duarte

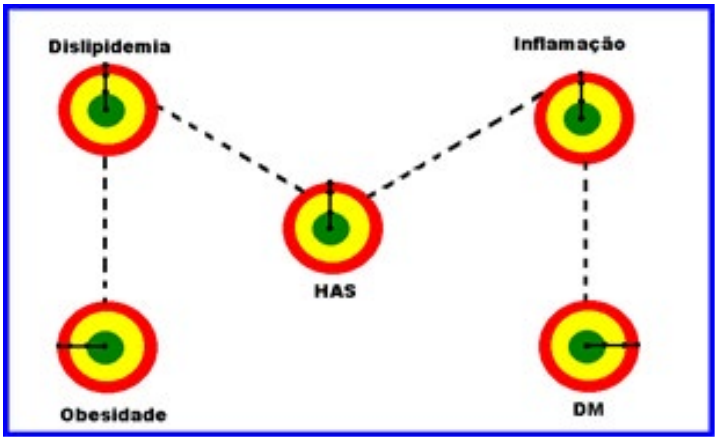
Medicine School of The Federal University of
Rio de Janeiro, Brazil

Biography: Antonio Cláudio Goulart Duarte holds a PhD in Medicine and is specialized in Internal Medicine, Nutrology, and Semiology. He serves as a Professor of Internal Medicine at the School of Medicine of the Federal University of Rio de Janeiro, Brazil.

Assessment of a Metabolic Map (MM) in association with Metabolic Syndrome (MS)

Metabolic Syndrome (MS) is a complex and chronic metabolism disturbance. Obesity (OB), Dyslipidemia (DL), Systemic Arterial Hypertension (SAH), Atherosclerotic Microvascular Inflammation (AMI) and Hyperglicemia (HG) in different arrangements, at the same time, is a very difficult combination to interpret. Sometimes the interpretation is according to the expertise or the knowledge of the doctors instead of understanding the real clinical situation of the patients. The Metabolic Map (MM) is a semiological and clinical form of assessment that analyses each component of the MS according to the photo below. There are five targets with three diferent zones inside; green, yellow, and red. Body Mass Index (BMI); Cholesterol (Ch), Triglycerides (Tg); Systolic (SBP) and Diastolic (DBP) Blood Pressure; Uric Acid (UA), High Sensibility Reactive C Protein (Hs-RcP), Fibrinogen (Fb); Fast Glucose (FG), Glycated Hemoglobin (GH) and Insulin Level (IL) are used. For BMI, we classified as a green zone values between 25-30Kg/m2; yellow 31-35Kg/m2 and red more than 35Kg/m2. For DL, a green zone means normal values for Ch and Tg; yellow if one of them is high and red if both are high. For SAH, green zone if both values are normal; yellow if one is high and red if both are high. For AMI, green zone if UA or Hs-RcP or Fb is high; yellow zone if two of them are high and red if all of them are high. For HG, green zone if FG and GH are normal and IL is high; yellow if FG and IL are normal and GH is high; and red if all of them are high. Patients can have an individual clinical and laboratory presentation in each target. As an example: In one moment there is a red

zone for OB, yellow for DL, green for SAH, yellow for AMI and red for HG. It shows that attention must be given to OB and HG at first. Another example: Yellow zone for OB, red for DL, yellow for SAH, green for AMI and yellow for HG. Now attention must be given to DL at first. Patients can show huge different forms of clinical presentation of MS. The MM helps to understand the true clinical evolution and the nutritional program, physical exercises, medications and surgery plans must be prescribed in a customized manner.



David Pineda Ereño

Managing Director, DPE International Consulting, Belgium

Biography: David Pineda Ereño Graduated in Law by the University of Deusto, Bilbao, Spain and with a Master's degree in Comparative Law and European Law (LL.M.) by the University of Maastricht, The Netherlands, David has over 20 years of experience providing strategic and regulatory advice to companies, trade associations and government bodies in the food, nutrition and health arena at national, regional and international level in Europe, Latin America, Asia, Middle East and the United States. David is an expert in regulatory harmonisation processes in international organisations such as the Codex Alimentarius Commission, in the notification processes of regulations to the World Trade Organisation (WTO) and in the development of international policies on health and nutrition, such as the World Health Organisation (WHO) and the Pan American Health Organisation (PAHO). David has vast expertise leading regulatory projects consisting of the analysis of regulations applying to foods, beverages and other nutritional products, advising in regulatory harmonisation processes, building up international, regional and national trade associations, and developing, coordinating and implementing strategic plans contributing to the removal of trade barriers and the access of foods and ingredients to markets worldwide. David organises, participates and speaks in events, conferences and training workshops for industry, academia and government bodies representatives in the foods, beverages and food supplements areas across the globe. David writes articles and publications and gives interviews for media magazines, newsletters and blogs internationally on trending topics on food, beverage and food supplement regulations and market entry.

Global regulatory trends on the use of probiotics and prebiotics in foods and food supplements

The global market for probiotics and prebiotics continues to grow with increasing consumer demand over the years. Consumers have become more health conscious than ever. Consumer demand internationally is expected to increase further helping individuals meet their optimum health goals, from boosting their immunity and digestive health to helping with allergies and weight management. Because of the higher demand among consumers, probiotics and prebiotics have, for some time, been at the top of the regulatory agenda, resulting in more regulation. However, regulatory divergences still persist. In light of all this, companies need to keep current with this evolving regulatory environment to develop successful marketing strategies and identify upcoming business opportunities.

David's presentation will address global regulatory trends on the use of probiotics and prebiotics in food and food supplements, providing an overview of the regulatory challenges

and opportunities on the use of probiotics and prebiotics in food and food supplements in Asia, Europe, Latina America, Middle East and Oceania.

The presentation will guide participants through the harmonised and non-harmonised rules, highlighting the main regulatory areas to be aware of when marketing food and food supplements containing probiotics and prebiotics including:

- Classification and definition of probiotics and prebiotics across the globe.
- Permissible use of probiotics and prebiotics, either through the development of positive lists or case by case authorisations.
- Novel foods and ingredients.
- Labelling requirements specific to probiotics and prebiotics, including marketing and advertising communications.
- The possibility of using nutrition and health claims for probiotics and prebiotics, and the scientific evidence needed to make them.
- Market entry requirements to bring to market products containing probiotics and/or prebiotics.
- Proposals for regulatory harmonisation of probiotics and prebiotics.

The presentation will guide participants on how to navigate regulatory complexity to realise commercial opportunities when launching food and food supplement products containing probiotics and prebiotics worldwide.

Dilip Ghosh

Director, Nutriconnect; Adjunct, NICM HRI, Western Sydney University, Consultant, WHO-GTMC (Traditional Medicine), Australia

Biography: Dr. Dilip Ghosh has received his PhD in biomedical science from India & post-doc from USDA-ARS, HNRCA at Tufts University, Boston. He is an international speaker, facilitator and author and professionally associated with Nutriconnect, Australia; Adjunct-NICM HRI. He is also a Visiting Professor, Kasturba Health Society, MRC, Mumbai; Jamia Hamdard University, India & Tehran University of Medical Sciences, Iran. Dr. Ghosh has published more than 100 papers in peer reviewed journals, numerous articles and 14 books with Academic Press & CRC Press. Two new books, "Traditional, Complementary and Integrative Medicine for Neurocognition" and "Ashwagandha: Potential Drug Candidate from Ancient Ayurvedic Remedy" to be published in September-October, 2025. Dr Ghosh is also a recipient of IASTAM-Zandu Oration Award 2022-23. Dr Ghosh has very recently nominated as Consultant, WHO-Global Traditional Medicine Center (GTMC).

Ashwagandha: Potential drug candidate from ancient ayurvedic remedy

Ashwagandha (*Withania somnifera*), also known as Indian Ginseng and Indian Winter Cherry, is an important ancient plant has been employed in Indian traditional systems of medicine, Ayurveda and Unani, for over 3000 years. The roots, leaves and fruits (berry) possess tremendous medicinal value. The plant has been used as an aphrodisiac, liver tonic, anti-inflammatory agent and more recently to treat asthma, ulcers, insomnia and senile dementia. Clinical trials and animal research support the use of Ashwagandha for anxiety, cognitive and neurological disorders, inflammation, and Parkinson's disease and many types of cancers.

Complex etiologies and pathologies cause major challenges to disease treatment. On the other hand, several herbs are known for their health-caring and disease-curing activities. Ashwagandha, a popular herb in Indian traditional home medicine, Ayurveda, has gathered increasing recognition in recent years when the chemically synthesized drugs for single target therapies showed limited success and adverse toxic effects. Ashwagandha is known as a powerful adaptogen and trusted to enhance function of the brain, reproductive system, cell-mediated immunity and increase the body's defence against disease, and possess anti-inflammatory, anticancer and anti-arthritic activities. In this presentation, I will provide a complete portrait on scientific understanding of the effects of Ashwagandha and its active principles for a variety of preventive and therapeutic activities.

Dilip Ghosh

Director, Nutriconnect; Adjunct, NICM HRI, Western Sydney University, Consultant, WHO-GTMC (Traditional Medicine), Australia

Biography: Dr. Dilip Ghosh has received his PhD in biomedical science from India & post-doc from USDA-ARS, HNRCA at Tufts University, Boston. He is an international speaker, facilitator and author and professionally associated with Nutriconnect, Australia; Adjunct-NICM HRI. He is also a Visiting Professor, Kasturba Health Society, MRC, Mumbai; Jamia Hamdard University, India & Tehran University of Medical Sciences, Iran. Dr. Ghosh has published more than 100 papers in peer reviewed journals, numerous articles and 14 books with Academic Press & CRC Press. Two new books, "Traditional, Complementary and Integrative Medicine for Neurocognition" and "Ashwagandha: Potential Drug Candidate from Ancient Ayurvedic Remedy" to be published in September-October, 2025. Dr Ghosh is also a recipient of IASTAM-Zandu Oration Award 2022-23. Dr Ghosh has very recently nominated as Consultant, WHO-Global Traditional Medicine Center (GTMC).

Where west meets East? Time to globalise Traditional, Complementary and Integrative Medicine (TCIM)

When I steeped in to investigate much on about traditional Asian medical practice that seems mystical and pseudoscientific. Other than well-known success stories—artemisinin for malaria, and arsenic trioxide for leukaemia—there seemed to be a lack of scientifically proven remedies. For around more than 200 years, two very different systems of medicine have been used in Asia to cure diseases and keep people healthy. Not only are big efforts underway to modernize traditional medicine in China, India and Japan, but Western medicine is adopting some aspects of the Eastern point of view too. In particular, modern medical practitioners are coming around to the idea that certain illnesses cannot be reduced to one isolatable, treatable cause. Rather, a fall from good health often involves many small, subtle effects that create a system-wide imbalance. The concept of lack of controlled trials in traditional medicines appear more magical than practical, and, without a physical basis, have resisted measurement and observation. But slowly these differences are resolving. In reality, these two systems cannot replace each other but instead they will complement each other towards disease-free health and wellness.

Professor Dipak P. Ramji

Cardiff School of Biosciences, Cardiff University, Cardiff, United Kingdom

Biography: Dipak Ramji is Professor of Cardiovascular Science and Deputy Head at the School of Biosciences in Cardiff University. He is also Fellow of the Learned Society of Wales and the Indian Society of Chemists and Biologists. He received his BSc (Hons) degree (Biochemistry) and his PhD (Molecular Biology) from the University of Leeds. This was followed by post-doctoral research at the EMBL (Heidelberg) and IRBM (Rome) with fellowships from the Royal Society and the EU. His current research is focused on understanding how natural products regulate cellular processes in heart disease with the goal of attaining deeper mechanistic insight and identifying preventative/therapeutic agents. He has published over 150 research articles (h index 44 and i10 index 87 with over 10,000 citations), including 880-page book in 2022 on Methods in Atherosclerosis. He is an Editorial Board member of 16 international journals; regular organising committee member, speaker, and track/session chair at international conferences on heart disease; involved in grant evaluation for over 20 organisations; and supervised over 30 PhD students.

Molecular mechanisms underlying the anti-atherogenic actions of probiotics

Atherosclerosis, a chronic inflammatory disease of medium and large arteries, is the leading cause of myocardial infarction and cerebrovascular accidents, accounting for more global deaths than any other condition. Although lifestyle modifications and pharmacotherapies have reduced morbidity and mortality, the growing prevalence of risk factors such as hypercholesterolemia, obesity and diabetes threatens to reverse these gains. Current treatments leave substantial residual cardiovascular risk and are often associated with adverse effects, while many promising pharmaceutical leads have failed in clinical trials.

A deeper understanding of the molecular basis of atherosclerosis is essential for developing novel preventive and therapeutic strategies. Our research focuses on elucidating the mechanisms underlying the anti-atherogenic effects of natural products using integrated *in vitro* and *in vivo* models combined with biochemical, molecular and immunological approaches. These studies have revealed novel insights into the protective actions of several nutraceuticals. This presentation will highlight he molecular basis of atherosclerosis, limitations of current therapies, emerging approaches targeting lipid metabolism and inflammation, and the potential of probiotic bacteria as preventive and therapeutic agents.

Esperanza Martinez-Romero[1*], José López Bucio[2], Leslie M Montes-Carreto[1], Rafael Bustamante Brito[1], Marco A Rogel[1], Mónica Rosenblueth1, Julio Martinez Romero[1]

[1]Center for Genomic Sciences, UNAM, Cuernavaca, México
[2]UMSNH–Universidad Michoacana de San Nicolás de Hidalgo, México

Biography: Professor Martínez-Romero, director of the Genomic Sciences Center, studies the mutualistic symbioses of bacteria with plants and animals native to Mexico using metagenomic and functional genomics approaches. She was a pioneer in the molecular study of the nitrogen-fixing symbioses of beans and endophytes of corn and beans. She has given workshops and advice to agricultural producers. She described new species of bacteria from plants and insects from Mexico, some of them nitrogen-fixing bacteria. The strains that she obtained have been deposited in official bacterial collections and some of them are used as inoculants or biofertilizers in agriculture.

Probiotics with auxin producing bacteria: Emerging benefits for human health

We eat vegetables that contain bacteria many of which are capable of producing plant hormones such as auxins. Thus, we eat bacteria that produce auxins. Will bacteria produce auxins in our guts? If so, what are the effects of auxins in human health? Indole-Acetic Acid (3-IAA) is an auxin, known for a long time, that has significant effects in root proliferation in plants, enhances plant growth and is produced from the essential amino acid tryptophan, which is also precursor of other bioactive molecules such as serotonin, kynurenine, melatonin and others. In intestines, other sources of 3-IAA are the vegetables themselves because some may contain high levels of auxins that could be readily absorbed in the small intestine. Seemingly the proportion of 3-IAA that derives directly from plants or produced by bacteria in the colon will vary depending on diet and the gut microbiota. It appears that we should favor consuming probiotics with 3-IAA-producing bacteria as this metabolite looks beneficial for human health. Nevertheless, there was a report on the toxic effects of 3-IAA at high concentrations. We recently reported a review on the benefits of IAA in human health. It is outstanding that 3-IAA is anti-inflammatory, may alleviate colitis, activates the aryl hydrocarbon receptor that would support the integrity of gut epithelial cells. 3-IAA-producing bacteria improve the response to chemotherapy in patients with cancer. Even if we consume probiotics with auxin

producing bacteria this is no warrant that this metabolite will be produced in guts. Bacterial genes must be expressed and enzymes must have the needed substrate. In addition, 3-IAA may be catabolized by other gut bacteria before reaching the gut epithelium for its uptake. Thus, more studies are needed to understand the ecology and roles of probiotics to produce bioactive metabolites in the gut.

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Prof. Dr. Henning Sommermeyer*, Jacek Piatek

Department of Health Sciences, Calisia University, Kalisz, Poland

Biography: Henning Sommermeyer studied biochemistry at the University of Hanover, Germany and graduated from the Department of Molecular Pharmacology at the Medical High School of Hanover. For over 20 years, he worked for different pharmaceutical companies in Germany, Portugal, Poland, and the Czech Republic. Since 2019, he has been a visiting professor leading the Microbiota Research Group at the Department of Health Sciences of the Calisia University, Kalisz, Poland. His research covers preclinical and clinical studies with pro-and synbiotics as prophylactics and therapeutics. Clinical studies focused on irritable bowel syndrome and infantile colic. He authored 32 scientific research articles and two scientific books.

Treating irritable bowel syndrome patients with a balanced multi-strain synbiotic–results from a multi-center, randomized, double-blind, placebo-controlled clinical trial (The ViIBS trial)

Effects of a balanced multi-strain synbiotic in patients with moderate to severe Irritable Bowel Syndrome (IBS) of all stool form types were characterized in a multi-center, randomized, double blind, placebo-controlled clinical study. A total of 202 adult IBS patients were randomized (1:1) and, after a four-week treatment-free run-in phase, were treated either with the balanced multi-strain synbiotic or a placebo for 12 weeks. Primary endpoints of the trial were (1) assessment of the severity of IBS Symptoms (IBS-SSS) and (2) the improvement of IBS Global Symptoms (IBS-GIS). Secondary endpoints comprised Adequate Relief (IBS-AR scale), stool form type (Bristol Stool Form Scale), severity of abdominal pain and bloating, stool pressure, feeling of incomplete stool evacuation, and adverse events. A total of 201 patients completed the study. Synbiotic treatment, in comparison to placebo, significantly improved IBS-SSS and IBS-GIS scores. After the end of the treatment, 70% of patients in the synbiotic group (0% in the placebo group) achieved adequate relief. After 12 weeks of treatment, the secondary endpoints were favourably differentiated in the synbiotic group when compared with the placebo group. Two patients in the synbiotic group reported transient adverse events (headache). The results indicate that treatment of IBS patients with the synbiotic significantly improved all major symptoms of IBS and was well-tolerated.

Vintila Iuliana

Department of Food Science, Food Engineering, Biotechnology and Aquaculture, University "Dunarea de Jos" Galati, Romania

Biography: 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, 114 BDI scientific papers indexed in recognized international databases, articles presented in national & international conferences and published articles revues. 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 », Horizon Europe Program, Innovation Fund Denmark Expert, EU TAIEX, COST, EACEA. 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 & Food Safety", "Journal of Agriculture" Canada Editorial Board Member, "EC Nutrition" Editorial Board, Editorial board "Clinical Journal of Nutrition and Dietetics", Editorial Board "Discoveries in Food Technology and Nutrition Sciences", etc.

The software tools for fop nutrition labelling

The adequate and reliable menus nutrition labelling need a well-designed and easy-to-use digital tool, including an acceptable algorithm of nutritional profile comparing with the energy & nutrients DRV. The complex structure of the dish units and the meals associations of culinary products and beverages deliver more variables in the algorithm calculation which need to be adequate calibrated and integrated in a reliable software tool. Also, the using of the software programs dedicated to the calculation of the required nutritional labelling information offer, also, approximate values of the nutrition value depending on proposed mathematical algorithm, the nutriments energy coefficient, the nutrients bioavailability, the compatibility with the dishes recipes, the correct denomination of the ingredients. In all cases, the exactly composition of all dishes ingredients need to be available, especially in case of trans/saturated fatty-acids, salt and carbohydrates.

There is a cost associated with the algorithm using in the calculation of the catering products nutritional value and this cost is, finally, paid by the consumer. In fact, the responsibility for the correct information of the final consumer regarding the nutritional value of the menu's dishes need to be shared between the producer, the national authorities responsible with the public health and the final consumer.

Prof. Dr. Jacek Piatek*, Henning Sommermeyer

Department of Health Sciences, Calisia University, Kalisz, Poland

Biography: Prof. Jacek Piatek studied at the Faculty of Medicine at the Medical University of Poznan, Poland. He worked from 1985 until 2018 at the Department of Physiology, University of Medical Sciences in Poznan, Poland. From 2011 to 2013, he was a visiting professor at the Institute of Rural Medicine in Lublin, Poland. Since 2018, he has been a professor at the Calisia University, Kalisz, Poland, where he was the Dean of the Faculty of Health Sciences for a year. He is now heading the Internal Disease Department of the University. His research is focused on the gut microbiota, probiotics, and synbiotics. He is the author of more than 50 peer-reviewed research publications and of two scientific books.

Results from a cross-sectional observational study examining irritable bowel syndrome patients six months after finishing their participation in the ViIBS trial

A recent clinical (ViIBS) trial investigating the effects of a balanced multi-strain synbiotic in Irritable Bowel Syndrome (IBS) patients showed that twelve weeks of treatment resulted in significant improvements across all major IBS symptoms. The current observational study pursued three aims: To investigate patients' attitudes towards the intake of pro- or synbiotics during the six months after finishing their trial participation, to determine the severity of IBS symptoms, and to assess IBS diagnosis scores. During a single six-month follow-up examination, patients were asked about the intake of probiotics or synbiotics. For the study, former placebo-group patients who abstained from taking probiotics were compared with synbiotic-group patients who continued taking the tested synbiotic. IBS symptom severity was assessed with the IBS—Severity of Symptoms Scale and the IBS diagnosis score with the IBS questionnaire of the World Gastroenterology Organisation. The control group comprised 17 patients (out of 70 from the placebo group participating in the follow-up) and the treatment group 75 (out of 91 examined). IBS symptom severity was significantly lower in the treatment group (23.5±33.1) than in the placebo group (232.6±35.1). IBS diagnosis scores were 5.9±2.5 and 21.2±2.0 in the treatment and control group, respectively. Measurement values for the treatment group indicate the absence of IBS. The results indicate that the prolonged administration of the balanced multi-strain synbiotic can potentially reduce IBS symptom severity and IBS diagnosis scores to levels indicating the absence of IBS, an observation to be followed up in a controlled clinical trial.

Jack T. Rogers*, Sanjan Sarang, Ning Xia, Rachit Bakshi, Asif Maroof, Catherine M. Cahill

Neurochemistry, Massachusetts General Hospital, Harvard Med School, Boston, Massachusetts, USA

Biography: Jack Rogers, PhD. is a leading authority on the role that RNA plays in the maintenance of iron homeostasis related to disease processes in neurodegeneration, including manganese neurotoxicity and Parkinson's disease. He is the Director of the Neurochemistry Laboratory in the Psychiatry/NEUROSCIENCE Department at Massachusetts General Hospital. Jack is an Associate Professor at the Harvard Medical School, having a funded track-record in established scientific journals (Cell, J. Biol. Chem. and PNAS). His peer review publications won him a Zenith award from the Alzheimer's Association on translational control by iron and related disease progression. He is contributing his efforts to treat Mn toxicity and PD by pharmacological modulation of iron homeostasis towards neural survival.

Translation modulators to preserve neurodegenerative decline from metal toxicity

Manganese (Mn) toxicity has long been linked to the neurodegenerative movement disorder of occupational manganism and also has long been associated with Parkinson's Disease (PD). We collaborated with Prof. Fudi Wang (Zhejiang University) to conduct a meta-analysis demonstrating that environmental excesses of Mn are statistically linked with impaired childhood neurodevelopment and cognition (Liu W, et al, Environ Health. 2020, 2;19(1):104). Here, we present support that Mn, and also Lead (Pb), exposures to brain neurons dysregulate iron transport to cause a neurodegenerative ferroptosis that might jeopardize cognitive function. We reviewed how high Mn and Pb exposures perturb iron homeostasis Rogers JT, Cahill CM. Learn Mem. 2020 09; 27(9):395-413.PMID: 32817306.

The Alzheimer's Amyloid Precursor Protein (APP) cytoprotectively exports excess toxic Fe from neurons after binding to the central iron Exporter Ferroportin (FPN) (Venkataramani et al, 2018). As a part of normal cellular physiology, increases in intracellular iron concentrations induce the up-regulation of APP gene expression at the level of translation by relieving of repression by the Iron-Regulatory Protein-1 (IRP1) acting at the site of an iron-responsive element RNA stem loop (IRE) in the 5'untranslated Region (5'UTR) or APP mRNA. Resulting from these events, increased APP(s) levels have a protective role to promote excess iron efflux. The iron storage protein ferritin also is translationally up-regulated to confer cyto-protection

via its ferroxidase activity (in the H- subunit). We discuss our model that Mn and Pb can both operate in model SH-SY5Y neural cell lines and in rodents to selectively interfere with the translation of ferritin and APP by a post-transcriptional mechanism to explain environmental metallo-neurotoxicities both *ex vivo* and *in vivo*. We review our findings that overexposures to Mn and Pb cause toxicity to neurons by targeting 5'UTR specific IREs amongst the network of iron-associated transcripts encoding proteins that promotes neuronal viability; this includes APP and ferritin whose Mn/Pb-induced absence increases iron load and may generate ferroptosis and cell death.

For a new therapy, urate's elevation emerged as a neuroprotective strategy to treat neurologic disorders based on convergent epidemiological and clinical biomarker data as well as on its antioxidant and metal chelator properties. We present our findings that the use of urate, and our neuroprotective APP/ferritin 5'UTR activators, indeed mitigate Mn/Pb induced degeneration of cultured dopaminergic neurons. Activators of IRE-target sequences are to be tested for their capacity to restore translation of the mRNAs for APP (neuroprotective iron export) and ferritin (neuroprotective iron storage) after their inhibition in the presence of Mn or Pb. Among the activators, we describe clinical aspects of urate's neuroprotective potential to ward off Mn and Pb dependent neuronal injury via IRE-mediated pathways.

Jason Ryan*, Andrea Rabellino, Marcela Charry, Ava Stallery
Sacco System Australia, Brisbane, Queensland, Australia

Biography: Dr. Ryan studied Biotechnology at Griffith University, Australia, as an undergraduate completing his degree in 1996, then Masters in Biotechnology at Massey University, New Zealand in 2006. He then completed his PhD in Bioprocessing Engineering at the University of Canterbury in 2012. He has worked in a range of private and government laboratories and manufacturing facilities developing upstream and downstream processes in the environmental, industrial, nutrition and pharmaceutical industries. Currently he is the Head of Scientific Development at Sacco System Australia and has published 21 research papers and 1 patent. His contributions to the field continue to drive innovation in the development and manufacturing of live biotherapeutics, positioning Sacco System Australia as a leader in the microbiome industry.

Overcoming manufacturing challenges in next-generation probiotics: From anaerobic cultivation to clinical-grade formulation

Next-Generation Probiotics (NGPs), consisting of non-traditional commensal microorganisms with targeted health benefits, are at the forefront of microbiome-based therapeutics. Unlike conventional probiotics, NGPs such as *Faecalibacterium prausnitzii, Bacteroides xylanisolvens, Alistipes shahii,* and *Mediterraneibacter faecis* are strict anaerobes with complex metabolic requirements and heightened sensitivity to oxygen, presenting substantial challenges for industrial-scale cultivation and formulation. This presentation addresses the critical bottlenecks and bioprocessing strategies necessary to support the translation of these organisms into clinically viable products.

Production begins with anaerobic cultivation under tightly controlled conditions, including bioreactor systems equipped with continuous monitoring of redox potential, pH, and gas composition. Custom growth media must be optimized to exclude animal-derived components and known allergens while meeting regulatory requirements for GRAS (Generally Recognized as Safe) status. The nutritional profiles of these organisms often demand supplementation with specific short-chain fatty acids, vitamins, and specific carbohydrates. For example, optimized fermentation of *F. prausnitzii* in buffered, defined media supplemented with acetate and yeast peptone has achieved stable yields of up to 5×10^9CFU/g (dry weight) in anaerobic bench-scale systems.

Lyophilization (freeze-drying) remains the preferred method for stabilizing anaerobic NGPs, but standard protocols are inadequate for highly oxygen-sensitive strains. Optimization of lyophilization involves the selection and pre-conditioning of cells with appropriate cryoprotectants—such as trehalose, maltodextrin, ascorbate, or cysteine—and careful control of freezing and drying kinetics. Critical parameters include freezing rate (to minimize intracellular ice formation), primary drying pressure and temperature (to maintain structural integrity), and secondary drying for moisture content reduction. Post-lyophilization viability assessment must be conducted under anaerobic conditions using Colony Forming Unit (CFU) enumeration and validated flow cytometry protocols with membrane integrity stains (e.g., SYTO 9/propidium iodide). Stabilized formulations may also be combined with enteric coatings or encapsulation systems to enhance shelf-life and targeted delivery.

Throughout the development process, integration of advanced analytical methodologies is essential for product quality and regulatory compliance. This allows implementation of a Quality by Design (QbD) framework, which supports reproducibility, scalability, and consistency during technology transfer and regulatory submission.

In summary, the development of NGPs for therapeutic use requires a multidisciplinary approach encompassing anaerobic microbiology, process engineering, regulatory science, and analytical innovation. This presentation provides a comprehensive overview of current best practices and emerging strategies for overcoming the key challenges in the manufacturing of NGPs, with the goal of enabling their successful integration into clinical pipelines and commercial markets.

Małgorzata Mizgier

Department of Sports Dietetics, Chair of Dietetics, Faculty of Health Sciences, Poznan University of Physical Education, Poznan, Poland

Biography: Małgorzata Mizgier is an Associate Professor at the Department of Sports Dietetics, Chair of Dietetics, Faculty of Health Sciences, Poznań University of Physical Education. She earned her Ph.D. at the Department of Hygiene and Human Nutrition, Division of Dietetics, at Poznań University of Life Sciences, and completed her habilitation at Poznań University of Medical Sciences in the field of health and medical sciences. Her current research focuses on the impact of diet and physical activity on clinical, hormonal, and immunometabolic parameters in women with polycystic ovary syndrome, menstrual disorders, infertility, and during pregnancy.

Combined influence of nutrition and physical activity on reproductive health in adolescent and young adult women: Risks, benefits, and clinical implications

Proper nutrition during adolescence plays a crucial role in ensuring optimal somatic, hormonal, and reproductive development in girls. This period is characterized by intense biological changes that require increased energy intake and high-quality nutrients. Both deficiencies and excesses of these substances can lead to menstrual cycle disturbances, delayed menarche, and adverse effects on the hypothalamic–pituitary–ovarian axis.

Low energy availability, resulting from insufficient food intake or excessive physical activity, may disrupt hypothalamic function and lead to menstrual dysfunction. Early identification of disordered eating behaviors and appropriate dietary counseling are essential for restoring menstrual cycles and improving gynecological outcomes.

In clinical practice focused on adolescent gynecology, increasing attention is being paid to improper eating habits, which may lead to both malnutrition and overweight or obesity. These conditions represent significant risk factors for endocrine and metabolic disorders that may impair reproductive function.

A separate yet related issue involves eating disorders such as anorexia nervosa, bulimia nervosa, and binge eating disorder. Although primarily psychiatric in nature, these disorders have direct consequences for gynecological health in adolescent girls, leading to secondary amenorrhea, hormonal deficiencies, and long-term fertility issues.

Although excessive physical activity combined with energy deficiency may negatively affect reproductive health, regular and moderate physical activity has a beneficial impact on hormonal balance, ovulation, and pregnancy outcomes, including reduced risk of gestational diabetes and hypertensive disorders of pregnancy.

An integrated therapeutic approach that combines gynecological care with nutritional intervention and psychological support is essential for the effective prevention and treatment of developmental disorders in adolescent girls. Including both nutrition and physical activity in a holistic care model is key to promoting reproductive health from adolescence through early adulthood. Nutritional education aimed at young patients and their families plays a vital role in shaping healthy behaviors that support proper maturation and long-term reproductive well-being.

Professor Dr. Mohammad Kamil

Director General, Lotus Holistic Institute, Abu Dhabi,
United Arab Emirates

Biography: Professor Dr. Mohammad Kamil, M.Sc.; M.Phil.; Ph.D.; D.Sc.; Chartered Chemist (UK) and Fellow Royal Society of Chemistry (London), has worked in various capacities. As In-charge-Drug Standardization lab. CCRUM, Ministry of Health-India, Associate Professor at Hamdard University, India; Professor & Head Department of Pharmacognostic Science, Zayed Complex for Herbal Research & Traditional. Medicine, Ministry of Health, UAE (1996-2010); Head TCAM Research at Department of Health, Abu Dhabi (2010-2020). Presently working as Director General, Lotus Holistic Healthcare Institute, Abu Dhabi, UAE since 2021. He is heading the Scientific Committee for the Sheikh Zayed International TCAM Awards. Recipient of many honours and awards lastly received Sheikh Zayed International Award in Traditional Herbal Research in 2020. Produced 20 Ph. D. and M.Phil. students besides guiding a huge number of M.Sc. dissertations and 40 Interns. More than 800 research papers with more than 7000 citations.

Plants with special reference to flavanoids and their role in obesity prevention

Obesity is one of the most prevalent nutritional disease and a growing public health problem worldwide. The plant kingdom offers a rich source of structural biodiversity in the form of a variety of Natural Products. As we know natural products continue to play an important role especially in & food and pharmaceutical industries. Besides medicament, plants have always been a common source of food and nutrition either as such or as dietary supplements. The unique nutrient richness of every whole, natural food can be showcased in a variety of ways. But there is no better way to highlight the unique nutrient richness of foods than to focus on their flavonoid content. Flavonoid, one of the largest nutrient families known to scientists, covers a large group of naturally occurring, low molecular phenolic compounds found practically in all parts of the plant, include over 6,000 already-identified family members. A large number of novel flavonoids and biflavonoids have been isolated from medicinal plants. Some of the best-known flavonoids include quercetin, kaempferol, catechins, and anthocyanidins.

In this talk the anti-obesity potential of diverse plants such as: *Aloe vera, Camellia sinensis, Hibiscus sabdariffa, Hypericum perforatum, Phaseolus vulgaris, Capsicum annuum, Rosmarinus officinalis, Citrus limon, Punica granatum* and some other common plants will be discussed. Researchers consider the potential of these plants as natural alternative

treatments of some metabolic alterations associated with obesity. Market dietary supplements for obesity frequently contain undeclared/hidden active ingredients that could be harmful to public health; the laboratory experience on this intensional adulteration will be dealt in detail.

Neha Bhanusali MD

University of Central Florida, United States

Biography: Dr. Neha Bhanusali is a board-certified rheumatologist and lifestyle medicine physician with over 15 years of experience treating autoimmune rheumatic diseases. She is an Associate Professor of Medicine at the University of Central Florida College of Medicine, where she teaches at the intersection of immunology, nutrition, and chronic disease. Her work focuses on dietary patterns and immune modulation in conditions such as rheumatoid arthritis and lupus. Through clinical practice, research, and public education, she translates nutrition science into practical, evidence-based strategies for autoimmune disease management.

Dietary patterns in autoimmune disease: From nutrition science to clinical outcomes

Autoimmune rheumatic diseases provide a compelling human model to examine the interaction between dietary patterns and immune regulation. Conditions such as rheumatoid arthritis, systemic lupus erythematosus, and psoriatic arthritis are characterized by chronic immune activation, systemic inflammation, and metabolic disturbances that may be influenced by dietary exposures. While nutritional immunology has increasingly explored individual nutrients and bioactive compounds, growing evidence suggests that whole dietary patterns may exert more clinically meaningful effects than isolated components.

This session will examine the current evidence linking dietary patterns—particularly Mediterranean-style, plant-forward, and fiber-rich approaches—to inflammatory and disease activity markers in autoimmune rheumatic disease. Randomized and observational studies have demonstrated associations between Mediterranean dietary adherence and reductions in C-Reactive Protein (CRP), Erythrocyte Sedimentation Rate (ESR), and composite Disease Activity Scores such as DAS28 in rheumatoid arthritis. Plant-rich dietary patterns may influence immune activity through multiple pathways, including modulation of gut microbiota composition, increased short-chain fatty acid production, improved metabolic tone, and reduced dietary advanced glycation end-product exposure depending on the individual.

Emerging data also suggest potential benefits in fatigue, functional status, and cardiometabolic comorbidity—key considerations in long-term autoimmune management.

Beyond mechanistic plausibility, this presentation (if time allows) will address the practical realities of dietary implementation in clinical care. Topics will include variability in tolerance to high-fiber or fermented foods, the role of ultra-processed plant-based products, sarcopenia risk in chronic inflammatory disease, and the limitations of reductionist, nutrient- focused approaches. The distinction between associative data and causal evidence will be emphasized, clarifying where randomized trial data are robust and where further investigation is needed.

By bridging nutrition science, immunology, and clinical outcomes, this session will outline how dietary pattern interventions may complement—but not replace—standard pharmacologic therapy in autoimmune rheumatic disease. The goal is to provide a clinically grounded, evidence-based framework for integrating dietary strategies into comprehensive autoimmune care.

Raffaella Conversano

I.C. "Giovanni XXIII-Pascoli", Fasano (BR), Italy, Adjunct Professor Laboratory of Special Needs Education, For.Psi.Com., University of Bari, Italy, UTL University of free time "San Francesco D'Assisi" Fasano (BR)-Puglia, Italy

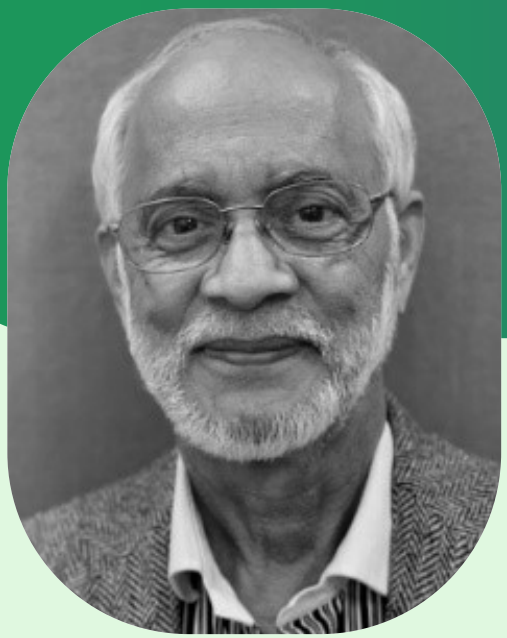
Biography: Raffaella Conversano was born in Fasano, she is Teacher specialized in Special Teaching Role (Support) at the IC "Giovanni XXIII-Pascoli" of Fasano (BR), Media Educator, Contract Professor of Special Teaching Laboratory: Communication Codes of Language Education at the "Aldo Moro" University of Bari and the "San Francesco D'Assisi" University of Free Time Fasano (BR), Academic Member of the Communication Institute of Greece (COMING) Athens and Academic Member of the Scientific Committee of the International Conference on Communication and Management and Academic Member of the Athens Institute for Education and Research (ATINER) and academic member of the Mass Media and Communication Research Unit; Honorable Editor for American Journal of Biomedical Science & Research. She is the author of 61 global publications. Her field of research focuses on the strategic use of educational technologies in the field of disabling pathologies in general; the application of Media Education conducted on serious, very serious cases and cases with rare disabilities have always achieved educational successes in different study contexts. She is the author of the innovative Pedagogical The "Dis(ease)Ability" Theory. She has been appointed President and official signatory of the documents and certifications as well as Member of the Scientific Committee of FAT2024, a Euro-global event that will be held in Rome from 16 to 18 September 2024 and FAT2025.

We are elastic: The color of hunger and food perception in borderline cognitive functioning

In a global context where food science is increasingly engaging with the complexity of cognitive diversity, the concept of elasticity becomes a bridge between body and mind, between sensory experience and cognitive functioning. The title We Are Elastic is not just a metaphor—it represents an openness to a new paradigm in which food perception, mediated by color, can become a tool for inclusion and innovation for individuals with Borderline Intellectual Functioning (BIF). This research offers a novel perspective on the relationship between food, color, and cognition, paving the way for personalized nutritional strategies and elastic sensory environments—those capable of adapting to individual needs. Color is one of the most immediate and powerful sensory stimuli influencing food perception and choice. Extensive research has shown that color variations can alter taste expectations, appeal, and food preferences in the general population. However, little is known about how color influences eating behavior in individuals with Borderline Intellectual Functioning (BIF)—a cognitive range

defined by an IQ between 70 and 85, often overlooked in studies and inclusion policies. This research moves beyond the medical-compensatory model of disability. Color is not merely a sensory stimulus but a gateway to subjectivity: Evocative, relational, affective. In this sense, the person with borderline functioning is listened to in their embodied experience—in their concrete perception of food and their world. Eating, a daily and universal act, thus becomes a device for recognition, where the real person emerges—not just evaluated for what they lack, but acknowledged for how they see, feel, choose, and narrate. This study explores the interaction between color perception and cognitive processes in individuals with BIF, positioning food not only as a source of nourishment but as a complex perceptual and relational experience. The work is framed within an innovative theoretical model inspired by the *"Arginare la Di(agi)abilità"* paradigm, which aims to move beyond the medical-compensatory view of disability to value embodied subjectivity and the relationship between person and environment. Through a case study of a student assigned to me as a Special Education teacher, I am investigating how individuals with borderline functioning demonstrate greater sensitivity to color than control subjects, with color influencing food selection and preference more strongly—often overriding familiarity or taste. Qualitative narratives reveal a deeper relationship between color, emotional memory, and a sense of safety, suggesting that color is not simply an aesthetic element but a cognitive and emotional threshold in the relationship with food. The anticipated results will have significant implications for the design of inclusive eating environments, educational strategies, and personalized nutritional interventions for people with BIF.

Moreover, this work proposes a research and application paradigm that values the recognition of the real person and their lived experience, offering an original contribution to sensory and cognitive inclusion in the field of food science and technology. So, if color is the silent language of food—capable of evoking expectations, emotions, and choices—what happens when cognitive functioning alters how we interpret these signals?



Dr. Safiullah Pathan

Department of Agriculture and Environmental Sciences Lincoln University of Missouri, Jefferson City, Missouri, USA

Biography: Dr. Safiullah Pathan is an Associate Professor of Crop Science at Lincoln University of Missouri in Jefferson City, MO, USA, with more than 42 years of experience in teaching, research, and extension. He holds a Ph.D. in Agronomy from Texas Tech University in Lubbock, TX. His research centers on developing improved crop varieties with higher yields, enhanced tolerance to abiotic stress, and value-added traits. In recent years, Dr. Pathan has focused on the production and promotion of quinoa as a nutrient-dense leafy green. He has authored more than 100 publications, including journal articles and book chapters. He has presented at national and international conferences on the nutritional and health-promoting properties of quinoa, both as grain and a leafy green.

Nutrients and bioactive compounds of non-traditional green leafy vegetables: A natural path to better health

Bioactive, or biologically active, compounds are extra-nutritional phytochemicals found in small amounts in foods such as fruits, vegetables, nuts, oils, and whole grains. These compounds offer health benefits that go beyond the fundamental nutritional value of the food. Examples include phenolic acids (e.g., gallic acid, caffeic acid, ferulic acid), flavonoids (e.g., kaempferol, quercetin, rutin, luteolin), terpenoids (e.g., cryptoxanthin, lutein, zeaxanthin), and glucosinolates (e.g., indoles, sulforaphane). Research has shown that many bioactive compounds possess antioxidant, anti-obesity, anticancer, anti-inflammatory, and antimicrobial properties, as well as protective effects against cardiovascular disease. Food and nutrition insecurity remains a significant issue among low-to middle-income consumers, who must balance nutritional quality with affordability. Nutrient-dense foods are typically more expensive, making them inaccessible for regular consumption by many. To help address this challenge, green leafy vegetables—an essential part of a healthy diet—serve as excellent sources of fiber, minerals, vitamins, essential amino acids, and bioactive compounds. In addition to Traditional Green Leafy Vegetables (TGLVs), Non-Traditional Green Leafy Vegetables (NTGLVs) are equally rich in nutrients and bioactive compounds. These NTGLVs are widely available year-round, often at lower prices, making them a more affordable option. *In vitro* and *in vivo* studies have demonstrated that consuming NTGLVs can reduce the risk of non-communicable diseases such as heart disease, stroke, cancer, and obesity.

According to the CDC, the Dietary Guidelines for Americans recommend consuming five servings of fruits and vegetables daily, with one of those servings comprising green leafy vegetables.

Dr. M. Suriyavathana

Professor, Department of Biochemistry, Periyar University, Salem, Tamil Nadu, India

Biography: Prof. Dr. M. Suriyavathana studied Biochemistry at the Bharathiar University, Coimbatore and post graduated in 1991. Then joined in Periyar University as an assistant professor in the year 2005 and received her PhD degree in Biochemistry in the year 2007 from Bharathiar University. Area of Specializations are Plant Therapeutics, Clinical Biochemistry and Nanomedicine. She has teaching and research experience of 30 years. Received a patent for the invention of portable organic water purifier. She has guided 24 Ph.D Scholars and 37 M. Phil Scholars. Books publication-3. Paper publications-110 including SCI(E) and Scopus. Citation-715 and h-index-15. Awards received- 4 (International and National).

Biochemical profile and nutripotential glimpses of *Terminalia arjuna* bark extract

Medicinal plants are of great importance worldwide and can be used alone and as a supplement to traditional medication. The remarkable number of reports on the nutritional and therapeutic properties of medicinal plants combined with long-term experience in folk medicine has led to a growing interest in the use of natural products. Numerous biochemical constituents found in *Terminalia arjuna* contributes potential nutritional benefits, and the plant has a long history of traditional use. The study looks into how immunological responses to bacterial species are affected when *Terminalia Arjuna* (TA) ethanolic bark extract is supplemented in the diet. It possesses high nutritive and medicinal value. The nutritional characteristics of medicinal plant species were analyzed by using qualitative and quantitative analysis. It was observed that medicinal plants are not only used for therapeutic purposes, but they can also be used as nutritional supplements. The amount of total polysaccharides (17.6±1.05µg/ml) in *Terminalia arjuna* bark possess a good store of polysaccharides than cellulose and total protein. It possesses a good amount of calcium (10.74±0.97µg/ml) along with phosphorus and iron which improves the nutritional quality. *Terminalia arjuna* bark upholds good store of vitamin C (5.4±1.23µg/ml) than vitamin A and vitamin E. It was found that these plants are good source of carbohydrate, minerals and vitamins. They are rich source of available carbohydrates. They also contain antimicrobial activity which help in controlling bacterial strains. The antibacterial study provided an effective inhibitory activity against the selected strains (*Streptococcus aureus* and *E.coli*).

Keywords: *Terminalia Arjuna*, Nutritional, Biochemical, Antibacterial.

Tafere G Belay[1*], Birhane Alem[2], Aubrey Ross[1], Afework Mulugeta[2], Tony Magana[2], Peixin Yang[3], Hayelom Kebede Mekonen[3]

[1]Central Washington University, USA

[2]Mekelle University, Ethiopia

[3]University of Maryland, USA

Biography: Dr. Tafere G. Belay is an Associate Professor of Nutritional Sciences at the Department of Health Sciences, Central Washington University, USA. He teaches undergraduate and graduate nutrition courses and conducts research on micronutrient deficiencies, maternal and child nutrition, and food insecurity. He holds a PhD and MS in Nutritional Sciences from Oklahoma State University. His current work includes studies using the NHANES dataset to advance understanding of nutrition-related health outcomes.

Risk factors for neural tube defects in conflict-impacted Tigray, Ethiopia: Findings from a case–control study

Neural Tube Defects (NTDs) continue to pose a major global public health challenge, with prevalence and risk factors differing widely by region. In Tigray, the ongoing war and siege have severely disrupted the health system, heightening pregnancy-related complications and contributing to increased rates of NTDs. This study examines sociodemographic, obstetric, and conflict-related determinants of NTDs during the crisis period.

A case-control study was carried out from December 2023 to January 2024, involving 103 NTD cases and 205 controls. Data were collected using a WHO-adapted birth defects survey and ODK/KOBO tools. Analyses were performed using SPSS version 27, employing descriptive statistics to summarize participant characteristics and logistic regression to identify significant predictors of NTDs ($p<0.05$).

Among the 308 participants, stillbirths constituted 79.7% of NTD cases. Anencephaly was the most frequently observed defect, followed by spina bifida and encephalocele. Of the affected fetuses, 23.3% were male, 18.4% female, and 58.3% had undetermined sex. Co-occurring anomalies were relatively infrequent and included hydrocephalus (2.9%), clubfoot, omphalocele, and cleft palate (1–1.9%).

Several factors were significantly associated with NTDs, including younger maternal age, low educational attainment, prior abortion or stillbirth, and absence of prenatal care. Conflict-related conditions such as exposure to violence, unintended pregnancies, limited access to

health services, and widespread food insecurity further intensified the burden. Many women reported reliance on aid or subsistence farming and consuming fewer than two meals per day.

Overall, the study highlights the strong link between NTDs particularly anencephaly and elevated stillbirth rates. High proportions of unidentified fetal sex, limited detection of associated anomalies, and inadequate prenatal care reflect diagnostic and service-delivery challenges. The ongoing conflict has amplified maternal health risks and may be contributing to the heightened prevalence of NTDs in the region.

These findings emphasize the urgent need to strengthen maternal health services, expand preventive interventions, and ensure access to high-quality care, especially in conflict-affected settings.

Thi Thu Hao Van[1*], Adel Hamdi[1], Le Van Truong[2], Vu Thi Hien[2,3], Phuong Anh Nguyen[3], Thi Bach Duong Hoang[4], Charmaine Lloyd[1], Rajaraman Eri[1], Dragana Stanley[5], Dong Van Quyen[2,3]

[1]School of Science, RMIT University, Australia
[2]Institute of Biology, Vietnam Academy of Science and Technology, Vietnam
[3]University of Science and Technology of Hanoi, Vietnam Academy of Science and Technology, Vietnam
[4]New Horizon Palliative Care Company Limited, Vietnam
[5]Central Queensland University, Australia

Biography: A/Prof. Thi Thu Hao Van holds a PhD in Molecular Microbiology from RMIT University, Australia, awarded in 2007. Her research focuses on identifying pathogenic and beneficial bacteria, characterising and manipulating gut microbiota, and developing intervention strategies—including probiotics, postbiotics and vaccines—to promote gut and overall health in poultry and humans. She leads the Microbes in Health and Disease Lab at RMIT University and has authored over 120 peer-reviewed publications, demonstrating her sustained contribution and leadership in microbiology and gut health research.

Gut microbiome as a driver of healthy ageing

The gut microbiome is a complex and dynamic microbial ecosystem that plays a pivotal role in metabolic regulation, immune modulation, and neurological function across the human lifespan. Ageing is associated with marked alterations in gut microbiota composition, influencing susceptibility to inflammation, metabolic disorders, cognitive decline, and frailty. Chronological ageing is typically characterised by a decline in dominant beneficial taxa, including *Faecalibacterium, Roseburia, Coprococcus, Eubacterium rectale, Lactobacillus,* and *Bifidobacterium,* alongside an increased abundance of alternative commensal and pathogenic microorganisms. Distinct microbiome signatures differentiate healthy from unhealthy ageing, with healthy ageing associated with enrichment of taxa such as *Akkermansia, Odoribacter, Barnesiella, Butyricimonas, Butyricicoccus, Oscillospira,* and *Christensenellaceae*, whereas unhealthy ageing is marked by reduced microbial diversity and expansion of potentially pathogenic bacteria, including *Enterobacteriaceae, Escherichia sp., Streptococcus,* and disease-associated *Clostridium* species.

Emerging evidence highlights the combined influence of geography and habitual diet on age-related gut microbiome profiles. Urban and rural elderly populations display distinct microbial diversity and compositional patterns, reflecting differences in dietary intake. Diets enriched in plant-based foods, fermented products, and freshwater fish protein sources are associated with higher abundances of health-promoting and butyrate-producing genera, including *Bifidobacterium, Blautia, Fusicatenibacter, Roseburia,* and *Lachnospira*. Advancing age is further associated with reduced microbial richness and declines in key fibre-fermenting taxa.

Targeting the microbiome through integrated strategies, including probiotics, prebiotics, postbiotics, and targeted dietary strategies, holds strong potential to improve gut health and positively influence ageing outcomes and longevity.

Yasin Ozdemir*, Zekiye Goksel, Hasret Altunkanat, Aysun Ozturk, Seda Kayahan

Department of Food Technologies, Ataturk Horticultural Central Research Institute, Yalova, Türkiye

Biography: Yasin Ozdemir studied Food Engineering at Ege University, Türkiye, and graduated with an MS in 2004. He received her Ph.D. degree in 2011 at Namık Kemal University. During Ph.D. studies he started to work at Ataturk Horticultural Central Research Institute. He has 3 processes patents and 2 national awards in his scientific study area. He has taken part in 22 national research projects, 4 international projects and 5 private sector-supported projects. He published more than 100 articles in international journals and congress proceedings.

Potential for prebiotic food supplement production from by-products of dried persimmon (*Diospyros kaki*)

The increasing emphasis on sustainability in the food industry has heightened interest in converting fruit processing by-products into value-added functional ingredients. Persimmon (*Diospyros kaki*), a fruit with growing global production, generates significant amounts of peels and fruit part residues during the drying process. These by-products are rich in soluble dietary fibers (pectin, hemicellulose), polyphenols, and oligosaccharides, which are considered natural sources of prebiotic compounds. Therefore, this study aims to evaluate the potential for producing prebiotic supplements from dried persimmon processing by-products.

In this context, the functional component composition of persimmon processing residues was analyzed based on literature data, and their usability in prebiotic supplement formulations was assessed. The effects of bioactive fractions extracted from the peels on gut microbiota were reviewed through *in vitro* fermentation and enzymatic digestion studies. Furthermore, potential applications such as extraction of active compounds and enrichment of functional food products were discussed.

Dried persimmon peel contains hemicellulose and fructooligosaccharides, which may support the growth of beneficial gut bacteria and exhibit prebiotic effects. These compounds can enhance the production of short-chain fatty acids, thereby contributing to improved gut health. In addition, phenolic compounds such as gallic acid, kaempferol, quercetin, epicatechin, and catechin were identified. These polyphenols can modulate gut microbiota and serve as next-generation prebiotics due to their transformation into bioactive metabolites

by microbial fermentation. The presence of tannins in persimmon peel may also provide anti-inflammatory and microbiota-balancing benefits. Persimmon peel is also rich in carotene content, which may contribute to intestinal health through its indirect effects.

The presence of bioactive components in persimmon peel that have prebiotic properties and that indirectly contribute to health even though they do not have prebiotic properties can make the products obtained from this product more beneficial. In conclusion, the findings indicate that by-products of dried persimmon processing not only reduce environmental waste load but also offer economically viable and health-promoting solutions in the field of functional foods. The utilization of such fruit residues as functional food ingredients holds significant promise for both rural development and the growing prebiotic food market.

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ORAL PRESENTATIONS

Abrar Hussain*, Syed Abid Ali
Third World Center for Science and Technology, H.E.J. Research Institute of Chemistry, at International Center for Chemical and Biological Sciences (ICCBS), University of Karachi, Karachi-75270, Pakistan

Elucidating next-generation probiotic potential of lead *enterococcus faecium* strains through *in vitro* aggregation and adhesion profiling

The effectiveness and action potential of probiotics depend on their adhesion to the host tissue. The effective host interactions rely heavily on their ability to aggregate and adhere to host tissues, thereby supporting mucosal colonization, immune modulation, and competitive exclusion of pathogens. In the present study, six locally isolated *Enterococcus faecium* strains were evaluated for their aggregation behavior and adhesion potential following the established protocol and developing simulated gastrointestinal conditions. All selected strains demonstrated high-level auto-aggregation potential (>75%) after 1 h of incubation. The highest potential was shown by *E. faecium* TWCST1 and *E. faecium* Se142 (82%), followed by *E. faecium* NF (80%). The visual auto-aggregation was assessed visually after 24 hrs of incubation, revealing that all strains exhibited a score of +3, indicating moderate aggregation with low turbidity, whereas *E. faecium* NF showed a score of +4, reflecting higher turbidity and stronger aggregation. This auto-aggregation likely facilitates initial colonization within the gastrointestinal tract and increases competitive exclusion of enteric pathogens. Co-aggregation results revealed that the selected strains show variable percentages against different indicator strains and range from–36 to 46%. After 24 h of incubation, high co-aggregation was observed between *E. faecium* NF and *L. monocytogenes* and *E. faecium* F25 with Proteus mirabilis (46%), followed by *E. faecium* TWCST1 and *E. faecium* M30 with *Lactobacillus spp.* (39%). Beyond self-aggregation, adhesion to host molecules was assessed through binding assays using fibrinogen and mucin, critical components of mucosal surfaces. All strains exhibited measurable mucin adhesion, underscoring their potential to interact with the mucus layer lining the gut, an essential step for stable colonization. The highest mucin-binding potential was observed in *E. faecium* TWCST1, followed by *E. faecium* Se142, whereas

E. faecium NF and *E. faecium* F25 showed comparatively lower adhesion. The fibrinogen binding capacity varied. The highest was observed in E. faecium M30 (27.21%), followed by *E. faecium* NF (22.75%). In contrast, *E. faecium* Se142 and *E. faecium* F25 exhibited negative binding values, measuring -10.75% and -25.89%, respectively. These adhesion profiles suggest that the selected *E. faecium* strains possess diverse surface properties that contribute to host interaction. The combined aggregation and adhesion traits observed indicate a robust ability to remain associated with host tissues, enhancing probiotic performance. These functional properties, coupled with stress tolerance and safety traits, highlight the suitability of these *E. faecium* strains as promising next-generation probiotic candidates for advanced probiotic formulations aimed at improved host interaction and health benefits.

Biography

Mr. Abrar Hussain is a research scholar and probiotic expert, currently working on the validation, probiogenomic analysis, and commercialization of probiotic strains. He earned his Master's in Biochemistry and M.S./M.Phil. in Biochemistry/Molecular Microbiology, and is pursuing his Ph.D. in Probiotic Microbiology at the H.E.J. Research Institute of Chemistry, ICCBS, University of Karachi, Pakistan. A professional speaker, he has delivered numerous lectures on probiotics and biotechnological applications and trained internship students in his laboratory. Passionate about science, Mr. Hussain combines deep research expertise with excellent communication, writing, and presentation skills, and excels both independently and collaboratively.

Ashot Khachatryan

New Hydrogen Technologies RPC, Yerevan, Armenia,
National Academy of Sciences of the Republic of Armenia,
Yerevan, Armenia

From theory to biotechnology and clinical practice: The world's first integrated protocol for the microbiome-gut-brain axis (1993-2002) - A forgotten pioneering system ahead of its time

In recent decades, the role of the microbiome in the pathogenesis and therapy of chronic diseases has received increased scientific attention, particularly in the context of the "gut-brain axis" concept. However, the systematic study of the human microbiota and its central role in maintaining health was initiated much earlier.

In 1993, the world's first "Interregional Center for Correction of Human Microbiocenosis" was opened in Novosibirsk, marking the practical implementation of a new medical paradigm. In the same year, we established the world's first industrial production of a liquid probiotic based on the Lactobacillus acidophilus 317/402 strain, creating a fundamentally new, highly active therapeutic tool.

In 1997, the monograph "Dysbiosis in the 21st Century?" first formulated and substantiated the revolutionary theory: Dysbiosis is not a consequence, but a systemic cause of a wide range of chronic diseases. This work laid the foundation for a holistic medical philosophy of the future, realized at that time, which considered the role of intestinal microflora as a key link in the pathogenesis, clinical presentation, and treatment of chronic diseases.

Between 1998 and 2002, this theory was materialized into a series of patented clinical technologies, forming the world's first integrated correction protocol. The protocol included three stages:

1. **Environment Preparation:** "Hydrogen Preconditioning." Hydrogen solutions were used

for the first time worldwide for antioxidant protection and anti-inflammatory preparation of the intestinal mucosa, as well as for systemic detoxification of the recipient prior to transplantation.

2. **Conditioning:** Use of the world's first liquid probiotic for modulating the microbial ecology.
3. **Radical Restoration:**

- Creation of the first personalized autochthonous microbiota bank (Russian Federation patent, 1998; US patent, 2002).
- Development of the segmental microbiota transplantation method–colonoscopic introduction of microbiota in the active growth phase with topographical precision into specific sections of the large intestine.

Today, every element of this 1990s system is at the forefront of science: Liquid and metabolically active probiotics, hydrogen medicine, optimization of FMT, and the establishment of microbiota banks. This presentation will restore this forgotten system, analyze its components in light of current knowledge, and argue that it remains a remarkably prescient blueprint for medicine focused on the microbiome-gut-brain axis. The focus will be on the logic of integration—how environmental preparation, biotechnology, and microsurgical delivery methods were combined—and the lessons this offers for developing complex therapeutic ecosystems today.

Thus, the complete translational medicine cycle implemented in the 1990s–early 2000s–from revolutionary theory through biotechnological breakthrough to unique clinical methods–serves not only as proof of scientific priority but also as a relevant roadmap for genuine microbiome management in the treatment of chronic diseases.

Biography

Ashot Khachatryan MD, PhD, Professor is an Active Member of the European Academy of Natural Sciences, the New York Academy of Sciences, and the Russian Academy of Medical and Technical Sciences. He is an Honorary Professor of the Oxford Academic Union and a Honored Inventor of Russia and Europe. A pioneer in the field of hydrogen medicine and microbiome correction, he founded the world's first interregional Center for Correction of Human Microbiocenosis (1993); the world's first Hydrogen Medicine Cinic (1995) and an International Clinic Network (2016). His innovations include internationally patented, first-of-their-kind household hydrogen generators (electronic, 2009; metal-alloy based, 2015), the first dietary supplement for hydrogenating food products (2018), and pioneering work on the world's first integrated protocol for microbiota correction (1993-2002). He is the author of over 60 patents, 10 monographs, and the recipient of numerous international awards and medals.

Ashot Khachatryan

New Hydrogen Technologies RPC, Yerevan, Armenia,
National Academy of Sciences of the Republic of Armenia,
Yerevan, Armenia

Hydrogen foods: A new era in the food industry

When discussing human nutrition, we typically focus on the balance of proteins, fats, carbohydrates, caloric content, and daily requirements. However, not only the compositional makeup but also the bioelectrical characteristics of food products—determined by Oxidation-Reduction Potential (ORP) and active hydrogen concentration—are of critical importance. Inadequate supply of active hydrogen to the body weakens intercellular communication, inhibits energy production, and leads to the accumulation of toxins and free radicals. These radicals attack cells by stripping electrons, resulting in a drop in cellular charge, disruption of metabolic processes, loss of function, disease, aging, and eventual cell death.

We have developed and patented the world's first food additive, "Nanohydride," based on magnesium salts, which releases a significant amount of active hydrogen upon contact with water. Experimental studies have demonstrated that the Nanohydride solution is non toxic and acts as an effective adaptogen, enhancing the body's nonspecific resistance to extreme stressors. It exhibits high antioxidant activity, significantly suppressing Lipid Peroxidation (LPO), indicating its potential utility in regulating oxidative processes and protecting tissues from oxidative stress.

In 2025, a production plant for the Nanohydride food additive and hydrogen enriched food products was launched in Armenia. The product range includes confectionery items (sweets, chocolate, marmalade, etc.), grocery products (leaf tea, ground coffee, dry juices, dry soups, etc.), salt, sugar, and any other products where these ingredients are used. As a result, these foods become saturated with active hydrogen, acquire antioxidant properties, and exert an immunostimulatory effect that contributes to the prevention of chronic diseases, rehabilitation from post COVID complications, improved memory, overall health benefits, enhanced athletic performance, and increased lifespan.

In light of the above, we believe an important step has been taken toward establishing a sustainable hydrogen economy in the food industry. As Hippocrates stated in the 5th century BCE: "Let food be thy medicine and medicine be thy food." In the 21st century, we have made this a reality.

Biography

Ashot Khachatryan MD, PhD, Professor is an Active Member of the European Academy of Natural Sciences, the New York Academy of Sciences, and the Russian Academy of Medical and Technical Sciences. He is an Honorary Professor of the Oxford Academic Union and a Honored Inventor of Russia and Europe. A pioneer of the new field of hydrogen medicine, he founded the world's first Hydrogen Medicine Clinic (1993) and an International Clinic Network (2016). His innovations include internationally patented, first-of-their-kind household hydrogen generators (electronic, 2009; metal-alloy based, 2015) and the first dietary supplement for hydrogenating food products (2018). He is the author of over 60 patents, 10 monographs, and the recipient of numerous international awards and medals.

Atefeh Rahimi*, Zakieh Sadat Sheikhalishahi, Ali Rafati, Somaye Keshavarz

Department of physiology, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Spirulina (*Arthrospira platensis*) as a future functional food: Mitigating oxidative and apoptotic injury in doxorubicin-treated rats

Anthracycline agents such as doxorubicin are widely used in cancer therapy but are associated with severe oxidative and apoptotic damage in cardiac tissue. Identifying safe, accessible, and nutrition-based protective strategies is therefore a global health priority. Spirulina (*Arthrospira platensis*), a highly nutritious microalga recognized as a future possible and sustainable food source, possesses potent antioxidant and cytoprotective properties. This study evaluated the therapeutic potential of Spirulina as a complementary dietary component for individuals exposed to anthracycline chemotherapy.

18 male rats were assigned to control, doxorubicin, and Spirulina+doxorubicin groups. Doxorubicin was administered at a cumulative dose of 15 mg/kg, delivered as six injections over two weeks. Spirulina was given at 1 g/kg/day, initiated on day 1 of the experiment and continued daily for 14 days, including the period of co-treatment with doxorubicin. Oxidative stress was assessed by quantifying Malondialdehyde (MDA), Superoxide Dismutase (SOD), Catalase (CAT), and reduced Glutathione (GSH) in cardiac tissue using ELISA Method. Apoptotic and inflammatory pathways were evaluated in cardiac tissue through real-time PCR analysis of BAX, BCL-2, Caspase-3, and TNF-α.

Doxorubicin caused a marked increase in oxidative stress, characterized by elevated MDA and significant suppression of SOD, CAT, and GSH. Spirulina co-administration significantly reduced MDA and restored SOD and CAT activities in cardiac tissue, although GSH levels remained unchanged. Gene expression analysis showed that Spirulina effectively counteracted doxorubicin-induced apoptosis, evidenced by downregulation of BAX,

Caspase-3 significantly, and TNF-α, alongside a robust upregulation of the anti-apoptotic gene BCL-2.

Spirulina provides substantial antioxidant and anti-apoptotic protection of cardiac tissue against doxorubicin-induced toxicity in rats. These findings highlight its potential as an innovative, sustainable, and biologically active food supplement for populations undergoing anthracycline-based cancer therapy. Spirulina may therefore represent a promising future nutritional intervention to reduce chemotherapy-related oxidative injury and enhance cellular resilience.

Biography

Atefeh Rahimi is a researcher specializing in biological and physiological sciences, nutritional biochemistry, and oxidative stress mechanisms. Their work focuses on how natural bioactive compounds influence cellular injury, inflammation, and apoptosis, especially in drug-induced toxicity models. With expertise in biochemical assays (MDA, SOD, CAT, GSH) and molecular techniques such as real-time PCR, they investigate the therapeutic value of spirulina platensis for future health applications. Their recent research explores Spirulina as a sustainable nutrient source capable of reducing anthracycline-induced oxidative and apoptotic damage. They actively contribute to international conferences in biology, food science, and medical research.

Ayse Binnur Karatas[1,2*], Yasemin Sahan[3]

[1]Central Research Institute of Food and Feed Control, Osmangazi, Türkiye

[2]Graduate School of Natural and Applied Sciences, Bursa Uludag University, Türkiye

[3]Department of Food Engineering, Faculty of Agriculture, Bursa Uludag University, Türkiye

Comparative evaluation of Advanced Glycation End Products (AGEs) in snack foods and investigation of mitigation strategies

Advanced Glycation End-Products (AGEs) are harmful compounds formed through non-enzymatic reactions between reducing sugars and amino groups in proteins, lipids, or nucleic acids. They are associated with the pathogenesis of chronic diseases such as diabetes, cardiovascular disorders, and neurodegenerative conditions. While AGEs can form endogenously, a significant portion originates from food processing, especially heat-treated snack products. This study compares the AGE content of commonly consumed snack categories, including baked products (crackers, cookies), fried snacks (potato chips), and extruded products. Critical processing parameters such as temperature, time, pH, moisture, and ingredient profiles (type of sugar, protein content, free amino acid composition) were examined from the perspective of AGE formation. Understanding the relationship between these factors and AGE generation is essential for developing prevention strategies. Two main approaches for reducing AGE formation are identified: Reformulation of the product and modification of processing conditions. Reformulation may involve reducing the levels of reducing sugars and amino acids or introducing ingredients that inhibit their reactivity. Alternatively, adjustments to the processing method or parameters can be employed. This study investigates the enrichment of snack products with fruit processing by-products or fruits (e.g., aronia, cherry, apple, grape skin), peel powders (e.g., passion fruit, banana, quince), and medicinal plant powders or extracts (e.g., sage, moringa, aloe vera). Such enrichment provides dual benefits, lowering the glycemic index and increasing antioxidant activity, which are relevant to AGE reduction. Additionally, the study explores mitigation strategies such as reformulating products using natural antioxidants (e.g., grape pomace extract, rosemary, ginger), employing alternative sweeteners, and applying innovative processing techniques such as

vacuum frying and steaming. Findings indicate that certain plant-based extracts can reduce AGE formation by 20–45% without compromising product quality. Moreover, applying lower temperatures for extended durations and adjusting formulations significantly reduced AGE levels. Numerous studies have shown that phenolic compounds, especially anthocyanins, flavonols, and proanthocyanidins, not only exhibit radical scavenging properties but also inhibit key enzymes involved in carbohydrate digestion (e.g., α-amylase and α-glucosidase), thereby indirectly reducing AGE precursors. In conclusion, the food industry can reduce the formation of AGEs through optimized processing and formulation techniques without compromising sensory quality, enabling the production of healthier snack products with lower AGE content.

Biography

Karatas had a BSc in the Food Engineering Department of Hacettepe University. She graduated with an MS in 2019 from Bursa Technical University. She continues her doctoral thesis at Bursa Uludag University. She has studied "Investigation of the Effects and Bioaccessibility of Different Dietary Fiber Sources on Advanced Glycation Products (AGEs) Formed in Biscuit Production". In 2015, she started working as a researcher in the "Additive and Mycotoxin Laboratory" within the Food and Feed Control Central Research Institute. Her research and expertise areas include food chemistry, instrumental food analysis, food technology, bioavailability, validation and verification in chemical analysis, AGE, and quality management systems.

Charu Bisht[1]*, Satish Kumar Sharma[2], Anil Kumar[3], Sweta Rai[4], Priyanshi Maheshwari[1]

[1]Research Scholar, Department of Food Science & Technology, College of Agriculture, Govind Ballabh Pant University of Agriculture & Technology, Pantnagar, Uttarakhand, 263145, India

[2]Professor, Department of Food Science & Technology, College of Agriculture, Govind Ballabh Pant University of Agriculture & Technology, Pantnagar, Uttarakhand, 263145, India

[3]Senior Research Officer, Department of Food Science & Technology, College of Agriculture, Govind Ballabh Pant University of Agriculture & Technology, Pantnagar, Uttarakhand, 263145, India

[4]Assistant Professor, Department of Food Science & Technology, College of Agriculture, Govind Ballabh Pant University of Agriculture & Technology, Pantnagar, Uttarakhand, 263145, India

Ultrasound assisted protein extraction from distiller's rice spent grain: Advancing agro-industrial by-product valorisation for food applications

Distiller's rice spent grain is the predominant solid residue of the rice-based ethanol industry, accounting for approximately 85% of total byproducts generated. On average, 20kg of spent grain is generated from 100L of ethanol produced. According to the Renewable Fuels Association (2025), global ethanol production reached 31.3 billion gallons (approximately 118.5 billion liters), corresponding to an estimated co-production of 23.7 million tons of spent grain. Nearly 20% of the generated spent grain is landfilled, each ton emitting 514kg CO2 per ton, thereby exacerbating the environmental burden. The large volume of underutilized spent grain reinforces the need to move from disposal-based management to value-driven utilization. With a crude protein content of 50%, distiller's rice spent grain constitutes a viable substrate for protein extraction and valorization. Therefore, this research optimized the ultrasound-assisted alkaline ethanol extraction of protein from distiller's rice spent grain to obtain a protein concentrate. The effects of ultrasonication power (300-450W), extraction duration (10-25min), and duty cycle (60-90%) were systematically evaluated. An alkaline-ethanol solvent (45% ethanol: 55% 0.1 N NaOH) was used for extraction along with ultrasonication, followed by isoelectric precipitation at pH 4.8 using 1 M HCl. Optimal conditions (350W, 15min, 90% duty cycle) achieved maximum protein yield (26.40%) and purity (82%). The recovered protein exhibited functional properties, namely, emulsification and water/oil absorption capacities,

comparable to commercial protein isolate. These results indicate that distiller's rice spent grain protein concentrate can serve as an ingredient in various food products, highlighting the potential of industrial by-product valorization to support sustainable circular bioeconomy frameworks.

Biography

Charu Bisht is a Research Scholar in the Department of Food Science and Technology, Govind Ballabh Pant University of Agriculture & Technology, Uttarakhand. Her research focuses on the utilisation of agro-industrial waste, and she is currently working on the modification and incorporation of dried distiller's rice spent grain for the preparation of value-added products. She has qualified the ASRB-NET, 2021, and secured an All-India Rank of 38 in the 4th FSSAI Junior Analyst Exam.

Chetanya Rai

Junior Sous Chef–Pastry, Tavistock Group, Atlas and the Garden Room, Atlanta, USA

Effective methods for teaching artisanal skills: Lessons from custom cake workshops and professional kitchen training

Purpose: This study discusses the interface of culinary training, nutrition education, and the concept of public health, which involves the concept of experiential culinary education and nutrition awareness, food science knowledge, and healthy food preparation. The study employed a mixed-method design by examining the data of 120 respondents in custom cake workshops and professional kitchen training programs to determine the relationship between skill development, creativity, and mentorship and nutritional consciousness and health-oriented cooking. It was found that students who had the opportunity to experience the practical side of the culinary world showed much more knowledge of the balance of nutrition, functionality of ingredients and healthy method of cooking than the students who were taught the same information via the traditional and standardized approach. The training in culinary was discovered to improve the understanding of food composition, food nutrient retention and sustainable use of ingredients, and hence the linkage of culinary artistry and evidence-based nutrition. Furthermore, it was the unification of food science concepts, including heat impact on food nutrient content and other recipe development approaches, that gave learners the ability to adjust dishes to yield improved health results, but not at the expense of food flavor. The paper also concludes that culinary education is a bridge between food science and the general health population, producing professionals who not only excel in the cooking methodology but also promote healthier, more sustainable, and nutritionally educative food structures. This study highlights the importance of integrating nutrition and food science education into culinary programs to develop health conscious chefs who can impact the eating patterns of communities and promote the health goals of the world population.

Biography

Chetanya Rai is an accomplished Pastry Chef based in Atlanta, Georgia, specializing in Michelin-starred fine dining and avant-garde pastry innovation. Currently serving as Junior Sous Chef at Tavistock Group's Atlas and The Garden Room, he blends classical French techniques with modernist approaches to create exceptional desserts and artisan breads. A former bakery entrepreneur in India, he has earned multiple awards for culinary excellence and innovation. Chetanya is also pursuing a Master's in Business Analytics at Trine University, combining his creative artistry with analytical precision to shape the evolving landscape of modern gastronomy.

Chiho Myojin[1]*, Yukiko Ueda[2], Toshiyuki Kohri[3]

[1]Kindai University, Japan

[2]Ryukoku University, Japan

[3]Konan Women's University, Japan

Evaluation of the usefulness of heat-retention pack cooking for people requiring special consideration (patients with chronic kidney disease) in disaster situations

Purpose: During disasters, household cooking is frequently conducted under conditions of power outages and gas supply disruptions, necessitating low-energy, practical, and safe cooking methods. Special consideration is required for vulnerable populations who need individualized nutritional management, particularly individuals with impaired renal function, whose prevalence is expected to increase in aging societies. These individuals require restriction of potassium intake, making appropriate preparation of potassium-rich vegetables essential. In addition, psychological and physiological stress during disasters can increase oxidative stress, underscoring the importance of maintaining dietary antioxidant intake from vegetables. This study aimed to evaluate whether a pack cooking method that enables individualized preparation (PC method) and a heat-retention pack cooking method combining pack cooking with insulated, energy-saving cooking (HPC method) can achieve potassium reduction comparable to conventional boil-and-discard cooking, while preserving antioxidant properties under disaster-simulated household cooking conditions.

Methods: Komatsuna (Japanese mustard spinach), cabbage, Chinese cabbage, potato, and carrot were used as test vegetables. In the PC method, vegetables were placed in high-density polyethylene bags, air was removed, the bags were sealed, and the samples were heated in boiling water. In the HPC method, samples were briefly heated in boiling water and then cooked using retained heat by wrapping the pot with a flame-retardant emergency blanket, simulating household cooking during power outages and gas supply interruptions.

As a comparison, Soaking the sample in water? Alone as a pre-treatment was also examined. After cooking, potassium content was measured to evaluate potassium reduction. In addition, DPPH radical scavenging activity and total polyphenol content were assessed to evaluate antioxidant capacity. Temperature changes inside and outside the samples during cooking were recorded to confirm heating adequacy. Furthermore, color difference, soluble solids content (Brix), and sensory evaluation were conducted to assess food quality and palatability.

Results: All vegetables prepared using the PC and HPC methods showed a significant reduction in potassium content comparable to that achieved by boil-and-discard cooking ($p<0.01$). Antioxidant capacity, as indicated by DPPH radical scavenging activity and total polyphenol content, showed similar trends between the PC and HPC methods, suggesting that antioxidant properties were largely retained. In contrast, soaking the sample in water? Alone resulted in minimal potassium reduction. Temperature measurements confirmed that the core temperature of all samples reached 85°C within 5 minutes, ensuring microbiological safety.

Conclusions: The PC and HPC methods are feasible, simple, and energy-efficient household cooking techniques suitable for disaster situations involving power outages and gas supply disruptions. These methods are particularly useful for providing nutritionally appropriate meals for individuals with impaired renal function while supporting antioxidant intake under disaster-related stress, indicating their potential applicability for disaster nutrition support in home settings.

Biography

Chiho Myojin, Ph.D., RD, is a lecturer in the Department of Food and Nutrition, Faculty of Agriculture, Kindai University, Japan. Her research interests include nutrition education, food science, and nutritional support for vulnerable populations, particularly in disaster contexts. She focuses on developing practical cooking methods that accommodate dietary restrictions among older adults and individuals with chronic diseases. Her current work examines energy-efficient cooking and packaging techniques to reduce potassium levels in vegetables, aiming to support dietary management for patients with chronic kidney disease during emergencies.

Cindy Febrina*, Steffi Sonia, Nurul Ratna Mutu Manikam

Departement of Nutrition, Faculty of Medicine, Universitas Indonesia–Dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia

Stainless steel ice oral cryotherapy for oral mucositis in nasopharyngeal cancer: A case report

Introduction: Oral mucositis is a common and debilitating complication in patients with nasopharyngeal carcinoma undergoing chemoradiotherapy, with incidence exceeding 80%. It is characterized by painful oral ulcerations, dysphagia, xerostomia, and taste disturbances leading to reduced oral intake, malnutrition, and impaired quality of life. Despite advances in radiotherapy techniques, effective management of Radiation-Induced Oral Mucositis (RIOM) remains largely supportive. Therefore, simple, safe and easily implementable non-pharmacological interventions are needed to alleviate symptoms and support nutritional intake during cancer treatment. Oral cryotherapy using stainless steel ice represents a potential supportive strategy to reduce oral discomfort and improve nutritional intake patients with nasopharyngeal cancer.

Case Report: A 63-year-old male with locally advanced nasopharyngeal carcinoma had completed neoadjuvant TPF chemotherapy (docetaxel, cisplatin, and 5-fluorouracil) and was undergoing intensity-modulated radiation therapy at a total dose of 70/60/54 Gy in 33 fractions. During treatment, patient developed RIOM presenting with significant oral pain resulting in reduced oral intake, progressive weight loss, and clinically moderate malnutrition. As part of supportive care integrated with comprehensive medical nutrition therapy, oral cryotherapy using stainless steel ice was implemented to alleviate mucositis-related pain, while enteral nutrition via nasogastric tube was used to ensure adequate nutritional intake. Over the observation period, the patient demonstrated improved oral intake tolerance, weight gain, and improvement in quality of life, as assessed using the University of Washington Quality of Life questionnaire.

Discussion: Oral cryotherapy using stainless steel ice may alleviate mucositis-related pain through localized vasoconstriction, thereby reducing inflammatory mediator delivery to the oral mucosa and limiting tissue injury. The cooling effect also provides transient analgesia, improving oral comfort and swallowing tolerance. Unlike pharmacological interventions, oral cryotherapy is simple, low-cost, non-invasive, and associated with minimal risk, making it a feasible adjunctive strategy in routine clinical practice.

Conclusion: Oral cryotherapy using stainless steel ice is a simple and safe supportive intervention that may reduce RIOM related pain and improve oral intake in patients with nasopharyngeal carcinoma undergoing chemoradiotherapy. When combined with medical nutrition therapy, it may contribute to improved nutritional status and quality of life.

Keywords: Oral Mucositis, Oral Cryotherapy, Nasopharyngeal Carcinoma, Nutritional Intake, Quality of Life.

Biography

Cindy Febrina is a medical doctor who earned her medical degree from Universitas Gadjah Mada and is currently a Clinical Nutrition resident at Universitas Indonesia. During her clinical training, she has been extensively involved in the management of hospital-related malnutrition across diverse patient populations, including but not limited to patients with cancer. Her academic interests focus on early identification and evidence-based nutritional interventions to prevent and treat malnutrition, optimize clinical outcomes, and support recovery during inpatient care.

Diana Catalina Castro Rodríguez

Medical Science Researcher, Departamento de Inmunobioquímica, Instituto Nacional de Perinatología, Mexico City, Mexico

The benefits of probiotics during pregnancy and breastfeeding: Critical windows of development

The overall health of pregnant and lactating women is an important element in a country's development. The nutritional status of the mother affects the weight of the newborn, which in turn affects the health of the individual in adulthood. Malnutrition during the early stages of development (pregnancy and lactation) is associated with increased oxidative stress, which is implicated in the pathogenesis of many diseases and developmental defects. Epidemiological studies have shown that maternal nutritional imbalance alters the metabolism and composition of the microbiota of both mother and offspring. Thus, pregnancy and lactation are windows of opportunity to implement lifestyle modifications that could prevent adverse effects in both mother and offspring. One of these modifications would be the consumption of probiotics, microorganisms that stimulate the protective functions of the digestive tract, thus helping to ameliorate the metabolic and immunological changes associated with malnutrition. As described above, the consumption of probiotics plays an important role in maintaining the intestinal ecosystem and stimulating the immune system, thereby improving or preventing certain pathologies. While pregnancy is a period of vulnerability for predisposition to disease in postnatal life, it is also a window of opportunity to implement interventions to improve the health of the mother and consequently her offspring. Today, women are increasingly aware of the link between nutrition and health, which has prompted the development of functional foods such as probiotics.

Biography

Dr. Diana Castro studied chemistry at the Universidad Industrial de Santander, Colombia. She holds a PhD in Bioprocess Sciences. Her research focuses on the biosynthesis, analysis and characterisation of functional foods, such as probiotics and prebiotics, and their use in the

prevention of chronic degenerative diseases. She has trained students at undergraduate and postgraduate level. She currently has 25 publications, three book chapters and three patents. She has completed two international research stays, one at the Institute of Agrochemistry and Food Technology, Spain, and the other at the Texas Biomedical Research Institute and Southwest National Primate Research Center, USA.

Iryna Paliy, Serhii Zaika, OlehKsenchyn, Dmytro Palii*
National Pirogov Memorial Medical University, Vinnytsya, Ukraine

A dietary supplement containing *Lactobacillus delbrueckii subsp*. Bulgaricus improves clinical manifestations of functional dyspepsia and patient's quality of life, which is maintained one year after the end of treatment

Background: Functional Dyspepsia (FD) is a common disorder that is difficult to treat and has a significant negative impact on the quality of life of patients. There is growing evidence that the small intestinal microbiota plays a role in the pathophysiology of FD.

Aim: To study the effect of a product containing a lyophilizate of *Lactobacillus delbrueckii subsp*. bulgaricus strain 9702 (IMV B-7085) and its metabolic products on the clinical manifestations of the disease and the quality of life of patients with functional dyspepsia.

Materials and Methods: 37 patients with functional dyspepsia, with an average age of 45.9±2.5 years (16 men and 21 women), were included in the study. We analyze the results of the GSRS questionnaire before treatment, after completing a fifteen-day course of taking the probiotic additive, which contained *Lactobacillus delbrueckii subsp*. bulgaricus, and 15 days after the end of the course. In addition, we evaluate the dynamics of quality of life based on the analysis of the MOS-SF-36 questionnaires, completed by patients before treatment and on the 30th day of observation. Furthermore, we conducted a similar assessment of the GSRS questionnaire results and the quality-of-life evaluation one year after treatment with *Lactobacillus delbrueckii subsp*. bulgaricus (long-term outcomes).

Results: Comparing the total score of the GSRS questionnaire on the 15th day of taking the

probiotic drug and 15 days after the end of the 15-day course of taking the drug, found a significant (24.31±1.67 points and 21.29±1.27 points respectively, $p<0.05$) decrease in the total score, compared to the value before treatment (39.64±2.34 points). Analysis of the quality of life, according to the SF-36 questionnaire, showed a significant increase ($p<0.05$) in the clusters of physical functioning (PF-91.25±2.84 vs 81.82±3.22), role functioning (RF-82.29±6.47 vs 62.50±7.44), pain intensity (BP-84.58±3.71 vs 57.86±4.59) and general health (GH-64.58±4.18 vs 51.07±3.37) on the 30th day of observation. Comparison of the psychological component of health revealed a significant increase ($p<0.05$) in the quality of life in the social functioning cluster (SF-85.94±4.14 vs 72.77±3.97) on the 30th day of observation. In other psychological health clusters, a tendency to increase indicators was established, but it was not statistically significant ($p>0.05$). Evaluation of long-term results (one year after treatment) revealed long-term improvement in gastrointestinal symptoms, as indicated by the GSRS (total score: 28.73±3.13 points versus 39.64±2.34 points before treatment). Analysis of quality of life one year after treatment revealed a significant increase ($p<0.05$) compared to the results before treatment in the pain intensity cluster (AT-73.21±5.23 vs. 57.86±4.59), general health (GH-60.87±4.36 vs. 51.07±3.37), and social functioning cluster (SF-83.75±4.05 vs. 72.77±3.97).

Conclusions: Taking a dietary supplement containing the strain *Lactobacillus delbrueckii* subsp. bulgaricus 9702 (IMV B-7085) improves the clinical manifestations of functional dyspepsia, as evidenced by a reduction in the severity of gastrointestinal symptoms and an improvement in the quality of life of these patients, immediately after treatment and maintained one year after it.

Keywords: *Lactobacillus Delbrueckii Subsp.*, Bulgaricus, Functional Dyspepsia, GSRS Questionnaire, Quality of Life, Nutritional Support, Long-Term Clinical Outcomes.

Biography

Dmytro Palii serves as Head of the Department of Epidemiology at National Pirogov Memorial Medical University, Vinnytsya, Ukraine and works clinically at the Clinical Center for Infectious Diseases. His professional interests include infection control, epidemiological research, clinical microbiology, and the role of microbiota in human health. He actively collaborates with international partners and participates in multidisciplinary research projects in public health, infectious diseases, and microbial therapeutics. Dr. Palii has authored educational materials, scientific publications, and clinical research focused on improving patient outcomes and strengthening public health capacity in Ukraine.

Elmer N. Ametefe*, Kwesi O. Ayeh
Department of Biochemistry, Cell and Molecular Biology
University of Ghana, Ghana

Probiotic characterization and functional metabolic potential of the microbiome of *asaana* and *nmedaa*, traditional fermented beverages from Ghana

The human gastrointestinal microbiome performs an essential role in maintaining the homeostasis of the intestine by regulating host inflammation and immune responses. This important function of the gastrointestinal microbiota is affected by changes in its composition caused by lifestyle choices such as diet, which could lead to the pathogenesis of diseases such as cancer. This study sought to investigate the probiotic and functional metabolic potential of indigenous Ghanaian fermented maize-based beverages-*asaana* and *nmedaa*. Twelve (12) fermented maize-based beverages were obtained from vendors and producers from five (5) different locations (Amasaman, Haatso, Madina, Osu, and Tema) in the Greater Accra Region of Ghana. Metagenomics using the CCMetagen 1.3 web server was used for profiling the beverages. The Nephele bioinformatics web server was used to predict functional metabolic gene families present in the microbiota of the fermented beverages. Lactobacillus species were isolated and identified by 16S rRNA sequencing. The average load of LAB in the beverages was 8.43±0.37 log CFU/ml, which is close to the suggested 9 log CFU/ml required for colonization of the gut. The microbiome of *asaana* and *nmedaa* was found to be very diverse, with both fermented beverages having similar microorganisms at the phyla, genera, and species level. *Pichia* and *Lactobacillus* were the main microbial species present in the beverages. The study identified genes for regulating cellular processes, metabolic functions, and environmental information processing using Nephele. *Lactobacillus fermentum* strain HBUA53262, and *Limosilactobacillus fermentum* strain UL were isolated from the beverages and they showed potential characteristics as probiotics which included their ability to survive simulated conditions in the gut such as in the presence of hydrochloric acid and bile salt in addition to being susceptible to antibiotics, being non-hemolytic, and having antimicrobial

activity against test pathogens: *Escherichia coli* NCTC 11954 TEM-1, *Klebsiella pneumoniae* NCTC 13368 ESBL (+), *Salmonella typhi* ACT 1, Streptococcus pneumoniae ATCC 49619, *Pseudomonas aeruginosa* and *Staphylococcus aureus* which may be a result of the production of organic acids which lower the pH of their surroundings, and the production of antimicrobials such as bacteriocins. All the isolated *L. fermentum* strains were resistant to vancomycin but were sensitive to other antibiotics. The *L. fermentum* strains present in asaana and nmedaa make them suitable as potential functional foods.

Biography

Elmer Nayra Ametefe Ph.D is a Senior Lecturer at the Department of Biochemistry, Cell and Molecular Biology, University of Ghana. As an applied microbiologist, her research has focused on the characterization of microbial strains in African fermented foods and the beneficial interactions of these microbes with human and animal hosts. This focus has driven her research career toward exploring the potential probiotics associated with fermented foods and their impact on human and animal health. As the Lead Researcher of the Ametefe Probiotic Research Lab, she and her team have characterized Bacillus, yeasts, and lactic acid bacteria as promising probiotic candidates for gut microbiome modulation. Her research also extends to the application of intrinsic microbes in polluted soil and water as agents for pollutant degradation. She holds a Bachelor's degree in Botany from the University of Ghana and both an MPhil and PhD in Biochemistry from Kwame Nkrumah University of Science and Technology (KNUST), Ghana. She is married with two teenage sons and is passionate about advancing STEM education in Ghana.

Galuh Indiradini[1]*, Rizki Meizikri[2]
[1]Faculty of Medicine Universitas Brawijaya, Indonesia
[2]Department of Neurosurgery, Indonesia Health Ministry's Hospital Surabaya, Indonesia

Vitamin D supplementation and spinal fusion success: A meta-analysis

Background: Poor bone mineralization and various musculoskeletal disorder have been linked to Vitamin D deficiency, especially osteoporosis and fractures. Recently, there has been growing an interest towards the potential impacts of vitamin D on the outcomes of spinal fusion surgery; however, clinical evidence supporting its benefit in spinal fusion remains inconclusive.

Objective: This meta-analysis aims to evaluate the effect of vitamin D supplementation on spinal fusion success rates in patients undergoing spinal fusion surgery.

Methods: A systematic literature search was performed using PubMed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Eligible studies included randomized controlled trials, prospective, and retrospective cohorts reporting spinal fusion outcomes in patients receiving vitamin D supplementation. Data were analyzed using a random-effects model with the Mantel-Haenszel method, and heterogeneity was assessed using the I^2 statistic.

Results: Three studies met the inclusion criteria, comprising one randomized controlled trial and two prospective cohort studies, involving a total of 270 patients (170 in the vitamin D group and 100 in the control group). Pooled analysis demonstrated no statistically significant difference in fusion success between groups (risk ratio=1.01; 95% CI=0.72–1.41; p>0.05). High heterogeneity was observed (I^2=89%), and risk of bias ranged from low to moderate across studies.

Conclusion: Vitamin D supplementation did not significantly improve spinal fusion success rates. Further large-scale randomized controlled trials with standardized supplementation protocols and controlled preoperative vitamin D levels are needed to clarify its potential role in enhancing spinal fusion outcomes.

Keywords: Preoperative Vitamin D, Spinal Fusion.

Biography

Galuh Indiradini, MD is a dedicated medical doctor and former medical student tutor, now working as a general practitioner at a Klinik Pratama. Her experience in patient care and medical education has strengthened her passion for promoting health through evidence-based practice. Inspired by the vital role of nutrition in disease prevention and management, she is now preparing to pursue a specialization in clinical nutrition. With her strong medical foundation, teaching background, and commitment to holistic care, Dr. Galuh aims to integrate clinical expertise and nutrition science to improve patient outcomes and overall well-being.

Dr. Ghada Zaghloul Soliman[1*], MH Youssef[2]
[1]Prof Biochem at NNI, Egypt
[2]Lecturer Analytical Chem at NNI, Egypt

Assessment of iodine content of local commercial table/ cooking salt brands in Egyptian (Cairo) market

Introduction: Iodine is a rare element. Iodine is a component of thyroid gland hormones. Iodine Deficiency Disease (IDD) is an important public health problem all over the world, occurs as a result of iodine deficiency.

Aim: To determine the levels of iodine in commercial dietary salts; and to compare the results of this study with data reported in published studies related to iodine levels in salts from different countries.

Methods: In this study, the iodine amounts of 15 edible salt brands with 300 samples collected from supermarkets, hypermarkets, grocery, local shop and weekly fair in Cairo, Egypt were analyzed and then compared with the Egyptian Food Codex Salt.

Results: Mean of all the 20 samples was appropriate at the Egyptian codex level of 30-70ppm as KIO_3 (17.79-41.78ppm as I), although some batches (1-5, 5-25%) had lower concentration (<30 ppm/17.79 ppm).

Conclusion: Iodine deficiency detected in salts in the market increases the risk of IDD, In this case, it is important that the sustainability of food control and inspection by administrative authorities is effective for the protection of public health.

Keywords: Iodine, Salt, Public Health, Egypt.

Hema Dadhwal
Founder & Director, Hal Glow-Bal's Marketing & Content Creation Agency, Singapore

Self care for healing

Statement of the Problem: There is a growing lack of awareness and understanding around the importance of self-care in daily life. Many individuals neglect their own well-being due to busy schedules, societal pressures, or guilt associated with prioritizing themselves. This lack of self-care can lead to chronic stress, burnout, hormonal imbalances, and emotional fatigue. Simple and accessible methods of self-care are often overlooked, though they hold the potential to create significant positive changes in one's physical, emotional, and mental health.

Methodology & Theoretical Orientation: This approach draws from a review of holistic wellness literature, real-life practices, and ancient wisdom blended with modern techniques. The focus is on integrating self-care into daily routines without guilt or complexity. Practical methods include mewing for jaw alignment and energy flow, lymphatic drainage techniques to support detoxification, and the use of essential oils for mood regulation and skin care. Other methods involve foot massages before sleep, applying oil to the navel and soles, and incorporating detox drinks and skin-care rituals. These practices support the body's natural healing and promote balance across physical and emotional domains.

Findings: Consistent implementation of these simple self-care techniques shows noticeable improvements in mood, energy levels, hormonal balance, sleep quality, and overall well-being. Individuals who practice mindful self-care experience reduced stress, enhanced self-esteem, and a greater sense of control over their health.

Conclusion & Significance: Self-care is not a luxury—it is a necessity. The presented model encourages a guilt-free, sustainable, and enjoyable approach to self-care that can be personalized to individual needs. Regular self-care practices nurture physical, emotional,

spiritual, and mental health. This holistic approach is highly adaptable and can be introduced in schools, homes, wellness workshops, and healthcare settings. It is not a medical intervention but a movement to empower people to take charge of their well-being through awareness and consistent, simple efforts.

Biography

Hema Dadhwal is an award-winning digital creator, entrepreneur, and holistic wellness advocate based in Singapore. She is the Founder and Director of Hal Glow-Bal's Marketing & Content Creation Agency, where she leads innovative digital storytelling and brand strategy initiatives. Hema has been honored with the International Women Gloria Award 2025 by The International

Ishaan Bhardwaj*, Sathish Sadagopan, Minal Udipi
Anthem Biosciences Ltd., Bommasandra Industrial Area, Phase-I, Bengaluru-560099, Karnataka, India

From petri dish to production - Navigating manufacturing challenges in probiotic scale up

Transitioning probiotics from lab-scale to commercial production demands careful strategies to overcome technical, regulatory, and economic barriers. Manufacturer of probiotics face scale up challenges like media sterilization, media cost, selecting suitable media, identifying contamination risks, inconsistent cell viability and meeting the regulatory requirements like Good Manufacturing Practice (GMP) standards, WHO guidelines, and regional regulations (FDA, EFSA, FSSAI, etc.) to ensure safety and efficacy. Addressing these challenges requires optimized fermentation, cost-effective media, and advanced processing techniques. Lab conditions allow precise control, but industrial fermenters introduce uneven temperature, oxygen gradients, and mixing issues that reduce yields and alter biomass production. Probiotic strains thriving in small batches at lab scale may underperform due to these factors, requiring process redesigns like optimized media or bioreactor tweaks. Downstream processes like centrifugation and drying exacerbate viability losses due to prolonged stresses and environmental sensitivities. Strain variability and fermentation inefficiencies cause unpredictable yields during scale-up. Stability of probiotics suffers from environmental sensitivities, with viability losses during drying, storage, and delivery; for instance, industrial processes can reduce cell counts significantly without protective measures. Scale-up of probiotic processes is preferably done in two stages. The first stage is a pilot plant (pilot scale) with 100–10,000 L fermenters and matched downstream equipment. Its purpose is to translate the lab-scale process into a realistic scaled-down version of the manufacturing process. The selected pilot scale is a judgment based on the size, availability, and cost of representative scaled-down equipment and required product sample sizes. The second stage of scale-up is a demonstration plant (demo scale) with 10 000–100 000 L fermenters and matched downstream. It serves to minimize the risk of a large capital investment in the full-scale manufacturing plant

by further validating the process, the supply chain (from raw materials to commercial product application), and market demand. Contamination from unwanted microbes or allergens demands rigorous testing, which intensifies at scale. Ensuring probiotic viability through drying, storage, and delivery requires rigorous hygiene to prevent contamination, alongside sensory and dose consistency in products. Shelf-life stability further complicates matters, necessitating advanced packaging and real-time monitoring.

Biography

Ishaan is Senior Vice President at Anthem Biosciences and has been associated with the organization for 12 years. He holds a Bachelor's Degree in Engineering from Visvesvaraya Technological University and a Master's of Science degree from The George Washington University, Washington. He experiences is in handling large scale multi product manufacturing facilities with capabilities to produce form a variety of expressions hosts primarily focussed on the nutrition and pharmaceutical industries.

Xintian Xu[1], Dasheng Qiu[2], Jian Chen[3], Mengxing Tian[1], Xin Jin[1*]

[1]Department of Clinical Nutrition, Hubei Cancer Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei, China

[2]PET/CT Center, Hubei Cancer Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei, China

[3]Department of Head and Neck Surgery, Hubei Cancer Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei, China

Computed tomography-defined osteosarcopenia is a predictor of prognosis in cancer: A meta-analysis and systematic review

Background: Osteosarcopenia is defined as the coexistence of sarcopenia and osteopenia/osteoporosis. The adverse health outcomes associated with osteosarcopenia may be more severe than those observed in individuals with either osteopenia or sarcopenia alone. The aims of this systematic review and meta-analysis were to estimate the prevalence and prognostic value of osteosarcopenia in patients with cancer.

Methods: Four electronic databases including Embase, PubMed, MEDLINE, and Cochrane Library databases were searched to until July 1, 2025 to identify studies related to osteosarcopenia and cancer. Overall pooled prevalence of osteosarcopenia was obtained using a random-effects model. The predictive value of osteosarcopenia for Overall Survival (OS), Disease-Free Survival (DFS), Recurrence-Free Survival (RFS), and Progression-Free Survival (PFS) was also investigated. The meta-analysis on the association between osteosarcopenia and postoperative complications was also conducted. The Quality in Prognosis Studies tool was used to evaluate the quality of the included studies.

Results: A total of 17 studies comprising 3,150 patients were included. Using computed tomography to diagnose osteosarcopenia, the pooled prevalence of osteosarcopenia was 30% (95% Confidence Interval [CI] 25-35%, I2=90.7%) in the studies included for meta-analysis. Osteosarcopenia predicted significantly poor OS (Hazard Ratio [HR]=2.42, 95% CI 2.13-2.75, P<0.001) and DFS/RFS/PFS (HR=2.24, 95% CI 1.89-2.65, P<0.001). Osteosarcopenia was associated with postoperative complications (Odds Ratio [OR]=1.56, 95% CI 1.31-1.86, P<0.001).

Patients with osteosarcopenia had lower body mass index and higher ECOG Performance Status scores than patients without osteosarcopenia. No significant difference in gender was observed between two groups.

Conclusions: The prevalence of osteosarcopenia was high in patients with cancer, especially among the elderly. Our findings demonstrated that osteosarcopenia predicted adverse survival outcomes in elderly patients with cancer.

Biography

Jin Xin MD, PhD, serves as Deputy Director of Department and Clinical Nutrition Department at Hubei Cancer Hospital, a hospital "Qihang Talent" and national registered dietitian in China. A visiting scholar at National University of Singapore, he leads several research projects. As first/corresponding author, he has published 21 SCI papers and 13 Chinese core papers. He holds roles in multiple academic committees, is a Top 10 Nutrition Science Popularization Expert in Hubei, and has won awards in science popularization and academic competitions.

Wen Wang[1], Xintian Xu[2], Mengxing Tian[2], Qian Han[3], Tingting Yang[1], Xin Jin[2*], Lei Lei[4]

[1]Department of Nutrition, Henan Provincial People's Hospital, Zhengzhou University People's Hospital, Zhengzhou, Henan, China

[2]Department of Clinical Nutrition, Hubei Cancer Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei, China

[3]Cancer Center, Henan Provincial People's Hospital, Zhengzhou University People's Hospital, Zhengzhou, China

[4]Department of Gastroenterology, Henan Provincial People's Hospital, Zhengzhou University People's Hospital, Zhengzhou, Henan, China

Prognostic performance of the Nutritional Risk Screening 2002 and the global leadership initiative on malnutrition in patients with lung cancer treated with immune checkpoint inhibitors

Background: The Nutritional Risk Screening 2002 (NRS 2002) is used to identify patients at risk who may benefit from nutritional intervention, while the Global Leadership Initiative on Malnutrition (GLIM) criteria serve as a diagnostic tool for malnutrition. However, their impacts on response to immunotherapy in patients with lung cancer are unknown. Therefore, this study investigated the role of NRS 2002 and GLIM criteria in predicting Overall Survival (OS) in patients with lung cancer receiving Immune Checkpoint Inhibitors (ICIs).

Methods: This retrospective study included 146 patients with lung cancer treated with ICIs. Nutritional risk was evaluated using the NRS 2002, while nutritional status was assessed using the GLIM criteria. The OS rates were analyzed using Kaplan-Meier curves and Cox proportional hazard analyses. Two nomograms based on NRS 2002 and GLIM criteria were established to predict OS. Kendall's Tau was used to determine the relationship between NRS 2002 scores and GLIM criteria.

Results: The Kaplan-Meier survival revealed poor survival times in patients with nutritional risk (NRS 2002 score≥3) and malnutrition as defined by the GLIM criteria. The multivariable

Cox analyses identified that nutritional risk (Hazard Ratio [HR], 2.00, 95% Confidence Interval [CI]: 1.06-3.81, P=0.033) and malnutrition (HR, 2.46, 95%CI: 1.28-4.77, P=0.007) are independent factors predicting OS. Age, stage, NRS 2002 score, and GLIM criteria were used to develop the nomograms. Higher nomogram scores predicted significantly reduced OS (P<0.0001). NRS 2002 scores and GLIM criteria showed a moderately strong positive correlation, with Kendall's tau=0.709 (95% CI: 0.629-0.785; P<0.001).

Conclusions: Nutritional risk and GLIM criteria-defined malnutrition are prognostic factors in patients with lung cancer receiving immunotherapy. NRS 2002 scores were significantly correlated with GLIM criteria in predicting diagnostic outcomes in lung cancer.

Keywords: Nutritional Risk Screening 2002, Glim Criteria, Lung Cancer, Immune Checkpoint Inhibitors, Nomogram.

Biography

Jin Xin MD, PhD, serves as Deputy Director of Department and Clinical Nutrition Department at Hubei Cancer Hospital, a hospital "Qihang Talent" and national registered dietitian in China. A visiting scholar at National University of Singapore, he leads several research projects. As first/corresponding author, he has published 21 SCI papers and 13 Chinese core papers. He holds roles in multiple academic committees, is a Top 10 Nutrition Science Popularization Expert in Hubei, and has won awards in science popularization and academic competitions.

Joanna Śledziona

Private Practice in Nutrition and Herbal Science, Poland

From “Healthy” claims to scientific credibility: Bridging nutrition science, food technology and consumer communication

In recent years, nutrition-related communication has emerged as a critical factor influencing consumer trust in food, supplement, and wellness products worldwide. While advances in nutrition science and food technology continue at a rapid pace, market messaging often relies on simplified claims that fail to capture the complexity of product composition, bioactivity, and evidence-based health effects. This growing gap between science, technology, and communication presents both reputational and regulatory challenges for producers and practical challenges for nutrition professionals.

This presentation explores how interdisciplinary collaboration between nutrition science, food technology, and quality assessment can enhance the credibility and consistency of nutrition-related messaging. Drawing on professional experience in food technology, dietetics, and herbal science, it highlights common pitfalls in communicating ingredient claims, functional properties, and health-oriented positioning. Special attention is given to the role of precise, evidence-informed language in maintaining consumer trust across diverse international regulatory frameworks.

The presentation also discusses practical approaches for aligning product formulation,

scientific substantiation, and communication strategies without compromising scientific accuracy or consumer understanding. Case-based examples illustrate how evidence-informed communication can strengthen brand credibility, support public health objectives, and mitigate regulatory and reputational risk in global markets.

This session will be delivered online, allowing real-time engagement with the international audience. By integrating insights from nutrition science, food technology, and consumer education, the presentation offers actionable strategies for researchers, practitioners, and industry professionals to effectively bridge the gap between scientific evidence and consumer communication.

Biography

Joanna Śledziona is a food technologist and dietitian currently pursuing a PhD, with over 15 years of professional experience in nutrition education, food quality assessment, and interdisciplinary work at the interface of nutrition science, food technology, and consumer communication. She also specializes in herbal science, focusing on botanicals and their application in food and wellness products. Joanna collaborates with both industry and educational institutions, combining scientific knowledge with practical implementation and evidence-based communication strategies to improve consumer trust and public health outcomes.

Mariela Beatriz Maldonado[1], Juan Ignacio González Pacheco[2]*, Oscar Daniel Galvez[2]

[1]CONICET, National Scientific and Technical Research Council, Argentina

[2]Food and Effluent Treatment Laboratory (LATE). Department of Chemical Engineering, Mendoza Regional Faculty, National Technological University, C. Rodriguez 273, M5502AJE, Mendoza, Argentina

Prebiotic pumpkin in syrup as a functional food option to support metabolic health in people with overweight, obesity and diabetes

The rapid increase in overweight, obesity and type 2 diabetes has intensified the demand for sweet food options that provide sensory pleasure while exerting a lower glycaemic impact and offering additional physiological benefits. In this context, candied fruits reformulated with prebiotic ingredients and reduced-calorie sweeteners represent a promising strategy for developing functional foods adapted to metabolic disorders. The present work describes the design of a prebiotic pumpkin in syrup obtained from Cucurbita moschata cubes processed through a combined sequence of prefreezing, calcium treatment and osmotic dehydration in a binary sucrose–xylitol solution. This approach aims to preserve structure and texture, reduce the overall energy density and incorporate a sugar alcohol with documented prebiotic potential and low glycaemic index, thereby aligning the product with the nutritional needs of individuals with overweight, obesity and diabetes. Fresh pumpkin was selected at commercial maturity, standardised in size and characterised for initial moisture to allow accurate description of mass transfer during processing. Half of the cubes were subjected to prefreezing at sub-zero temperatures followed by controlled thawing to induce microstructural modifications that enhance water removal and solute uptake during the osmotic step. A subsequent immersion in calcium hydroxide solution promoted calcium pectate formation within cell walls, increasing tissue firmness and resistance to thermal damage. Osmotic dehydration was then carried out in a 65° Brix sucrose–xylitol solution (1:1, w/w) at different temperatures and contact times under constant agitation. Water loss, solid gain, changes in soluble solids and colour were evaluated to characterise process performance and product quality. The combined prefreezing and calcium pretreatment improved structural stability,

enabling high solid incorporation without disintegration of the pumpkin matrix. The inclusion of xylitol reduced the caloric content relative to conventional sucrose-based candied products and introduced a prebiotic component. The process conditions that delivered optimal water removal and solid gain were associated with strong correlations between operating variables and mass-transfer responses, suggesting technological robustness and potential for scale-up to industrial manufacture. Overall, the prebiotic pumpkin in syrup developed here can be considered a technically feasible confectionery alternative for adults with overweight, obesity, and diabetes who seek to moderate glycaemic excursions without fully renouncing sweet foods. By integrating a vegetable rich in bioactive compounds with a reduced-calorie, potentially prebiotic sweetening system, this product concept contributes to the broader agenda of designing culturally acceptable, technologically prebiotic, stable functional foods that support both metabolic and gut health.

Biography

Juan Ignacio González Pacheco is a Chemical Engineer who graduated from UTN FRM in Argentina. He is currently a PhD candidate in Engineering at the National University of Cuyo, supported by several scholarships, including a CONICET scholarship, a UTN scholarship, and one from the Federal University of Campina Grande in Brazil. Active in the Food and Effluent Treatment Laboratory (LATE) at UTN FRM, his accolades include the Silver Palm from the Argentine Society of Writers and a Medal of Honour from Rotary International. He received the Gold Medal from UTN FRM in 2018 and was nominated for the Outstanding Young Mendocinos Award in 2019. Notably, in 2022, he ranked first nationally in doctoral scholarships for UTN teachers and is a finalist for the 2024 Food of the Future Award. He has presented over 60 scientific works in esteemed journals and conferences, contributing significantly to Food Engineering.

Kousani Chakraborty*, Dr. Annalakshmi Chatterjee

[1]Laboratory of Food Chemistry and Microbiology, Department of Home Science, University of Calcutta, V.L Campus, Kolkata, W.B, India

[2]ITMERG lab, IISER–Kolkata, India

Enzymatic and functional characterization of synthetic dye biotransformation by a pre-isolated bacterial strain

The indiscriminate release of synthetic dyes from textile effluents poses a serious threat to aquatic ecosystems and public health. Addressing this challenge, the present dissertation investigates the bioremediation potential of a bacterial isolate through a comprehensive, multi-method approach encompassing liquid broth degradation, solid agar-flat decolorization, and laccase enzyme activity assessment using the ABTS assay.

In the liquid broth assay, two inoculum regimes (5µL and 2.5µL) were tested in nutrient-rich media across varied dye concentrations. Dye degradation was quantified spectrophotometrically following centrifugation and collection of the cell-free supernatant. Notably, enhanced degradation efficiency was observed at lower dye concentrations, with the 5µL-inoculated set demonstrating faster and more consistent decolorization within 72 hours.

Parallel agar-flat assays, involving dye incorporation into solidified media followed by surface inoculation, provided a visual understanding of degradation kinetics. Decolorization zones were evident from 2.5ppm to 15ppm within 7–10 days, while 20ppm required extended incubation, highlighting concentration-dependent efficacy.

To elucidate the enzymatic mechanism, extracellular laccase activity was confirmed using the ABTS–phosphate buffer method. The culture supernatant exhibited measurable activity, peaking between Day 2 and Day 3, suggesting inducible oxidative enzyme production under dye stress.

Collectively, these findings establish the isolate's capacity for effective dye biodegradation, supported by laccase-mediated mechanisms. This work not only underscores the isolate's environmental relevance but also contributes foundational insight for its deployment in green, low-cost wastewater treatment technologies.

Keywords: Bioremediation, Laccase, Dye Decolorization, ABTS Assay, Bacterial Isolate, Textile Effluents, Wastewater Treatment.

Biography

Kousani Chakraborty is a postgraduate researcher in Food and Nutrition with strong interests in nutrigenomics, biochemistry, microbiology, and environmental biotechnology. She is a batch topper and NET qualified, with peer-reviewed publications on bioactive components and their biological impact. She worked as a Project Assistant at IISER Kolkata under a DST-funded project. Her current research focuses on microbial applications, including dye-degrading and bioremediation studies, and she aspires to pursue a PhD in interdisciplinary life sciences.

Lee P. Liao BSc (Adv) (Hons) MTeach[1*], Patroys DePaz BdataAnalyt[2], Simone Marschner BScb(Hons) MSc PhD[1], Gary C. H. Gan PhD MBBS[3,4], Liza Thomas MBBS, PhD[1,3,5], Luigi Fontana MD PhD FRACP[6,7], Sarah Zaman PhD MBBS[1,3]

[1]Westmead Applied Research Centre, Faculty of Medicine and Health, University of Sydney, Sydney, Australia
[2]Australian Government Department of Education, Australia
[3]Department of Cardiology, Westmead Hospital, Sydney, Australia
[4]Department of Cardiology, Blacktown Hospital, Sydney, Australia
[5]South West Clinical School, University of NSW, Sydney Australia
[6]Charles Perkins Center, Faculty of Medicine and Health, University of Sydney, Australia
[7]Department of Endocrinology, Royal Prince Alfred Hospital, Sydney, Australia

Association between the Dietary Approaches to Stop Hypertension (DASH) diet and risk of heart failure: A UK biobank cohort study

Background: Evidence supporting dietary interventions for Heart Failure (HF) prevention remains limited. The Dietary Approaches to Stop Hypertension (DASH) diet—characterised by high intake of vegetables, fruits, and whole grains, and lower consumption of sodium and red and processed meat—has been proposed for HF prevention, but population level evidence is sparse.

Aim: To investigate the association of higher adherence to the DASH diet with lower incidence of HF and its risk factors, namely hypertension and Type 2 Diabetes Mellitus (T2DM).

Methods: A prospective cohort analysis was conducted using UK Biobank participants free of HF at baseline (2006–2010), with follow up to 2024. Dietary intake was assessed using ≥2 instances of 24 hour recall. DASH scores were derived and categorised into quintiles. Fine-Gray competing risks Cox models estimated adjusted Hazard Ratios (aHRs) and 95% Confidence Intervals (CIs) for a primary composite outcome of incident HF or HF related death, adjusting for sociodemographic factors, deprivation, obesity, smoking, hypertension, and T2DM and accounting for all cause mortality. Secondary outcomes were incident hypertension and T2DM.

Results: Among 126,040 participants (mean age 56.1±7.8 years; 56% female; 7% with diabetes;

36% with hypertension), followed for a mean of 12 years, 2,931 HF events and 441 HF deaths occurred. Compared with the lowest DASH adherence quintile, the highest quintile had a lower risk of HF after adjustment for sociodemographic factors (aHR 0.79, 95% CI 0.70–0.89, p<0.001) and comorbidities (aHR 0.84, 95% CI 0.75–0.94, p<0.05). Higher DASH adherence was also associated with reduced risk of hypertension (aHR 0.92, 95% CI 0.87–0.98, p<0.05) and T2DM (aHR 0.78, 95% CI 0.68–0.88, p<0.001).

Conclusions: Higher adherence to the DASH diet was associated with lower risk of HF, hypertension, and T2DM, supporting the role of a DASH diet in HF prevention.

Biography

Lee is a PhD candidate at the University of Sydney's School of Medicine, based at the Westmead Applied Research Centre. Her doctoral research examines the relationship between diet and heart failure and includes a clinical trial investigating the ketogenic diet in heart failure patients. She is the lead author of Effect of ketone supplementation, a low carbohydrate diet and a ketogenic diet on heart failure measures and outcomes: A systematic review and meta analysis. Lee won first place for her oral presentation at the Charles Perkins Centre's 11th Annual Symposium 2025. She holds a Master in Teaching and has nearly 20 years of teaching experience, currently teaching Mathematics at Ravenswood School for Girls.

Maria Carolina Santos de Oliveira Moritz[1*], Érika Ramos de Alvarenga[1], Vinícius Monteiro Bezerra[2], Gean Paulo Andrade Reis[1], Karen Costa[1], Carlos Augusto Rosa[1], Eduardo Maldonado Turra[1], Whasley Ferreira Duarte[3], Flaviano dos Santos Martins[1]

[1]Federal University of Minas Gerais, Brazil
[2]Salgado de Oliveira University, Brazil
[3]Federal University of Lavras, Brazil

Phaffia brasiliana as a natural source of astaxanthin for aquaculture

Carotenoid pigments play an important role in aquaculture due to their well-known contributions in enhancing coloration, oxidative stability, and overall fish health. Among them, astaxanthin stands out as one of the most powerful natural antioxidants described to date, exhibiting strong free-radical neutralizing activity and promoting improved pigmentation of muscle in food fish and skin color in ornamental fish. Species of the genus *Phaffia* have been reported as natural producers of astaxanthin and other related carotenoids, making them promising biological sources for aquaculture applications. Thus, it was evaluated the *in vitro* antioxidant profile of the yeast *Phaffia brasiliana* UFMG-CM-6497 and analyzed its effects when administered as a dietary supplement to Nile tilapia (*Oreochromis niloticus)* for 63 days in Biofloc (BFT) and Clear Water (CW) systems. High antioxidant activity *in vitro* was demonstrated for all the methods tested: Folin-Ciocalteu (69.76mg GAE/100g), DPPH (5.37mg/mL), and β-carotene/linoleic acid bleaching (64.55% protection). Moreover, carotenoid identification and quantification by HPLC-DAD-MS revealed the presence of a diverse array of pigments, including astaxanthin isomers (50.72µg/g; 6.56%), β-carotene (78.80µg/g; 10.19%), β-zeacarotene isomers (79.59µg/g; 10.29%), phytoene (417.29µg/g; 53.95%), and phytofluene (58.35 µg/g; 7.54%). Due to their different intrinsic antioxidant capacities, the weighted contribution of each carotenoid to the total antioxidant activity of the yeast was evaluated, revealing a predominant role of astaxanthin isomers (507.2), especially when considering their lower relative concentration compared to other more abundant compounds – phytoene

(208.645), β-zeacarotene isomers (79.59), and β-carotene (78.8). When administered *in vivo* to Nile tilapia, although all values remained within the species-specific reference ranges, a significant effect on the yeast-supplemented groups (Y) (CW-Y and BFT-Y) was observed ($p<0.05$) on some hematological parameters, including higher erythrocyte counts (1.85 106/mm^3 and 1.60 106/mm^3) and hematocrit (38.13% and 34.54%), when compared to controls (C) (CW-C: 1.07 106/mm^3 and 24.08%; BFT- C: 1.10 106/mm^3 and 20.83%). Furthermore, considering serum glucose as a stress biomarker, this parameter remained stable ($p>0.05$) and within the recommended range for the species across all groups during the postprandial period, ranging from 82.92mg/dL to 101.42mg/dL (CW-Y/BFT-Y) and 87.17mg/dL to 83.25mg/dL (CW-C/BFT-C). Moreover, a significant difference ($p<0.05$) in fillet coloration was observed in the yeast-supplemented groups compared to their respective controls, with increased fillet redness (a* values)–CW-Y (11.40), BFT-Y (13.65), CW-C (10.47), and BFT-C (13.11). Also, considering *in vitro* antioxidant activity analysis, such as β-carotene bleaching, fillet redness is determined not only by pigment accumulation but also by the yeast's antioxidant activity, which can protect carotenoids from metabolic degradation and facilitate their incorporation into muscle. Altogether, these findings demonstrate the potential of *P. brasiliana* UFMG-CM-6497-derived carotenoids, especially astaxanthin, as functional supplementation in aquaculture feeds, offering a natural and biological source for improving fish pigmentation and oxidative stress regulation.

Biography

Maria Carolina Santos de Oliveira Moritz holds a Bachelor's degree in Biomedical Sciences and a Master's degree in Microbiology from the Federal University of Minas Gerais, Brazil. She has participated in microbiological research with a primary focus on nanotechnology, antimicrobial resistance, and probiotics. She is currently engaged in studies on the intestinal microbiota, emphasizing probiotic applications and their role in health promotion and the development of pathological conditions, particularly in aquatic organisms. Her work specifically involves evaluating the administration of probiotics in fish.

Mariela Beatriz Maldonado[1,2]*,
Juan Ignacio González Pacheco[2]

[1]CONICET, National Scientific and Technical Research Council, Argentina

[2]Food and Effluent Treatment Laboratory (LATE). Department of Chemical Engineering, Mendoza Regional Faculty, National Technological University, C. Rodriguez 273, M5502AJE, Mendoza, Argentina

Nutrition for the future and the human microbiome - Dietary approaches to modulate gut microbial balance and support metabolic health

The human gut microbiome, comprising trillions of microorganisms, functions as a virtual endocrine organ that profoundly influences metabolic health through complex bidirectional communication with host physiological systems. Recent evidence demonstrates that dietary strategies targeting the gut microbiota represent promising therapeutic interventions for preventing and managing metabolic syndrome and related cardiometabolic disorders. Dietary fibre and fermented foods emerge as key modulators of gut microbial composition and function. Resistant carbohydrates undergo microbial fermentation in the colon, producing Short-Chain Fatty Acids (SCFAs), primarily acetate, propionate, and butyrate in a 60:20:20 ratio, of which 90-95% are absorbed and systemically distributed. These microbial metabolites regulate multiple metabolic pathways: Butyrate serves as the primary energy source for colonocytes while strengthening gut barrier integrity through tight junction formation, propionate enhances hepatic gluconeogenesis and improves insulin sensitivity, and acetate modulates lipid metabolism and appetite regulation via G-protein coupled receptors FFAR2 and FFAR3. Recent longitudinal studies reveal that long-term consumption of naturally fermented foods, including fermented dairy and legume products, induces significant shifts in gut microbial ecological states, with seasonal variations between Prevotella-and Bifidobacterium/Ruminococcus-driven community structures. These dietary interventions demonstrate the capacity to modulate the Firmicutes/Bacteroidetes ratio, enhance the production of beneficial metabolites, including fatty acid derivatives, and influence colonisation resistance patterns. The microbiota-gut-brain axis further extends these metabolic benefits through vagal nerve-mediated signalling, with cardiac vagal activity positively correlating with gut

microbial diversity and inversely with inflammatory markers such as CRP and IL-6. Emerging evidence supports the concept of "psychobiotics"—probiotics that influence mental health through neurotransmitter production (GABA, serotonin, dopamine) and modulation of the hypothalamic-pituitary-adrenal axis. Precision nutrition approaches incorporating the Dietary Index for Gut Microbiota (DI-GM) are associated with a reduced prevalence of metabolic syndrome components, including abdominal obesity, dysglycemia, and dyslipidemia. Multi-omics integration, combining metagenomics, metabolomics, and transcriptomics, enables mechanistic elucidation of diet-microbiota-host interactions, facilitating development of personalised dietary interventions. These findings underscore the therapeutic potential of microbiome-targeted nutritional strategies, encompassing prebiotics, probiotics, synbiotics, and whole-food dietary patterns such as the Mediterranean diet for optimising metabolic health and preventing chronic disease. Future research should prioritise well-powered, long-term randomised controlled trials to establish clinical efficacy and develop evidence-based, personalised dietary recommendations for diverse populations.

Biography

Mariela Beatriz Maldonado, an esteemed academic with a Doctorate in Biological Sciences, specialises in Quality Engineering and Food Science. She is an Adjunct Researcher at CONICET and a Research Professor at the National Technological University (UTN FRM), where she directs the Specialisation in Food Technology and Quality Engineering. Dr. Maldonado, a PhD graduate with honours from the National University of Cuyo, has received several accolades, including an Honourable Mention from the Federation of Argentine University Women. She has published extensively and presented more than 300 scientific works in Food Science, Technology, and Engineering, thereby contributing significantly to her field.

Ms Suchi

Laughter Therapist, Singapore

Dealing with addiction with happy hormones

Statement of the Problem: There is a lack of awareness about what are happy hormones and what can be done to get them. People tend to feel unhappy for multiple reasons and sort towards Addiction & Alcoholism and commit suicides in some cases.

Methodology & Theoretical Orientation: Review of Books and Research shows that feeling good and taking care of our emotional well-being will resolve the problems of Addiction, Alcoholism and it will decrease suicide rates as well. Adopting Laughter therapy and getting hormones which makes one feel good will help many to recover from Depression & Anxiety thus reducing suicidal rates.

Findings: One needs to work on his/her energies using Laughter Therapy and boosting Happy Hormones which is a positive approach for not having Depression & Anxiety or use it as a Holistic way to recovery.

Conclusion & Significance: The Laughter therapy which includes ways to get the dosage of happy hormones promotes overcoming Depression & Anxiety using a fun way. Leading fulfilling lives encourages people to get a new life away from Addiction & Alcoholism. Repeated sessions to be conducted to remind people that the new life should go beyond just seeking medical and counselling help and also include rebuilding Spiritual, Physical, Emotional, Relational and Mental health. The model has been put together from for testing in many settings including hospitals, elderly homes and senior citizen centers. This is not a research book or paper. It is just an effort to demystify the help available for Depression & Anxiety. It is an attempt to motivate and encourage people to seek help and take a simple approach to remember and work on all aspects of their recovery.

Biography

Ms. Suchi is a Stress Management Coach, Laughter Therapist, and a mentor at Nanyang Technological University (NTU) who is recognized by Favikon as Singapore's Number 1 Influencer in the Fitness & Personal Growth/Motivation category. She is a dedicated mentor, coach, and speaker, focusing on stress management, personal growth, positive thinking, and leadership. She also runs Hal Glow-Bal's Content & Marketing Agency as CEO. She achieved prominence as the top Favikon influencer in Singapore for fitness and motivation, using her platform to inspire people towards leading a happy and healthy life. She mentors individuals, especially seniors and women, on topics like stress and anxiety coping mechanisms, organic social media growth, and effective communication. She emphasizes the power of positive self-talk and manifestation techniques to design one's future. She is a recipient of the International Women's Gloria Award by TIAF USA. She advocates for physical health, such as regular exercise and walking 10,000 steps daily, as a core component of overall well-being.

Dr. Najat Amharar MD*, Julius Inso, Wayne Kleintjes MD, PhD
Burjeel, United Arab Emirates

A case-cohort study of the outcomes of probiotics on wound healing in a private hospital in Abu Dhabi

Introduction: Multidrug-resistant micro-organisms are a growing concern in the United Arab Emirates (UAE), with a rate of Multi-Resistant *Staphylococcus Aureus* (MRSA) of up to 26,4% according to latest estimates (1). This involves the community as well the more specific population represented by the patients admitted in an Intensive Care Unit (ICU) in the UAE. Our hospital has facilitated the emergence of a long term intensive care unit, where patients with multiple organ failure can be managed with ventilation, dialysis, and personalized wound care.

Problem: This prolonged stay of vulnerable immune-suppressed patients has led to the growth of particularly pathogenic bacteria strains, such as *Pseudomonas Aeruginosa, Klebsiella Pneumoniae, Escherichia Coli or Staphylococcus Aureus*, resistant to the most advanced intravenous antibiotic therapies available. In the wake of the re-discovery of the therapeutic impact of probiotics on wound healing the use of probiotics may be the solution to the problem of ineffective antibiotics.

Aim: The aim of this study was to treat some of the most concerning patients, presenting with infected wounds and poor healing despite optimal antibiotic cover, with topical application of probiotics for better wound healing.

Material & Methods: Patients were selected prospectively based on their chronic wounds poor prognosis, either due to some infection or colonization associated with virulent micro-organisms, or due to a lengthy stall of their healing (6 months or above). The principal criteria for selection were the failure of all conventional wound care therapies and the absence of any other non invasive therapeutic option available (compassionate cases criteria). Once selected, the wounds were dressed daily, with peroxyde hydrogen and/or saline cleansing

before applying a paraffin gauze containing one of the two probiotics available: Bacillus Clausii or a combination of *Lactobacillus Acidophilus* and Bifidus. Pictures were taken regularly, and whenever possible a culture swab was collected before and during the treatment. In cases of infection, vitals and inflammatory markers were recorded.

Results: Six patients were selected as 'compassionate cases' for either infected wounds or stalled wounds with mediocre prognosis, which we know to be colonized. Our wound care team followed their outcomes in terms of wound healing, systemic septic symptoms, and lab testing whenever it was possible.

We observed a general improvement of all wounds within the first two weeks of the treatment, and a systemic resolution of septic symptoms such as fever and\requirements for vasopressors within the first 48-72 hours.

Culture swabs were taken from most wounds after one to two weeks and a switch from a multidrug resistant to a "no growth" result, either at the second swab or the third, regardless of the presence of any systemic antibiotic therapy.

All wounds progressed faster in few weeks than they had in the prior six to twelve months, notwithstanding patients' most severe malnutrition and skin damages secondary to their medications, stool contamination or vascular disease.

Conclusion: The topical use of probiotics for wound healing support, whether infected or only colonized, is a potential safe and effective option to consider in the presence of multi-drug resistant bacteria strains.

Biography

Dr. Najat Amharar is a French-born and French-trained laparoscopic general surgeon of Moroccan descent. She completed her comprehensive surgical training in France, gaining experience in renowned medical centers across Normandy, Bordeaux, Paris, and Lille. Her areas of specialization during training included hepatobiliary surgery, colorectal surgery, and advanced laparoscopic procedures. With over 12 years of overall experience, Dr. Amharar has spent the past 8 years practicing in the United Arab Emirates, primarily in Abu Dhabi. During this time, she has developed significant expertise in wound care (including acute, burn-related, and chronic wounds), the management of benign breast diseases, endocrine surgery (thyroid and parathyroid), and proctology. Known for her meticulous approach and patient-centered care, Dr. Amharar continues to bring a wealth of international training and diverse surgical experience to her practice in the UAE.

Priyanshi Maheshwari[1]*, Satish Kumar Sharma[2], Sweta Rai[3], Anil Kumar[4], Charu Bisht[1]

[1]PhD Scholar, Department of Food Science and Technology, G.B. Pant University of Agriculture and Technology, Pantnagar (263145), Uttarakhand, India

[2]Professor, Department of Food Science and Technology, G.B. Pant University of Agriculture and Technology, Pantnagar (263145), Uttarakhand, India

[3]Assistant Professor, Department of Food Science and Technology, G.B. Pant University of Agriculture and Technology, Pantnagar (263145), Uttarakhand, India

[4]Associate Professor, Department of Food Science and Technology, G.B. Pant University of Agriculture and Technology, Pantnagar (263145), Uttarakhand, India

Buckwheat protein concentrate as a functional ingredient for future food and nutrition applications

Buckwheat is a widely recognized pseudocereal belonging to the family *Polygonaceae*, predominantly cultivated in cold and mountainous regions of the world, particularly in China and Russia. According to 2023 statistics from the Food and Agriculture Organisation, global buckwheat production is estimated at approximately 2.2 million metric tons. Buckwheat is rich in bioactive compounds, including phenolic acids, tannins, phytosterols, and diverse antioxidants, and is also a valuable protein source containing a complete profile of essential amino acids. Its protein is noted for high biological value and superior nutritional quality relative to most cereal proteins. In this context, the present research focused on the production of buckwheat protein concentrate from flour using an alkaline extraction approach. Protein extraction was conducted across pH ranges of 8-12 and extraction times of 1-3 h, and the optimal parameter combination was determined based on protein yield and concentration. The optimised concentrate can be incorporated into a variety of food products. Under optimal conditions, approximately 8% protein yield with about 66.7% recovery was achieved, and the resulting concentrate contained nearly 80% protein. These results indicate that process optimisation of alkaline extraction represents an efficient method for obtaining high-quality buckwheat protein concentrate suitable for different food applications. Furthermore, the high protein purity, favourable functional attributes, and preserved structural characteristics of the optimised concentrate suggest significant potential for its potential for incorporation into

nutritionally enhanced food formulations, supporting the development of future functional foods.

Biography

Priyanshi Maheshwari is a doctoral researcher in Food Science and Technology at G. B. Pant University of Agriculture and Technology, Pantnagar, India. Her research centers on sustainable processing and value addition of buckwheat, emphasizing green extraction of bioactive compounds, protein fractionation, and development of functional food ingredients, contributing to advances in plant-based nutrition and functional foods. She holds a postgraduate degree in Food Technology from the University of Allahabad. She has presented at scientific conferences and publishes in food chemistry, nutraceuticals, and process optimization. Her interests include bioactive extraction, protein concentrates, functional ingredients, and innovative technologies for sustainable food processing.

Qingmin Yan*, Qihan Qin, Shu Zhang, Fuhao Chen, Yuehang Ru, Yi Zhong, Guoqing Wu

Health Science Center, Ningbo University, China

Glial cell nutrient sensing: Mechanisms of nutrients regulating Alzheimer's pathogenesis and precision intervention

Modern nutrition plays a pivotal role in clinical care. While existing studies have touched upon neuro-nutrition in Alzheimer's Disease (AD), a comprehensive analysis of how the six essential nutrient categories modulate AD remains limited. Given the direct involvement of glial cells in AD pathology, there is a need to synthesize a coherent "essential nutrients–glial cells–AD" framework. This review systematically outlines the modulatory functions of glial cells (astrocytes, microglia, and their networks) in AD and investigates the pathways through which essential nutrients exert effects on AD via these cells. Key nutrients—including vitamins, minerals, proteins and amino acids, lipids, and carbohydrates—are shown to regulate critical glia-driven processes such as energy metabolism remodeling, neuroinflammation, and phagocytic clearance. Additionally, the review highlights nutrient imbalances commonly observed in AD patients and proposes tailored nutritional interventions aimed at prevention and symptom management. Promising dietary patterns for AD mitigation are also evaluated. By elucidating the molecular interplay between essential nutrients and glial cells, this work contributes to the advancement of precision nutrition approaches for AD.

Biography

Qingmin Yan is a Master's candidate at the School of Public Health, Ningbo University. Under the supervision of Dr. Guoqing Wu, her research focuses on the role of nutritional factors in modulating neurodegenerative diseases, with a current emphasis on the relationship between methionine restriction and the pathogenesis of Alzheimer's disease. She is a member of the research team led by Dr. Guoqing Wu at the School of Public Health, Ningbo

University. The team specializes in molecular nutrition and mechanisms of chronic disease prevention, placing particular focus on how nutrients and functional nutritional components influence chronic diseases, especially Alzheimer's disease. Actively supported by national and provincial research funding, the team has published 15 papers in high-quality SCI-indexed journals such as CRIT REV FOOD SCI, JFAC, FOOD BIOSCI, Foods. Employing an interdisciplinary approach that integrates molecular nutrition with experimental studies in animal models, the team is dedicated to advancing scientific understanding and developing practical dietary interventions for chronic disease management and health promotion.

Rajdeep Dalal*, Amit Awasthi
Translational Health Science and Technology Institute, NCR-Biotech Science Cluster, 3rd Milestone, Faridabad-Gurgaon Expressway, Faridabad-121001, Haryana, India

Gut commensals-derived succinate impels colonic inflammation in ulcerative colitis

Ulcerative Colitis (UC) is a relapsing-remitting inflammatory disorder of the gastrointestinal tract driven by complex interactions between the gut microbiota and dysregulated mucosal immune pathways. In this study, we identify microbiota-derived succinate as a key metabolic driver of colitogenic immune responses in UC. We observed a distinctive dysbiosis characterized by a marked enrichment of succinate-producing bacteria, particularly Bacteroides vulgatus, along with a substantial depletion of succinate-consuming taxa such as Phascolarctobacterium and Dialister. This microbial imbalance leads to elevated luminal succinate, which activates the succinate receptor SUCNR1 on $CD4_+$ T cells, promoting the differentiation of IL-9-secreting $CD4_+$ T cells that contribute to epithelial barrier disruption and inflammation. Strategies that increased colonic succinate including dietary FOS supplementation, PEG-mediated succinate elevation, or colonization with succinate-producing bacteria consistently exacerbated colitis and expanded IL-9-producing $CD4^+$ T cells. Conversely, interventions that reduced succinate availability, such as colonization with succinate-metabolizing bacteria, retinoic acid supplementation to suppress B. vulgatus, IL-9 neutralization, or pharmacological inhibition of SUCNR1, significantly ameliorated disease severity. Together, these findings highlight the succinate-SUCNR1-Th9 axis as a central pathogenic pathway in UC and underscore the therapeutic potential of targeting succinate metabolism and its microbial regulators to develop next-generation microbiome-based interventions.

Biography

Dr. Rajdeep Dalal is a translational scientist and mucosal immunologist at BRIC-THSTI, India. His research focuses on microbiome-immune interactions, inflammatory bowel disease, and microbiota-based therapeutics. During his doctoral and postdoctoral work, he has identified key mechanisms linking gut metabolites, micronutrients, and immune signaling to colitis and cancer immunity, leading to multiple national and international patents. Dr. Dalal work integrates multi-omics platforms with clinical collaborations at AIIMS and CMC Vellore. He has published in leading journals, delivered invited talks globally, and received several prestigious awards, including the World Immunotherapy Council Young Investigator Award.

Prof. Rama Rao Nadendla

Chalapathi Institute of Pharmaceutical Sciences, Chalapathi Nagar, Lam, Guntur, Andhra Pradesh, India

Nano-liposomal curcumin–berberine hybrid formulation for targeted modulation of pancreatic inflammation and oxidative stress in pancreatitis

Pancreatitis is a complex inflammatory disorder of the pancreas marked by excessive oxidative stress, dysregulated cytokine signaling, and pancreatic enzyme leakage, leading to progressive tissue damage. Current therapeutic strategies are largely supportive and lack site-specific delivery, limiting effective and sustained modulation of pancreatic inflammation. The present study aimed to design, develop, and evaluate a nano-liposomal Curcumin–Berberine hybrid formulation for targeted management of pancreatic inflammation and oxidative stress.

Curcumin and Berberine were co-encapsulated into phosphatidylcholine-based liposomes, stabilized with cholesterol and surface-functionalized with N-Acetylcysteine (NAC) to enhance pancreatic affinity, redox responsiveness, and antioxidant capacity. Preformulation studies established complementary physicochemical properties of the phytoconstituents, confirming their suitability for co-encapsulation. FTIR and DSC analyses demonstrated drug–excipient compatibility and molecular dispersion within the lipid bilayer, while accelerated stability studies confirmed formulation robustness.

Nano-liposomes were prepared using the thin film hydration method followed by probe sonication, yielding uniform nanosized vesicles. *In vitro* evaluations revealed enhanced antioxidant activity (IC_{50}=12.3µg/mL), controlled zero-order drug release kinetics ($t_{1/2}$=8.6 h), and significantly improved cellular uptake in AR42J pancreatic acinar cells. The synergistic Curcumin–Berberine combination effectively suppressed NF-κB-mediated pro-

inflammatory cytokines (TNF-α, IL-6, IL-1β), reduced reactive oxygen species generation, and supported restoration of pancreatic enzyme homeostasis.

Overall, the NAC-functionalized nano-liposomal Curcumin–Berberine system offers a stable, biocompatible, and targeted therapeutic platform with the potential to improve localized pancreatic delivery, minimize systemic toxicity, and provide effective management of both acute and chronic pancreatitis. This formulation warrants further in vivo and translational investigation

Prof Dr. Ramesh Nagarajappa

Department of Public Health Dentistry, The Oxford Dental College, Bangalore, India

Early colonizers: Role of natural probiotics in pediatric oral health

The establishment of the oral microbiome begins at birth and plays a decisive role in shaping lifelong oral health. Early microbial colonizers influence immune maturation, biofilm formation, and susceptibility to dental caries and periodontal conditions. Disruption of this delicate microbial balance—through dietary practices, antibiotic exposure, or poor oral hygiene—may predispose children to Early Childhood Caries (ECC) and inflammatory oral diseases. In this context, naturally occurring probiotics have emerged as a promising biological approach to support microbial homeostasis during the critical developmental window of infancy and childhood.

Probiotic strains such as Lactobacillus and Bifidobacterium, commonly present in breast milk, fermented foods, and dairy products, demonstrate potential in modulating oral biofilms by competitively inhibiting cariogenic pathogens such as Streptococcus mutans. These beneficial microorganisms contribute to reduced plaque accumulation, decreased acidogenicity, enhancement of salivary immunity, and modulation of inflammatory responses in gingival tissues. Additionally, the concept of vertical transmission and the maternal–child microbial interface highlights the importance of early preventive strategies incorporating probiotic support.

Emerging clinical and *in vitro* evidence suggests that natural probiotics may serve as safe adjuncts in pediatric preventive dentistry, particularly in high-risk caries populations. However, considerations regarding strain specificity, dosage, delivery vehicles, and long-term

colonization require further scientific validation.

This presentation will examine the dynamics of early oral colonization, the mechanisms through which natural probiotics influence pediatric oral health, and their potential integration into preventive and community-based dental programs. Emphasis will be placed on translating current evidence into practical strategies for clinicians and public health professionals.

Keywords: Early Colonizers, Probiotics, Pediatric Oral Health, Early Childhood Caries, Oral Microbiome, Preventive Dentistry.

Biography

Prof Dr. Ramesh Nagarajappa graduated from the prestigious Bapuji Dental College and Hospital, Davangere, India in 1999. He is currently working as a Vice Principal, Professor and Head, in the Department of Public Health Dentistry at the Oxford Dental College, Bangalore, India. He has post-graduation teaching experience of over 26 years and have guided both PhD and MDS students. Nagarajappa has authored 140 publications in various international and national reputed journals. Been a regular reviewer too in many journals. He also has experience in delivering scientific presentations and chairing scientific sessions at various conferences.

Xiao Qin He[1], Pei Xiu Rong[2], Hong Yan Liu[1], Ren You Gan[3*]

[1]Research Center for Plants and Human Health, Institute of Urban Agriculture, Chinese Academy of Agricultural Sciences, Chengdu National Agricultural Science & Technology Center, Chengdu 610213, China

[2]School of Food and Biological Engineering, Chengdu University, Chengdu 610106, China

[3]Department of Food Science and Nutrition, The Hong Kong Polytechnic University, Kowloon, Hong Kong SAR, China

Valorization of mushroom byproducts by co-fermentation with soybeans for a functional Douchi development

This work explores the valorization of Edible Mushroom By-Products (EMBP) in Douchi production. We first focused on optimizing the critical koji-making stage, utilizing a mixed culture of Aspergillus oryzae and Mucor racemosus to maximize enzymatic activity. Through response surface methodology, we identified optimal conditions, specifically a 1:1 strain ratio, 6% inoculation, and 21% EMBP supplementation for fermenting over 63 hours. These parameters significantly enhanced protease and β-glucosidase activities, facilitating the biotransformation of isoflavone glycosides into bioactive aglycones like daidzein and genistein, thereby boosting antioxidant capacity compared to traditional soybean-only Douchi. Building on this, we further employed untargeted UPLC-MS/MS metabolomics to map non-volatile metabolites throughout the entire fermentation and 30-day post-fermentation process. Identifying 695 metabolites, the analysis revealed that the most profound metabolic shifts occur during koji-making and the first five days of post-fermentation. Differential analysis highlighted flavonoids and amino acids as primary drivers of metabolic variance, while correlation data linked the escalating antioxidant potential to specific accumulations of aglycones, free fatty acids, phenolic acids, and group A saponins. Collectively, our work demonstrates that co-fermenting soybeans with mushroom waste effectively enhances the nutritional profile, flavor precursors, and functional bioactivity of Douchi, offering a sustainable solution for agricultural by-product utilization.

Biography

Dr. Renyou Gan is an Assistant Professor and Presidential Young Scholar at The Hong Kong Polytechnic University. Following his PhD from HKU (2016), he held key positions at SJTU, CAAS, and A*STAR. His research focuses on plant-based foods, probiotics, and the gut microbiome. Dr. Gan has managed over 10 million RMB in grants and authored 250+ SCIE publications, amassing over 29,300 citations and an H-index of 91. A Clarivate Highly Cited Researcher (2021-2023) and Stanford Top 2% Scientist (2020-2025), he holds 20 patents and serves as Editor-in-Chief of Food as Medicine.

Satoe Kon

Setagaya Elementary School attached Tokyo, Gakugei University, Japan

A comparison of the nutrition teacher system in Japan and South Korea: Actual duties of nutrition teachers in Gyeonggi Province based on observations and interview

The nutrition teacher system is only a national system in Japan and South Korea. While acknowledging the policy differences in school meal management between these two countries, this study examined how nutrition teachers perform their duties. In accordance with a notice from the Ministry of Education, Culture, Sports, Science and Technology (MEXT), nutrition teachers in Japan emphasize guidance based on individual consultation during meals and interact with children and students. In contrast, nutrition teachers in Korea provide dietary guidance that emphasizes "autonomy." We hope the findings of this study will contribute to enhancing food education and developing systems in other countries.

Biography

Satoe Kon from April 2016 to present, she is a nutrition teacher at Setagaya Elementary School, attached to T OKYO GAKUGEI University. After graduating from Tokyo Kasei University with a major in registered dietitian in March 2011, she became a nutrition teacher in Miyagi Prefecture in April of the same year following the Great East Japan Earthquake. In March 2022, she obtained a Master's degree in Social Design. She is involved in a corporate initiative to promote breakfast intake during the growing season with Nagatanien Co., Ltd.'s Meza Mashi Chazuke, and is the supervisor of the book Delicious Recipes Born from Stories (Poplar Publishing).

Seema Singh[1]*, Anil Kumar[2], Satish Kumar Sharma[3], Ashok Kumar Verma[4], Sabbu Sangeeta[5]

[1]PhD Scholar, Department of Food Science and Technology, G.B. Pant University of Agriculture and Technology, Pantnagar (263145), Uttarakhand, India

[2]Associate Professor, Department of Food Science and Technology, G.B. Pant University of Agriculture and Technology, Pantnagar (263145), Uttarakhand, India

[3]Professor, Department of Food Science and Technology, G.B. Pant University of Agriculture and Technology, Pantnagar (263145), Uttarakhand, India

[4]Assistant Professor, Department of Food Science and Technology, G.B. Pant University of Agriculture and Technology, Pantnagar (263145), Uttarakhand, India

[5]Professor and Head, Department of Biochemistry, G.B. Pant University of Agriculture and Technology, Pantnagar (263145), Uttarakhand, India

Valorization of pea pod food processing waste for recovery of protein using alkali- and salt-assisted extraction

The efficient management of waste in food processing is increasingly gaining importance as the food industry looks for eco-friendly and resource-saving technologies. Agro-industrial biomass generated during food processing can be a valuable and cost-effective resource for functional biomolecules, such as food-grade proteins. Pea pod, a large by-product around 60% of pea processing, contains about 16% protein but is largely unexplored and considered food waste. Thus, it has immense potential as a low-cost feedstock material for the extraction of protein biopolymers using eco-friendly extraction methods, thus making it feasible to generate value-added food materials using a circular bioeconomy approach. The current research work was focused on the optimization of alkali-assisted and salt-assisted protein extraction from pea pod biomass using efficient and sustainable extraction methods. For the case of alkali-assisted protein extraction, the process variables optimized were alkali pH (8-12), precipitation pH (3-4), and extraction time (1-3 h). Similarly, for salt-assisted protein extraction, the variables optimized were salt concentration (4-10%) and extraction time (12-48 h). The response variables were extraction efficiency, yield, recovery, and protein content. Maximum extraction efficiency (41.24%), yield (8.87%), recovery (58.75%), and protein content

(42.93%). In salt-assisted extraction, maximum extraction efficiency was achieved at 8% salt concentration and 36 h extraction time, with no significant difference between 36 h and 48 h. These results clearly show the great potential for sustainable conversion of low-value agro-industrial food waste into valuable protein biopolymers. The results of this research support food waste valorisation, sustainable resource utilization, and circular bioeconomy strategies for developing protein-enriched functional food products.

Keywords: Circular Economy, Waste Valorisation, Pea Pod, Protein.

Biography

Seema Singh is a Ph.D. scholar in Food Technology at G.B. Pant University of Agriculture and Technology, Pantnagar. Her research focuses on sustainable protein extraction from pea pod powder. Her work aligns with current research on waste valorisation, plant-based proteins, and sustainable food processing, as reflected in her research abstract. She holds an M.Sc. degree in Food Technology from the University of Allahabad and has international research exposure at INRAE, France. She is a UGC-JRF-NET and GATE qualified researcher and a recipient of national research awards.

Dr. Shuchi Upadhyay

Health Sciences Cluster, School of Health Sciences and Technology (SoHST), UPES, Dehradun, Uttarakhand, India

Repurposing the food residues into value-added bakery products: A sustainable way for development of nutritious products

The formulation of highly nutritious bakery products is always in demand, which can be fulfilled through the innovative design of food waste. Innovative use of food residue is important for achieving the country's SDG (Sustainable Development Goals) and supporting the growth of nation. The present study aims to formulate nutritionally enhanced value-added functional bread using fruit and vegetable pomace. The composite flour was developed in four different ratios by mixing peel and pomace powders with whole wheat flour, created as PPWF1, PPWF2, PPWF3, and PPWF4. These formulations incorporated a mixture of vegetable and fruit pomace powders, including Indian gooseberry pomace, apple pomace, bottle gourd peel, and potato peel powders, in varying proportions with whole wheat flour. Among the four functional flours, PPWF3 highlighted as superior nutritional and functional characteristics, with higher levels of dietary fiber (8.16%), crude protein (3.18%), total phenolic content (14.48mg GAE/g), vitamin C (13.64mg/100g), and acceptable moisture content (9.5%) compared to the other formulations and the control flour. To think about the enhanced nutritional profile, PPWF3 was chosen as a partial replacement for wheat flour in bread formulation. The functional Bread dough prepared using this composite flour yielded two samples, G1 and G2. Among these, G2 exhibited significantly improved nutritional quality, functional properties, and sensory acceptability when compared with refined wheat bread used as the control. The results of composite flour highlighted that the incorporation of fruit and vegetable waste-derived flours in bread production not only enhances nutritional value but also offers a sustainable approach to food waste utilization, thereby promoting value addition, environmental sustainability, and potential health benefits for consumers. Changing fruit and vegetable residues into value-added food

products not only reduces environmental burden but also enhances nutritional quality and resource efficiency. This approach promotes sustainable food production, minimizes post-harvest losses, and encourages innovative strategies for waste valorization, contributing to environmental sustainability, improved food security.

Keywords: Value-Added, Food Waste, Bakery Products, Functional Flour, Sustainable Development Goals, Composite Bread.

Biography

Dr. Shuchi Upadhyay is currently a Senior Associate Professor in the Allied Health Sciences Cluster at the School of Health Sciences and Technology (SoHST), UPES, Dehradun, Uttarakhand, India. She earned her PhD in Clinical Nutrition from Barkatullah University, Bhopal, India, and was felicitated by the Hon'ble Chief Minister for academic excellence. With over 16 years of experience as a clinical dietitian, researcher, and educator, she has worked on UNICEF projects and with organizations such as VLCC Mayo Clinic, and several academic institutes. She has published over 60 research articles in Scopus, WOS, and SCI indexed journals. She is guiding five PhD scholars and supervised 25 MSc dissertations. Her 3 scholars awarded their PhD in Nutrition science. Her research focuses on novel food product development, vaporization of food waste into functional product, probiotic formulation and characterization, and clinical nutrition interventions for improving health outcomes. She is actively involved in funded research SEED and SHODH grant and community-based health initiatives.

Sonoko Kirinoki-Ichikawa*, Rie Sugiyama, Yoshiko Sakai, Yukiko Watanabe, Gen Takagi
Nippon Medical School Hospital Nutrition Support Team, Japan

Impact of nutritional status on limb salvage in critical limb ischemia: A retrospective analysis from a multidisciplinary program

Background: The prevalence of Critical Limb Ischemia (CLI) is rising globally, and elderly patients often progress to major lower-limb amputation, resulting in loss of mobility and long-term disability. Our multidisciplinary limb-salvage program integrates revascularization therapy, bone marrow transplantation to promote angiogenesis, maggot debridement therapy as a minimally invasive wound-bed preparation method, infection management, glycemic optimization, antiplatelet therapy, and structured nutritional intervention. Because wound healing depends heavily on nutritional reserves, we evaluated which indicators best predict limb outcomes.

Methods: We conducted a retrospective cohort analysis of 293 CLI patients presenting with rest pain or ischemic leg ulceration (mean age 67±13 years). Patients were recruited at Nippon Medical School Hospital, Tokyo, Japan, between April 2002 and March 2017, with a mean follow-up duration of 10.6 years. Variables included BMI, Basal Energy Expenditure (BEE), hemoglobin, serum albumin, inflammatory markers, renal function, and the Controlling Nutritional Status (CONUT) score. The CONUT score is a validated nutritional screening tool incorporating serum albumin as an indicator of protein reserve, total lymphocyte count as a marker of immune competence, and total cholesterol as a reflection of caloric and lipid metabolism. Higher scores indicate poorer nutritional status. The primary outcome was major lower-limb amputation.

Results: During follow-up, major amputation was avoided in 80.6% of patients. Independent

predictors of limb loss included hemodialysis dependence ($p<0.001$), ischemic leg ulceration ($p=0.005$), elevated CRP ($p=0.012$), hypoalbuminemia ($p=0.017$), and higher CONUT score ($p<0.001$). A cutoff value of ≥3.5 was strongly associated with increased amputation risk, underscoring the clinical utility of the CONUT score as a practical prognostic marker in CLI.

Conclusion: The CONUT score is a decisive factor in predicting limb salvage among patients with CLI. Early nutritional screening and timely intervention are essential. Strategies that improve albumin levels through adequate protein intake and inflammation control, enhance immune function by treating infection and correcting micronutrient deficiencies, and support caloric and lipid metabolism through appropriate energy provision may help reduce CONUT scores and promote better limb outcomes. Integrating targeted nutritional therapy into multidisciplinary CLI management may substantially reduce the risk of major amputation.

Biography

Dr. Sonoko Kirinoki-Ichikawa is a physician in The Department of Emergency and General Medicine at Nippon Medical School Hospital in Tokyo. Graduating from Dokkyo Medical University and holding both an MPH and PhD, she combines clinical medicine with a background in global health. She previously served as a medical attaché at the Embassies of Japan in Cameroon and Mali, gaining extensive experience in chronic disease management in resource-limited settings. Her clinical and research interests include nutritional intervention, limb salvage in peripheral arterial disease, diabetes care, and multidisciplinary strategies to improve patient outcomes internationally.

Sreelakshmi Sankara Narayanan
School of Biosciences, Taylor's University, Subang Jaya, Malaysia

Sustainable nutrition from agricultural by-products: Nutrient and bioactive profiles of indigenous banana inflorescence cultivars in Malaysia

Banana inflorescences, often discarded as agricultural by-products, represent a sustainable and nutrient-dense food resource with promising applications in community nutrition, functional foods, and health promotion. Despite their potential, the nutritional composition, bioactive properties, and health-promoting activities of Malaysian banana inflorescences remain underexplored. This study evaluated the physical properties, proximate composition, amino acid and fatty acid profiles, dietary fibre, mineral content, antioxidant activity, and biofunctional properties of bracts and flowers of two indigenous cultivars—Berangan (Musa acuminata, AAA) and Nangka (Musa acuminata×Musa balbisiana, AAB).

Moisture, protein, lipid, and ash contents were determined using AOAC methods, carbohydrates calculated by difference, amino acids profiled via Ultra Performance Liquid Chromatography (UPLC), and fatty acids analyzed using Gas Chromatography–Flame Ionization Detection (GC-FID). Dietary fibre was quantified using a K-TDFR-200A Total Dietary Fibre Assay Kit, mineral composition assessed by ICP-OES, and antioxidant activity measured with ABTS and DPPH assays. Antimicrobial activity against selected pathogens and antihyperglycemic potential via α-amylase and α-glucosidase inhibition were also evaluated.

Results showed higher protein, minerals, antioxidant, antimicrobial, and antihyperglycemic activities in flowers, while bracts contained greater moisture, fat, carbohydrates, and insoluble fibre (53.9–63.2%). Soluble fibre was higher in flowers (7.9–14.2%), supporting gastrointestinal health. Sixteen amino acids and 13 fatty acids were identified, with essential amino acids

(isoleucine, lysine, threonine, valine) and major fatty acids (palmitic, oleic, linoleic acids) predominating.

These findings highlight banana inflorescences as nutrient-rich, bioactive, and sustainable plant components suitable for functional foods and nutraceutical development, contributing to improved community nutrition and reduced agricultural waste in Malaysia.

Biography

Dr. Sreelakshmi Sankara Narayanan is a Lecturer at the School of Biosciences, Taylor's University, Malaysia, specializing in sustainable agriculture, functional foods, and nutraceuticals with expertise in metabolomics. Her research focuses on dietary strategies to mitigate diabetes and cardiovascular disease risk, investigating Advanced Glycation End Products (AGEs), antioxidant and antimicrobial properties, and bioactive compounds in foods, including indigenous banana inflorescences and polyphenol-rich grains. She leads and collaborates on projects evaluating sustainable utilization of agricultural by-products, dietary AGEs, and cardiometabolic interventions, with multiple peer-reviewed publications supporting her work.

Sreelakshmi Sankara Narayanan

School of Biosciences, Taylor's University, Subang Jaya, Malaysia

Dietary advanced glycation end products: How common cooking methods impact health outcomes

Advanced Glycation End Products (AGEs) are a heterogeneous group of compounds formed through non-enzymatic reactions between reducing sugars and free amine groups in proteins, lipids, or nucleic acids, primarily via the Maillard reaction. Key AGEs, including Carboxymethyllysine (CML) and Carboxymethyllysine (CEL), are generated endogenously but can also be ingested through food, especially those prepared using high-temperature cooking. Excessive dietary AGEs have been linked to chronic conditions such as diabetes, cardiovascular disease, and neurodegenerative disorders.

Evidence from previous studies indicates that dry-heat cooking methods, such as frying, grilling, and baking, tend to increase AGE formation, whereas moist-heat methods, like boiling and steaming, result in lower AGE levels. Foods high in protein and fat are particularly prone to AGE accumulation during cooking. These findings highlight the critical role of dietary patterns and cooking practices in modulating AGE intake and their potential health impacts.

Overall, this body of research underscores the need for public awareness and dietary strategies aimed at reducing excessive AGE consumption. Promoting cooking methods that minimize AGE formation can provide actionable guidance for healthier diets and contribute to mitigating the risk of chronic disease.

Biography

Dr. Sreelakshmi Sankara Narayanan is a Lecturer at the School of Biosciences, Taylor's University, Malaysia, specializing in sustainable agriculture, functional foods, and nutraceuticals with

expertise in metabolomics. Her research focuses on dietary strategies to mitigate diabetes and cardiovascular disease risk, investigating Advanced Glycation End Products (AGEs), antioxidant and antimicrobial properties, and bioactive compounds in foods, including indigenous banana inflorescences and polyphenol-rich grains. She leads and collaborates on projects evaluating sustainable utilization of agricultural by-products, dietary AGEs, and cardiometabolic interventions, with multiple peer-reviewed publications supporting her work.

Dr. Vandana Dabla

UN Women, New Delhi, India

Women, food security and nutrition: Elevating the generational health

Women are central to food systems and intergenerational health outcomes and yet remain disproportionately affected by food insecurity and malnutrition. Globally, more than 1 billion women experience nutritional inadequacy, particularly in low-resource and climate-vulnerable settings (FAO, 2023). Women and girls face a 2.4 times higher risk of food insecurity compared to men (UN Women, 2022). These disparities have cascading effects for maternal undernutrition increases the risk of low birth weight, stunting and chronic disease across generations (Black et al., 2013; Bhutta et al., 2020).

Despite being primary caregivers and contributors to agriculture and nutrition, structural inequalities continue to limit their access to adequate food, health services and decision-making power. Thus, this session examines the intersection of women's nutrition, food security and generational health through a rights-based and equity-driven lens.

Drawing from global frameworks and practical case studies, this session shall also highlight effective approaches including nutrition-sensitive agriculture, gender-targeted social protection, and community-based health platforms that place women at the center of food and nutrition interventions. The presentation will also emphasize the importance of participatory, culturally relevant and rights-based models that empower women not only as recipients but as agents of systemic nutritional change. Investing in women's health and nutrition is both a moral and developmental imperative: One that can drive long-term improvements in population well-being, resilience and food system sustainability (Global Nutrition Report, 2022).

Biography

Dr. Vandana Dabla is an eminent Public Health Specialist and Researcher with a PhD and over 20 years of experience advancing gender-transformative health systems across South Asia. Currently a Technical Consultant with UN Women India, she integrates gender equity into HIV, reproductive health and climate-resilient health programming. Her past leadership includes directing USAID/US-CDC supported programs and managing large-scale government initiatives focussed on Communicable Diseases, Outbreak Management and Reproductive Health. A widely published researcher with 25+ publications, she has authored academic chapters, serves on national advisory panels and presented at global forums. Dr. Dabla is known for policy influence, capacity building & inclusive, sustainable development.

Kleintjes W G[1*], Kotzee E P[1], Whitelaw A[2], Abrahams A[3], Ebrahim M[1], Prag R[1]

[1]Department of Surgery, Western Cape Provincial Adult Burn Centre Unit, United Arab Emirates

[2]Department of Microbiology, Stellenbosch University, United Arab Emirates

[3]Infection Prevention & Control, UCT (previously Stellenbosch University, Tygerberg Hospital), United Arab Emirates

A study of chrisal probiotics for more efficient cleaning in tygerberg burns unit and as a method of decreasing nosocomial infections

Introduction: Biofilm in hospital environments provides the ideal environment for pathogenic bacteria to thrive. Cleaning and disinfection does not affect bacteria 'hiding' in the biofilm. By using environmentally friendly probiotic bacteria to eliminate biofilm there may be reduced the risk of hospital acquired infection. A prospective controlled study was designed to investigate this.

Aim(s): The primary objective of the study was to determine whether probiotics can reduce Hospital Acquired Infections (HAI's) in the Burns unit. The secondary objective was to establish a reduction and/or elimination of biofilm. The third objective was to determine the cost effectiveness and cost reductions.

Methods: The Burn Unit was divided into different areas and assigned a number to each test and comparative normal cleaning treatment zone in different rooms. We informed the cleaning staff to use only the Probiotic products in each of the designated test areas. A baseline surface swab for culture was done in each area. Swabs were taken again for culture weekly.

Ethical Considerations: Stellenbosch University Health Research Ethics approval N17/04/045.

Results: The results indicate that probiotic cleansing in the hospital environment may be a cost-effective way of decreasing environmental biofilms and HAI's.

Conclusion/Recommendations: Based on the results further recommendations as to the application of probiotics are indicated, and a prospective study looking at the effects on wound cleaning is planned.

Yasin Ozdemir[1*], Salih Akyüz[2]
[1]Department of Food Technologies, Ataturk Horticultural Central Research Institute, Yalova, Türkiye
[2]Akyuz Dairy Products Food Industry and Trade Co. Ltd., City, Kutahya, Türkiye

Internet of Things (IoT) applications in hygiene control in food production

Inspection of personnel and environmental hygiene at every stage of production is of critical importance both in terms of ensuring food safety and preventing waste of resources. Digital technologies that have developed in recent years, especially the Internet of Things (IoT), offer new opportunities in terms of monitoring, measuring, reporting and improving hygiene processes. This study aims to systematically present the areas of use of IoT technologies for ensuring hygiene in food production. Within the scope of the study, it is explained how applications such as monitoring parameters such as ambient temperature, humidity and air quality; verification of equipment cleaning processes via sensors; monitoring of personnel hygiene with cameras, sensors and/or RFID systems; control of production surfaces with different imaging systems or biosensors, time and adequacy control of manual cleaning, monitoring of the cold chain from transportation to storage can be carried out. Published articles and congress proceedings, relevant project studies and commercial activities in this field have been compiled. The data provided regarding hygiene inspection can be combined via cloud-based platforms and used in risk analysis. Data-based decision and precaution processes can be provided in this way. As a result, the use of IoT-based systems can go beyond traditional hygiene inspection methods and provide timely, sustainable and verifiable hygiene management. These technologies are easy to scale up and develop capacity. In this way, it can be used in all food production areas from family businesses to large-scale food businesses. The widespread use of this technology in hygiene inspection will enable early precautions to be taken and inspections to be recorded. As a result, the use of these technologies is valuable in terms of protecting consumer health, increasing the competitiveness of the producer and facilitating hygiene inspections by public institutions.

Biography

Yasin Ozdemir studied Food Engineering at Ege University, Türkiye, and graduated with an MS in 2004. He received her Ph.D. degree in 2011 at Namık Kemal University. During Ph.D. studies he started to work at Ataturk Horticultural Central Research Institute. He has 3 processes patents and 2 national awards in his scientific study area. He has taken part in 22 national research projects, 4 international projects and 5 private sector-supported projects. He published more than 100 articles in international journals and congress proceedings.

Yaying Cao[1,2,3*], Qinhao Guan[1,2], Xuewei Yang[1,2], Hui Chen[4], Tianzhu Li[5], Yuze Li[6], Zhe Huang[7], Alejandro Cifuentes[8,9], Elena Ibañez[8,9], Changzheng Yuan[10], Weihong Lu[1,2,3,9]

[1]School of Medicine and Health, Faculty of Life Sciences and Medicine, Harbin Institute of Technology, Harbin, 150001, China

[2]National and Local Joint Engineering Laboratory for Synthesis, Transformation and Separation of Extreme Environmental Nutrients, Harbin Institute of Technology, Harbin, 150001, China

[3]Key Laboratory of Hemp Industry Technology, Harbin, 150001, China

[4]Department of Neurology, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, 310003, China

[5]Heilongjiang Zhenbaodao Pharmaceutical Co,. Ltd, Harbin, 158400, China

[6]Department of Clinical Nutrition, Heilongjiang Provincial Hospital, Harbin, 150000, China

[7]Nuffield Department of Population Health, University of Oxford, OX3 7LF, UK

[8]Laboratory of Foodomics, Institute of Food Science Research, CIAL, CSIC, Nicol´as Cabrera 9, Madrid, 28049, Spain

[9]Zhengzhou Research Institute, Harbin Institute of Technology, Zhengzhou, 450003, China

[10]School of Public Health, the Second Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, 310009, China

Association of dietary flavonoid intake with incident depression risk and brain structural changes: A prospective study in the UK biobank

Objectives: To prospectively evaluate the association of dietary flavonoid intake with both incident depression risk and brain structural changes.

Design: Prospective cohort study.

Setting: UK Biobank.

Participants: The study included 114 848 non-depressed individuals (with ≥2 eligible 24-h dietary recalls) to analyse incident depression risk; a subgroup of 2120 was analysed for brain structural changes.

Exposures: Flavonoid exposure was assessed via total intake, subclass intake, and the Flavodiet Score derived from the Top 10 flavonoid-rich foods.

Main Outcome Measures: Incident depression, ascertained from inpatient and death register data, and alterations in cortical grey matter volumes and white matter integrity.

Results: During a median follow-up of 10.5 years, 2965 incident depression cases were identified. After adjusting for demographic, major lifestyle, and clinical factors, the Hazard Ratios (HRs) and 95% Confidence Intervals (CIs) for total flavonoid intake, across successive quintiles comparing to the lowest, were 0.89 (0.80, 1.00), 0.93 (0.83, 1.04), 0.94 (0.84, 1.05), and 0.84 (0.75, 0.95), respectively (P trend=0.030). Corresponding HRs (95% CIs) for the Flavodiet Score were 0.88 (0.78, 0.98), 0.94 (0.84, 1.05), 0.90 (0.80, 1.01), and 0.77 (0.68, 0.87), respectively (P trend<0.001). No significant interactions were found between total flavonoid intake and potential effect modifiers. Regarding flavonoid subclasses, intakes of anthocyanins and flavanones were linearly associated with lower depression risk, with HRs per SD (95% CIs) being 0.91 (0.88, 0.94) and 0.94 (0.90, 0.97). Among the biochemical indices, physical measures, and chronic disease histories examined, the Creatinine-to-Cystatin C ratio exhibited the largest mediating effect on the association between total flavonoid intake and depression, accounting for 14.4%. Concerning brain structural changes, higher flavonoid intake was associated with smaller atrophy in left Caudal anterior cingulate, left Supramarginal, right Caudal middle frontal, and right Precentral, and a smaller increase in mean diffusivity in the left Anterior Thalamic Radiation tract (all P<0.05).

Conclusions: Our study supported the beneficial contribution of dietary flavonoid consumption, particularly anthocyanins and flavanones, to depression prevention, alongside evidence for the protection of total flavonoid intake against adverse brain structural changes. Further mechanistic studies and clinical trials are warranted for translating these results into public health policy.

Biography

Yaying Cao is an associate professor at the School of Medicine and Health, Harbin Institute of Technology in China from 2023. She graduated with a Medicine Docter degree from Peking University in 2019. Her work focuses specifically on the risk profile and its management for cognitive decline and mental disorders. Previously, she systematically evaluated the impact of diet quality on subjective cognitive decline using 3 patterns, and the combination effect of lifestyle on management of diabetes. Her primary research interests broadly encompass the interplay between environmental and genetic factors, while specifically focusing on the dietary management of chronic disease risk.

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POSTER PRESENTATIONS

Shoira Abdusalamovna Agzamova, MD, DSc (Med)[1*], Faniya Rashidovna Babadjanova, PhD[2]

[1]Tashkent Medical University, Tashkent, Uzbekistan

[2]Urgench State Medical Institute, Urgench, Uzbekistan

Early-life gut microbiome signatures associated with growth failure in infants with congenital heart defects

Background: Infants with Congenital Heart Defects (CHD) frequently experience growth failure and metabolic disturbances that cannot be fully explained by hemodynamic factors alone. Increasing evidence suggests that early-life gut microbiome dysbiosis may contribute to impaired nutrient utilization, inflammation, and adverse clinical outcomes.

Objective: To investigate gut microbiome signatures and their association with metabolic alterations, inflammation, and growth outcomes in neonates with CHD.

Methods: A cohort of 150 neonates with CHD and 50 healthy controls was studied using deep metagenomic sequencing and metabolomic profiling of paired fecal samples. Microbial composition, functional potential, and genetic variability were analyzed. The intestinal virome was characterized to assess viral–bacterial interactions. Anthropometric indices were evaluated using WHO Z-scores. Statistical analyses included multivariate regression, correlation analysis (Spearman's ρ), and mediation modeling.

Results: Infants with CHD demonstrated significant gut microbiome dysbiosis, with a reduction in *Bifidobacterium* abundance (median relative abundance 12.4% vs. 28.7% in controls, $p<0.001$) and overgrowth of *Enterococcus* (18.9% vs. 6.3%, $p<0.001$). These alterations were associated with lower weight-for-age Z-scores (−1.9±0.6 vs. −0.8±0.4, $p<0.01$). Reduced *Bifidobacterium* levels correlated positively with short-chain fatty acid concentrations ($\rho=0.62$, $p<0.001$), whereas *Enterococcus* abundance showed a strong positive correlation with inflammatory markers ($\rho=0.58$, $p<0.001$). Genetic variability within these taxa was linked to altered metabolic pathways involved in carbohydrate fermentation and energy production. Virome analysis revealed a stable core dominated by Siphoviridae, contributing to microbial

community restructuring through modulation of bacterial adaptation. In subgroup analysis, elevated *Enterococcus* abundance was associated with increased risk of adverse surgical outcomes (OR=2.8; 95% CI: 1.5-5.2; p=0.002). Mediation analysis indicated that *Enterococcus* overgrowth accounted for approximately 34% of the effect on intestinal barrier dysfunction and systemic inflammation.

Conclusion: Gut microbiome dysbiosis in early life, characterized by depletion of beneficial bacteria and expansion of opportunistic taxa, is strongly associated with metabolic impairment, inflammation, and growth failure in infants with CHD. These findings highlight the microbiome as a potential therapeutic target for improving clinical outcomes and supporting growth and immune homeostasis.

Biography

Shoira Abdusalamovna Agzamova (born October 7, 1962, Tashkent region, Uzbekistan) is an MD, DSc (Med), Professor specializing in pediatrics at Tashkent Medical University. Since 2015, she has been a member of the Centralized Methodological Council, and since 2017, she has served as Chair of the Centralized Interdisciplinary Commission in Pediatrics. Since 2013, she has been the Scientific Secretary of the Scientific Seminar under the DSc Academic Council. Professor Agzamova's work focuses on advancing pediatric education and clinical research, and she is actively involved in training young researchers and improving methodological standards in medical science.

Andrija Karacic, Karlo Zeman*
The Gut Microbiome Center, Croatia

Vitamin D and the gut microbiota in young women: A cross-sectional metagenomics study

Background: Vitamin D deficiency is prevalent among young women and has been linked to immune dysregulation, metabolic disorders, and gut microbiota alterations. However, large-scale metagenomic studies examining the relationship between serum vitamin D and gut microbial composition, diversity, and function in healthy young women remain scarce.

Methods: Shotgun metagenomic sequencing was performed on stool samples from 283 young women (age 29-36; mean BMI 23.2±4.2kg/m^2) in Croatia. Serum 25(OH)D was measured in 187 participants, stratified by supplementation status (124 supplementers vs. 159 non-supplementers). Alpha diversity, the Firmicutes-to-Bacteroidetes ratio, genus-level taxonomy, and functional pathways were assessed. Associations were tested using Spearman correlations and Mann–Whitney U tests with Benjamini–Hochberg correction. A composite low-diversity phenotype was defined to evaluate vitamin D as a potential dysbiosis biomarker.

Results: Vitamin D deficiency was highly prevalent (37% deficient, 29% insufficient, 34% sufficient). Higher serum 25(OH)D correlated with Chao1 richness (ρ=0.147; p=0.045) and Faith's PD (ρ=0.164; p=0.025). This association was driven by serum concentrations rather than supplementation behavior: Supplementation alone did not improve alpha diversity (all p>0.05), while the correlation remained significant among non-supplementers (ρ=0.256; p=0.010). No association was found with the F/B ratio. Genus-level correlations did not survive FDR correction. Vitamin D deficiency more than doubled the odds of a low-diversity phenotype (OR=2.21; 95% CI: 1.09-4.49), with a dose–response across tertiles (p=0.018) and a negative predictive value of 83.8%. Among 12 routine blood parameters, only iron and CRP were also linked to diversity, making vitamin D the only universally measured, easily modifiable biomarker.

Conclusions: Low serum vitamin D was consistently associated with reduced gut microbial phylogenetic richness, independent of supplementation status, BMI, and age. Achieving adequate circulating concentrations—rather than supplementation per se—appears to be the relevant factor. With its high negative predictive value and easy modifiability, serum 25(OH)D shows promise as a screening biomarker for gut microbial health. Longitudinal studies are needed to clarify causality.

Keywords: Vitamin D, Gut Microbiota, Metagenomics, Alpha Diversity, Dysbiosis, Biomarker, Young Women, Firmicutes-to-Bacteroidetes Ratio, Supplementation.

Bushra Alharbi*, Hadeil Alsufiani, Abeer Banjabi
Department of Biochemistry, Faculty of Science, King Abdulaziz University, Jeddah 21589, Saudi Arabia

Macrominerals and microminerals content of some selected green leafy vegetables grown in Saudi Arabia

Objectives: To determine the macromineral and micromineral content of selected Green Leafy Vegetables (GLVs) commonly consumed in Saudi Arabia, and to contribute in developing the Saudi Food Composition Table (SFCT).

Methods: In the present study, six GLVs (parsley, coriander, arugula, lettuce, molokhia, and dill) were collected from a wholesale vegetable market in Jeddah, and underwent ICP-MS at the National Nutrition Institute in Egypt to detect their macromineral and micromineral content.

Results: The six studied GLVs samples show significant differences in the macromineral and micromineral profiles. Among macrominerals, Potassium (K) content showed the widest variation, ranging from 138.1 to 534.87mg/100g, and Magnesium (Mg) ranged from 9.44 to 48.59mg/100g. Parsley exhibited the highest level of both K and Mg. Calcium (Ca) content ranged from 21.96 to 226.415mg/100 g, with molokhia showing the highest Ca content. The Sodium (Na) content of the samples ranged from 9.75 to 62.93mg/100g. Zinc (Zn) ranged from 0.2 to 3.525mg/100g. Dill was found to be the richest source of both Na and Zn. Iron (Fe) concentrations ranged from 0.97 to 7.1mg/100g, and arugula exhibited the highest Fe content. Finally, Selenium (Se) ranged from 0.16 to 0.75µg/100g, and lettuce showed the highest Se concentration.

Conclusion: Variation in mineral composition among Saudi GLVs highlights the need for an accurate SFCT to support to Saudi Vision 2030's objectives of achieving self-sufficiency in national nutritional data.

Biography

Bushra Salem Alharbi is a postgraduate researcher at King Abdulaziz University, Saudi Arabia. Her research interests focus on food chemistry, nutritional analysis, and the determination of macro-and micronutrient content in plant-based foods. Her current work investigates the mineral composition of selected green leafy vegetables grown in Saudi Arabia, with emphasis on their nutritional value and relevance to public health and dietary assessment. She has experience in laboratory-based food analysis and data interpretation related to nutrition and food quality.

Fadime Kiran*, Buket Celik
Pharmabiotic Technologies Research Laboratory, Department of Biology, Faculty of Science, Ankara University, 06100, Ankara, Türkiye

From microbiota to medicine: Therapeutic promise of *Lactiplantibacillus plantarum*-derived postbiotics for cardiovascular health

Postbiotics, defined as bioactive metabolites produced by probiotics that confer health benefits, have increasingly attracted attention owing to their antioxidant, antimicrobial, and immunomodulatory properties. These attributes render them promising candidates for the prevention and management of Cardiovascular Diseases (CVDs), which are frequently associated with chronic inflammation and oxidative stress. Therefore, this study aimed to evaluate the efficacy of postbiotics derived from *Lactiplantibacillus plantarum* EIR/IF-1 (NCBI GenBank Accession Number: OP810909.1), previously isolated from the fecal microbiota of a breastfed infant, as bioactive agents for targeting CVDs. Postbiotics were obtained through centrifugation, sterile filtration, freezing, and lyophilization from the bacterial culture supernatant. The antibacterial efficacy of postbiotics against Methicillin-Resistant *Staphylococcus Aureus* (MRSA) ATCC 43300 was demonstrated using agar well diffusion and microtiter plate assays. Moreover, the impact of postbiotics on MRSA cell viability was evaluated via live/dead bacterial staining observed under fluorescence microscopy. The total phenolic and flavonoid content of the postbiotics was quantified spectrophotometrically, while their overall antioxidant activity was assessed using the 2,2-Diphenyl-1-Picrylhydrazyl (DPPH) radical scavenging assay. To evaluate immunomodulatory effects, the H9c2 rat cardiomyoblast cell line (ATCC CRL-1446), widely used in cardiovascular research due to its skeletal muscle-like properties, was employed. Non-cytotoxic postbiotic concentrations were determined by MTT assay. Subsequently, Lipopolysaccharide (LPS) derived from *Escherichia coli* O111:B4 was used as a positive control to stimulate immune-related pathways, and the immunomodulatory effects of postbiotics on LPS-stimulated H9c2 cells were assessed by quantitative Real-Time PCR

(qRT-PCR). Additionally, the expression of the collagen type I gene (COL1A1) was also analyzed via qRT-PCR and confirmed by immunofluorescence microscopy. The results revealed strong antimicrobial activity against MRSA, with an inhibition zone of 19±1.4mm and a Minimum Inhibitory Concentration (MIC) of 20mg/mL. Fluorescence microscopy further confirmed the postbiotics' effects on MRSA cell viability. At the MIC-10 dose, postbiotics scavenged 88.65% of DPPH radicals, improved H9c2 cell viability, and significantly upregulated gene expression levels—1.67-fold for *IL-6,* 1.85-fold for *IL-1β*, 1.25-fold for *TNF-α*, and 2.13-fold for NF-κB. Furthermore, a 2.11-fold increase in *COL1A1* gene expression was observed following postbiotic treatment. Collectively, these findings indicate that postbiotics may support cardiovascular health by modulating inflammatory responses and promoting extracellular matrix synthesis. Nevertheless, further *in vivo* studies are necessary to validate these effects and to explore their broader therapeutic applications in cardiovascular medicine.

Biography

Dr. Fadime Kiran graduated from Ankara University in 2003 and completed her Ph.D. in microbiology at the Norwegian University of Life Sciences. Since 2018, she has been a faculty member in the Department of Molecular Biology at Ankara University. Her research focuses on probiotics, microbiota, and host–microbiota interactions. She has conducted international collaborations with institutions in University of Turku (Finland), the French National Center for Scientific Research (France), and the Berlin Institute of Health at Charité Hospital (Germany). She has authored numerous peer-reviewed articles and book chapters and contributes to scientific journals as an editorial board member and reviewer.

Fadime Kiran*, Hazal Kibar Demirhan
Pharmabiotic Technologies Research Laboratory, Department of Biology, Faculty of Science, Ankara University, 06100, Ankara, Türkiye

Vaccine adjuvant potential of exopolysaccharides from *Pediococcus pentosaceus* EIR/HM-1 as a novel immunostimulatory agent

Recent studies have increasingly emphasized the immunomodulatory potential of Exopolysaccharides (EPS) derived from probiotic bacteria, identifying them as promising natural, biocompatible, and effective candidates for immune modulation. In the present study, we investigated the *in vitro* immunostimulatory effects of EPS isolated from *Pediococcus pentosaceus* EIR/HM-1, a commensal bacterium derived from the human milk microbiota, on RAW 264.7 murine macrophage cells. EPS was extracted from the culture supernatant of *P. pentosaceus* EIR/HM-1 through ethanol precipitation, followed by dialysis and lyophilization. The total carbohydrate content of the EPS was quantified using the phenol-sulfuric acid method. To assess biocompatibility, cytotoxicity of EPS was evaluated via the MTT assay in RAW 264.7 cells. Following a 24-hour stimulation with EPS, gene expression levels were measured using quantitative real-time PCR, and cytokine production was quantified through enzyme-linked immunosorbent assay. Additionally, Nitric Oxide (NO) levels were determined using a colorimetric assay, while the expression of surface markers CD80, CD86, and MHC-II was analyzed by flow cytometry. Our results revealed that the total carbohydrate content of the EPS was 12,034.04±1.9 mg/L. EPS concentrations ranging from 1 to 100µg/mL showed no cytotoxic effects on macrophage cells. Transcriptomic analysis demonstrated that EPS significantly upregulated the expression of several immune-related genes, including *TNF-α, IL-1β, IL-10, IL-6, iNOS, NOD1, NOD2, ARG1, CD206, COX-2, CCL2, CCL3, CCL5,* and *CXCL10,* when compared to untreated controls. Similarly, ELISA results indicated that EPS treatment (10–100µg/mL) significantly enhanced the secretion of pro-inflammatory cytokines IL-6 and *TNF-α,* eliciting an immune response comparable to that triggered by Lipopolysaccharide

(LPS). Furthermore, NO production was markedly elevated at 100µg/mL of EPS. Flow cytometric analysis showed that MHC-II expression in EPS-treated cells was comparable to that in the LPS group, while CD80 and CD86 levels were significantly upregulated relative to untreated controls. Collectively, these findings suggest that EPS derived from P. pentosaceus EIR/HM-1 exhibits potent immunostimulatory properties and holds significant promise as a novel vaccine adjuvant capable of enhancing immunogenicity. Nevertheless, further *in vivo* studies are required to elucidate the underlying mechanisms and to assess its broader potential in immunotherapy and vaccine development.

Biography

Dr. Fadime Kiran graduated from Ankara University in 2003 and completed her Ph.D. in microbiology at the Norwegian University of Life Sciences. Since 2018, she has been a faculty member in the Department of Molecular Biology at Ankara University. Her research focuses on probiotics, microbiota, and host–microbiota interactions. She has conducted international collaborations with institutions in University of Turku (Finland), the French National Center for Scientific Research (France), and the Berlin Institute of Health at Charité Hospital (Germany). She has authored numerous peer-reviewed articles and book chapters and contributes to scientific journals as an editorial board member and reviewer.

Agzamova Shoira Abdusalamovna[1], Babadjanova Faniya Rashidovna[2*]

[1]Doctor of Medical Sciences, Professor, Department of Family Medicine No. 1, Physical Education, and Civil Defense, Tashkent State Medical University, Uzbekistan

[2]PhD, Senior Teacher Department of Pediatrics and Neonatology, Urgench State Medical Institute, Uzbekistan

Gut microbiome and SCFA disturbances in young children from the aral sea region following cardiopulmonary bypass: Clinical and nutritional relevance

Congenital Heart Defects (CHD) remain a leading cause of morbidity and mortality in early childhood and often require surgical correction within the first months of life. Despite advances in pediatric cardiac surgery and intensive care, the early postoperative period continues to be associated with high rates of metabolic, nutritional, and functional complications. Cardiopulmonary Bypass (CPB), while essential for surgical correction, induces systemic inflammatory responses and disrupts microcirculation, making the gastrointestinal tract particularly vulnerable. Alterations in the gut microbiome and its metabolic activity, including Short-Chain Fatty Acid (SCFA) production, may critically influence postoperative nutritional and functional outcomes in young children.

Objective: To evaluate intestinal microbiome composition, SCFA levels, and nutritional status in children aged 0–3 years during the early postoperative period after cardiac surgery with CPB, and to investigate associations between intestinal dysbiosis and impaired physical growth and nutrition.

Methods: A prospective observational study was conducted from August to October 2025 at the Pediatric Intensive Care Unit of the Specialized Scientific and Practical Medical Center of Cardiology and Cardiac Surgery in the Aral Sea region. Twenty children with CHD were included: 12 underwent cardiac surgery with CPB (main group), and 8 were assessed preoperatively (control group). Stool samples were collected before surgery and during the early postoperative period. Microbiome composition was analyzed using quantitative

microbiological techniques, and fecal SCFA concentrations (acetate, propionate, butyrate) were measured by gas chromatography. Clinical and nutritional assessments included anthropometry, BMI-for-age z-scores, laboratory markers of protein and micronutrient status, and evaluation of feeding tolerance and functional activity.

Results: Postoperative dysbiosis was observed in children exposed to CPB, characterized by reduced abundance of commensal taxa (*Bifidobacterium, Lactobacillus, Bacteroides*) and SCFA-producing genera (*Rothia, Intestinimonas, Clostridium Innocuum*), alongside expansion of opportunistic taxa (*Enterobacteriaceae, Clostridium spp.*). SCFA analysis revealed decreased butyrate and propionate levels with relative acetate predominance. Dysbiosis severity correlated with CPB duration ($r=0.42$, $p<0.05$). Reduced SCFA levels were associated with impaired intestinal barrier function (elevated claudin-2, claudin-3, intestinal fatty acid–binding protein, fecal calprotectin) and with postoperative feeding intolerance, insufficient weight gain, and biochemical evidence of protein and micronutrient deficiencies.

Conclusion: Cardiac surgery with CPB in young children from the Aral Sea region induces significant alterations in the gut microbiome and SCFA production, which are closely linked to impaired intestinal barrier integrity, feeding intolerance, and compromised nutritional status. These findings highlight the need for systematic monitoring and targeted modulation of the gut microbiome and nutritional support to improve early postoperative recovery in this vulnerable population.

Biography

Faniya Babadjanova is a young clinician–researcher from the Khorezm region of Uzbekistan, representing the Aral Sea area. Her scientific work focuses on gut microbiome alterations, short-chain fatty acid metabolism, and nutritional disturbances in young children with congenital heart defects during the postoperative period. Her research integrates clinical pediatrics, pediatric cardiac surgery, and microbiome analysis, with particular interest in probiotics, prebiotics, and microbial metabolic function. She is actively involved in prospective clinical studies and aims to contribute to evidence-based microbiome-focused strategies to improve nutritional recovery and clinical outcomes in vulnerable pediatric populations.

Kneia DaCosta PhD,
Hailie Davis[1*], Manasvini Sai[2]
[1]Ursinus College, Collegeville, PA, USA
[2]Spring-Ford High School, Royersford, PA, USA

Food stigma and eating behaviors in white, black, and Latinx American women

This co-presented poster will showcase the findings from the study of a multi-method investigation of food preferences, eating behavior, and stigma in White, Black and Latinx Women in the United States. Recent public policies have made no secret about the disproportionate rate of obesity among Black American women, followed by Latinx American women. Certainly in the case of African-American women, traditional diets that have existed since they're importation into the country have been largely blamed. To look further into this, the current paper uses survey data from a national United States sample of 300 women (evenly divided by race) to examine both internalized and externalized food stigmas and eating behaviors associated with women's racial/ethnic identification and their BMI. Areas addressed include foods stereotyped by race/ethnicity, foods judged negatively, quantities of food judged negatively, secretive eating, foods of highest preference, and foods of most frequent consumption. Using an online food nutritional rating guide, foods have received nutritional value scores. Variables including generational status (age as proxy) and socioeconomic status (household income and occupational prestige combined variable) will illuminate relationships between these demographic factors (in addition to race/ethnicity) and the food-related indicators. These findings might lend insight into the nuances involved in the relationships between food, race/ethnicity and obesity, perhaps allowing for more creative thinking about the maintenance of traditional foods in women of color (particularly if future, qualitative steps find these foods to be meaningful) and improvement of their health.

Biography

Hailie Davis is a rising senior at Ursinus College, majoring in psychology. Her aim is to attain her MD and PhD. She has worked in the lab of Prof. Susan Lawrence studying grief and trauma and honing interview skills. In fall 2024, she joined Dr. Kneia DaCosta's Human Development lab.

Hazal Kibar Demirhan*, Fadime Kiran

Pharmabiotic Technologies Research Laboratory, Department of Biology, Faculty of Science, Ankara University, 06100, Ankara, Türkiye

Functional and probiotic characterization of *Lactiplantibacillus curvatus* isolated from the dolphin gut microbiota

Conventional probiotics are typically derived from a narrow spectrum of microbial species, which may inherently limit the diversity of their functional attributes and mechanisms of action. Conversely, microorganisms isolated from hosts adapted to extreme environments often exhibit superior resilience and possess unique biological properties that could be harnessed for therapeutic use. Within this framework, the present study aimed to comprehensively characterize the probiotic potential of a *Lactiplantibacillus curvatus* strain previously isolated from the intestinal microbiota of a dolphin, under controlled *in vitro* conditions. To establish its safety profile, the strain was first subjected to a series of evaluations, including hemolytic activity, antibiotic susceptibility—via both disc diffusion and broth microdilution methods—and PCR-based screening for virulence genes. Notably, the strain exhibited γ-hemolytic activity and was susceptible to nine antibiotics based on EFSA-established cutoff values, while PCR analyses confirmed the absence of virulence-associated gene sequences. Furthermore, simulated gastrointestinal assays demonstrated that the strain maintained a viability of 7.235 $\log_{10}$ CFU/mL, thereby indicating strong survival potential within the gastrointestinal environment. For functional characterization, Caco-2 intestinal epithelial cells were exposed to bacterial concentrations ranging from 10^6 to 10^8 CFU/mL, and MTT assay results showed no significant cytotoxic effects, thus validating the use of the highest concentration for subsequent analyses. The immunomodulatory properties of the strain were then investigated using RAW 264.7 murine macrophages, wherein ELISA findings revealed a marked downregulation of pro-inflammatory cytokines (TNF-α, IL-1β, and IL-6), coupled with an upregulation of the anti-

inflammatory cytokine IL-10. Taken together, these findings strongly support the notion that *L. curvatus* represents a promising and functionally robust next-generation probiotic candidate with potential applications in gastrointestinal health and immunological homeostasis.

Biography

Dr. Hazal Kibar Demirhan has a Ph.D. in Biology from Ankara University Graduate School of Natural and Applied Sciences. She is currently working as an R&D Specialist at Akerbio Biotechnology. Her research focuses on probiotics, microbiota, and the immunomodulatory effects of microbiota-derived postbiotics. She has been an active researcher in numerous national and international projects, has presented at scientific conferences worldwide, and has published several articles in peer-reviewed journals.

Ingrida Mažeikienė*, Lina Trakšelė, Lina Vaičiulytė, Antanas Šarkinas

Food Institute, Kaunas University of Technology, Radvilėnų Avenue 19, LT-50254 Kaunas, Lithuania

Sip smart: What shotgun metagenomics tells us about fermented oat concentrates

Understanding the microbial dynamics and functional potential of fermentation microbiota is crucial for optimizing product quality, ensuring food safety, and advancing the development of health-promoting functional beverages. Traditional microbiological methods and 16S rRNA sequencing have been widely used to describe microbial communities in fermented foods; however, these approaches are limited in taxonomic resolution and often fail to capture the functional complexity of microbial ecosystems. Shotgun metagenomic sequencing has emerged as a powerful method that provides direct access to the total DNA of microbial consortia, enabling high-resolution taxonomic identification as well as metabolic and functional pathway prediction. This approach is particularly valuable for studying non-dairy fermented products, such as oat-based beverages, which are characterized by diverse and substrate-specific microbiota.

In this study, shotgun metagenomic sequencing was applied to characterize the microbial structure and functional gene profiles of Fermented Oat-Based Products (FPs). Quality control and host DNA filtering resulted in over 97% high-quality effective reads, exceeding the commonly reported range (70–90%) in similar studies. The number of assembled scaffolds varied from 78,746 to 867,039 per sample, with maximum contig lengths up to 933,637bp, indicating robust data suitable for detailed analysis. Taxonomic annotation was performed using the MicroNR database, alpha diversity was assessed by Shannon and Simpson indices, and functional profiling included analyses based on the CAZy (Carbohydrate-Active Enzymes) and PHI (Pathogen–Host Interaction) databases.

Metagenomic analysis revealed that bacterial taxa dominated all oat-based products, primarily

Lactobacillus, Limosilactobacillus, Clostridium, and *Klebsiella* species. The blackcurrant-based sample (FP6) displayed the highest abundance of *Limosilactobacillus fermentum* (65.7%) and the yeast *Pichia californica*, alongside notable quantities of bacteriophages (*Caudoviricetes sp.*). Alpha diversity indices indicated a rich and balanced microbiota in the oat–blackcurrant fermented probiotic drink concentrate (FP2) (Shannon index 3.99) and lower diversity in FP6 (1.62). CAZy functional analysis identified six major enzyme classes, with Glycoside Hydrolases (GH) and Glycosyltransferases (GT) being predominant. These enzymes play vital roles in carbohydrate degradation, nutrient bioavailability, and texture development during fermentation. PHI gene analysis indicated that FP6 and the oat-flavored bacterial concentrate (FP7) samples harbored the highest abundance of genes involved in pathogen–host interactions, suggesting potential antimicrobial and probiotic properties.

Conclusions: This study provides new insights into the microbiome structure and functional potential of fermented oat-based beverages using shotgun metagenomics. The results demonstrate that microbial composition and enzyme activity profiles vary significantly among products, reflecting the influence of fermentation substrates. The dominance of Lactobacillus spp. and the diversity of carbohydrate-active enzymes highlight the key role of microbial metabolism in determining product functionality. These findings contribute to a deeper scientific understanding of plant-based fermentations and establish a foundation for developing next-generation functional and probiotic beverages.

Keywords: Shotgun Metagenomics, Fermented Oat Beverage, Microbiota, Probiotic Potential, CAZy Enzymes, PHI genes, Functional Food.

Biography

Dr. Ingrida Mažeikienė is a senior researcher at Kaunas University of Technology (KTU) and the Lithuanian Research Centre for Agriculture and Forestry (LAMMC). Her research focuses on plant and microbiota genetics, functional gene discovery, and gene expression analysis. Her scientific interests include the plant biotechnology, biotechnological processing of plant-based materials and their functional application in food systems.

Joanna Suliburska*, Rafsan Cholik
Department of Human Nutrition and Dietetics, Poznan University of Life Sciences, Poznan, Poland

Impact of dietary salicylates on maternal-fetal outcomes in pregnant rats with L-Name-induced preeclampsia

Low-dose aspirin prophylaxis is recommended for women at high risk of preeclampsia. It has been suggested that dietary salicylates may have a similar effect. This study evaluated the effect of dietary salicylates on the maternal-fetal parameters in rats treated with L-NAME (NG-Nitro-L-Arginine-Methyl Ester).

The study involved pregnant Sprague Dawley rats divided into two groups (n=8): Preeclamptic rats (CP group) and preeclamptic rats with a high dose of dietary salicylate (10 mg/kg diet) (HSP group). Preeclampsia was induced by administering L-NAME in drinking water from gestational days 6 to 19. Dietary salicylates were incorporated into the feed. A mixture of products with a relatively high salicylate content was added to the AIN-93G diet to create high-salicylate diets. The mixture consisted of 50% buckwheat groats, 10% oregano, 10% basil, 10% cumin, 10% tarragon, and 10% mint leaves. Blood pressure (Systolic (Sys) and Diastolic (Dia)) was measured at 18 Gestational Days (GD) using a non-invasive blood pressure system CODA (Kent Scientific). At 19 GD final body mass was measured, then rats were euthanised by decapitation, and tissues and blood samples were collected. Body mass, relative tissue mass, fetus, and placenta mass were measured. The number of fetuses and resorptions was counted. Morphological and biochemical parameters were assayed in blood in the certified diagnostic laboratory. Iron, zinc, and copper content in tissues were determined using flame atomic spectrometry (ZA 3000 Hitachi) after mineralization in a Microwave Digestion system (Mars 2TM System). Salicylate concentrations in diets and serum were analyzed using HPLC and UHPLC-MS/MS systems. Statistical analysis was performed using Statistica 13.

Dietary salicylate administration significantly increased total salicylates in serum, relative

mass of liver, and cholesterol concentration in serum. The markedly higher contents of iron in the liver, zinc in the placenta, and copper in the kidney were observed in the HSP group. Intake of a high salicylate diet resulted in an increase of Aspartate Transaminase (AST) in serum and a lower mean number of fetuses and a higher mean number of resorptions in HSP rats compared to the CP group; however, these changes were not statistically significant. Furthermore, inflammatory parameters (TNF and hsCRP), blood pressure, and ferritin, ceruloplasmin, and SOD concentrations in serum and placenta were comparable in both groups.

In conclusion, dietary salicylates do not have the beneficial effects on maternal parameters in preeclampsia. Side effect of salicylates is observed in the liver, manifested by an increase in cholesterol concentration and elevated AST levels.

Biography

Professor Joanna Suliburska is an employee of Poznan University of Life Sciences in Poland. Her scientific interests focus mainly on the influence of pharmacological and nutritional factors on the body's mineral balance. The research work of Prof. Suliburska mainly concerns the interaction of drugs and dietary supplements with minerals and the assessment of mineral balance in women depending on their physiological state and age. Recently, the important part of her scientific activity has been the relationship between the concentration of essential and toxic elements in the amniotic fluid and blood serum and the development of the fetus as well as the study of nutritional and health factors influencing the mineral balance of pregnant women.

Kneia DaCosta PhD[1], Hailie Davis[1], Manasvini Sai[2]*

[1]Ursinus College, Collegeville, PA, USA

[2]Spring-Ford High School, Royersford, PA, USA

Food stigma and eating behaviors in white, black, and Latinx American women

This co-presented poster will showcase the findings from the study of a multi-method investigation of food preferences, eating behavior, and stigma in White, Black and Latinx Women in the United States. Recent public policies have made no secret about the disproportionate rate of obesity among Black American women, followed by Latinx American women. Certainly in the case of African-American women, traditional diets that have existed since they're importation into the country have been largely blamed. To look further into this, the current paper uses survey data from a national United States sample of 300 women (evenly divided by race) to examine both internalized and externalized food stigmas and eating behaviors associated with women's racial/ethnic identification and their BMI. Areas addressed include foods stereotyped by race/ethnicity, foods judged negatively, quantities of food judged negatively, secretive eating, foods of highest preference, and foods of most frequent consumption. Using an online food nutritional rating guide, foods have received nutritional value scores. Variables including generational status (age as proxy) and socioeconomic status (household income and occupational prestige combined variable) will illuminate relationships between these demographic factors (in addition to race/ethnicity) and the food-related indicators. These findings might lend insight into the nuances involved in the relationships between food, race/ethnicity and obesity, perhaps allowing for more creative thinking about the maintenance of traditional foods in women of color (particularly if future, qualitative steps find these foods to be meaningful) and improvement of their health.

Biography

Manasvini Sai will be a rising senior at Spring-Ford High School. With a strong interest in psychology, she intends to pursue her PhD. She is president of the Psychology Club through which she met Dr. DaCosta. Manu expressed interest in shadowing in Dr. DaCosta's lab and joined in fall 2024. She has been an active team member since that time.

Maria Carolina Santos de Oliveira Moritz[1*], Érika Ramos de Alvarenga[1], Vinícius Monteiro Bezerra[2], Edgar de Alencar Teixeira[1], Carlos Augusto Rosa[1], Eduardo Maldonado Turra[1], Flaviano dos Santos Martins[1]

[1]Federal University of Minas Gerais, Brazil

[2]Salgado de Oliveira University, Brazil

Spray coating: Small scale method to incorporate potential probiotics in feed

Probiotics are increasingly studied in fish nutrition for their role in enhancing health and reducing antibiotic use. Nonetheless, the efficacy of probiotics in aquaculture diets is influenced not only by the selection of the microorganism species but also by the feed processing methods, which directly impact microbial viability. Conventional extrusion, widely used in commercial fish feed production, can compromise probiotic survival due to elevated temperature and pressure conditions, and standardized methods for experimental feed incorporation remain scarce. Therefore, incorporating live microorganisms directly (*in natura*) into the feed, without requiring additional processing steps such as drying or microencapsulation, can simplify feed preparation while maintaining microbial viability and ensuring effective functionality in the fish gastrointestinal tract. Hence, the spray coating method was tested as a strategy to directly incorporate potential probiotics in aquaculture feed, using the yeast *Phaffia brasiliana* UFMG-CM-6497, and the supplemented feed was administered to Nile tilapia (*Oreochromis niloticus*) for 9 weeks in both Clear Water (CW) and Biofloc (BFT) systems. During a seven-day storage trial, the concentration of 10^6 CFU/g remained remarkably stable ($p>0.05$), indicating minimal microbial loss when using this method. Additionally, feed moisture remained below the 15% threshold recommended by the FAO, measuring 13.8% immediately after spray coating and 12.2% after 24 hours, which allowed effective dilution of the microbial solution for homogeneous distribution while preserving the feed's physical integrity. When 300 pellets were administered in water to test microbial concentration maintenance – simulating practical feeding conditions–10^6 CFU/g was maintained at 0, 1, 3, 5, and 10 minutes. Additionally, the feed pellets exhibited buoyancy of 90% (within the established standard of 80-85% floating) and good hydrostability, preserving their structural integrity throughout the test. The yeast was

recovered from the intestinal content of fish in all treatment groups that received it, in both CW and BFT systems, and its survival was confirmed through the observation of characteristic *Phaffia* colonies, demonstrating that spray-coated feed effectively maintained microbial availability until consumption. Overall, these results indicate that spray coating is a viable, efficient, and scalable method for incorporating probiotics into fish feed, maintaining microbial viability and concentration, ensuring feed quality, and providing a practical solution for routine use in research laboratories, particularly due to the absence of prior processing and the direct in natura application.

Biography

Holds a Bachelor's degree in Biomedical Sciences and a Master's degree in Microbiology from the Federal University of Minas Gerais, Brazil. Has participated in microbiological research, primarily focusing on nanotechnology, antimicrobial resistance, and probiotics. Currently engaged in studies on the intestinal microbiota, with an emphasis on probiotic applications and their impact on health promotion and the development of pathological conditions, particularly in aquatic organisms. Specifically, works on evaluating the administration of probiotics in fish.

Reem Alazwari*, Hadeil Alsufiani, Hanna Alhoraibi, Nouf Alshareef, Taraji Bahdailah
Biochemistry Department, Faculty of Sciences, King Abdulaziz University, Jeddah, Saudi Arabia

Nutritional composition of black mulberry (*Morus nigra L.*) grown in Taif City, Saudi Arabia

Introduction: *Morus nigra L.* is a deciduous tree of the Moraceae family that grows widely in temperate and subtropical countries. The nutritional composition of black mulberry fruit comprises both nutrients (carbohydrates, fats, proteins, vitamins, minerals, and water) and non-nutrient components (fibers). Several factors influenced these, including cultivar, postharvest handling, storage, fertilizer applications, cultural practices, and soil parameters.

Therefore, the current study was conducted to investigate the nutritional composition of black mulberry fruit (*Morus nigra L.*) grown in Taif City, Saudi Arabia.

Method: Standard AOAC techniques were used to identify the macronutrients and fibers, while ICP-AES and ICP-MS were used to determine the minerals (K, Ca, Mg, Fe, N, Zn, and Cu). Additionally, the contents of vitamins C, A, B1, B2, and B3 were examined using HPLC.

Result: The concentrations of fibers and macronutrients (carbohydrates, fats, proteins, and moisture) were 2.84±1.29, 10.03±1.65, 0.35±0.25, 1.65±0.07, and 80.7±0.99g/100g fresh weight, respectively. Additionally, glucose was found to be the predominant sugar in our fruit, with a concentration of 6.09±0.69g/100g. K has the highest macromineral level (366±8.49mg/100g), while Fe has the highest micromineral level (0.88±0.15mg/100g). In contrast, the vitamin contents were found to be in trace amounts.

Conclusion: The moisture, protein, fat, ash, and glucose contents in our black mulberry fruits were comparable to those reported for mulberries grown in other regions worldwide. In contrast, fiber, total sugar, fructose, and minerals varied, reflecting the influence of environmental and cultural factors.

Biography

Reem Abdulaziz Alazwari is a candidate for a master's degree in biochemistry at King Abdulaziz University. This is my first study, and my academic interest is in nutrition, particularly nutritional composition.

Tshifhiwa Paris Mamphogoro[1*], Goitsemang Makete[1], Kazeem Adekunle Alayande[2]

[1]Gastro-Intestinal Microbiology and Biotechnology Unit, Agricultural Research Council-Animal Production, South Africa

[2]Unit of Environmental Sciences and Management, North-West University, South Africa

Genomic structure and probiotic potential of *Megasphaera elsdenii* CH_4: A promising candidate for cattle supplementation

Probiotics are widely used in the prevention and treatment of infectious diseases, primarily through the modulation of immune and physiological systems. This study analysed the genomic structure of *Megasphaera elsdenii* CH_4, a probiotic strain isolated from the rumen of a Holstein dairy cow, with the aim of identifying putative probiotic genes. Genomic DNA was extracted and sequenced using the Illumina Next Seq 550 platform, generating 5,589,766 paired-end reads (2×150bp). The reads were assembled using SPA des v3.15.3, and genome completeness was assessed with Check M v1.0.18. Taxonomic classification was performed based on both whole-genome and 16S rRNA sequences. Genome annotation was conducted using PGAP v6.7 and RAST with SEED viewer v2.0. Genome alignment and SNP confirmation were carried out using progressive Mauve and BWA-MEM, respectively. Comparative analysis revealed multiple genomic inversions in *M. elsdenii* CH_4 relative to a reference strain. The genome harbours several loci containing gene clusters associated with different CRISPR array types and subtypes, along with Cas proteins such as Cas1, Cas2, Cas3, Cas7, Cas8, Cse1, and components of the Csm complex. The SNP analysis identified synonymous and missense variants, though none appeared to impact on any protein function. Six putative genes were linked to host adhesion and immunomodulation. Additional genes, including *Per*R, *OhrR*, *dna*K, and *gro*ES, likely contribute to the strain's adaptation and resilience in the gut environment. Overall, *Megasphaera elsdenii* CH_4 demonstrates strong potential as a probiotic candidate, possessing genomic features that support functional stability and effective host interaction.

Biography

Tshifhiwa Paris Mamphogoro is a distinguished researcher in the field of microbiology, with a particular focus on the genomic analysis of probiotic and plant growth-promoting bacteria. His academic journey includes affiliations with notable institutions such as the ARC and NWU, south Africa where he contributed significantly. His recent publications reflect his expertise in microbial genomics and have been published in reputable journals such as Scientific Reports, Microbiology Resource Announcements and Microorganisms, highlights the potential of these bacteria in promoting plant growth and serving as probiotics serving as promising candidates for enhancing agricultural productivity and food safety.

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