THE NUTRITION SOCIETY OF SRI LANKA

Annual Scientific Sessions 2026

Proceedings

One Health, One Nutrition: Ensuring Optimal Nutrition for People and the Planet

Proceedings of the Annual Scientific Sessions of
The Nutrition Society of Sri Lanka

"One Health, One Nutrition: Ensuring Optimal Nutrition for People and the Planet"

24th and 25th January 2026

at the Cinnamon Lakeside,

Colombo

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Annual Scientific Sessions 2026 of the Nutrition Society of Sri Lanka
Cinnamon Lakeside Colombo - 24th & 25th January 2026
Theme: One Health, One Nutrition: Ensuring Optimal Nutrition
for People and the Planet
PROGRAMME

Day 1: 24th January 2026	
TIME	**ITEM**
7.30 am	**Registration**
8.00 am	**Arrival of the Guests**
8.10 am	**Formalities of the Opening Ceremony** **National Anthem** **Lighting of the Oil Lamp**
8.15 am	**Welcome Address – President, NSSL**
8.20 am	**Address by the Chief Guest: Prof. E.M.P. Ekanayake – Vice-Chancellor, Wayamba University of Sri Lanka**
8.30 am	**Keynote Address: Targeting the Renin–Angiotensin System to Develop Novel Organ-specific Therapies in Nutrition-Linked Liver Diseases: New Horizons for Type 2 Diabetes, MASLD, Cirrhosis and Hepatocellular Carcinoma** **Prof. Chandana Herath** – Head, Hepatology Research and Liver Cancer Laboratory, Faculty of Medicine, Nursing & Health Sciences, Monash University, Australia
9.15 am	**Presidential Address – President, NSSL**
9.25 am	**Special Appreciation Award to Professor Nihal Wijesinghe by the NSSL President**
9.45 am	**Vote of Thanks – Secretary, NSSL**
10.00 am	**TEA BREAK**
10.30 am – 11.35 am	**Symposium 1: Reversing the NCD Tide: Synergizing Nutrition and Physical Activity for a Healthier Nation** **Symposium Chair: Prof. K.K.D.S. Ranaweera** – Emeritus Professor/Food Science and Technology, University of Sri Jayewardenepura
10.30 am	**Plenary Lecture: From Risk to Resilience: Addressing the Growing Cardiometabolic Disease Burden in a Changing Nation** **Prof. Mahinda Abeywardena** – CSIRO Health and Biosecurity, Adelaide, Australia
10.55 am	**Symposium Lecture I: Nutrient Intake Goals and Enabling Food Environments for NCD Prevention: The Evidence** **Prof. Pulani Lanerolle** – Department of Biochemistry and Molecular Biology, Faculty of Medicine, University of Colombo
11.15 am	**Symposium Lecture II: Reverse the NCD Tide: Optimize Diet and Physical Activity in Children** **Prof. Pujitha Wickramasinghe** – Department of Pediatrics, Faculty of Medicine, University of Colombo

Day 1: 24th January 2026	
TIME	**ITEM**
11.35 am – 12.40 am	**Symposium 2: Holistic Perspective in Dietary and Food Behaviour for Enhancing Health Outcomes** **Symposium Chair: Prof. Eresha Mendis** – Department of Food Science & Technology, Faculty of Agriculture, University of Peradeniya
11.35 am	**Plenary Lecture: Nutritional Challenges in Contemporary Sri Lanka: Insights from the BRIGHT National Survey 2024-25** **Dr. Derek Headey** – Senior Research Fellow in the Poverty, Health and Nutrition Division at the International Food Policy Research Institute (IFPRI)
12.00 noon	**Symposium Lecture I: The Power of Movement: Physical Activity as Medicine for Disease Prevention and Control** **Prof. Ananda Chandrasekara** – Department of Nutrition and Dietetics, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka
12.20 pm	**Symposium Lecture II: Chrononutrition, Meal Timing and Time-Restricted Eating (TRE): Impacts on Cardiometabolic Health** **Prof. Kumari M. Rathnayake** – Department of Nutrition and Dietetics, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka
12.40 pm	**Panel Discussion – Symposium 1 & 2**
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1.30 pm – 2.30 pm	**Symposium 3: Beyond Macronutrients: Nutraceuticals, Microbiome Modulation and Micronutrients in Precision Nutrition** **Symposium Chair: Dr. Dhammika Senanayake** – Institute of Sports Medicine, Colombo 07
1.30 pm	**Plenary Lecture: Phytochemicals and Metabolic Health: Mechanistic Pathways and Emerging Therapeutic Potential** **Prof. K.K.D.S. Ranaweera** – Emeritus Professor/Food Science and Technology, University of Sri Jayewardenepura
1.50 pm	**Symposium Lecture I: Beyond Calories: Unmasking the Silent Crisis of Micronutrient Deficiencies** **Dr. Manoji Gamage** – Consultant Nutrition Physician, Nutrition Division, Ministry of Health and Mass Media
2.10 pm	**Symposium Lecture II: The Low-FODMAP Diet: Evidence-Based Dietary Strategy for Managing Functional Gastrointestinal Disorders** **Dr. Geeshani Somaratne** – Senior Lecturer, Department of Food Science and Technology, Faculty of Agriculture, University of Peradeniya
2.30 pm	**Panel Discussion – Symposium 3**
2.45 pm	**Expert Group Discussion – Rethinking Ultra-Processed Foods: From Dietary Patterns to Metabolic and Microbiome Health** **Chair: Prof. Renuka Silva** – Department of Nutrition and Dietetics, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka **Panel: Prof. Prasanna Gunathilake, Prof. K.K.D.S. Ranaweera, Prof. Ananda Chandrasekara**
3.15 pm	**Prof. T. W. Wickramanayake Oration: One Health, One Nutrition: Ensuring Optimal Nutrition for Individuals** **Prof. Sunil J. Wimalawansa** – Professor of Medicine, Endocrinology and Human Nutrition
4.15 pm	**Oration Tea**
4.30 pm	**NSSL Annual General Meeting**
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Day 2: 25th January 2026		
TIME	**ITEM**	
8.00 am	**Oral Presentation Session 1: Mechanistic, Clinical, and Intervention-Focused Research on Cardiometabolic Health and Precision Nutrition (12 Presentations)** **Session Judges:** **Chair: Prof. Usha Hettiarachchi** – Department of Biochemistry, Faculty of Medical Sciences, University of Sri Jayewardenepura 1. **Dr. Geeshani Somaratne** – Senior Lecturer, Department of Food Science and Technology, Faculty of Agriculture, University of Peradeniya 2. **Dr. Shanthi Gunawardana** – Consultant Community Physician; Past President, NSSL	**Poster Presentation Session 1: Community and Clinical Nutrition: Determinants, Risks and Health Outcomes (18 Posters)** **Session Judges:** **Chair: Dr. Darshika Pathiraja** – Senior Lecturer, Department of Food Science and Technology, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka 1. **Mr. Wilfred Narammala** – Former Deputy Director, SLPS 2. **Mrs. Mala Abeygunawardena** – Senior Dietitian, Sri Jayewardenepura General Hospital
10.00 am – 10.55 am	**Symposium 4: AI-driven Diagnostics and Behaviour Change to Improve Diets and Nutrition in Sri Lanka** **Symposium Chair: Prof. Renuka Silva** – Chair Professor, Department of Nutrition and Dietetics, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka		
10.00 am	**Plenary Lecture: AI-assisted Diet Monitoring for Adolescent Girls in Sri Lanka: Evidence from Validation Against Conventional Methods** **Dr. Thushanthi Perera** – Senior Lecturer, Department of Nutrition and Dietetics, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka		
10.20 am	**Symposium Lecture I: Feasibility and Effectiveness of Using Mobile Phone AI-Assisted Dietary Assessment and Nudging to Improve Diets of Female Adolescents in Sri Lanka** **Ms. Nilmini Karunaratna** – Department of Nutrition and Dietetics, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka		
10.35 am	**Symposium Lecture II: From Validation to Impact: Leveraging FRANI for Real-World Dietary Assessment and Promoting Food-based Dietary Guidelines Adherence** **Prof. Renuka Silva** – Chair Professor, Department of Nutrition and Dietetics, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka		
10.45 am	**Symposium Lecture III: Highlights from Other Countries: FRANI App for Accurate, Real-Time Nutrient Insights in LMICs and Beyond** **Dr. Aulo Gelli** – Senior Research Fellow, International Food Policy Research Institute, Washington DC **Dr. Phuong Nguyen** – Senior Research Fellow, International Food Policy Research Institute		
10.55 am	**Panel Discussion – Symposium 4**		
11.10 am	**TEA BREAK**		

Day 2: 25th January 2026		
TIME	**ITEM**	
11.30 am	**Oral Presentation Session 2: Population-Level, Life-Course, Behavioural and Policy-Oriented Nutrition Research (13 Presentations)** **Session Judges:** **Chair: Prof. Indu Waidyatilaka –** Department of Biochemistry and Molecular Biology, Faculty of Medicine, University of Colombo 1. **Prof. Kanchana Abeysekera –** Department of Agricultural Technology, Faculty of Technology, University of Colombo 2. **Dr. Dhammika Gunaratne –** Consultant Community Physician, Department of Public Health, CMC	**Poster Presentation Session 2: Functional Foods, Bioactive Compounds, Food Innovation and Safety (18 Posters)** **Session Judges:** **Chair: Prof. Swarna Wimalasiri –** Department of Food Science and Technology, Faculty of Agriculture, University of Peradeniya 1. **Dr. Haily Seneviratne –** Senior Lecturer, Department of Food Science and Technology, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka 2. **Dr. Isuri Jayawardena –** Postdoctoral Scientist (FMR), National Research Institute for Agriculture, Food and Environment (INRAE), France
1.40 pm	**LUNCH BREAK**	
2.30 pm	**Nutri-Quiz Competition** **Coordinator/Chair: Dr. Thilanka Ranathunga –** Head, Department of Nutrition and Dietetics, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka **Contestants:** 1. P. Mathusha – Department of Food Science and Technology, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka 2. W.G.H.I. Adikari – Department of Food Science and Technology, Faculty of Applied Science, Sabaragamuwa University of Sri Lanka 3. T.A.S.D. Devindi – Department of Nutrition and Dietetics, Faculty of Livestock Fisheries and Nutrition, Wayamba University of Sri Lanka 4. J. Yanooja – Department of Nutrition and Dietetics, Faculty of Livestock Fisheries and Nutrition, Wayamba University of Sri Lanka 5. S.S. Nasrin – Faculty of Science, University of Peradeniya **Quiz Conductor/Compere: Ms. Shehari Wijesinghe** **Judges:** 1. **Dr. Disna Kumari –** Senior Dietitian, Hemas Hospitals and Health Care, Wattala 2. **Dr. Nipuni Nayanathara Waidyarathna –** Senior Lecturer, Department of Pre-Clinical Sciences, Faculty of Medicine, General Sir John Kotelawala Defense University 3. **Ms. Manjula Sandamali –** Technical Specialist - Nutrition, Scaling Up Nutrition People's Forum	
Closing Ceremony		
4.30 pm	**Awards and Appreciations**	
5.15 pm	**Closing Remarks – Conference Chair**	
5.30 pm	**Vote of Thanks – Conference Coordinator**	
5.40 pm	**Close of the Ceremony**	

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Message from the President - Nutrition Society of Sri Lanka

Prof. Ananda Chandrasekara, Department of Nutrition and Dietetics, Wayamba University of Sri Lanka, Makandura, Gonawila 60170

It is with great pleasure and a profound sense of responsibility that I welcome you to the **Annual Scientific Sessions 2026 of the Nutrition Society of Sri Lanka (NSSL)**. Convened under the timely and unifying theme, **"One Health, One Nutrition: Ensuring Optimal Nutrition for People and the Planet,"** these sessions reaffirm our collective commitment to advancing nutrition science through integrated, evidence-based, and sustainable approaches that respond to both national and global health challenges.

Nutrition occupies a pivotal position at the interface of human health, food systems, environmental sustainability, and socio-economic development. The "**One Health, One Nutrition**" framework recognises that optimal health outcomes cannot be achieved through isolated interventions but require coordinated action across sectors. The scientific programme of the 2026 Annual Scientific Sessions has therefore been thoughtfully curated to reflect this interconnectedness, bringing together insights from clinical nutrition, public health, food science, behavioural sciences, physical activity, nutraceutical research, and digital health innovations.

In the context of Sri Lanka, where **non-communicable diseases account for the majority of morbidity and mortality**, the importance of a **holistic approach to NCD prevention and management** cannot be overstated. Effective NCD control requires moving beyond disease-specific treatment models towards integrated strategies that address **dietary quality, physical activity, metabolic health, psychosocial factors, and environmental determinants of health**. Within the Sri Lankan healthcare system, such a holistic, nutrition-centred approach is essential to reduce long-term healthcare costs, optimise patient outcomes, and strengthen primary and preventive care services, while aligning with national health priorities and resource realities.

Over the two days of the conference, participants are engaged in rigorous academic exchange through keynote addresses, symposia, orations, free communications, and poster presentations delivered by eminent local and international experts. The programme highlights priority themes including reversing the rising tide of non-communicable diseases, the role of physical activity as medicine, nutraceuticals and phytochemicals, micronutrient deficiencies, dietary behaviour, ultra-processed foods, and the expanding application of artificial intelligence in nutrition assessment and behaviour change interventions. Together, these contributions underscore the evolving scope of nutrition science and its critical role in shaping Sri Lanka's health future.

The proceedings of the Annual Scientific Sessions 2026 serve as a permanent scholarly record of these deliberations and scientific contributions. They are intended to inform researchers, clinicians, policymakers, and students, and to support evidence-based decision-making and practice. I am particularly encouraged by the strong engagement of early-career researchers and postgraduate students, whose work featured in these proceedings represents a vital investment in the future capacity of nutrition research and practice in Sri Lanka.

On behalf of the Nutrition Society of Sri Lanka, I extend my sincere appreciation to our distinguished speakers, session chairs, reviewers, and contributors for their invaluable scholarly input. I also acknowledge with gratitude the dedication of the Organising Committee, Scientific Committee, and Secretariat, whose collective efforts ensured the success of this event. Our thanks are further extended to our institutional partners and sponsors for their continued support of the Society's mission.

As we move forward, may these proceedings not merely document scientific knowledge, but catalyse action—towards integrated policy development, innovative nutrition practice, interdisciplinary collaboration, and sustained advocacy for nutrition as a cornerstone of holistic health care. I trust that the outcomes of the Annual Scientific Sessions 2026 will meaningfully contribute to strengthening Sri Lanka's healthcare system and advancing the vision of **One Health, One Nutrition** for the benefit of present and future generations.

Message from the Conference Chair

Dr. Sashie Weerasinghe, Senior Lecturer, Department of Sports Science, Faculty of Applied Sciences, University of Sri Jayewardenepura, Gangodawila, Nugegoda 10250

It is with great pleasure and pride that I welcome you to the Annual Scientific Sessions 2026 of the Nutrition Society of Sri Lanka (NSSL). This year's gathering is particularly meaningful as we come together under the timely and compelling theme, *"One Health, One Nutrition: Ensuring Optimal Nutrition for People and the Planet."* The theme reflects our shared responsibility to address nutrition not only as a determinant of human health, but also as an integral component of environmental sustainability, food systems, and planetary well-being.

As the national professional body dedicated to advancing nutrition science and practice, the NSSL continues to champion interdisciplinary collaboration, evidence-based policy, and capacity building. In an era marked by climate change, food insecurity, and the double burden of malnutrition, the One Health approach reminds us that human, animal, and environmental health are deeply interconnected. Nutrition professionals therefore play a pivotal role in shaping resilient, sustainable, and equitable solutions for present and future generations.

Over the course of these two days, the scientific programme offers a rich platform for knowledge exchange, critical reflection, and innovation. We are delighted to host an outstanding line-up of plenary lectures, symposia, oral and poster presentations that showcase the breadth and depth of contemporary nutrition research and practice in Sri Lanka. These sessions reflect the collective efforts of academics, clinicians, researchers, students, and practitioners who are committed to advancing the field.

I am deeply honoured by the presence of our distinguished Chief Guest, Prof. E.M.P. Ekanayake, Vice-Chancellor of Wayamba University of Sri Lanka, and our keynote speaker, Prof. Chandana Herath of Monash University, Australia. Their leadership and scholarly contributions greatly enrich the intellectual spirit of this event.

I extend my sincere appreciation to our plenary and symposium speakers, as well as to the abstract reviewers and judges, whose expertise, diligence, and commitment have greatly enhanced the scientific quality and integrity of this year's programme I would like to thank the Conference Coordinator, the Organising Committee, and the volunteers whose dedication has ensured the success of these sessions. I also gratefully acknowledge our sponsors and partners for their generous support. Above all, I thank our delegates and NSSL members—your engagement, curiosity, and commitment give life to this scientific forum.

As we commence the New Year, may these sessions inspire renewed purpose, collaboration, and action. Let us move forward together, united in our vision to promote optimal nutrition for people and the planet alike.

Message from the Conference Coordinator

Dr. S.K.N. De S. Jeewakarathne, Primary Medical Care Unit, Ratmalana

It is with great pleasure that I welcome you to the Annual Scientific Sessions of the Nutrition Society of Sri Lanka -2026, conducted under the theme *"One Health, One Nutrition: Ensuring Optimal Nutrition for People and the Planet."* This theme highlights the vital interconnection between human health, environmental sustainability, and nutrition and emphasizes the need for integrated, evidence-based approaches to address contemporary nutrition and health challenges.

The Annual Scientific Sessions provide an important platform for academics, researchers, scientists, and professionals to share research findings, engage in scholarly discussion, and promote interdisciplinary collaboration. The diverse range of research papers presented this year reflects both the breadth and depth of the field of nutrition and health, as well as the commitment of contributors to advancing knowledge and practice.

I sincerely appreciate the presence of the Chief Guest and the valuable insights shared by the Keynote Speaker. I also extend my gratitude to our sponsors for their generous support, which has been essential to the successful organization of this conference.

My heartfelt thanks are extended to the President, Vice President, Conference Chair, Joint Secretaries, Editor of the Proceedings, and all other Council Members of the Nutrition Society of Sri Lanka for their leadership and dedication. I also acknowledge with sincere appreciation to the reviewers for their critical role in ensuring the academic quality of the conference proceedings.

Finally, I wish all presenters and participants a productive and rewarding conference. May these Scientific Sessions inspire meaningful dialogue, foster collaboration, and contribute significantly to advancing research and innovation in nutrition and health for the benefit of people and the planet.

Message from the Joint Secretaries - Nutrition Society of Sri Lanka

Dr. Thushanthi Perera, Senior Lecturer, Department of Nutrition and Dietetics,
Faculty of Livestock, Fisheries & Nutrition, Wayamba University of Sri Lanka,
Makandura, Gonawila (60170)
And
Dr. Sashie Weerasinghe, Senior Lecturer, Dept. of Sports Science, Faculty of
Applied Sciences, University of Sri Jayewardenepura, Gangodawila, Nugegoda 10250

It is our immense pleasure to extend a heartfelt welcome to all of you at the 2026 Annual Session of the Nutrition Society of Sri Lanka (NSSL). This vibrant gathering stands as a premier forum where researchers, healthcare professionals, and emerging scientists converge to exchange groundbreaking insights, foster dialogue, and advance evidence-based discoveries in nutrition and public health. As Sri Lanka's foremost professional body in this vital domain, the NSSL remains steadfast in its mission to elevate national health and nutrition standards. Through targeted educational initiatives, we strive to boost nutritional literacy, disseminate rigorous, science-driven knowledge, and empower communities toward sustainable well-being. Our society exemplifies collaborative excellence, uniting a broad spectrum of experts in a holistic embrace of nutrition's role in holistic health.

Over the coming two days, we are thrilled to unveil an inspiring array of presentations, symposia, and discussions led by eminent scientists and thought leaders from institutions across the nation. We are profoundly honoured by the presence of our esteemed Chief Guest, Prof. E.M.P. Ekanayake, Vice-Chancellor of Wayamba University of Sri Lanka, whose visionary leadership graces this occasion. Equally, we express our deepest appreciation to our keynote speaker, Prof. Chandana Herath, Head of the Hepatology Research and Liver Cancer Laboratory at Monash University's Faculty of Medicine, Nursing and Health Sciences in Australia, for sharing his pioneering perspectives.

Our sincere gratitude extends to the symposium speakers, judges, abstract reviewers, evaluators, award recipients, and presenters whose expertise and dedication form the heartbeat of this event. We are equally indebted to our valued sponsors, whose unwavering support has brought this vision to life. A special nod of thanks goes to our exemplary hosting, visual production, and compering teams for their seamless orchestration. To our delegates, distinguished guests, and fellow NSSL

members: your enthusiasm and engagement are the true catalysts for our collective success. We invite you to immerse yourselves fully. We also salute the enduring guidance of our NSSL Council for its pivotal role in steering this journey.

Should any inadvertent omissions occur, we humbly seek your understanding. As we usher in the New Year, may it bring you joy, vitality, and boundless prosperity. Together, let us renew our commitment to transforming lives through nutrition, here's to a remarkable two days ahead!

Message from the Chief Guest

Prof. E.M.P. Ekanayake, Vice Chancellor of the Wayamba University of Sri Lanka

I'm very much honored and privileged to address you all at the 2026 Annual Scientific Sessions of the Nutrition Society of Sri Lanka. '*One Health, One Nutrition: Ensuring Optimal Nutrition for People and the Planet*' - The theme of this session speaks directly of the fundamental and the pivotal role that sustainable nutrition plays in the well-being of not only the individuals and societies of the present times, but also of the generations to come. Hence, I'm confident that the discussions and the outcomes of this session will definitely be vital in shaping the integrated, unifying approaches that aim to *sustainably balance and optimize the health and nutrition of people, animals and ecosystems* both in Sri Lanka and globally.

Undoubtedly, this event serves as both a platform for knowledge sharing and a call for collective action - Which requires the cooperation of many sectors, including healthcare professionals, academia, researchers, government, as well as the support of international partners, to contribute to meaningful discussions, form new partnerships, and collaborate on innovative and sustainable solutions.

I commend the Nutrition Society of Sri Lanka for championing this cause and creating a platform for scientific exchange, advocacy, and public engagement. Initiatives like this drive awareness and inspire meaningful action. Let us commit ourselves to empowering Sri Lankans with the knowledge and tools they need to make sustainable, healthier choices.

Together, we can build a nation where health and wellbeing are paramount, and where our healthcare system focuses on sustainability and resilience.

Thank you and looking forward for fruitful two days ahead full of insightful deliberations. Wishing the 2026 Annual Scientific Sessions of the Nutrition Society of Sri Lanka every success …

Keynote Address

Targeting the Renin Angiotensin System to Develop Novel Organ-specific Therapies in Nutrition-Linked Liver Diseases: New Horizons for Type 2 Diabetes, MASLD, Cirrhosis and Hepatocellular Carcinoma

Prof. Chandana B. Herath, Department of Pharmacology, Biomedicine Discovery Institute, Faculty of Medicine, Nursing and Health Sciences, Monash University, Clayton, Victoria 3800, Australia; Department of Surgery, Melbourne Medical School, Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne, Austin Health, Heidelberg, Victoria 3084, Australia

Over-nutrition, physical inactivity and changing lifestyles are very common in society and are driven by a variety of factors, leading to significant impacts on public health. Metabolic-dysfunction-associated steatotic liver disease (MASLD) is one such entity and the primary liver manifestation of metabolic syndrome often associated with risk factors such as obesity, type 2 diabetes (T2D) and insulin resistance, hypertension and dyslipidemia. Disorders of lipid metabolism trigger triglyceride accumulation in hepatocytes in subjects with MASLD, the prevalence of which has been reported to be around 75% in the obese population. Oxidative stress is a common event in MASLD where reactive oxygen species (ROS) drive pathological changes, thereby promoting the progression of MASLD to its severe inflammatory form, metabolic dysfunction-associated steatohepatitis (MASH). Persistent inflammation in MASH drives it to either liver fibrosis, cirrhosis and hepatocellular carcinoma (HCC) or MASH progresses to HCC in the absence of liver cirrhosis. MASLD driven liver fibrosis and cirrhosis and/or HCC is now one of the world's leading causes of chronic illness and death. However, at present, there are no specific medical treatments for MASLD or its end-stage liver diseases. Thus, there is a major unmet need for the development of effective and better tolerated treatments.

Pioneering work from our laboratory has demonstrated for the first time that the renin angiotensin system (RAS) plays a central role in the pathogenesis of MASLD and its sequelae of liver fibrosis, cirrhosis and HCC. Whilst the classical RAS, comprising angiotensin converting enzyme (ACE), angiotensin II (Ang II) peptide and its putative receptor Ang II type 1 receptor (AT1R) is profibrogenic and procarcinogenic, the alternate RAS which is also known as the protective RAS, comprising angiotensin converting enzyme 2 (ACE2), angiotensin-(1-7) (Ang-(1-7)) peptide and its putative receptor Mas (MasR) opposes many of the deleterious effects of the classical RAS. Thus, the balance between the two axes of the RAS dictates the overall effect of the RAS on organ scarring as ACE2 degrades profibrotic and procarcinogenic Ang II peptide to anti-fibrotic and anti-carcinogenic Ang-(1-7) peptide. Therefore, the protective RAS is a potential therapeutic target in MASLD driven liver fibrosis and HCC. This has led us to develop therapeutic strategies targeting ACE2 and Ang-(1-7) peptide of the protective RAS in MASLD, liver fibrosis and HCC. Additionally, we are also developing a similar strategy targeting pancreatic beta-cells in T2D since T2D is associated with a worse MASLD phenotype and rapidly promoting the progression of MASLD to liver fibrosis and increases the risk of developing HCC and risk of death from HCC.

In a series of studies using mouse and rat models of MASLD, T2D, liver fibrosis and HCC, ACE2 gene was delivered using a safe and liver-specific adeno-associated viral vector (ACE2-AAV) via intraperitoneal (i.p.) route to over-express ACE2 in the diseased liver. Additionally, the therapeutic potential of Ang-(1-7) peptide infusion is being investigated, either alone or in the form of conjugated peptide to Carbon Dots (CDs), in animal models with MASLD, liver fibrosis and HCC. In these studies, we have demonstrated ACE2 gene therapy increased liver ACE2 gene expression by many folds compared to the control human serum albumin (HSA-AAV) vector injected animals and lasted for at least 6 months after a single i.p. injection. ACE2 therapy and Ang-(1-7) peptide improved hepatocellular damage as reflected by significantly reduced liver enzyme profiles, the expression of proinflammatory and profibrotic cytokines, NADPH oxidase (NOX) enzyme and generation of ROS compared to the controls. These changes are associated with a significant reduction in the activation of hepatic stellate cells, a major cell type that secretes extracellular matrix proteins in response to tissue injury, leading to a significant reduction in matrix component collagen secretion. Thus, profound reduction in proinflammatory and profibrotic cytokines in ACE2 or Ang-(1-7) treated animals has led to a marked reduction in MASLD progression, liver fibrosis and HCC. Mechanistically, ACE2 therapy increases liver Ang-(1-7) peptide levels by degrading liver Ang II levels. In conclusion, these findings suggest that liver-specific ACE2 gene therapy via increased Ang-(1-7) peptide has a potential as a therapy for patients with MASLD, T2D, liver fibrosis and HCC.

Prof. T.W. Wickramanayake Oration
One Health, One Nutrition: Ensuring Optimal Nutrition for Individuals

Dr. Sunil J. Wimalawansa, Distinguished Professor of Medicine, Endocrinology and Human Nutrition, Cardio-Metabolic and Endocrine Institute, New Jersey, USA

The concept of "One Health, One Nutrition" embodies a transformative framework that unites human health, nutrition, and planetary sustainability within a single, integrated vision. This paper addresses the urgent need for such a unified approach to combat the growing global challenges of chronic diseases, micronutrient deficiencies, and environmental degradation. It underscores the critical role of optimal nutrition—particularly ensuring micronutrient sufficiency, eliminating ultra-processed foods, and adopting personalized dietary strategies—in extending health span and reducing disease burden. The manuscript further exposes systemic shortcomings in contemporary healthcare systems that emphasize treatment rather than prevention, calling for legislative reforms and the formal integration of nutrition into medical and nursing curricula, and clinical and public health practice. In parallel, it examines the ecological consequences of current food production and consumption patterns, proposing sustainable dietary transitions to mitigate environmental and climate impacts. Drawing upon clinical insights, global datasets, and emerging innovations such as Artificial Intelligence-driven nutrition platforms, the paper delineates actionable pathways for individuals, healthcare institutions, and policymakers alike. Its overarching vision is to restore and sustain health through evidence-based nutrition while preserving planetary ecosystems for generations to come.

Three Cheers to a True Hero of All Times - Prof. D.G.N.G. Wijesinghe

Prof. D.G.N.G. Wijesinghe - An excellent scholar, compassionate mentor and a visionary leader whose wealth of expertise and experience as an academic, researcher and administrator profoundly transformed the landscape of nutrition education and nutrition field in Sri Lanka, across generations.

The profound influence that Prof. Wijesinghe had on generations of nutrition professionals via his initiatives that strengthened the nutrition education and capacity building is commendable. He pioneered developing the curriculum of many Undergraduate and Postgraduate Nutrition Degree programmes in the national Universities in the island, including the first-ever of its kind in Sri Lanka, implemented in year 1996 titled 'Nutrition and Community Resource Management' - A three year Bachelor's Degree programme offered by the Wayamba University, which was later upgraded in year 2002 into a four year Special Degree programme and renamed as 'B.Sc. Food and Nutrition' and the M. Sc, M. Phil and Ph.D. Food and Nutrition Postgraduate Degree programmes offered by the Postgraduate Institute of Agriculture, University of Peradeniya are to list a few of his commendable contributions to the landscape of nutrition education in the country. Nevertheless, he had been an absolutely essential consultant to date, in all the Nutrition related Degree programme curriculum development and revision agendas in the country.

His legacy in this sphere extends beyond Sri Lanka. For example, Prof. Wijesinghe was the coordinator and the key resource person in the 'Review of Nutrition Curricular Offerings in Asia' among the Universities offering Food and Nutrition Degrees (B.Sc, M.Sc. and Ph.D. levels) in the six Regional Network member countries (Viz China, Indonesia, Philippines, Vietnam, Bangladesh and Sri Lanka), done in collaboration with the Regional Network on Food and Nutrition Planning (RN-FNP), based in the Philippines in year 2002.

The scholarly contributions of Prof. Wijesinghe were instrumental. With a wealth of experience of over 45 years since year 1980, as an academic at the capacity of both a lecturer and an examiner of the University of Peradeniya, Ruhuna University, Eastern University, Wayamba University, Sabaragamuwa University and Rajarata University plus the diverse positions that he held within the Board of Study of Food Science and Technology of the Postgraduate Institute of Agriculture (PGIA), including being a member of Board of Management, the Chaiman of the Board of Study and being

the Head of the Department of Food Science and Technology of the Faculty of Agriculture of the University of Peradeniya for more than seven years had further paved the way to strengthen his seminal work. He is also an external examiner to the Postgraduate Degree programme of the Ballarat University and Deakin University of Australia.

Prof. Wijesinghe's legacy is multifaceted - His contribution to the fraternity both as a researcher and a research supervisor can never be forgotten. In addition to supervision of several on-going research studies to date, he has supervised more than 100 Postgraduate students of M.Sc, M.Phil. and PhD programmes plus over 80 final year Undergraduate research students. He is also an award-winning researcher - *Inter alia*, he had authored several books/chapters in books and monographs plus altogether at least seventy-five articles in refereed journals, proceedings of international scientific sessions, non-refereed journals and proceedings of local scientific sessions. Prof. Wijesinghe is a paper reviewer to the Journal of Agricultural and Food Chemistry - Adelaide, Australia too.

Prof. Wijesinghe's mentorship extends beyond intellectual guidance to practical support - As a Master Trainer, his expertise and experience in the coordination and conduct of Nutrition training programmes both at national and international level, being a Nutritionist of the Sri Lankan Technical Committee on Food Insecurity and Vulnerability Information and Mapping Systems (FIVIMS) formed under the FAO Initiative, being a member of the Sectoral Committee for Dairy Products and the Sectoral Committee for Cereals and Pulses of the Sri Lanka Standards Institute (SLSI) are only a handful of examples from the plethora of his contributions.

Not a surprise that he was the Nutrition Consultant and/or the National Nutrition Expert for numerous projects - World Vision projects, the 'Mainstreaming Biodiversity for Nutrition Improvement' project of the Ministry of Environment and 'Udakumbura Village Baseline Nutrition Survey' of the Biodiversity for Food and Nutrition (BFN) project, coordinated by the Ministry of Agriculture are only a few examples.

Several active roles and positions that he held within the Regional Network on Food and Nutrition Planning (RN-FNP) over the years (1998 - 2005) and the Nutrition Society of Sri Lanka (NSSL) from time to time, catalyzed his contributions towards encompassing the formulation and implementation of national nutritional policies and the advancement of scientific research.
Prof. Wijesinghe is a life member of the Nutrition Society of Sri Lanka (NSSL), the Sri Lanka Association for the Advancement of Science (SLAAS) and the National Agricultural Society of Sri Lanka. His major research areas of interest include community nutrition, food and nutrition, nutrition assessment and nutrition education.

Today, proudly we see the fruitful results of his foresight, visionary leadership and unwavering commitment towards enriching the nutrition landscape in the country - Though Prof. Wijesinghe is officially retired from the University service since year 2021, his groundbreaking endeavours and commendable contributions to the arena plus his legacy will forever be cherished.

Hence, this tribute is a humble effort of the NSSL to celebrate the enduring legacy and guiding spirit of Prof. D.G.N.G. Wijesinghe in cadence - Three cheers to a true Hero of all times !!!

Symposium 1

Reversing the NCD Tide: Synergizing Nutrition and Physical Activity for a Healthier Nation

Symposium Chair: Prof. K. K. D. S. Ranaweera, Emeritus Professor/
Food Science and Technology, University of Sri Jayewardenepura

From Risk to Resilience: Addressing the Growing Cardiometabolic Burden in a Changing Nation

Prof. Mahinda Abeywardena, CSIRO Health and Biosecurity, Adelaide, Australia

The landscape of cardiometabolic health in Sri Lanka is rapidly evolving, reflecting broad shifts in lifestyle, diet, and the demographic profile of the nation. Increasing urbanisation, changing dietary habits with greater reliance on processed foods, and a decline in physical activity have all contributed to a surge in non-communicable diseases, particularly those affecting the cardiovascular and metabolic systems. Understanding the multifactorial origins of this disease burden is essential for developing effective prevention and intervention strategies tailored to the unique context of Sri Lanka.

Reports indicate that a concerning 77% of adults in Sri Lanka experience dyslipidaemia. Low levels of HDL-cholesterol (50% prevalence), and increased LDL-cholesterol were the most common lipid abnormalities evident. In addition, limited data reported for apolipoproteins (ApoB and ApoA1) point to notably higher mean ApoB concentrations among Sri Lankans compared to other countries. Similarly, hypertension, a major cause of premature death globally has a high prevalence (35% - 51%) in Sri Lankan adults. Overweight and obesity rates, particularly among women are highest in the region. Similarly, both the type-2 and gestational diabetes are rising at an alarming rate.

Recent findings identify an array of inflammatory mechanisms underpinning the pathogenesis of cardio-metabolic diseases. In this instance, vascular inflammatory cascade in tandem with low grade systemic inflammation - arising from gut microbiome dysbiosis brought upon by poor dietary choices (high sugar, excess carbohydrates, insufficient essential fatty acids, low fibre, high salt, low antioxidants) - can be identified as being central to the compromised cardio-metabolic health in this population. Under such settings the resulting metabolic abnormalities would manifest as elevated postprandial hyperlipidaemia (triglyceride rich lipoproteins), consisting of an array of lipoprotein particles with greater atherogenicity along with hyperglycaemia and resultant hyperinsulinemia creating a pro-oxidative metabolic milieu. Lack of dietary diversity including the quality and quantity of proteins and lower presence of omega 3 and omega 6 polyunsaturated fatty acids in the average Sri Lankan diet warrants urgent attention.

Nutrient Intake Goals and Enabling Food Environments for NCD Prevention: The Evidence

Prof. Pulani Lanerolle, Department of Biochemistry and Molecular Biology, Faculty of Medicine, University of Colombo

Reverse the NCD Tide: Optimize Diet and Physical Activity in Children

Prof. Pujitha Wickramasinghe, Department of Pediatrics,
Faculty of Medicine, University of Colombo
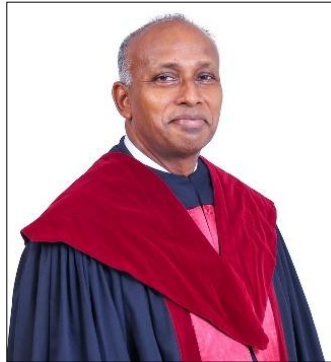
Symposium 2

Holistic Perspective in Dietary and Food Behaviour for Enhancing Health Outcomes

Symposium Chair: Prof. Eresha Mendis, Department of Food Science and Technology, Faculty of Agriculture, University of Peradeniya

Nutritional Challenges in Contemporary Sri Lanka: Insights from the BRIGHT National Survey 2024-25

Dr. Derek Headey, Senior Research Fellow in Poverty, Health and Nutrition Division at the International Food Policy Research Institute (IFPRI)

The Power of Movement: Physical Activity as Medicine for Disease Prevention and Control

Prof. Ananda Chandrasekara, Department of Nutrition and Dietetics, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka
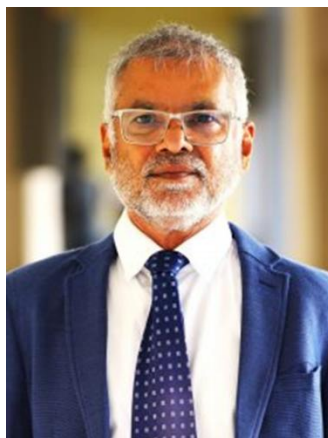
Non-communicable diseases (NCDs), including type 2 diabetes mellitus, cardiovascular disease and obesity represent a major global and national health burden, largely driven by physical inactivity and metabolic dysregulation. Among the central pathophysiological mechanisms underpinning these conditions, insulin resistance plays a pivotal role, linking excess adiposity, impaired glucose and lipid metabolism, mitochondrial dysfunction, and chronic low-grade inflammation. Increasing evidence supports physical activity as a potent, low-cost, and scalable therapeutic strategy that directly targets these mechanisms, positioning movement as a form of "medicine" in both the prevention and management of NCDs.

Regular physical activity improves insulin sensitivity through multiple, interrelated pathways. Skeletal muscle contractions stimulate insulin-independent glucose uptake via enhanced GLUT-4 translocation, while repeated exercise exposure increases mitochondrial biogenesis, oxidative capacity, and metabolic flexibility. Improvements in mitochondrial function enhance fatty acid oxidation, reduce ectopic lipid accumulation in liver and muscle, and mitigate lipotoxicity-induced insulin resistance. In parallel, physical activity modulates adipokine profiles, increases adiponectin levels, reduces systemic inflammation, and improves endothelial function, collectively contributing to improved metabolic homeostasis.

Energy expenditure through structured exercise and habitual physical activity further supports weight regulation and reductions in visceral adiposity, a key driver of cardiometabolic risk. Importantly, emerging evidence demonstrates that these metabolic benefits can occur independently of significant weight loss, underscoring the unique role of physical activity in restoring metabolic health beyond glycemic control alone.

This presentation will synthesize current evidence on the role of physical activity in NCD prevention and control, with particular emphasis on insulin resistance, mitochondrial activation,

and energy expenditure. Practical implications for integrating physical activity prescriptions into clinical and public health nutrition practice will be discussed, highlighting the need to reposition movement as a core therapeutic pillar alongside dietary modification in comprehensive metabolic disease management.

Chrononutrition, Meal Timing and Time-Restricted Eating (TRE): Impacts on Cardiometabolic Health

Prof. Kumari M. Rathnayake, Department of Nutrition and Dietetics, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka

Chrononutrition is an emerging area of nutritional science that explores the interaction between **meal timing, circadian rhythms, and metabolic regulation**, with increasing evidence supporting its role in the prevention and management of cardiometabolic diseases. Key metabolic processes, including glucose homeostasis, lipid metabolism, blood pressure regulation, and hormone secretion, follow endogenous circadian rhythms that are synchronized with the light–dark cycle. Disruption of these rhythms through irregular eating patterns, late-night food intake, and misalignment between feeding times and biological clocks can negatively affect cardiometabolic health.

Rapid urbanization and modern lifestyles have substantially altered sleep and dietary behaviours over recent decades. Declines in sleep duration and quality, particularly among children, alongside increased shift work, eating outside the home, and irregular meal patterns such as breakfast skipping and late-night eating, have contributed to circadian misalignment. Chrononutrition, integrating principles of nutrition science and chronobiology, provides a framework for understanding how the timing of food intake influences metabolic and cardiovascular health outcomes.

Accumulating evidence indicates that **earlier meal timing**, aligned with circadian peaks in insulin sensitivity and metabolic efficiency, is associated with improved glycaemic control, lipid profiles, blood pressure, and body weight regulation. In contrast, late-night eating and extended daily eating windows are linked to a higher risk of obesity, type 2 diabetes, metabolic syndrome, and cardiovascular disease. Time-restricted eating (TRE),

a central chrononutrition strategy, has demonstrated promising effects on insulin sensitivity and cardiometabolic risk markers, even without intentional caloric restriction.

At the molecular level, circadian rhythms are regulated by internal biological clocks, and their disruption (chronodisruption) is increasingly associated with obesity. While rare mutations in clock genes may increase obesity risk, more common genetic variants influence individual susceptibility rather than determining outcomes. Evidence from nutrigenetics and epigenetics suggests that lifestyle behaviours, particularly dietary composition and meal timing, can interact with genetic predisposition and modify gene expression, thereby reducing cardiometabolic risk.

Chrononutrition is especially relevant in contemporary societies characterized by shift work, prolonged screen exposure, and irregular daily routines. Integrating chrononutrition principles into dietary guidelines and public health strategies may offer a **low-cost, feasible, and scalable approach** to improving cardiometabolic health. However, further long-term randomized controlled trials and population-specific research are required to refine evidence-based recommendations and support translation into clinical and public health practice.

Symposium 3

Beyond Macronutrients: Nutraceuticals, Microbiome Modulation and Micronutrients in Precision Nutrition

Symposium Chair: Dr. Dhammika Senanayake, Institute of Sports Medicine, Colombo 07

Phytochemicals and Metabolic Health: Mechanistic Pathways and Emerging Therapeutic Potential

Prof. K.K.D.S. Ranaweera, Emeritus Professor/Food Science and Technology, University of Sri Jayewardenepura

Beyond Calories: Unmasking the Silent Crisis of Micronutrient Deficiencies

Dr. Manoji Gamage, Consultant Nutrition Physician, Nutrition Division,
Ministry of Health and Mass Media
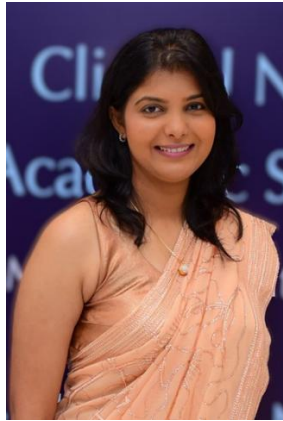
The Low-FODMAP Diet: Evidence-Based Dietary Strategy for Managing Functional Gastrointestinal Disorders

Dr. Geeshani Somaratne, Senior Lecturer, Department of Food Science and Technology, Faculty of Agriculture, University of Peradeniya

Functional gastrointestinal disorders (FGIDs), including irritable bowel syndrome (IBS) and functional dyspepsia (FD), are highly prevalent conditions characterized by chronic abdominal pain, bloating, altered bowel habits, and reduced quality of life, in the absence of structural abnormalities. Conventional pharmacological therapies often provide limited relief, prompting increased interest in dietary interventions. Among these, the low-FODMAP diet has emerged as one of the most rigorously studied and clinically effective strategies.

FODMAPs—fermentable oligosaccharides, disaccharides, monosaccharides, and polyols—are short-chain carbohydrates that are poorly absorbed in the small intestine. Their malabsorption leads to osmotic effects, increased luminal water content, and rapid fermentation by colonic microbiota, resulting in gas production, distension, and pain. Restricting dietary FODMAP intake has been shown to significantly reduce symptom severity in FGID patients, particularly those with IBS.

This presentation will comprehensively examine the scientific basis of the low-FODMAP diet, including mechanisms of action, clinical trial evidence, and patient outcomes. The structured three-phase approach—restriction, reintroduction, and personalization—will be discussed in detail, highlighting the importance of individualized dietary counselling by trained nutrition professionals. Evidence from randomized controlled trials and systematic reviews will be presented to demonstrate improvements in symptom control, quality of life, and patient adherence.

Challenges such as nutritional adequacy, long-term sustainability, and variability in patient response will also be addressed, alongside emerging research on microbiome modulation and personalized nutrition. By integrating clinical evidence with practical dietary strategies, the low-

FODMAP diet represents a promising non-pharmacological intervention for managing FGIDs and improving patient well-being.

Keywords: Low-FODMAP diet; Functional gastrointestinal disorders; Irritable bowel syndrome; Functional dyspepsia; Carbohydrate malabsorption; Gut microbiota

Symposium 4

AI-driven Diagnostics and Behaviour Change to Improve Diets and Nutrition in Sri Lanka

Symposium Chair: Prof. Renuka Silva, Chair Professor, Department of Nutrition and Dietetics, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka

AI-assisted Diet Monitoring for Adolescent Girls in Sri Lanka: Evidence from Validation Against Conventional Methods

T. Perera[1], H.M.N.J. Karunarathna[1], K.D.R.R. Silva[1] and A. Geli[2]

In low- and middle-income countries (LMICs), accurate data on adolescent diets is limited and hard to obtain, constrained by the expense and inaccuracies inherent in traditional evaluation approaches. Though technology-based tools gained traction, validating them against the standard dietary assessment methods is scarce in these settings. Hence, this study evaluated the validity of the PlantVillage Food Recognition Assistance and Nudging Insights (FRANI), an AI-powered mobile app for dietary assessment, against weighed food records (WFR) and multipass 24-hour recalls (24HR) in 60 adolescent girls aged 14–18 years from urban and semi-urban communities in Sri Lanka. Dietary intake was captured over two non-consecutive days using FRANI, WFR, and 24HR. Nutrient equivalence was tested via mixed-effects models, comparing intake ratios (FRANI/WFR and 24HR/WFR) against 10%, 15%, and 20% bounds to account for repeated measures. Agreement was further assessed using the concordance correlation coefficient (CCC). FRANI showed equivalence to WFR at the 10% bound for energy and vitamin A; 15% for protein, fiber, iron, and zinc; and 20% for fat, niacin, and folate. In contrast, 24HR achieved no equivalence at 10%; energy, protein, fat, iron, niacin, and vitamin A aligned at 15%; while fiber, calcium, folate, and vitamin C met the 20% bound. CCC values ranged from 0.49 to 0.89 (FRANI vs. WFR) and 0.44 to 0.84 (24HR vs. WFR). Omission rates were low at 2% for FRANI (vs. 12% for 24HR), with intrusion rates being 7% vs. 9%. The PlantVillage FRANI yielded precise nutrient assessments on par with the 24-hour recall method, establishing it as a practical, affordable, and expandable solution for tracking diets in adolescent girls across LMIC countries.

Keywords: Adolescents, AI-assisted tools, Dietary assessment, Validation, Smartphone application

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Feasibility and Effectiveness of Using Mobile Phone AI-Assisted Dietary Assessment and Nudging to Improve Diets of Female Adolescents in Sri Lanka

H.M.N.J. Karunarathna[1], T. Perera[1], K.D.R.R. Silva[1] and A. Geli[2]

Adolescent nutrition has been overlooked, partly due to the lack of comprehensive dietary intake data for this age group. The PlantVillage Food Recognition Assistance and Nudging Insights (FRANI) is a validated artificial intelligence (AI)-assisted smartphone application designed for dietary assessment and gamified nudging to make healthier food choices. This study examined the feasibility (adherence, acceptability, and usability) of FRANI and its potential impact on food choices and diet quality among adolescent girls in Sri Lanka. A total of 60 adolescent girls from two schools in Kuliyapitiya were recruited and randomly assigned to an intervention group (n=30), which received smartphones equipped with gamified FRANI, or a control group (n=30), which received smartphones with a dietary assessment-only-version. After an initial 4-week intervention period, both groups used gamified FRANI for an additional 2-week feasibility period. The primary outcome was the feasibility of employing FRANI, evaluated through adherence (percentage of completed food records), acceptability, and usability (proportion of participants rating FRANI acceptable and usable based on responses to a Likert questionnaire). Secondary outcomes included the Minimum Dietary Diversity for Women (MDDW) and Global Diet Quality Score (GDQS). Regression models examined the associations between exposure to gamified FRANI and diet quality outcomes. Overall, adherence to dietary recording throughout the study period was 97%. All participants reported that FRANI was acceptable and likable. Ongoing analyses are evaluating whether the gamified FRANI is associated with improvements in MDDW and GDQS compared to the non-gamified version. These finding demonsrated high feasibility and acceptability of AI-assisted gamified dietary assessment among adolescent girls in Sri Lanka and suggest that FRANI may be a promising tool for supporting dietary monitoring and promoting healthier food choices in this population.

Keywords: Adolescents, Artificial intelligence, Dietary assessment, Gamification, Smartphone application

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From Validation to Impact: Leveraging FRANI for Real-World Dietary Assessment and Promoting Food-based Dietary Guidelines Adherence

K.D.R.R. Silva[1], H.M.N.J. Karunarathna[1], T. Perera[1] and A. Geli[2]

Reliable dietary intake data are essential for informing nutrition policy and nutrition intervention programme design. However, such data are often scarce among many population groups in low- and middle-income countries due to the high cost, respondent burden, and methodological constraints of conventional dietary assessment methods. The PlantVillage Food Recognition Assistance and Nudging Insights (FRANI) is an AI-assisted, image- and smartphone-based dietary assessment application that has been validated and shown to be feasible for tracking and improving dietary intake among adolescent girls in Sri Lanka.

We are currently expanding the application of FRANI to monitor school meal programs and to assess its validity among undergraduate students. For school meal programs, it is being applied to assess meal consumption, dietary diversity, and menu adequacy, while for undergraduate students, it is being validated against conventional dietary assessment methods, including weighed food records and 24-hour recalls. FRANI also has the potential to promote adherence to Food-Based Dietary Guidelines (FBDGs) by providing real-time feedback and nudges aligned with national nutrition recommendations.

Further expansions are proposed to position FRANI as a transformative and scalable low-burden platform for routine dietary surveillance, capable of supporting institutional nutrition programs and informing evidence-based policy interventions. Beyond dietary assessment, FRANI can provide real-time dietary monitoring, detect early nutritional risk, deliver personalized feedback, and nudge consumers toward nutrient-adequate options in line with FBDGs during supermarket purchases, meal planning or institutional feeding programs. Its capabilities are particularly valuable in low-resource settings and during crises, such as economic shocks, natural disasters, or public health emergencies, where rapid assessment of dietary patterns, food acquisition, and nutritional vulnerabilities is critical.

Extending AI-enabled dietary assessment tools such as FRANI to broader demographic groups represents a promising and context-appropriate approach to modernizing nutrition monitoring, driving innovation in program implementation and retail environments, and ultimately, improving dietary quality and health outcomes across diverse communities.

Keywords: AI-assisted dietary assessment, FRANI, Food-based dietary guidelines, Nutrition monitoring, School meal programmes, Sri Lanka

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Highlights from Other Countries: FRANI App for Accurate, Real-Time Nutrient Insights in LMICs and Beyond

A. Geli[1] and P. Nguyen[1]
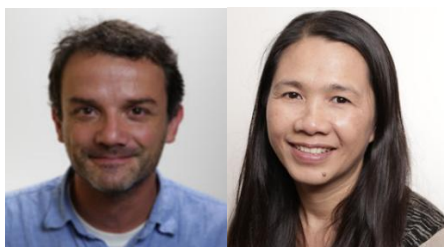
Global burden of disease estimates suggests that 20% of global deaths are caused by unhealthy diets. The modernization of food systems in low- and middle-income countries (LMIC) has led to shifts to unhealthy diets and reductions in physical activity that have contributed to increases in rates of overweight and obesity. Up-to date dietary intake data are essential for effective evidence-based nutrition actions. However, dietary assessment is complex and expensive. Dietary assessment surveys often use multi-pass 24-hour recall (24HR) methods that have been validated for use in adults reporting their intake and/or that of their young children, as well as in adolescents. The costs of conducting a 24HR are of the order of $500 per assessment. While mobile-phone-based dietary assessment has the potential to lower costs, only a few tools have been validated and assessed for the feasibility of use in LMICs. In response to these challenges, the Nudging for Good project developed, validated, and assessed the feasibility of adopting innovative artificial intelligence (AI) assisted mobile technology to provide real-time diagnostics on dietary intake. This presentation will provide an overview of the PlantVillage Food Recognition Assistance and Nudging Insights (or FRANI) app that has demonstrated the capability to estimate food and nutrient intakes at least as accurately as a trained dietician undertaking a 24HR in adolescents in Ghana, Vietnam, and Sri Lanka. Further development and validation are underway in Kenya and the USA, also leveraging new developments in AI-assisted food recognition through large language models.

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Abstracts of
Oral Presentations

2603 - Association Between Life's Essential 8 and Depression Among Postmenopausal Women: Evidence from National Health and Nutrition Examination Survey 2011–2020

Harshini Meegaswatte [1 2 3], Siraphat Taesuwan [1 3 4 5], Andrew J McKune [2 3 6], Demosthenes B Panagiotakos [1 3 7], Martin Veysey [8], Nenad Naumovski [1 2 3 7 8 9]

Depression is a psychological disorder characterized by disturbances in mood and behaviour regulation, with women experiencing a 50% higher burden than men. Cardiovascular disease (CVD) is the leading cause of mortality among women. Postmenopausal women, particularly during the menopausal transition, are at heightened risk for CVD and depression. Depression and CVD have a well-established bidirectional relationship, each one potentially predicting the other. Life's Essential 8 (LE8) is a recently introduced cardiovascular health index comprising eight health behaviours and factors, which may serve as a useful tool for predicting depression risk in this population. A cross-sectional study was conducted to examine the association between LE8 cardiovascular health scores and depression among postmenopausal women using NHANES data. The NHANES (2011–2020) data were extracted from the publicly available database. The LE8 score, calculated as the unweighted mean of eight components (0-100), and classified as low (0–49), moderate (50–79), or high (80–100) cardiovascular health status. Depression symptoms were defined by a Patient Health Questionnaire-9 score ≥ 10. Analyses used complex survey–adjusted regression models. A total of 5472 postmenopausal women (mean-age 63.0 years) were included; 654 (12%) met criteria for depression. Mean LE8 scores were lower in women with depression compared to those without (53.2 ± 14.6 vs. 64.9 ± 14.7, $p < 0.001$). Higher LE8 scores were associated with lower odds of depression (OR per 10-point increase:0.65, 95% CI:0.60–0.72, $p < 0.001$). Higher dietary quality was associated with lower odds of depression ($p = 0.02$), with postmenopausal women in higher dietary quality categories having 49% to 77% lower odds compared with those in the lowest category. The inverse relationships between LE8 scores and depression highlight the potential utility of this new index for integrating cardiovascular health management with strategies to assess, monitor and manage depression in postmenopausal women.

Keywords: Cardiovascular disease, Depression, Life's Essential 8, Menopause, Postmenopausal women

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2604 - Comparative Study on the Effect of *Garcinia cambogia*-based Herbal Supplementation on Metabolic Syndrome Management

P.T.M. Abeyrathna[1], D.A. Gayanjalee[1], W.D.S.K. Dharmapala[1], K.A.R. Keragala[1], and A. Chandrasekara[1]

Metabolic syndrome (MetS) is a cluster of interrelated conditions, including central obesity, dyslipidemia, hypertension, and insulin resistance, which substantially increase the risk for type 2 diabetes and cardiovascular diseases. In recent years, herbal treatments for MetS have been increasingly studied due to their potential benefits, despite the management challenges associated with these evolving non-pharmaceutical interventions. *G. cambogia,* which is rich in hydroxycitric acid, has emerged as a promising candidate due to its ability to target metabolic risk factors by natural, synergistic mechanisms. This herbal supplement consists of Garcinia, along with cinnamon, black pepper, and curry leaves. This study aimed to evaluate the effectiveness and safety of a Garcinia-based herbal supplement in managing MetS by observing its impact on insulin sensitivity, anthropometric, biochemical, and inflammatory markers over 3 months. A randomised double-blind placebo-controlled clinical trial involving 100 overweight or obese adults with MetS. Participants were randomised to receive either the herbal supplement or a non-active placebo (4.5 g/day). Anthropometric measurements, body composition parameters, biochemical and inflammatory markers (CRP) were assessed at baseline and post-intervention. Compared with baseline values, the intervention group showed significant reductions in body weight (73.16 ± 13.0 kg to 72.6 ± 13.1 kg, $p<0.05$), waist circumference (91.0 ± 9.86 cm to 88.1 ± 9.9 cm, $p<0.05$), and total body fat percentage ($38.6 \pm 8.0\%$ to $38.2 \pm 8.4\%$, $p<0.05$). Metabolic parameters also improved significantly, with reductions in triglycerides (155.5 ± 85.6 mg/dL to 133.9 ± 73.7 mg/dL, $p < 0.05$), fasting blood glucose level (108.6 ± 29.2 mg/dL to 103.1 ± 17.9 mg/dL ($p < 0.05$) and the insulin resistance index (TyG) (8.9 to 8.7 ($p<0.05$). No significant changes were observed in the placebo group. This study provides solid evidence supporting the therapeutic potential of a Garcinia-based herbal supplement for weight loss and improving metabolic health in overweight and obese adults.

Keywords: *Garcinia Cambogia*, Hydroxycitric acid, Insulin sensitivity, Metabolic syndrome, Tyg index

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2606 - Body Mass Index, Physical Activity and Workplace Posture as Potential Risk Factors for Lumbar Disc Herniation in Subjects Undergoing Lumbar Microdiscectomy for Lumbar Disc Herniation Presented to a Private Hospital in Colombo

W.D.H.R. Gunarathne[1], S. Perera[2] and L.V. Athiththan[1]

Lumbar disc herniation (LDH) is a primary contributor to chronic lower back pain, significantly impacting quality of life and productivity. Multiple extrinsic and intrinsic risk factors contribute to its development, among which obesity, physical activity, and workplace posture are recognized as modifiable risk factors. Understanding these associations is crucial for prevention and management, optimizing treatment outcomes of affected individuals. This hospital-based observational study preliminarily assessed the associations between body mass index (BMI), physical activity level, workplace posture, and LDH in individuals undergoing lumbar microdiscectomy for LDH. The study involved 18 (n=18) consecutive individuals scheduled for lumbar microdiscectomy after confirmation by the consultant neurosurgeon at a selected private hospital in Colombo. Pre-operative BMI was calculated from direct measurements of weight and height, while physical activity levels and predominant workplace posture were categorized using a structured interviewer-administered questionnaire. Shapiro-Wilk tests confirmed normality of BMI within each group (all $p > 0.05$), validating parametric test assumptions. The relationship between BMI and the presence of LDH was analyzed using one-way ANOVA, and the association involving activity and posture were assessed using frequency analysis. Statistical significance was set at $p < 0.05$, and analyzed using IBM SPSS version 21. One-way ANOVA revealed significantly higher BMI in level 2 discectomy (30.30 ± 6.03 kg/m^2) versus level 1 discectomy (23.57 ± 3.92 kg/m^2; F [1,16] =8.35, p=0.011, η^2=0.34). The participant distribution for physical activity was 55.6% moderately active, 38.9% sedentary, and 5.6% heavily active. Workplace posture analysis revealed that 38.9% primarily worked in sitting positions, 16.7% worked in standing, bent or squatting positions, and the remainder had mixed or dynamic postures. The preliminary findings suggest elevated BMI as a potential risk factor for LDH in this sample, while no definitive associations were identified for physical activity or workplace posture within this sample. The preliminary study findings are constrained by the limited sample size, which necessitates further investigation with a larger population.

Keywords: Lumbar disc herniation, Obesity, Occupational health, Risk factors, Spine surgery

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2614 - Factors Affecting the Complementary Feeding Practices of Employed Mothers: A Qualitative Study

H.P. Gunawardena[1] and M.L.R.S.K Bandara[1]

The first thousand days of human life are a critical window for shaping the health, nutritional status and well-being. Complementary feeding (CF) is the practice of providing solid foods and liquids in addition to breast milk when an infant reaches six months of age. Ensuring the proper delivery of CF is often a challenge for employed mothers. Therefore, the present study aims to explore factors affecting the CF among a group of employed mothers with infants aged between 6 and 12 months in Pannala and Kuliyapitiya areas. A qualitative study was conducted with 35 (n=35) employed mothers in the age range of 20-45 years. Seven focus group discussions (FGD) were held. All FGDs were recorded, and non-verbal clues were noted. Recordings of the FGDs were then transcribed verbatim. Data were analyzed following the deductive thematic approach using NVivo 15 software. There were four major themes and fifteen subthemes identified. Factors affecting the CF practices of employed mothers were individual (age, education, employment status, income, knowledge of mothers and limited time availability), social factors (cultural norms, family support, peer and relatives' influence), physical environment factors (food availability and market access, home environment, work place facilities, health care system) and macro system (Government and workplace policies, printed and digital media). Work pressure has often led to the initiation of early CF before six months and relying on simple foods like mashed rice or formula. Further, it was found that economic barriers limited access to diverse, nutrient-rich diets. Information received at the mother and child health clinics, social media, family members and peers on modern child feeding guidelines shows some conflicts with traditional beliefs. Workplace policies on maternity leave have created some impact on feeding practices. Hence, the findings of the present study highlight the importance of targeted education and workplace support in improving the complementary feeding practices of employed mothers.

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2621 - Prevalence and Associated Factors of Malnutrition in Elderly Patients Admitted to Medical Wards at Sri Jayewardenepura Teaching Hospital

P.A.C.L. Dayarathna[1], K.V.C. Janaka[1] and M.P. Abeygunawardene[1]

The global increase in elderly populations poses major health challenges, with malnutrition being a critical concern due to its association with higher morbidity, prolonged hospital stays, and poorer clinical outcomes. In Sri Lanka, where the elderly population is projected to reach 22% by 2037, there is a need to understand the prevalence of malnutrition and the factors contributing to it, particularly in hospitalised settings. The objectives of this study were to determine the prevalence of malnutrition and identify associated factors among elderly patients admitted to the medical wards of Sri Jayewardenepura Teaching Hospital. A descriptive cross-sectional study was conducted between June and August 2024 among 216 elderly patients ($\geq$60 years) admitted to medical wards at Sri Jayewardenepura Teaching Hospital using the validated Mini Nutritional Assessment (MNA) tool to assess nutritional status. Significance level was taken as $p < 0.05$, and odds ratios (OR) were calculated for risk association. Among the participants, 21.3% were malnourished, 53.7% were at risk, and only 25.0% had a normal nutritional status. Significant associations with malnutrition included family dynamics such as number of members ($p=0.004$), children ($p=0.001$), dependents ($p=0.001$), and employment status ($p=0.007$). Malnutrition was five times higher among employed elders (OR=5.0, $p<0.001$), 3.25 times higher among those with education below Advanced Level ($p<0.001$), and 2.63 times higher in patients with diabetes mellitus ($p=0.008$). A vegetarian/vegan diet was associated with a 2.5-fold increased risk ($p=0.04$). Malnutrition among hospitalised elders is highly prevalent and is influenced by socioeconomic, educational, and health-related factors. Interventions such as strengthening hospital-based screening and improving nutrition literacy are necessary to address future challenges.

Keywords: Elders, Malnutrition, Nutrition assessment, Sri Lanka

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2623 - Association Between Dietary Habits and IBS-like Symptoms in Women with Endometriosis: A Cross-Sectional Pilot Study

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Endometriosis is a chronic gynecological condition affecting 10% of women of reproductive age globally. Many women with endometriosis experience gastrointestinal symptoms resembling irritable bowel syndrome (IBS), making diagnosis and management challenging. Both conditions share similar symptoms such as abdominal pain, bloating and altered bowel habits. Despite the role of diet in symptom severity, evidence on dietary overlaps is limited. This pilot study examined the prevalence of Rome IV–defined IBS-like symptoms, assessed dietary habits with emphasis on FODMAP intake, and explored associations between diet and gastrointestinal symptom severity in women with endometriosis. A cross-sectional study was conducted with a **convenience sample** of thirty-five women (aged 18-50 years) with a clinical diagnosis of endometriosis, recruited with ethical approval from the Wayamba University of Sri Lanka and De Soysa Maternity Hospital, Colombo. Data were collected via an interviewer-administered questionnaire comprising a Food Frequency Questionnaire (FFQ), the Rome IV criteria, the Bristol Stool Form Scale (BSFS), and the Visual Analogue Scale for IBS (VAS-IBS). **Statistical analysis** included descriptive statistics and Spearman's rank correlation tests to examine associations between dietary habits and symptom severity scores. IBS-like symptoms were reported by 42.9% of participants, predominantly IBS-D (56.3%). Over half of the respondents (52.8%) frequently consumed high foods in Fermentable Oligosaccharides, Disaccharides, Monosaccharides, and Polyols (FODMAPs), which are known to exacerbate GI symptoms. Significant correlations were observed between dietary habits and IBS-like symptoms, including abdominal pain (p = 0.001), bloating (p = 0.049), vomiting (p = 0.016), and mental well-being (p = 0.013). This pilot study highlights a significant link between dietary patterns and IBS-like symptoms among Sri Lankan women with endometriosis, emphasizing the importance of dietary assessment and personalized nutrition to improve gastrointestinal symptoms and quality of life. However, the small non-random sample limits generalizability, highlighting the need for larger longitudinal studies to develop evidence-based dietary guidance.

Keywords: Dietary habits, Endometriosis, High FODMAP diet, IBS -like symptoms

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2624 - Leveraging AI For Personalized Diet Planning: A Time-Saving Approach for Dietitians in Nutrition Guidance

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Traditional meal planning techniques are labour-intensive and prone to errors, limiting personalized nutrition delivery. Dietitians often face challenges in managing the number of patients, time, and data, relying on patients' memories. Digital monitoring platforms face challenges with data reliance on memory-sharing features rather than real-time patient input, confusion with multiple devices in the same category, sharing not being a clear, unique factor, and the presence of "stand-alone" apps. The objective of this study was to develop and validate an AI-integrated platform to support dietitians through the automation of nutrition calculation, which has led to saving time and increasing workflow efficiency. As a digital tool development study, this employs image recognition models, a prepared local Sri Lankan food database, and integration with multiple AI models (Deep-Seek, ChatGPT, Claude-AI, Gemini) for several functions like generating diet plans, automating calculations, etc. A mobile-friendly web platform was developed, integrating ChatGPT and DeepSeek APIs for real-time nutrition and calorie calculations. Thirty-two nutrition professionals (n=32) evaluated the tool and provided feedback on its usability. The study successfully developed a nutrition tool, accessible at https://edietetics.com/, designed for dietitians to assist in delivering personalized nutrition guidance. Evaluations carried out using nutrition professionals yielded overall positive feedback. A majority (96.9%) reported significant time savings in their daily professional work, and an equal proportion confirmed the tool as user-friendly and convenient to use. The tool was found to drastically reduce the time and manual calculation burden of traditional dietary assessment methods. This novel digital approach can be a useful solution for enhancing the effectiveness of nutrition counselling. Its time-saving features and ease of use suggest its potential for use in practical applications. Hence, dietitians can spend more time and attention on client interaction and eventually advance the delivery of personalized nutritional care.

Keywords: Artificial Intelligence (AI), Dietary assessment, Dietitians, Digital tool, Personalized nutrition

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2626 - Reversing Insulin Resistance and Improving Cardiovascular Health by Losing Weight

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Insulin resistance (IR) is a key risk factor for metabolic disorders, including type 2 diabetes and cardiovascular diseases. Weight loss is widely recognized for increasing insulin sensitivity while improving metabolic health. This study examines whether weight loss interventions can improve insulin resistance, lipid profiles, and cardiovascular health markers. Major objectives of this research were to evaluate whether weight loss intervention can effectively reverse insulin resistance and to observe improvement of metabolic and cardiovascular health markers. The study design used was a longitudinal cohort study. A total of 106 participants (n=106) diagnosed with insulin resistance were enrolled in a 12-week structured weight loss program incorporating dietary modifications, physical activity, and supplementation. At the end of the time period, based on participants' success in losing weight, they were divided into 2 groups as weight loss group (n=65) or weight gain group (n=41). Fasting triglyceride and blood glucose levels were measured to calculate the Triglyceride-Glucose (TyG) Index, a recognized marker of insulin resistance. Anthropometric data and Cardiovascular health markers were measured at baseline and post intervention. There were significant differences between the weight loss and weight gain groups across the following parameters. BMI showed a significant reduction in the weight loss group ($p<0.0001$). Systolic blood pressure significantly decreased after weight loss ($p=0.002$), along with reductions in body fat percentage ($p<0.0001$), body fat mass ($p<0.0001$), and visceral fat mass ($p=0.0001$). Fasting blood glucose improved significantly ($p=0.0001$), while High Density Lipoprotein (HDL) increased ($p=0.0008$), and Triglyceride (TG) ($p=0.002$) and Very Low Density Lipoprotein (VLDL) ($p=0.004$) decreased in the weight loss group. The TyG index significantly decreased from 8.68 ± 0.64 to 8.45 ± 0.64 ($p<0.0001$), indicating improved insulin sensitivity. This study provides strong evidence that weight loss over a 12-week period significantly improves insulin sensitivity, lipid profile, and cardiovascular health markers. These findings emphasize the importance of weight management in reducing metabolic disease risk.

Keywords: Cardiovascular health, Diabetes, Insulin resistance, Metabolic health, Weight loss

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2634 - *In Silico* Analysis of Phytochemicals from Green Tea, Black Tea and Cinnamon Targeting α-Amylase and α-Glucosidase in Diabetes

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Although inhibition of α-amylase and α-glucosidase is an effective strategy for controlling postprandial hyperglycemia, currently available antidiabetic drugs are often associated with gastrointestinal side effects, creating a demand for safer, naturally derived alternatives. Green tea, black tea, and cinnamon tea are widely consumed beverages rich in bioactive phytochemicals with potential antidiabetic activity. This study aimed to evaluate the inhibitory effects of selected phytochemicals present in these food materials against key digestive enzymes related to diabetes and to predict their pharmacokinetic and toxicity profiles using *in silico* approaches. Twenty phytochemicals were selected based on their documented abundance in tea and cinnamon infusions, relevance to glucose metabolism, and structural diversity. Molecular docking analysis was performed using AutoDock 1.5.7 against α-amylase (PDB ID: 1HNY) and α-glucosidase (PDB ID: 5NN8) to assess ligand–enzyme interactions. Ligand structures were optimized using OpenBabel and Avogadro, and binding interactions were visualized and analyzed using Discovery Studio Visualizer. Pharmacokinetic and toxicity properties were evaluated using SwissADME, pkCSM, and Osiris Property Explorer. Each ligand underwent ten docking runs, and the conformation with the lowest binding energy was selected for comparative analysis. To validate inhibitory efficacy, docking results were compared with metformin, a commonly used standard antidiabetic drug. All selected phytochemicals exhibited negative minimum binding energy values, indicating favourable inhibitory interactions with both target enzymes. Among the tested compounds, theaflavin-3′-gallate and epigallocatechin gallate (EGCG) demonstrated the strongest binding affinities toward α-glucosidase (–8.34 kcal/mol) and α-amylase (–7.23 kcal/mol), respectively, showing comparable or superior interactions relative to metformin (–8.26 and –6.99 kcal/mol). Additionally, both compounds were predicted to be non-toxic, non-carcinogenic, and non-mutagenic. Overall, these findings suggest that phytochemicals from green tea, black tea, and cinnamon tea possess significant enzyme inhibitory potential and may serve as promising candidates for the development of safer antidiabetic agents.

Keywords: α-amylase, α-glucosidase, Diabetes, *in silico*, Nutrigenomics

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2636 - Development, Formulation and Physiological Evaluation of Nitrate-Rich Beetroot-Based Functional Sports Beverage for Enhancing Athletic Performance in Trained Individuals

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The growing demand for sports nutrition products has intensified interest in natural ingredients with supported performance benefits. Beetroot (*Beta vulgaris* L.) is a rich source of dietary nitrate, which enhances nitric oxide bioavailability and may improve aerobic performance and cardiovascular efficiency. This study aimed to develop, standardize, and evaluate a beetroot-based sports drink using a product development and human intervention approach. Beetroot samples sourced from three agro-climatic zones of Sri Lanka were analyzed for nitrate content and mineral composition. The thermal stability of nitrate was evaluated across pasteurization temperatures ranging from 75 to 95 °C. Nitrate content remained stable across processing conditions, enabling formulation of a standardized beverage delivering 500 mg of dietary nitrate per serving, consistent with established ergogenic intake thresholds. Product efficacy was assessed through a four-week randomized controlled intervention trial conducted among physically active university athletes (n = 30; 16 males and 14 females). Aerobic performance was evaluated using Cooper's 12-minute test with estimated VO_2 max, while cardiovascular responses were assessed through resting systolic and diastolic blood pressure measurements. Sensory acceptability of the sports drink was evaluated by an untrained consumer panel (n = 51) and compared with two commercially available sports drinks. Participants in the intervention group demonstrated a significant improvement in VO_2 max (p < 0.001), alongside significant reductions in resting systolic (p = 0.002) and diastolic blood pressure (p < 0.001), indicating enhanced oxygen utilization and cardiovascular efficiency. Sensory evaluation revealed higher overall acceptability scores for the formulated sports drink compared to commercial alternatives. In conclusion, the standardized beetroot-based sports drink was well accepted and demonstrated significant improvements in aerobic capacity and cardiovascular parameters. These findings suggest its potential as a natural ergogenic aid for athletes while highlighting opportunities for value-added utilization of locally cultivated beetroot in the food sector.

Keywords: Beetroot, Blood pressure, Dietary nitrate, Ergogenic aid, VO_2 max

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2638 - Determinants of Cardiovascular Endurance Among National-level Athletes in Sri Lanka: Insights from Multidimensional Analysis

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Cardiovascular endurance (CE) is vital for athletic performance, yet findings on the predictors of CE among Sri Lankan athletes remain scarce. This study aimed to identify the primary predictors of cardiovascular endurance among national-level athletes in Sri Lanka. A descriptive cross-sectional study was conducted at the Institute of Sports Medicine, Sri Lanka, with 130 national-level athletes (male: n=60, females: n=70) selected through purposive sampling. Athletes with a known history of any cardiopulmonary disorders were excluded. Athletes were assessed for their cardiovascular indices (CI), anthropometry (AI) and body composition (BC) using standard methods. Dietary intake (DI) was determined using a 3-day estimated diet diary. Cardiovascular endurance (CE) was estimated by converting Harvard step test scores to VO_2 max. Sleep Quality (SQ) and sports nutrition knowledge (SNK) were evaluated using the Pittsburgh Sleep Quality Index and the Nutrition for Sports Knowledge Questionnaire, respectively. Principal component analysis (PCA) and multiple linear regression were used for analysis. Male athletes showed a significantly higher (p=0.02) mean VO_2 max (55.4 ± 5.2 ml/kg/min) compared to females (49.5 ± 5.0 ml/kg/min). Eight PCA-derived components collectively explained 63% of the variance in VO_2 max among athletes. Components 1 (BC) and 5 (CI) were negatively associated with VO_2 max ($\beta = -0.31$, $p = 0.002$; $\beta = -0.26$, $p = 0.004$, respectively), indicating detrimental effects of higher fat and inappropriate cardiovascular measures. Conversely, components 2 (DI), 3 (SNK), and 6 (training and performance indicators) showed positive associations ($\beta = 0.12$, $p = 0.018$; $\beta = 0.24$, $p = 0.009$; $\beta = 0.28$, $p = 0.003$, respectively) with CE. AI, metabolic factors, and SQ were not statistically significant predictors. CE in Sri Lankan national athletes is shaped by physiological, nutritional, and lifestyle factors, underscoring the importance of integrated strategies focusing on body composition, cardiovascular health, and sports nutrition to enhance aerobic capacity and performance.

Keywords: Athletes, Cardiovascular endurance, Physiological, Sri Lanka, VO_2 max

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2641 - Lifestyle Characteristics of a Group of Community-Dwelling Elderly: A Preliminary Survey

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Elderly are a vulnerable community to develop lifestyle-related non-communicable diseases. This preliminary survey aimed to describe the basic lifestyle characteristics of a group of community-dwelling elderly persons in the Galle District, Sri Lanka. A descriptive cross-sectional survey was conducted among 80 community-dwelling elderly volunteers from one Divisional Secretariat area in Galle District. Data on sociodemographic and lifestyle characteristics were collected using an interviewer-administered questionnaire that assessed six lifestyle pillars: diet, sleep, physical activity, use of risky substances, stress and mood, and social connectedness. Descriptive statistics were used for data analysis. Their mean age was 72.1 years, and 80% of them were females. The mean knowledge score for a healthy diet was 7.2, and 56.3% scored above the mean. The main cooking oil was coconut oil for 97.5%. The majority (88.8%) consumed three main meals, and 71.3% consumed at least one snack daily. Only a minority (31.3%) engaged in regular exercise. Their mean daily sleep duration was about 7.5 hours. Most of them (83.8%) perceived a fair to excellent sleep quality. The majority (67.5%) of them were less prone to developing depressive disorders. The mean social connectedness score was 44.7, and 76.3% scored above the mean. Among them, 95% were non-smokers, and 92.5% did not consume alcohol. In conclusion, the lifestyle profile of the elderly was satisfactory, except for their diet and exercise engagement. Hence, the implementation of active interventions would further improve their lifestyle. More comprehensive multi-centre studies with bigger sample sizes are required to delineate the findings.

Keywords: Elderly, Lifestyle modifications, Lifestyle pillars

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2642 - Effect of *Osbeckia octandra* (Heen bovitiya) Herbal Porridge on Cardiometabolic Risk Markers in Adults with Overweight and Obesity

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Cardiometabolic disorders, encompassing type-2 diabetes, hypertension, and insulin resistance, represent a significant global public health burden. The growing interest in herbal medicine necessitates the need for scientific validation of traditional remedies in cardiometabolic health. *Osbeckia octandra* (Heen Bovitiya), an endemic medicinal plant in Sri Lanka, is traditionally valued for its anti-inflammatory, potential glycemic control and lipid management properties. As the experimental design, Randomized Controlled Trial (RCT) evaluated the effects of *Osbeckia octandra* herbal porridge on key cardiometabolic risk markers; fasting blood glucose level (FBG), blood pressure (BP) and abdominal obesity, in adults (n=24; aged 25-60 years). *Osbeckia octandra* plant materials were authenticated by the Peradeniya Botanical Garden. Total Phenolic Contents (TPC) of *Osbeckia octandra* mature leaves were calculated as 4543 mg Gallic acid equivalents (GAE)/100 g dry weight (DW) of leaves. The treatment group (n=14) consumed a standardized herbal porridge containing 15 g of *Osbeckia octandra* leaves per person, while the control group (n=10) received a placebo, four times per week for five weeks. Anthropometric (BMI, waist circumference), biochemical (FBG, TAG), clinical (BP), and dietary (24-hour diet recall) markers were assessed at pre- and post-intervention to determine potential metabolic improvements. The results revealed statistically significant reductions in systolic BP (Treatment group change±SEM: -9.1±2.8 mmHg vs. Control group change±SEM: 3.4±1.3 mmHg, p=0.01), waist circumference (Treatment group change±SEM: -1±0.3 cm vs. Control group change±SEM: 0.2±0.2 cm, p=0.04), fasting triglycerides (TAG) (Treatment group change±SEM: -0.07±0.24 mmHg vs. Control group change± SEM: 0.14±0.23 mmHg, p=0.541), body fat (Treatment group change±SEM: -0.79±2.44 kg vs. Control group change±SEM: 0.02±8.64 kg, p=0.060) and trends toward reductions in FBG (Treatment group change±SEM: -0.08±0.1 mmol/l vs. Control group change±SEM: 0.09±0.1 mmol/l, p = 0.439) between 2 groups. These findings suggest that *Osbeckia octandra* has potential for improving cardiometabolic health, warranting further long-term studies.

Keywords: Blood pressure, Lipid management, Glycemic control, Obesity, *Osbeckia octandra*

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2643 - Effects of Time-restricted Eating on Cardiometabolic Risk Markers in Evening Chronotype Shift Workers

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Time-restricted eating (TRE) is a chrononutrition intervention that aligns meal timing with circadian rhythms, potentially enhancing metabolic health. Shift workers with an evening chronotype, who naturally prefer late sleeping and eating patterns, often experience circadian misalignment due to irregular work schedules, increasing their risk for cardiometabolic diseases. This randomized controlled trial evaluated the effects of different TRE durations (10-hour, 12-hour, and 14-hour) compared to unrestricted eating, focusing on cardiometabolic risk markers. Evening chronotype shift workers were identified using the Munich Chronotype Questionnaire (MCTQ), and 104 participants completed the intervention (10h TRE: n=19; 12h TRE: n=27; 14h TRE: n=33; control: n=25). Anthropometric (height, weight, waist and hip circumferences, body composition), biochemical (fasting glucose and lipid profile), clinical (blood pressure), and dietary (24-hour diet recall) data were collected at baseline and post-intervention. Compliance with TRE was monitored via a diet diary mobile app. After 8 weeks, significant reductions were observed in weight (10h TRE:1.55kg P<0.001; 12h TRE:0.63kg P=0.006), waist circumference (10h TRE:2.9cm P=0.035; 14h TRE:1.5cm P=0.008), visceral fat level (10h TRE: 0.37 P=0.005), muscle mass (10h TRE: 0.67kg P=0.001), total cholesterol (12h TRE:0.26 mmol/L P=0.023), HDL-C (10h TRE: 0.34mmol/L P=0.043), systolic blood pressure (12hr TRE: 5.2mmHg P=0.033), and diastolic blood pressure (14 TRE: 6.7mmHg P= 0.001). Compared to the control group, the 10-hour TRE group showed greater reductions in weight (1.70 kg, P<0.001), visceral fat level (0.49, P = 0.001), and fat mass (0.92kg, P = 0.002). The 12-hour TRE group showed significant improvement in weight (0.78kg, P=0.023), BMI ($0.36 kg m^{-2}$ P=0.013), visceral fat level (0.27, P=0.036), and total cholesterol (0.48mmol/L P=0.008). In conclusion, both 10-hour and 12-hour TRE windows significantly improved multiple cardiometabolic risk markers, whereas the 14-hour TRE window showed no significant effect. These results highlight the potential benefits of shorter eating windows in mitigating cardiometabolic risks among evening chronotype shift workers.

Keywords: Chrononutrition, Circadian misalignment, Evening chronotype, Shift work

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2644 - Development of a Tool to Evaluate Marketing Strategies in Promoting Unhealthy Packaged Food and Non-Alcoholic Beverages (FNAB) to Children and Adolescents

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Marketing of unhealthy food and non-alcoholic beverages (FNAB) targeting children and adolescents is a significant public health concern, influencing their food preferences, purchasing behaviour, and dietary patterns, thereby increasing health risks. Despite its importance, standardized tools to systematically evaluate these marketing strategies remain limited. This study aimed to develop and validate a tool to evaluate marketing strategies used in promoting unhealthy packaged FNAB for children and adolescents. As part of a nine-country study, a total of 350 FNAB products advertised on television channels popular among children and adolescents in Sri Lanka were identified, and the marketing strategies used on these advertisements were systematically reviewed against the INFORMAS Protocol food promotion module – food marketing – television. Based on this review and a comprehensive literature review, a tool that led to a comprehensive assessment of how promotional strategies are designed to attract and influence children and adolescents was developed. The draft tool comprised 13 main categories (i.e., background, music, visuals, catchy phrases or slogans, claims, promotional offers, and branding) and 93 subcategories related to different aspects of the advertisement. For content validity, consensus was built using a modified Delphi technique with an expert panel of 4 in related subject areas. To assess the drafted tool, advertisements related to 100 randomly selected FNAB products were independently coded by three researchers. Results showed acceptable content validity of the tool. Its inter-rater reliability was high (Cohen's Kappa values are over 0.7). This tool was developed for policymakers, food manufacturers, and food promotion organizations to identify marketing strategies used in advertisements and to support the promotion of healthy food consumption. Thus, it is recommended to be used to generate robust evidence to inform policy, guide regulation, and support interventions to protect children and adolescents from the harmful impact of unhealthy FNAB marketing.

Keywords: Adolescents, Children, Marketing Strategies, Packaged Food and Non-Alcoholic Beverages (FNAB)

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2645 - Development and Validation of Innovative Educational Content to Promote Fruit and Vegetable Consumption among Sri Lankan Adolescents

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Sri Lankan adolescents face significant nutritional challenges, including low fruit and vegetable intake and a rising prevalence of diet-related non-communicable diseases, during this crucial developmental stage. This study aimed to develop and validate age-appropriate educational materials that combine conventional and interactive strategies to promote the consumption of fruit and vegetables among adolescents. Posters, banners, social media-optimised videos, and an interactive board game were included in this comprehensive educational package designed for Sri Lankan adolescents. Content validation was conducted by a purposive panel of five experts in clinical dietetics, community health, public health nutrition, extension communication, and adolescent education. Using a four-point Likert scale, the experts assessed attractiveness, alignment with purpose, age-appropriateness, message clarity, and behaviour change potential. The Content Validity Index (CVI) was calculated for each item, establishing an acceptable threshold of 0.78. Validation showed varying effectiveness: videos (0.94) and the board game (0.84) exceeded the threshold. Conversely, banners (0.73) and posters (0.44) performed poorly. Consistent with existing literature on adolescent behaviour change communication, these findings suggest that static media often fail to engage this demographic due to limited interactivity and relatability compared to highly interactive and emotionally relatable materials. Experts recommended creating a systematic delivery framework, increasing the board game's longevity, and clarifying the poster to enhance impact and align with effectiveness. While this study demonstrates the potential of interactive, visually engaging formats for fruit and vegetable promotion among adolescents, findings are based solely on expert validation and do not assess behavioural outcomes among adolescents. Future research should assess these materials in school-based settings to determine their influence on dietary knowledge, choices, and behaviours. Collaboration with schools, health systems, and government and non-governmental agencies is crucial for integrating validated, evidence-based nutrition education into curricula and public health campaigns, ensuring it reaches adolescents and promotes long-term, healthy dietary habits.

Keywords: Adolescents, Behavioural change, Content validation, Creative content, Nutrition education

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2646 - Determinants of Muscle Function and Its Association with Dietary and Lifestyle Factors of Older Adults

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Muscle function is important for maintaining quality of life and achieving successful ageing. However, older adults experience a gradual decline in their muscle function. Understanding how dietary and lifestyle factors influence muscle function is essential to address the increasing burden of age-related functional decline. This cross-sectional study aimed to determine the association of dietary and lifestyle factors with muscle function and to compare muscle function between free-living and institutionalized older adults. A total of 200 older adults (100 free-living and 100 institutionalized) aged 65 years or over (mean age ±SD; 72±6 years) were recruited from selected areas in Kurunegala and Gampaha districts using the convenience sampling method. Anthropometric measurements, body composition (skeletal muscle mass), handgrip strength, and 4-meter gait speed were assessed to evaluate muscle function. Low muscle function was defined as low muscle strength (handgrip strength <28 kg for men, <18 kg for women) and low physical performance (gait speed <0.8 m/s). A single 24-hour dietary recall was used to assess nutrient intake, and multiple linear regression analysis was applied to identify determinants. The prevalence of sarcopenia was 1%, while the majority had possible sarcopenia (85%). A majority showed low muscle function (low muscle strength 82.5%, low physical performance 72.5%), with free-living individuals showing better muscle function than institutionalized individuals. Some nutrient intakes were higher among free-living participants, with significant differences in carbohydrate (p=0.014), vitamin E (p=0.012), and vitamin D (p=0.036) intakes. Vitamin E, dietary fibre, and protein intakes were positively associated with muscle strength, while vitamin B12, carbohydrate, and vitamin E intakes were positively associated with physical performance. Physical activity was the major determinant of muscle function in terms of muscle strength (β=0.188, p= 0.001, R^2=0.584). In conclusion, promoting regular physical activity, minimizing sedentary behaviour, and improving dietary quality could help maintain proper muscle function in older adults.

Keywords: Gait speed, Muscle strength, Older adults, Physical performance, Sarcopenia

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2647 - Comparative Analysis of Postprandial Glucose Responses to Various Bread Preparations Using Continuous Glucose Monitoring

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Postprandial glucose control plays a crucial role in preventing and managing non-communicable diseases such as diabetes, obesity, and cardiovascular disease. The glycemic response of foods can be influenced by preparation methods, ingredient combinations, starch composition, and the presence of dietary fibre or fat. Understanding these variations provides valuable insights into how different food forms and cooking techniques can alter glucose metabolism and insulin response. This study aimed to evaluate the variations in postprandial glucose responses to different types of bread and their preparations using continuous glucose monitoring (CGM), with the objective of identifying dietary modifications that may enhance glycemic control and overall metabolic health. A continuous glucose monitoring device was used to measure interstitial glucose changes following the consumption of 50 g of bread in various preparations. Parameters analyzed included peak glucose level (mg/dL), glucose increase from baseline, and time to return to baseline glucose level (minutes). As the baseline, fresh 50 g of white bread had a 43 mg/dl sugar spike from the baseline; when toasted, it had an almost similar spike of 44 mg/dl. The same 50 g fresh white bread with one egg had a 42 mg/dl spike. When eaten with 15 g of butter, the spike reduces to 18 mg/dl, and when kept in the fridge for 12 hours and toasted, the spike reduces to 8 mg/dl. A 50 g fresh multigrain bread had a 26 mg/dl spike from the baseline. Time to return to baseline ranged between 96 and 168 minutes. CGM findings demonstrate that the preparation and composition of bread significantly influence postprandial glucose behaviour. Refrigeration appears to reduce glycemic response, while combining bread with protein and fat alters glucose absorption kinetics. These outcomes highlight the importance of food form and macronutrient balance in dietary strategies for glycemic control.

Keywords: Continuous glucose monitoring, Dietary modification, Glycemic response, Postprandial glucose, Sugar spike

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2648 - Assessing National Policies and Programmes Addressing Child Malnutrition and Food Insecurity in Sri Lanka: A Qualitative Policy Analysis

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Despite decades of national strategies, Sri Lanka still suffers from child malnutrition and food insecurity, which were further exacerbated by the recent economic shocks, showcasing the defects of current interventions. This study moves beyond identifying the problem and critically evaluates gaps to improve the effectiveness of interventions targeting child malnutrition and food insecurity. This research employed a qualitative policy analysis, including a structured review of national nutrition and food security policies and semi-structured interviews with key stakeholders, informed by trends from national survey data (2016–2024). The review focused on policy objectives, target groups, implementation strategies, and their connection to broader goals, key performance indicators, and gaps. The semi-structured interviews were conducted with key stakeholders in policy formulation, implementation, and analysis. Then the data were analyzed thematically using NVivo 15. The analysis of stakeholder interviews revealed that there are critical gaps across the policy lifecycle. In the planning stage, there is a lack of clear and measurable indicators to assess policy effectiveness. Also, the policy implementation phase is hindered by weak inter-sectoral coordination, accompanied by systemic operational barriers, including outdated data and inadequate resources. Deviation of policy goals from national goals was also identified. During the review stage, the absence of adequate monitoring mechanisms was noted, which tends to reduce programme efficacy. These factors collectively undermine the potential impact of nutrition programmes and highlight that the core issue is not a lack of nutrition-related policies but a systemic failure in policy implementation and monitoring, which encompasses a range of reasons. Therefore, the study recommends establishing a mandated governance body to enforce multi-sectoral accountability. Future interventions should be co-designed with local authorities and grounded in programme-specific research to ensure they are evidence-based, contextually tailored, and sustainable.

Keywords: Children, Nutrition policies, Policy analysis, Stunting, Wasting

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2659 - Baseline Assessment of School Children's Knowledge, Attitudes and Practices toward School Gardening

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School gardening is an effective educational tool that enhances students' nutrition literacy, agricultural knowledge, environmental awareness and healthy dietary practices. This baseline study assessed the existing knowledge, attitudes, and practices of secondary school students toward school gardening. A cross-sectional study involved 156 secondary school students (Grades 7–9; males 61, females 95) from five schools in two educational zones in the North Western Province of Sri Lanka. Data were collected using a validated self-administered KAP questionnaire consisting of 15 knowledge items, 12 attitude items measured on a Likert-scale and 10 items related to gardening practices. The attitude section covered student engagement, perceived benefits, environmental awareness, home gardening intentions, peer influence, eating habits, and gardening's impact on food choices. Data are shown as descriptive statistics, with means compared using the Mann–Whitney U test. Mean knowledge, attitude, and practice scores were 9.3 ± 2.3 (out of 15), 47.8 ± 6.5 (out of 60) and 8.5 ± 3.9 (out of 20), respectively. No gender differences were found in knowledge ($p=0.76$) or attitudes ($p=0.59$), but males showed significantly ($p=0.02$) higher practice scores (9.5 ± 4.0) compared to females (7.9 ± 3.7). Attitudes towards school gardening were generally positive: 77.6% agreed that they enjoy gardening. Only 14.7% perceived it as tiring and unenjoyable. A majority recognised the educational value of gardening (76.7%) and expressed high environmental awareness (92.3%). Positive shifts were also noted in students' interest in home gardening (85.3%), peer learning (83.3%) and nutrition awareness (72.9%), including healthier eating habits and increased preference for fruits and vegetables. Over 50% reported active involvement in school garden activities. Preliminary findings indicate that students are receptive to school gardening, demonstrating positive attitudes, a moderate level of knowledge, and partial engagement in related activities. This supports the development of targeted, nutrition-sensitive garden-based education within the formal education curriculum in Sri Lanka.

Keywords: Garden-based education, Nutrition-sensitive intervention, Nutrition literacy, School children, School gardening

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2661 - Modification of Waya One-Dish Meals (ODMs) for Sri Lankan Pregnant and Lactating Mothers (PLMs) and Evaluating the Acceptance

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Proper maternal nutrition during pregnancy and lactation supports maternal and fetal health, yet Sri Lankan PLMs often face dietary inadequacies. This included energy and macronutrient shortages along with micronutrient deficiencies. Time constraints, financial limitations, and meal preparation challenges have widened gaps in meeting increased nutrient needs such as energy, protein, iron, calcium, and folate. The aim of this study was to modify Waya ODMs to suit the nutrient requirements of PLMs and to evaluate their acceptance for meals. The preliminary dietary assessment conducted identified shortages in energy and macronutrients among the target group and used as a guidance for ODMs modifications. This study modified 30 Waya ODMs, originally designed previously for university students. Meals were incorporated with all food groups such as cereals, pulses, lean meat, egg, vegetables, nuts and oil and delivered ~525 kcal/serving with balanced macronutrient content as per 26-33g protein, 18-22g fat, 60-90g carbs per meal verified via the estimation by FoodBase 2000. Sensory evaluation used a 7-point hedonic scale. As a pre–test, 50 untrained university students screened random 10 meals to select the most preferred 03 meals. The 25 of target population evaluated acceptability of 03 meals, namely Waya Veggie Burst, Waya Chickpea Delight, and Waya Leeky Pea Carota. Waya Veggie Burst received the highest mean scores (~5.0-6.3) for sensory attributes from PLMs. Modified ODMs address energy and macronutrient inadequacies among PLMs effectively, showing high acceptance. Further studies are warranted to evaluate the acceptance of modified meals using a high number of PLMs. These meals can be used to achieve potential Sri Lankan maternal nutrition goals, promoting healthy population via convenient, culturally appropriate dietary options.

Keywords: Energy intake, Maternal nutrition, One-dish meals, Pregnancy and lactation, Sensory attributes

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2665 - School Food Environment (SFE) as a Barrier to Healthy Eating among Adolescents in Sri Lanka: A Mixed-methods Approach to Inform Intervention Design

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Adolescents in Sri Lanka face a triple burden of malnutrition and a rising rate of non-communicable diseases. However, limited research exists on school-based interventions to tackle these challenges. This study examined adolescents' dietary behaviours in relation to the SFE and their food literacy levels to inform future interventions. A mixed-methods study was conducted across 18 secondary schools in Sri Lanka to explore adolescents' dietary behaviours in relation to the SFE and to assess their food literacy levels. Qualitative data were collected through in-depth interviews with principals (n=15) and teachers (n=22). Twelve focus group discussions were conducted involving 120 students. Food literacy level was quantitatively assessed among 130 students aged 12–14 years (55% girls) using a previously validated tool that measured three domains: knowledge, attitudes, and practices. Thematic analysis was used to analyze qualitative data, and descriptive statistics were used to analyze quantitative data. The qualitative insights identified the existing SFE as a key barrier to healthy eating among adolescents. The food literacy assessment across three domains showed a mean score of 75 ± 1.8 (out of 100) for knowledge and 74 ± 1.5 for attitudes (out of 100). The mean score for practices was 56 ± 1.7, indicating a notable gap between knowledge and actual dietary behaviours. In conclusion, these findings emphasize the need to strengthen the SFE and integrate food literacy interventions into the education system to support positive dietary behaviour among adolescents. In response to the findings, a multi-component, school-based intervention has been developed to enhance the SFE and improve food literacy among adolescents through school garden-based learning, healthier school canteens and interactive nutrition education. Further evaluation will be conducted to assess the impact and scalability of the interventions, which will be the focus of the next phase of this research.

Keywords: Adolescents, Dietary behaviours, Food literacy, Nutrition education, School-based intervention

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2669 - From Policy to Practice: Evaluating Coverage and Quality of the National School Meal Programme in Sri Lanka

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The school meal programme in Sri Lanka has served in improving nutritional status and even school attendance of students, for nearly 100 years. Currently, students in Grades 1-5, and all students in schools with fewer than 100 students, are provided with a morning meal. This study was conducted to assess the gaps and disparities in coverage, quality and procedural efficacy of the school meal programme in five selected districts in Sri Lanka. A cross-sectional study was conducted across 124 schools selected through stratified random sampling from five purposefully chosen districts to represent ethnic and sectoral diversity. Trained data collectors gathered data through interviews with school representatives (N=124) and direct observation (n=75) of the school meal programme. A pre-tested interviewer-administered questionnaire and observation sheet were used to collect data. Quality was assessed based on adherence to the recommended menu, hygienic practices, and food safety. Procedural efficacy was evaluated based on the provision of timely reimbursement and the presence of additional meal programmes. Statistical significance was assessed using the Chi-square test. Coverage was 77.9% for eligible schools, with significantly lower coverage in the Hambantota, Gampaha, and Ampara districts (p = 0.02), as well as in private and religious schools (p < 0.001) and type 1AB schools (p < 0.001). More than three-quarters (77.3%, 58/75) of observed schools adhered to the recommended menu, while Ampara and Vavuniya districts showed significant deviations. Poor hygienic practices were prevalent (60.0%) during food distribution to students. Food safety measures were observed and monitored in 54 (72.0%) schools. Nearly half of the payments to meal providers were significantly delayed in the Ratnapura and Ampara districts, as well as in estate schools. The school meal programme showed discrepancies in its coverage, quality, and management. Thus, measures to improve coverage, quality, and management are highly recommended.

Keywords: Meal programme, Nutrition environment, Nutrition intervention, School children

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2671 - Prevalence of Irritable Bowel Syndrome and Its Association with Symptom Severity and Quality of Life among Sri Lankan Undergraduates

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Irritable Bowel Syndrome (IBS) is a functional gastrointestinal (GI) disorder characterized by recurrent abdominal pain, altered bowel habits, and psychosocial distress, commonly affecting young adults, particularly those at risk due to irregular lifestyles, high stress levels, and inconsistent dietary patterns. IBS can substantially impair quality of life (QOL), influencing daily functioning, emotional well-being, and social engagement. This study aimed to determine the prevalence of self-reported IBS and examine the relationship between IBS symptom severity and QOL among Sri Lankan undergraduates. A cross-sectional study was conducted using a convenience sampling method among undergraduates enrolled in a state university in Sri Lanka. Participants included consenting undergraduates without diagnosed organic GI conditions (inflammatory bowel disease, celiac disease, or lactose intolerance), while those with relevant medical conditions, food allergies, or non-consent were excluded. Data were collected in two phases. In Phase I, 380 undergraduates (41% males and 59% females) participated, and IBS was identified using the Rome IV diagnostic criteria and the Bristol Stool Scale. Phase II included students who met IBS criteria (n = 56) and completed the IBS Symptom Severity Scale (IBS-SSS) and the IBS Quality of Life (IBS-QOL) questionnaire. The prevalence of self-reported IBS was 15%, with subtype distribution as IBS-Constipation (52%), IBS-Diarrhoea (16%), IBS-Mixed (25%), and IBS-Unexplained. Moderate symptom severity (IBS-SSS: 133.09 ± 45.73) and relatively good quality of life (76.04 ± 6.28) were observed. No significant association was found between symptom severity and overall QOL (r = 0.048, p = 0.726), though significant differences were noted in specific domains, including daily activity interference, body image, and health-related worry. IBS-D showed greater activity interference, while IBS-U demonstrated lower body image and health concern. In conclusion, IBS affects a substantial proportion of undergraduates, with distinct subtype-specific effects on daily functioning. These findings underscore the need for targeted interventions to enhance the quality of life among individuals with IBS.

Keywords: IBS subtypes, IBS-QOL, Irritable bowel syndrome, Quality of life, Sri Lankan undergraduates

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2673 - Association between Dietary Patterns and Glycemic Control among Patients with Type 2 Diabetes Mellitus

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Dietary habits play a major role in maintaining glycemic control (GC) among individuals with type 2 diabetes mellitus (T2DM). Identifying specific food patterns associated with GC is essential for effective dietary management. To determine the association between dietary patterns and GC among patients with T2DM, we conducted a cross-sectional study among adults with T2DM, attending the Diabetes and Endocrine Clinic at the National Hospital, Galle. Data on patients' diet was collected using a pre-tested food frequency questionnaire. Blood HbA1c levels of < 7.0% and HbA1c ≥ 7.0% defined the good and poor GC, respectively. Binary logistic regression analysis was used to assess associations between GC and other variables. Among 381 patients, 94.5% patients had received dietary advice during their clinical visits. However, only 49.5 % patients adhered to the recommended diet. Among them, 30% had good GC, while 70 % had poor GC. Red meat (OR=0.25; p=0.022) and raw rice (OR=0.169; p=0.023) consumption showed a significant negative association with good GC, indicating higher intake was associated with poorer control. In contrast, consumption of eggs (at least 1 egg per day) (OR=3.25; p=0.008), green leafy vegetables (OR=3.109; p=0.014), and parboiled rice (OR=11.86; p<0.001), vitamin A-rich vegetables (OR=9.321; p<0.01) demonstrated a significant positive association with good control. There was no association observed between fruit, nuts, pulses, poultry, fish and oil consumption and GC. However, dietary patterns rich in green leafy vegetables, eggs, vitamin A-rich vegetables and parboiled rice are associated with better GC, while diets high in red meat and raw rice impair the GC. These findings highlight the importance of consuming a diet with adequate green leafy vegetables, parboiled rice, and adequate protein to maintain GC in T2DM.

Keywords: Dietary patterns, Glycemic control, Green leafy vegetables, Raw rice, Type 2 Diabetes Mellitus

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Abstracts of

Poster Presentations

2601 - Nutritional Status and Dietary Pattern among Adults in a Rural Post-Conflict Region of the Eastern Province, Sri Lanka

R.S. Akshana[1], P. Sothiraj[2], A. Chandrasekara[3]

Populations in post-conflict regions frequently experience unusual nutritional and health challenges, whereas evidence of their dietary intake and nutritional status is limited. This survey assessed the nutritional status and dietary habits of adults in Kathiraveli, a post-conflict region within the Vakarai Medical Officer of Health (MOH) division, a primary administrative public health unit under the Ministry of Health, Sri Lanka. A community-based cross-sectional survey was carried out among 130 adults between December 2024 and March 2025, using a pre-tested Food Frequency Questionnaire (FFQ) adapted from national dietary surveys and a single 24-hour dietary recall to assess dietary patterns, along with anthropometric measurements, and bioelectrical impedance analysis (BIA). The mean (SD) of height, weight, BMI, MUAC, WC, HC, WHR, fat percentage (FP), muscle percentage (MP), systolic blood pressure (SBP), and diastolic blood pressure (DBP) were 152.76 (8.47) cm; 58.30 (13.45) kg; 24.96 (5.31) kg/m2; 27.58 (4.69) cm; 70.59 (22.82) cm; 81.47 (26.02) cm; 0.88 (0.13); 25.78 (12.19)%; 69.48 (12.39)%; 123.45 (19.16) mmHg; and 82.14 (12.05) mmHg, respectively. Significant difference was observed between the genders in height, weight, BMI, MUAC, WC, HC, WHR, and SBP and DBP ($p<0.05$). In the total population, 7.7% were underweight, 17.7% overweight, and 43.1% obese. Central obesity, as measured by WHR, was recorded with 34.6%, 22.3%, and 43.1% at low, moderate, and high risk, respectively. The mean (SD) dietary diversity score was 3.66 (1.28), whereas mean intakes of protein-rich foods, fruits, vegetables, and dairy were significantly lower than Sri Lankan national dietary recommendations ($p < 0.05$). These results provided evidence of a high prevalence of obesity and central obesity, together with poor dietary diversity, highlighting the imperative to develop culturally sensitive nutrition interventions aimed at improving dietary diversification and decreasing the health hazards associated with widespread obesity in post-conflict settings.

Keywords: Anthropometry, Bio-electrical impedance, Central obesity, Dietary patterns, Nutritional status

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2605 - Knowledge and Perceptions of Food Misconceptions and Facts: A Pilot Study Among Selected Sri Lankan Adults in the Puttalam District

S.M.T. Marliya[1] and A. Chandrasekara[2]

Food misconceptions are nutritional concepts which are poorly justified or even contradict existing scientific evidence, and those are taken as truth by individuals. Knowledge of nutrition is an important tool in tackling misinformation and in the promotion of adequate food choices. This cross-sectional survey aimed to investigate the Knowledge and Perceptions (KP) of a sample of adult Sri-Lankans from Puttalam District regarding a series of food myths and facts and further investigate the reliability of the main sources of information. Sixty-five adult participants were recruited (convenience sampling: 32 males and 33 females, aged 25-50yrs, Sinhalese, Tamils and Muslims) by an interviewer-administered questionnaire in June 2024. Each respondent was asked to indicate whether they agreed or disagreed on 30 food related facts and myths statements on a 5-point Likert scale ranging from strongly disagree to strongly agree (+2, +1, 0, -1, -2 scores for highly correct, correct, no idea, incorrect and highly incorrect responses respectively) and the 4-point Likert scale questionnaire (1- no trust at all, 2-little trust, 3-much trust, 4-full trust) was used to examine the trust on sources of information. The results showed that 69% of participants have poor KP in identifying food misconceptions and facts (0 to negative values), whereas 31% of them have better KP (positive values). Only 6 out of 30 statements were correctly identified by the majority of participants. In terms of source of information, webpages (90.8%) and social networks (89.2%) were poorly trusted, whereas appointments with doctors/nutritionists (90.8%) and health checkup clinics (89.2%) were highly trusted sources of information by the majority of participants. It is concluded that the study sample has poor Knowledge and Perceptions in distinguishing the food misconceptions and facts, that needs to be educated via appropriate sources of information, to promote healthy, balanced, and adequate eating behaviours.

Keywords: Food misconceptions, Health, Nutritional knowledge, Perception, Source of information

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2608 - Weight and Shape Dissatisfaction and Its Association with Nutritional Status of Adolescent School Children in Matara Educational Division: A Preliminary Study

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Weight and shape dissatisfaction is a growing concern among adolescents with significant implications for their well-being. This study aimed to assess its prevalence and association with nutritional status among adolescent schoolchildren in Matara Educational Division. A descriptive, cross-sectional study was conducted among 168 adolescents aged 16-19 years attending schools in Matara Educational Division. Participants were selected from five schools using a cluster sampling technique. Weight and shape dissatisfaction were assessed using the validated, Sinhala version of Eating Disorder Examination Questionnaire 6.0. Nutritional status was assessed using Body Mass Index (BMI) per age. Data were analysed using Statistical Package for Social Sciences software, version 30, using descriptive statistics and Chi Square test. Mean age (SD) was 16.9 (0.9) years. The majority were Sinhalese (98.8%), Buddhists (99.4%) and females (52.4%). The majority (53%) were from GCE O/L classes. Over 61% of adolescents were from rural areas, while 38.1% were from urban areas. Weight dissatisfaction was reported among 61.3% of the adolescents, with 11.3% having moderate dissatisfaction and 6.0% having marked dissatisfaction. Shape dissatisfaction was reported among 66.1% of the adolescents, with 8.9% having moderate dissatisfaction and 7.1% having marked dissatisfaction. The majority (64.9%) had normal BMI for age, 14.3% had thinness, 9.5% had severe thinness, 9.5% had overweight, and 1.8% had obesity. Weight dissatisfaction showed a significant association with high BMI ($p<0.05$) but not with low BMI or gender. Shape dissatisfaction did not show a significant association with BMI or gender. A high prevalence of weight and shape dissatisfaction was observed among adolescents with no evidence of gender difference. High BMI was associated with weight dissatisfaction among adolescents. This highlights the need of school based body image education, access to psychosocial support and health promotion strategies prioritising wellbeing over appearance. Further research is recommended to explore underlying causes and gender-specific patterns of weight and shape dissatisfaction among Sri Lankan adolescents.

Keywords: Adolescents, Nutritional status, School children, Sri Lanka, Weight and shape dissatisfaction

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2611 - Phenolic Contents and Antioxidant Activities of Finger Millet and Foxtail Millet-based Novel Instant Beverage Mixes

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Finger millet (*Eleusine coracana*) and foxtail millet (*Setaria italica*) are prominent gluten-free cereals cultivated in Sri Lanka, which have gained renewed interest in developing innovative food products due to their high nutritional value. Millets are abundant in dietary fibre and various phytochemicals, including phenolic compounds. This research aimed to develop novel instant dried beverage mixes from both millet varieties and assess their antioxidant properties and consumer acceptability. The beverage mixes were prepared from both germinated and non-germinated grains of each millet type. A sensory evaluation was conducted involving 50 untrained participants to gauge the consumer acceptability of the new products. The physical attributes and rehydration characteristics of the beverage mixes were also determined using standard procedures. The study further investigated the total phenolic content (TPC) and total flavonoid content (TFC) in both soluble and bound phenolic extracts of the dried mixes. To measure the antioxidant activity, three different assays were employed: reducing power (RP), 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity (DRSA), and ferrous ion chelating activity (FICA). The non-germinated finger millet beverage mix was the most favor with consumers, while the non-germinated foxtail millet mix was the least favoured. Germinated millet mixes showed superior rehydration capabilities, whereas the finger millet-based mixes were noted for their favourable physical properties. The TPC in the soluble and bound extract ranged from 21.84 to 154.79 mg of ferulic acid equivalent/ gram of dry matter and 11.02 to 45.32 mg of ferulic acid equivalent/gram of dry matter, respectively. The findings indicated that both millet types have significantly higher antioxidant activity (47.67 to 527.82 mg of Trolox equivalent/ gram of dry matter). In conclusion, instant beverage mixes derived from both finger and foxtail millets contain substantial levels of phenolic compounds and exhibit notable antioxidant activities, which could be a valuable addition to dietary wellness strategies.

Keywords: Bound phenolics, Germinated, Non-germinated, Physical attributes, Sensory

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2613 - Vitamin E Profiles of Popular Traditional Rice (*Oryza sativa* L.) Varieties of Sri Lanka

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Rice, a dietary staple for over half the global population, is reported to contain vitamin E. The presence of vitamin E in rice is associated with various health benefits. Vitamin E is present as α, β, γ and δ tocopherols and tocotrienols, collectively named as tocochromanols. However, limited research is still available on the vitamin E content in rice globally and locally. This study aims to investigate the vitamin E profiles of popular traditional rice varieties (TRVs) in Sri Lanka. Ten TRVs, namely, *Herath Banda, Pachchaperumal, Kurulu Thuda, Rathel, Kalu Heenati, Suwadel, Madathawalu, Murungakayan, Pokkali*, and *Kahawanu,* obtained from the Rice Research and Development Institute, Batalagoda, Sri Lanka, were used in the study. The vitamin E was extracted from rice brans (n=3) of selected rice varieties, analyzed using a high-performance liquid chromatography coupled with a fluorescence detector, and the results were expressed on a dry weight basis for whole grain rice. The results showed significant variations ($p \le 0.05$) in vitamin E contents among the studied TRVs. The total tocopherol and tocotrienol contents varied between 1226.2-1746.3 and 2496.1-3352.3 µg/100 g, respectively. The α, β, γ and δ tocopherols were in the range of 449.8- 680.6, 33.0-68.8, 700.9-942.4, and 60.5-93.5 µg/100 g, respectively. Furthermore, α, γ and δ tocotrienols ranged from 313.2-577.3, 2063.9-2953.3, and 45.8 -81.5 µg/100 g, respectively. Generally, γ-tocotrienol was the most prevalent vitamin E component among the studied rice varieties, followed by γ-tocopherol, α-tocopherol, and α-tocotrienol. Interestingly, *Madathawalu* showed the highest levels of total tocopherol, total tocotrienol, γ-tocopherol, α-tocopherol and γ-tocotrienol. Further, *Kurulu Thuda* had the highest β-tocopherol, while *Kalu Heenati* had the highest δ-tocopherol. *Murungakayan* and *Herath Banda* had the highest α-tocotrienol, and *Suwadel* had the highest δ-tocotrienol. Overall, the findings revealed a diverse range of vitamin E profiles among the studied TRVs, with *Madathawalu* standing out as particularly rich in tocochromanols.

Keywords: Sri Lankan rice**,** Tocopherols, Tocotrienols, Traditional rice, Vitamin E

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2615 - Dietary Fat Intake and Risk of Developing Cardiovascular Disease: A Case-control Study

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Cardiovascular disease (CVD) is the leading cause of death in Sri Lanka. Diet definitely plays a vital role in the development and progression of CVD. Findings on dietary fat intake and the development of CVD are inconsistent. Therefore, the current study was intended to assess the association of dietary fat intake and risk of developing CVD. A case control study was conducted with thirty-two (n=32) individuals who had undergone the first reported and verified myocardial infarction (MI) or stroke during the last three months as cases. Thirty-nine (n=39) apparently healthy individuals without a known history of CVD were selected as controls. Details of the general lifestyle pattern and disease history were collected. Anthropometry, body composition and blood pressure of the participants were measured following standard procedures. Dietary intake was assessed using a semi-quantitative food frequency questionnaire and 24-hr recalls. Total energy intake, energy from carbohydrates, fat and proteins and micronutrient intake were similar among cases and controls. A positive association was found between CVD status and saturated fat intake (OR= 1.05, CI 95% 1.00–1.10, $P = 0.041$). However, there were no significant associations observed between CVD and the intake of total fat, trans fatty acids (TFA), monounsaturated fatty acids (MUFA), or polyunsaturated fatty acids (PUFA). Out of the major SF contributors of the diet, coconut milk and coconut scraping intakes were similar between the two groups. However, coconut oil consumption was significantly ($P<0.05$) higher among controls (15.5 ± 10.4 ml/day) compared to the cases (10.5 ± 8.7 ml/day). Milk and milk products and meat appeared to be contributors to SF intake among cases. The intake of MUF and PUF was nearly half of the recommendation among both groups. Therefore, a moderate increase in saturated fat (SF) intake may be a risk factor for MI or stroke among the study participants. Low MUF and PUF intake may have increased the risk of CVD by limiting its beneficial effects.

Keywords: Cardiovascular diseases, Dietary intake, Risk factors, Saturated fat

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2616 - Effect of Oven Roasting Pretreatment on Bioactive and Functional Properties of Flaxseed (*Linum usitatissimum* L.) Oil

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Flaxseed (*Linum usitatissimum* L.) oil (FSO) is rich in polyunsaturated fatty acids and antioxidants, with increasing demand in the functional food and nutraceutical sectors. However, the influence of thermal pretreatments, such as conventional oven roasting, on the functional quality of FSO remains undiscovered. In this study, flaxseeds were oven-roasted at 180 °C for 5 and 10 minutes, and the functional properties of the extracted oil were compared with those of oil obtained from untreated seeds (control) and a commercially available cold-pressed FSO. Oil extraction was carried out using Soxhlet extraction with a 1:2 (v/v) ethanol–hexane solvent system. The oils were analysed for total phenolic content (TPC), DPPH radical scavenging activity (RSA), and carotenoid content. Oven roasting significantly increased TPC, with values of 43.16 ± 0.21 mg GAE/100 g and 38.92 ± 0.13 mg GAE/100 g for 5- and 10-minute treatments, respectively, compared to the control (34.69 ± 0.46 mg GAE/100 g) and cold-pressed FSO (32.32 ± 1.14 mg GAE/100 g). RSA increased to $56.21 \pm 0.53\%$ and $59.34 \pm 1.02\%$ in oils obtained from seeds oven-roasted for 5 and 10 minutes, respectively, compared with the control ($51.04 \pm 0.08\%$) and commercially available cold-pressed FSO ($49.01 \pm 0.11\%$). Similarly, carotenoid content increased to 1.60 ± 0.02 mg kg^{-1} and 2.31 ± 0.04 mg kg^{-1} following 5- and 10-minute roasting treatments, respectively, compared with the control oil (1.04 ± 0.02 mg kg^{-1}) and cold-pressed FSO (1.02 ± 0.02 mg kg^{-1}). The higher RSA observed after extended roasting, despite a lower TPC compared to the oil from 5-minute treatment, suggests that antioxidant activity depends not only on phenolic concentration. Overall, oven roasting, particularly for 5 minutes, enhanced the functional quality of FSO, while extended roasting further improved antioxidant activity, indicating its potential as an effective pretreatment for edible oil production.

Keywords: Antioxidant activity, Flaxseed oil, Oven roasting, Total phenolics

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2617 - Bio-fabricated Silver Nanoparticles from *Solanum virginianum*: Antioxidant, Antibacterial, Cytotoxic and Melamine Detection

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Solanum virginianum (*S. virginianum*) is recognised as a valuable medicinal plant with strong potential for the green synthesis of silver nanoparticles (AgNPs), which offer diverse applications in nutrition and food safety. In this research, *S. virginianum* AgNPs were synthesised using green-based extracts of different parts of the plant and antioxidant, cytotoxicity, melamine adulteration and antibacterial properties were evaluated. A water-based extraction method at 80°C for 20 minutes was applied to five parts: leaf, stem, seed, root, and fruitpeel, to synthesise AgNPs. Water extracts (WEs) displayed the presence of proteins, carbohydrates, tannins, phenols, saponins and alkaloids, which will act as reducing agents in AgNP synthesis. The formation of nanoparticles at 90 °C for 30 minutes was visually confirmed by a colour intensification and a characteristic peak at 400 nm in the UV-Visible spectrum. Scanning electron microscopy of the Leaf_AgNP revealed spherical particles with diameters of $30 - 40$ nm. The antioxidant capacity of *S. virginianum* AgNPs was compared with their respective WEs using total flavonoid content, total phenolic content, and total antioxidant capacity assays, in which AgNPs exhibited significantly higher values than respective WEs; p=0.04187, p=0.000284, p=0.03063, respectively ($p < 0.05$). Toxicity assessment showed 100% viability of *Artemia salina* after 48 h exposure and zebrafish after 92 h exposure to 200 ppm of AgNPs, which were calculated using the percentage viability equation. Leaf_AgNP successfully detected melamine at concentrations of 1 ppm, 3 ppm, and 5 ppm. The Leaf_AgNP also detected melamine in spiked and non-spiked milk. Additionally, among all synthesised AgNPs, Leaf_AgNP exhibited strong antibacterial activity against Gram-negative bacteria (*Escherichia coli*) with a higher zone of inhibition than against Gram-positive bacteria (*Staphylococcus aureus*). These findings suggest that *S. virginianum* AgNPs hold promising potential for the development of new antimicrobial and antioxidant agents with low toxicity, and the leaf shows the most effective characteristics.

Keywords: Antioxidant, Cytotoxicity, Green synthesis, Melamine, *Solanum virginianum*

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2619 - Improving Food Applications of Seaweed (*Eucheuma cottonii*) by Enhancing Gel Strength and Sensory Quality for Hydrocolloid-Based Products

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Eucheuma cottonii is a valuable source of carrageenan, widely applied as a hydrocolloid in food products. However, its dark colour and strong odour restrict direct applications in the food industry, despite its nutritional and functional importance. This study was undertaken to optimize decolorization treatments that preserve gel strength while reducing undesirable sensory attributes, and to advance the development of hydrocolloid-based food products. Seaweed was collected from local farmers in Mannar, Sri Lanka, and subjected to comparative decolorization trials using 3% hydrogen peroxide, sodium metabisulfite, and ascorbic acid for 24 hours at ambient temperature, followed by hot-water extraction at 70 °C for 1 hour. Among these, hydrogen peroxide exhibited the highest gel strength and deodorization scores on the hedonic scale. Further optimization using hydrogen peroxide at 0.5%, 1%, and 3% for 24, 48, and 72 hours revealed that 0.5% H_2O_2 for 48 hours achieved the best balance between decolorization and gel strength retention. This treatment improved lightness (L value 18.58) while maintaining a high gel strength (0.18 N). Extending the treatment to 72 hours further increased decolorization (L value 20.21) but significantly reduced gel strength (0.11 N). Statistical analysis confirmed a strong correlation between treatment duration and gel strength at 0.5% H_2O_2 ($r = 0.912$, $p < 0.001$). Quality evaluations of the optimized gel confirmed the absence of heavy metals using Microwave digestion/ICP-MS method (Pb, Cd, Hg, As), while mineral analysis revealed the presence of Mg, Zn, Ca, Cu, Na and K. These findings demonstrate that optimized decolorization with 0.5% H_2O_2 for 48 hours not only enhances the visual and sensory quality of *E. cottonii* but also preserves its functional gel properties, supporting its application in developing high-quality hydrocolloid-based food products such as jam & jellies, confectioneries, processed meat analogues, and texture-modified foods.

Keywords: Carrageenan, Decolorization, *Eucheuma cottonii,* Gel strength, Hydrocolloid-based food products

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2620 - Physicochemical and Sensory Evaluation of Nori-like Sheets Developed from *Ipomoea aquatica* (Kangkung) Leaves

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Nori is a type of edible seaweed used as a snack or food wrapper produced using edible seaweed like *Porphyra spp* and is commonly consumed by Asian populations such as Japanese and Chinese. A recent surge in global demand for nori has drastically increased the consumption of seaweed. Conversely, several recent studies have highlighted possible health concerns related to seaweed consumption, such as iodine-induced hypothyroidism and heavy metal intake. Meanwhile, leafy green vegetables of Sri Lanka, such as Kangkung (*Ipomoea aquatica*), are known for their high nutritional content; however, the availability of value-added products derived from these leafy greens is limited in the market. Therefore, in this study, a nori-like sheet was developed using Kangkung leaves. Then its proximate composition, shelf-life, sensory attributes, colour and texture were evaluated. Sensory evaluation by 40 untrained panellists using a 9-point hedonic scale showed that the developed product was equally liked overall compared to conventional nori, but scored significantly higher for umami taste and seaweed-like flavour. After one week of ambient storage conditions, the bacterial count of the developed sheet was 1.17×10^5 CFU/g without preservatives. The proximate analysis revealed that 100 g of the developed sheets contained 13.9 g of moisture, 7.32 g of ash, 9.94 g of fibre, 25.89 g of protein, 13.00 g of fat, 29.95 g of carbohydrate and 340.36 kcal of energy on a wet weight basis. Moreover, compared to control, the developed product exhibited a darker colour with lower redness and yellowness while key textural attributes, hardness, chewiness, cohesiveness and gumminess were not significantly different ($p>0.05$). Overall, the developed nori-like sheets have the potential to serve as an alternative to conventional nori due to their favourable nutritional profile, comparably similar sensory properties and textural attributes. Further studies are needed to enhance commercial potential by improving shelf-life stability.

Keywords: Consumer acceptance, Edible sheet, Green leaves, Proximate composition, Texture

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2622 - Knowledge, Attitudes and Practices Related to Iron Deficiency Anaemia among Secondary School Children in Badulla District

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Iron deficiency anaemia (IDA) is a major nutritional concern among adolescents, especially in underserved regions of Sri Lanka. This study assessed the knowledge, attitudes, and practices (KAP) related to IDA among secondary school students (n=399), aged 15–17 years, in the Badulla District using a descriptive cross-sectional design. Data were collected through a pretested, validated questionnaire and analysed using SPSS Version 21.0. Ethical approval was obtained from the Ethical Review Committee of the Institute of Biology, Sri Lanka (ERC IOBSL 381/12/2024). The knowledge score of the participants ranged from 0 to 36, with a mean of 11.09 ± 7.04. Poor knowledge, with scores ranging from 0 to 12, was noted in 59.6% of students. Attitude scores ranged from 0 to 16, with a mean of 9.01 ± 2.3. The majority (68.2%) of the students had neutral attitudes with scores ranging between 6 and 10. The total practice score ranged from –3 to 133, with a mean of 49.6 ± 22.2. A lack of awareness in their daily routines, with scores ranging from 46-89 were noticed in 47.6% of students. Only 3.0% had undergone haemoglobin testing in the past year, and 19.5% reported receiving iron-folic acid supplementation. Frequent intake of iron absorption inhibitors was noted, with 44.6% of students consuming tea and 36.6% consuming milk before meals. Low consumption of heme iron sources was also observed, as 89.2% reported never or rarely consuming organ meat. Students from tea estate communities and low-income households were especially vulnerable. The findings highlight substantial gaps in adolescent nutrition literacy and behaviour, underscoring the urgent need for gender-inclusive, culturally appropriate school-based interventions to prevent IDA and improve long-term adolescent health outcomes.

Keywords: Attitudes, Badulla District, Iron Deficiency Anaemia (IDA), Knowledge, Practices

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2625 - Cinnamon as a Functional Ingredient in Wellness-Focused Foods: Assessing Antioxidant Enhancement and Sensory Feasibility

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Cinnamon is widely recognized for its diverse bioactive properties that offer significant potential for functional food innovation and wellness promotion. This study aimed to determine the feasibility of incorporating *Cinnamomum zeylanicum* (Ceylon Cinnamon) as a functional ingredient into common foods and assess its subsequent impact on antioxidant activities crucial for wellness. High-quality, export-grade *Cinnamomum zeylanicum* bark was processed into a fine powder and incorporated into three distinct food matrices: peanut butter, butter cake and wine biscuits, each formulated with varying concentrations. A sensory evaluation involving 50 untrained panelists was first conducted to determine the most sensorially acceptable concentration for each product, ensuring consumer acceptability. Subsequently, to quantify the biochemical impact, phenolic compounds were extracted from the cinnamon-incorporated samples. These extracts underwent comprehensive analysis to measure total phenolic content (TPC), total flavonoid content (TFC), 2,2-diphenyl-1-picrylhydrazyl radical scavenging activity (DRSA), ferrous ion chelating activity (FICA), and reducing power, with comparisons made against control samples without cinnamon. Cinnamon incorporation significantly increased TPC in wine biscuits (soluble phenolics: 31.7 ± 1.89 to 42.7 ± 2.05 µg FAE/g; bound phenolics: 61.1 ± 2.01 to 67.5 ± 3.35 µg FAE/g). Peanut butter demonstrated the highest TPC values (soluble phenolics: 77.44 µg FAE/g; bound phenolics: 84.66 µg FAE/g). TFC significantly increased in wine biscuits (3.94 ± 0.53 to 8.65 ± 0.81 µg CE/g), peanut butter (8.97 ± 2.39 to 16.78 ± 1.81 µg CE/g), and butter cakes (5.02 ± 0.61 to 6.95 ± 1.22 µg CE/g). DRSA and FICA values significantly increased in all cinnamon-incorporated foods. Importantly, a safety evaluation was performed by quantifying coumarin levels. The coumarin content per serving for each product remained within the tolerable daily intake (TDI) of 0.1 mg/kg body weight (wine biscuits: 33.84 µg, peanut butter: 0.04 mg, butter cake: 22 µg per serving). The incorporation of cinnamon effectively enhances antioxidant properties in common foods while maintaining consumer acceptability and safety, demonstrating significant potential for developing wellness-focused functional foods.

Keywords: Antioxidant activities, Bioactive properties, Cinnamon, Phenolic content, Wellness

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2627 - Evaluation of the Oxidative and Thermal Stability of Coconut Oil Fortified with Coconut Testa Extract

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Coconut oil is highly susceptible to oxidative degradation during high-temperature processing, necessitating strategies to improve its stability. This study evaluated the oxidative stability of coconut oil fortified with coconut testa extract (CTE) using an emulsion-based fortification system (EFS). Coconut testa, a polyphenol-rich by-product, was extracted with 80% (v/v) methanol and incorporated into coconut oil at concentrations of 60, 80, and 100 mg. Fortified oils were analysed for antioxidant activity, total phenolic content (TPC), peroxide value (PV), iodine value (IV), free fatty acid content (FFA%), and fatty acid profile at 30 °C, 150 °C, and 180 °C using standard methods. At 150 °C, moderate fortification (60–80 mg) significantly enhanced oxidative stability. Antioxidant activity increased from $13.33 \pm 0.89\%$ to $19.23 \pm 1.26\%$, while PV decreased from 3.97 ± 0.02 meq/kg to 1.98 ± 0.01 meq/kg. Although phenolic retention slightly declined (30.31 ± 4.66 to $24.70 \pm 0.13\,\mu g/g$), oil quality improved with reduced oxidation. However, FFA% increased from $0.32 \pm 0.00\%$ to $0.52 \pm 0.001\%$, and IV increased from 1.90 ± 0.02 to 2.84 ± 0.07 g I_2/100 g oil, indicating the formation of reactive double bonds at higher fortification. At 180 °C, excessive heating triggered phenolic degradation and potential pro-oxidant effects. Increasing CTE from 0 to 80 mg led to higher PV (8.91 ± 1.33 to 23.74 ± 0.24 meq/kg), FFA% ($0.26 \pm 0.02\%$ to $0.54 \pm 0.02\%$), and IV (2.80 ± 0.01 to 2.92 ± 0.03 g I_2/100 g oil). The fatty acid profile of coconut oil remained stable across all treatments, reflecting its inherent thermal resilience. Overall, CTE fortification effectively improved the oxidative and thermal stability of coconut oil, but its protective role was strongly influenced by both the concentration of extract and the processing temperature.

Keywords: Coconut oil, Coconut testa extract, Emulsion-based fortification, Oxidative and thermal stability

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2628 - Estimation of Aflatoxin Exposure Levels among Sri Lankans – A Pilot Study

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Aflatoxins, carcinogenic mycotoxins produced by *Aspergillus species*, present significant global health concerns due to their potent carcinogenic, teratogenic, and mutagenic effects. Aflatoxin B1, the most toxic variant, is classified as a group 1 carcinogen by the International Agency for Research on Cancer. This study aimed to quantify the dietary intake of the foods at risk of being contaminated with aflatoxins based on the literature and to assess the correlation between the dietary intake of those foods and population-wide aflatoxin exposure levels among Sri Lankans. A cross-sectional dietary survey was conducted among 100 adults representing 25 districts in Sri Lanka, using a food frequency questionnaire and 24-hour dietary recall. A robust database of aflatoxin concentrations in various food commodities was established by using data from published scientific literature. Statistical analyses were performed using IBM SPSS version 23. A risk assessment based on the margin of exposure (MOE) revealed that parboiled rice has the greatest health risk. A very strong positive correlation ($r = 0.972$, $P < .05$) was observed between the daily dietary intake of chili powder and its associated aflatoxin exposure level. Furthermore, strong statistically significant correlations were identified for cardamom ($r = 0.948$, $P < .05$), tea ($r = 0.929$, $P < .05$), biscuits ($r = 0.907$, $P < .05$), turmeric ($r = 0.867$, $P < .05$), parboiled rice ($r = 0.849$, $P < .05$), and cloves ($r = 0.834$, $P < .05$). Moderate correlations were noted for cinnamon ($r = 0.270$, $P < .05$), milk powder ($r = 0.380$, $P < .05$), coconut oil ($r = 0.442$, $P < .05$), dhal ($r = 0.549$, $P < .05$), cumin ($r = 0.599$, $P < .05$), and curry powder ($r = 0.630$, $P < .05$). These findings highlight widespread exposure to aflatoxins and urgent necessity for mitigating the associated health risks.

Keywords: Aflatoxin, Aflatoxin exposure level, Carcinogenic, Margin of exposure, Risk assessment

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2629 - Validating Traditional Wisdom for Modern Nutrition: Bioactive Potential and Public Awareness of *Polyscias scutellaria* in Sri Lanka

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In the context of "One Health, One Nutrition," leveraging underutilised indigenous plants like *Polyscias scutellaria* (Burm.f.) Fosberg (recognised in Sri Lanka as '*'Koppa kola''*) offers a sustainable pathway to enhance public health. This plant, a staple in Sri Lankan traditional medicine long consumed for general wellness, holds significant potential as a functional food, yet its scientifically validated benefits remain largely unknown to the public. This study was therefore designed to bridge this gap by reviewing its pharmacology and assessing local ethnobotanical knowledge. A dual methodology was employed. First, a comprehensive literature review (1998–2024) of PubMed, Google Scholar, and ScienceDirect was conducted to analyse the phytochemistry and pharmacological properties of *P. scutellaria*. Second, a questionnaire-based cross-sectional survey of 385 Sri Lankan participants was performed to evaluate public awareness, consumption patterns, and traditional knowledge. Survey data were subsequently analysed for descriptive frequencies using IBM SPSS Statistics 22 software. The literature review, encompassing 50 articles, confirmed that *P. scutellaria* possesses significant antioxidant, anti-inflammatory, anti-diabetic, and lactogenic properties. The phytochemical composition of the plant indicates that it contains flavonoids, triterpenoid saponins, and alkaloids. The survey results revealed a significant disconnect between its potential and current practice: while 90.6% of participants could identify the plant and 61.8% consumed it as food, only 8.8% used it for specific medicinal purposes. Critically, 56.1% consumed it with no awareness of its therapeutic value. This study highlights a clear opportunity to translate traditional knowledge into evidence-based nutritional solutions. Scientific validation and promotion of indigenous food sources like *P. scutellaria* can lead to the development of novel functional foods that support the health of people while honouring the biodiversity of the planet. This approach directly aligns with the 'One Health' framework and underscores the fundamental importance of integrating ethnobotany into modern nutrition science.

Keywords: Bioactive compounds, Ethnobotany, Functional foods, *Polyscias scutellaria,* Public awareness

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2630 - Knowledge, Attitudes and Practices Related to Vitamin D in Young Adults in Rural Sri Lankan Settings

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The human body synthesizes vitamin D in the skin through sun exposure. It is crucial for maintaining bone and muscle health, immune function, and preventing chronic diseases. However, vitamin D deficiency is highly prevalent in Sri Lanka and many other countries, irrespective of sunlight availability. This study aimed to assess the Knowledge, Attitudes, and Practices (KAP) related to vitamin D in young adults in rural Sri Lankan settings. A cross-sectional study was conducted among 120 young adults from three selected Grama Niladhari Divisions in the Pannala Divisional Secretariat. Data were collected using an interviewer-administered questionnaire consisting of three sections: knowledge, attitudes, and practices related to vitamin D. Knowledge was assessed using questions on vitamin D sources, functions and deficiency signs. Attitudes were assessed using statements rated on a Likert Scale, reflecting participants' perceptions and beliefs regarding vitamin D. Practices were assessed based on behaviours related to sun exposure and dietary intake. Scores for each category were converted into percentages, with higher scores (>75%) indicating better knowledge, more positive attitudes, or healthier practices. Scores between 50 – 74% were considered "moderate" KAP, while scores <50% were considered "poor" KAP related to vitamin D. The findings of this study revealed that the study population's mean knowledge score related to vitamin D was 42.1 ± 13.3. However, the mean attitude score toward vitamin D was 79.6 ± 8.9, and the mean practice score related to vitamin D was 65.6 ± 8.5. Significant associations were observed between education level and knowledge scores ($p = 0.037$), demonstrating that higher education levels have been linked with better vitamin D knowledge. Age was significantly associated with attitude scores ($p < 0.001$), indicating that older participants had more positive attitudes regarding vitamin D. Gender was significantly associated with practice scores ($p < 0.001$), revealing that males were engaged in more healthy practices related to vitamin D than females. In conclusion, this study discovered that many Sri Lankan young adults in rural settings exhibited poor knowledge, good attitudes and moderate practices related to vitamin D.

Keywords: Attitudes, Knowledge, Practices, Vitamin D, Young adults

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2632 - Association between Food Cravings and Anthropometric Measures among Postmenopausal Women in Kandy District, Sri Lanka

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Menopause marks the end of a woman's reproductive years with the permanent cessation of menstruation. Postmenopausal women commonly experience cravings for energy-dense food, potentially due to hormonal fluctuations. Evidence suggests that low oestrogen levels increase sugar cravings; however, in-depth research on food craving patterns after menopause is limited. Thus, the present study aimed to assess the association between food craving patterns and anthropometric measures among postmenopausal women in the Sri Lankan context. This cross-sectional study included postmenopausal women aged 45–60 years who had experienced amenorrhea for at least 12 consecutive months (N=40). Participants were recruited from the Kandy District, Sri Lanka, using convenience sampling. Anthropometric measurements, including weight, height, body mass index (BMI), and waist-to-hip ratio, were obtained using standard procedures. Food cravings were assessed using the standardized Food Craving Questionnaire–Trait, reduced version (FCQ-T-r), and a Food Craving Inventory (FCI) validated for the study population. The mean weight of the participants was 65.32 kg ($\pm$9.92), height was 1.515 m ($\pm$0.049), and BMI was 28.52 kg/m^2 ($\pm$4.75), classifying most as obesity class I according to Asia-Pacific BMI criteria. The mean waist-to-hip ratio was 0.90 ($\pm$0.05), reflecting a predominance of central obesity. Based on FCQ-T-r scores, the majority of participants (85.0%) were categorized as having non-clinical trait food cravings (score < 32), while 12.5% fell within the borderline range (32–54), and 2.5% exhibited clinically relevant trait food cravings (score > 54). No statistically significant association was observed between FCQ-T-r scores and BMI categories (p=0.927). Among the four FCI subscales, cravings were highest for high-carbohydrate food (mean score 2.403$\pm$0.706), followed by sweets (2.256$\pm$0.640), high-fat (2.053$\pm$0.566), and fast-food fat (1.956$\pm$0.566), with no significant variation across BMI groups. In conclusion, no significant association was identified between BMI categories and food craving patterns among the studied group of postmenopausal women. However, conducting a mass-scale study is required to link this with biomarkers, nutrition intake, and other associated dietary habits to understand the exact picture of the impact of hormonal fluctuation on the overall health of the postmenopausal life stage.

Keywords: Anthropometry, BMI, Food craving, Obesity, Postmenopause

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2633 - Assessment of Dietary Intake, Physical Activity and Socioeconomic Factors among Postmenopausal Women Attending Teaching Hospital Peradeniya: A Preliminary Cross-Sectional Study

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Postmenopausal women face an elevated risk of NCDs, largely due to hormonal shifts and associated lifestyle changes. In this context, a comprehensive dietary assessment is crucial for understanding nutritional patterns and guiding effective interventions. The present study investigated dietary patterns, physical activity, and health complications among post-menopausal women visiting Peradeniya Teaching Hospital during February-March 2025. A preliminary cross-sectional study was conducted among 80 postmenopausal women (45–65 years). Participants were recruited using a convenience sampling method. Data collection was carried out through a series of structured questionnaires, including a self-developed instrument to assess socioeconomic background and clinical history, a 24-hour dietary recall, an 85-item food frequency questionnaire (FFQ), and the World Health Organization's Global Physical Activity Questionnaire. Further, anthropometric measurements were obtained using standard instruments. Descriptive statistical analysis was performed using SPSS-23. The mean age of menopause was 47 years. Ethnic distribution was Sinhala 83.3%, Muslim 8.8% and Tamil 7.5%. The mean BMI was 26.47 kg/m² (± 4.23kg/m²), and most participants (78%) were overweight. The mean body fat was 36.40% (± 4.71%), and the average visceral fat level was 10.11% (±4.42%), indicating elevated adiposity. Central obesity was common, with a waist-to-hip ratio (WHR) of 0.872 ± 0.05. As per physical activity, 62% lead a sedentary lifestyle. FFQ highlighted that consumption of carbohydrates comprised 42% of dietary intake, while fruits were the lowest (4%). The participants' calorie intake was moderate (1467.6 kcal ±388.3 kcal) with carbohydrates dominating the diet (211.7±55.8 g). Protein intake (49.6 g±13.4 g) was adequate, with a rich mix of plant and animal sources. Fat consumption (45.3±18.1 g) was high in some participants due to fried items, coconut-based dishes, milk tea and fried snacks. This multi-dimensional approach enabled a comprehensive assessment of dietary intake relevant to postmenopausal obesity. Further, findings highlight the need for targeted interventions to improve lifestyle and reduce NCD risk among post-menopausal women.

Keywords: Dietary patterns, FFQ, Non-communicable diseases, Post-menopause Obesity

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2635 - Evaluating the Impact of Weight Reduction on Insulin Resistance in Middle-Aged Sri Lankan Adults

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Insulin resistance (IR) is a key metabolic dysfunction linked to type 2 diabetes mellitus (T2DM) and cardiovascular disease, with a rising prevalence in South Asians including Sri Lankans, who exhibit metabolic disorders at relatively lower body mass indices compared to Western populations. This prospective interventional study evaluated the effect of body weight reduction on improving insulin sensitivity and related metabolic parameters in 40 middle-aged (30-45 years) Sri Lankan adults, comprising 26 females (F) and 14 males (M). Baseline and post-intervention assessments include anthropometric indices (BMI, total body fat percentage, visceral fat percentage, skeletal muscle content and waist circumference), biochemical markers (fasting blood glucose and triglycerides) and blood pressure. Insulin resistance was estimated using the validated Triglyceride-Glucose (TyG) index. Participants received a structured, culturally sensitive lifestyle modification program over six weeks, involving nutritional education and physical activity promotion tailored to local contexts. Primary outcomes focused on changes in the TyG index reflecting improvements in insulin sensitivity while supporting data from lifestyle-related questionnaires, including the Depression Anxiety Stress Scale, International Physical Activity Questionnaire, Sleep Quality Index, and Food Frequency Questionnaire, facilitated population characterization and behavioral interpretation. Paired t-tests demonstrated significant post-intervention improvements in body weight ($P = 0.000$), waist circumference ($P = 0.003$), and BMI ($P = 0.000$). Fasting blood glucose ($P = 0.000$) and triglyceride levels ($P = 0.036$) also showed significant reductions, resulting in a markedly improved TyG index ($P = 0.000$), indicating enhanced insulin sensitivity. Similar improvements in insulin sensitivity following modest weight reduction have been reported in intervention studies from other countries. However, this study is among the first in Sri Lanka to demonstrate such effects using the TyG index. These findings validate weight reduction as an effective, non-pharmacological approach in improving insulin sensitivity and mitigating metabolic syndrome risk in middle-income South Asian populations.

Keywords: Insulin resistance, Metabolic syndrome, TyG Index, Type 2 diabetes, Weight reduction

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2637 - Development of Beetroot (*Beta vulgaris* L.)-Pigmented Probiotic Set Yogurt as a Natural Colourant-Based Product

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The increasing consumer demand for natural food colourants and functional products has encouraged the investigation of plant-derived pigments as substitutes for synthetic colours. Beetroot (*Beta vulgaris* L.), rich in Betalains, was used in this study to develop a probiotic set yoghurt replacing synthetic dyes. Steam-blanched beetroot puree was added at different concentrations (7%, 9%, and 10% w/w) and incubated at 37°C, 43°C, and a combination of 37°C followed by 43°C using a full factorial design. Sensory evaluation was conducted to identify the most acceptable formulation, which was then compared with a control (yoghurt without beetroot puree, incubated at 43°C) for physicochemical, phytochemical, microbiological, and shelf-life analyses. The yoghurt containing 10% beetroot puree and incubated at 43 °C achieved the highest sensory acceptance due to its appealing colour and desirable texture. Beetroot significantly increased the redness (a*) value to 26.86 ± 0.25 compared to the control (0.05 ± 0.09), which further increased to 30.45 ± 0.22 by day 15, demonstrating excellent colour stability. Betalain content showed minimal degradation (12.38 ± 0.01 mg/100g on day 1 to 12.34 ± 0.01 mg/100g on day 15; $p > 0.05$). Compared to the control, beetroot yoghurt exhibited higher pH, syneresis, ash, moisture, and carbohydrate contents but lower water-holding capacity, titratable acidity, viscosity, texture values, and fat content. Phytochemical analysis of the beetroot yoghurt revealed significant antioxidant activity (0.85 ± 0.01 mM TE/100g), total phenolics (0.1 ± 0.01 mg GAE/g), and anthocyanins (6.30 ± 0.00 mg/L). Mineral analysis detected Ca, Fe, Na, Mg, K, and Zn ($49.98 \pm 0.01, 4.80 \pm 0.01, 76.75 \pm 0.01, 9046.98 \pm 0.01, 52.73 \pm 0.01$, and 0.54 ± 0.01 mg/L, respectively). The developed beetroot yoghurt maintained probiotic thresholds (Day 15: 12.00×10^7 CFU/ml) and showed improved microbial stability throughout 15 days of refrigerated storage. This study demonstrates that beetroot puree is an effective natural colourant and functional additive in probiotic set yoghurt, offering a viable substitute to synthetic dyes.

Keywords: Anthocyanins, Beetroot puree, Betalains, Colour stability

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2639 - Evaluation of Phenolic Contents and Antioxidant Activities of 19 Common Culinary Spices Used in Sri Lanka – An *In Vitro* Experimental Study

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Spices are widely recognized not only for their flavouring properties but also for their rich bioactive content as well as their associated health benefits. The phenolic and flavonoid compounds present exert antioxidant activities, thus attenuating oxidative stress, which leads to several non-communicable diseases (NCDs). In this *in vitro* experimental study, soluble and bound phenolic compounds were extracted and analyzed from 19 commonly used commercially available spices, including red chilies, black pepper, turmeric, ginger, garlic, cloves, cinnamon, coriander, cumin, fenugreek, mustard, fennel, cardamom, nutmeg, star anise, basil, oregano, rosemary and parsley. The extracts were examined for total phenolic content (TPC) and total flavonoid content (TFC) of soluble and bound phenolic extracts. The antioxidant activities were measured by reducing power (RP), 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity and ferrous ion chelating assay (FICA). TPC of soluble extracts of spices ranged from 141.54 ± 0.64 mg gallic acid equivalents (GAE)/g dry weight to 1.31 ± 0.06 mg GAE/g dry weight, whereas that of bound extracts ranged from 4.52 ± 0.03 mg GAE/g dry weight to 0.06 ± 0.002 mg GAE/g dry weight. Among the spices analyzed, cloves, Rosmery, cinnamon, oregano and star anise showed high antioxidant activities. Antioxidant activity of different spices varied with different assays performed. The present results emphasize the variation of spices in phenolic content and antioxidant potential. The species, diverse botanical origin, growing environment, maturity at harvesting and postharvest practices influence varied bioactive levels and antioxidant activities. In conclusion, these findings may provide insights for the selection of these culinary spices for incorporation into various food recipes, as well as for the development of functional foods to prevent and manage NCDs.

Keywords: Soluble phenolics, Bound phenolics, DPPH, Reducing power, Ferrous ion chelation

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2649 - Evaluation of Knowledge and Attitudes of Doping among Selected Sports Coaches in Western Province, Sri Lanka

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Doping, described as the use of prohibited substances or methods to enhance athletic performance, has emerged as a major global concern in sports. Coaches can play a critical role in shaping athletes' attitudes and decisions regarding doping by influencing their knowledge and behaviours. This study aimed to assess doping-related knowledge and attitudes among coaches in the Western Province of Sri Lanka and to examine the influence of selected demographic factors on these outcomes. A total of 150 licensed coaches representing 16 sports were recruited through purposive sampling. Data were collected using a structured questionnaire comprising demographic information, doping-related knowledge assessed using two pre-validated instruments, and attitudes toward doping measured by the Performance Enhancement Attitude Scale (PEAS). The sample consisted of 65% males and 35% females aged 18–40 years. As the data were non-normally distributed, descriptive statistics and non-parametric tests were applied. Most participants identified media (n=55, 37%) and workshops/seminars (n=23, 15%) as the primary sources of doping-related information, and 63% (n=94) of participants attended doping awareness workshops. The mean knowledge score of participants was 64%, indicating a moderately satisfactory level of doping knowledge; however, only 27% (n=41) of coaches reported being confident in their knowledge, while 67% (n=100) reported being somewhat confident. The mean PEAS score was 39.3, reflecting generally unfavourable attitudes toward doping. Demographic factors such as age, gender, coaching sport, coaching experience, and district were not significantly associated with coaches' knowledge or attitudes toward doping (p>0.05). Coaches in the Western Province showed moderately satisfactory doping knowledge and generally unfavourable attitudes toward doping, which is encouraging for clean sport promotion. However, participants' low confidence levels indicate gaps in the effectiveness of the education programmes they attended. Structured doping education programmes for coaches that emphasize practical application and confidence-building are recommended to strengthen the promotion of clean sport.

Keywords: Doping attitudes, Doping awareness programmes, Doping knowledge, Licensed coaches

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2650 - Assessment of Nutrition Knowledge and Development of a Mobile – Based Education Platform for Pregnant Women in Sri Lanka

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Research has shown that maternal knowledge is strongly associated with maternal and child health and nutritional outcomes during pregnancy. Traditional methods of nutritional education may not reach everyone effectively or sufficiently, indicating a need for alternative approaches. Therefore, this study aims to assess the current level of nutritional knowledge among pregnant women and to develop a user-friendly nutrition education mobile application tailored to the needs of Sri Lankan pregnant mothers. A three-phase approach was used. In phase I, assessed the nutritional knowledge of pregnant women using an interviewer-guided cross-sectional survey (n=78) in Kandy, Hambantota, and Nuwara Eliya. Phase II focused on developing and validating a dietary guidelines booklet through a literature review and consultation with the experts to guide the application. Phase III included designing the mobile phone application "MaMaWell'' incorporating the dietary guidelines using the App builder platform Adalo. The survey data were analysed using SPSS (version 20.0). Descriptive statistics summarised participant characteristics and knowledge levels, while inferential analysis examined associations between nutrition knowledge and selected sociodemographic variables. Most women in the study sample were between 28 and 33 years of age (42%), Sinhalese (84.6%), with G.C.E. Advanced level education (37.2%). The lowest knowledge score was reported among women from NuwaraEliya (1.68±0.69), 69.2% had lower-level knowledge about recommendations and importance of the key nutrients during pregnancy, and 55% did not know their recommended weight gain during pregnancy. Maternal nutrition knowledge was significantly associated with their education level and resident districts (p<0.05). In conclusion, the findings indicate substantial gaps in nutrition knowledge among pregnant women in selected districts of Sri Lanka. The MaMaWell app was designed with user – centered educational tool to address these gaps. Future formative evaluation will assess the feasibility, acceptability and effectiveness of the application in improving maternal nutrition knowledge.

Keywords: Knowledge, mHealth, Mobile application, Nutrition education, Pregnant mothers

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2651 - Development and Evaluation of Functional, Physicochemical, Microbial and Sensory Properties of Cookies Incorporated with Avocado (*Persea americana*) Flesh Powder

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Cookies are high in fat, prompting a search for natural fat replacers that preserve taste and texture. Avocado (*Persea americana*) flesh powder, rich in healthy unsaturated fats, fibre, and antioxidants, was investigated as a novel ingredient to enhance the nutritional and antioxidant properties of cookies without compromising acceptability. Three avocado varieties; Simmonds, Fuerte, and Pinkerton were processed into powders by tray drying and milling the flesh. Powders were evaluated for physicochemical, functional and nutritional properties. The Pinkerton variety exhibited a superior profile, with desirable moisture ($6.82 \pm 0.02\%$), bright color (L* = 58.37 ± 1.01, a* = 2.79 ± 0.49, b* = 39.82 ± 0.25), and a high-water absorption capacity (4.26 ± 0.05 g/g). Nutritionally, it contained $5.08 \pm 0.34\%$ crude protein, $6.45 \pm 0.46\%$ crude fibre, $2.23 \pm 0.21\%$ ash, and $15.10 \pm 0.22\%$ crude fat, showing significant varietal differences ($p < 0.05$). Pinkerton also showed high phenolic content (210.13 ± 1.74 mg GAE/g DW) and antioxidant activity ($70.23 \pm 0.97\%$). Cookies were prepared by substituting wheat flour with Pinkerton powder at 10%, 20%, 30%, and 50% levels. Sensory evaluation with 30 untrained panelists revealed that the 20% formulation was most acceptable, showing the highest ($p<0.05$) overall acceptability (4.57 ± 0.50) and pleasant aftertaste (4.42 ± 0.38). The optimized cookie retained phenolic content (2.92 ± 0.04 mg GAE/g DW), DPPH activity ($39.27 \pm 0.86\%$), and desirable texture (hardness = 1389.43 ± 22.08 g; adhesiveness = 0.33 ± 0.03 mJ). The proximate composition of the sample was as follows: fat ($16.05 \pm 0.16\%$), protein ($7.29 \pm 0.40\%$), fibre ($2.97 \pm 0.08\%$), and carbohydrates ($67.49 \pm 0.40\%$). The microbiological quality remained safe ($<4.6 \times 10^4$ CFU/g) after 72 hours, with minimal yeast and mold growth ($2.1 \times 10^3 \pm 1.7 \times 10^3$ CFU/g). The 20% incorporation of Pinkerton avocado powder significantly enhances nutritional and antioxidant properties while preserving the sensory quality of cookies, establishing its strong potential for functional bakery applications.

Keywords: Avocado powder, Avocado varieties, Bakery product, Functional cookies, Pinkerton

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2652 - Analysis of Food Consumption Patterns and School Food Environment of Adolescents in the Echilampattu Educational Zone, Trincomalee, Sri Lanka

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Food consumption patterns and school food environment have direct impact and essential for developing effective nutritional interventions. This study investigates the dietary habits, school food environment among adolescents in the Echilampattu Educational Zone, Trincomalee. The objective was to understand the dietary patterns, school food environment and factors affecting the food consumption among adolescents. A cross-sectional survey was conducted with 310 adolescents from 18 residential areas and students who were studying in 6 secondary schools and participants were randomly selected. Data was collected using a pretested and validated self-administrated questionnaire. Descriptive statistics and Spearman's correlation was used to analyze the data. The study population was predominantly aged 14-16 years (86.1%) with a proportion of females (58.7%). Dietary findings revealed that while 71.3% consumed three main meals daily but only 48.1% ate breakfast daily. Snacking at school was prevalent (41.0%), with a strong preference for unhealthy options. 44.8% consuming unhealthy fast food three or more times per day meanwhile taste and price were the dominant factors influencing food choice, overshadowing health (24.2%). The majority of participants (71.6%) had the negative perception of the school canteen's food, with only 28.4% perceiving it as healthy. Majority (66.9%) reported not having thoughts about comparing their body to others. However, 32.8% indicated they do experience negative body image thoughts. There is no significant correlation between parents' educational qualification and the frequency of breakfast intake (p = 0.578), parents' educational qualification and the frequency of fast-food intake (p = 0.961) and between the frequency of fast-food intake and household (p = 0.499).This study underscores the urgent need for identifying the factors associated with poor dietary habits and target public health initiatives that address both the healthy school food environment with positive body affirmation among adolescents.

Key words: Adolescents, Dietary patterns, Food consumption, Food environment

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2653 - Adhesion of Probiotic *Lactobacillus acidophilus* (LA 5) to Resistant Starches of Sri Lankan Traditional Rice Varieties "*Sudu Heenati*" and "*Pachchaperumal*"

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The traditional rice varieties, "*Suduheenati*" and "*Pachchaperumal*", were experimentally proven to have high resistant starch (RS) contents in previous studies. RS is a functional fibre which cannot be degraded in the small intestine by mammalian gastric enzymes, reaches the large intestine, is fermented by the gut microbiota and serves as a substrate for the growth of probiotics. In this study, adhesion of commercially available lyophilised LA 5 to selected traditional rice RS was evaluated through a co-sedimentation assay. First, native starches from two rice varieties were extracted by soaking in NaOH. Then, native starches were pre-gelatinised, autoclaved, cooled, purified and quantified using the Megazyme Resistant Starch kit. Purified RS were subjected to the LA 5 cell adhesion, adhered cells were enumerated by conducting the pour plate technique using de Man Rogosa Sharpe Agar (MRSA), incubated at 37 °C for 48-72 hours, and the viable cell count was expressed as "Adherence rate %". Statistical analyses were conducted using MINITAB, version 18. A paired t-test was used to study differences between RS in raw rice varieties and extracted RS contents. The significance level was considered as 5% ($p<0.05$). The results revealed that raw and purified "*Sudu Heenati*" and "*Pachchaperumal*" RS contents (%) were 1.42±0.04, 56.70±0.84 and 1.14±0.06, 61.05±1.31, with 78.84% and 80.15% adherence rates, respectively. The purified RS was significantly higher ($p<0.05$) compared to the RS in raw rice. In conclusion, RS contents in "*Sudu Heenati*" and "*Pachchaperumal*" may increase at high temperatures, and a high adherence rate of probiotics may be advantageous during food processing.

Keywords: Adhesion, *Lactobacillus acidophilus*, Probiotic, Resistant starch, Traditional rice

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2654 - Nutritional Status of Hospitalised Elderly in a Tertiary Care Hospital in Southern Province, Sri Lanka

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Hospitalised elderly are a nutritionally vulnerable group due to age-related changes and medical, psychological and socio-economic factors. Current literature indicates a paucity of studies examining the nutritional status of hospitalised elderly individuals in Sri Lanka. The aim of this research was to assess the nutritional status of the hospitalised elderly patients admitted to National Hospital Galle (NHG), Sri Lanka, using anthropometric measurements. A descriptive cross-sectional study was conducted among a random sample of 409 hospitalised elderly patients admitted to medical and surgical wards in NHG. Nutritional status was assessed using Body Mass Index (BMI), Mid-Arm Circumference (MAC) and Calf Circumference (CC). Reference values for BMI were <18.5 kg/m^2=low (undernutrition), 18.5-22.9 kg/m^2= normal (normal nutritional status) and >23 kg/m^2 = high (overnutrition). Reference values for MAC were 23.9 cm (lower cut off) and 26.9 cm (upper cut off) for males and 22.5 cm (lower cut off) and 25 cm (upper cut off) for females. Reference values for CC were 28.1 cm (lower cut off) and 31.5 cm (upper cut off) for males and 26 cm (lower cut off) and 29 cm (upper cut off) for females. Data were analysed using descriptive statistics, and subgroup comparisons were done according to gender and age using an independent sampling t-test and ANOVA using SPSS software version 26. The sample was divided into three age groups: 65-74 years, 75-84 years and 85+ years. The mean age (SD) of the participants was 70.5 (5.1) years. The majority (55.5%) were males, while 44.5% were females. The mean BMI (SD) of the participants was 22.5 (3.9) kg/m^2. The majority (46.2%) had normal nutritional status, while 12.5% had undernutrition and 41.1% had overnutrition. Among male participants, 34.4% had low MAC, while the majority (35.2%) of female participants had low MAC, suggestive of low protein nutritional status. The majority of both male (59.0%) and female (48.9%) participants had low CC, suggestive of low muscle mass and low protein nutritional status. A statistically significant difference in CC was found between males and females (p<0.05), and males had greater CC values. No significant difference in the mean BMI (p=0.10) and MAC (p=0.78) was found between the two genders. There was no significant difference in mean BMI, MAC and CC among the three age groups. Nutritional assessment and further nutrition management are indicated in hospitalised elderly during hospital stays. Further research is recommended on undernutrition-related outcomes of the hospitalised elderly.

Keywords: Anthropometry, Hospitalised elderly, Nutritional status, Sri Lanka

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2655 - Encapsulation of Nature-derived Carotenes from Canistel (*Pouteria campechiana*) Fruit as a Food Colourant

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Consumer demand for nature-derived food is escalating with increasing awareness of health and safety. Food colourants are widely used to improve the sensory image of foods. Canistel - '*lavulu*' (*Pouteria campechiana*), an underutilised fruit in Sri Lanka, is rich in carotenoids, a precursor of vitamin A, antioxidant, anticancer properties and a natural food colourant. This study focuses on developing an encapsulated natural colourant from canistel. Carotenes were extracted from the dehydrated powder of ripe canistel with 95% ethanol. Composites of maltodextrin (M): gum arabic (G) were used as the medium of encapsulation at ratios of 1:0, 1:1, 1:3, 3:1, and 0:1, respectively, followed by freeze drying. The physicochemical properties of the product were measured by total carotenoids (TC), total phenols (TP), colour index (chromometer) and sensory properties (7- point hedonic scale). Technical samples (n=2) were analysed using a t-test (SPSS). Fresh canistel pulp and the dehydrated powder showed TC levels of 0.20 ± 0.04 mg g^{-1} and 0.52 ± 0.01 mg g^{-1}, respectively. TP content of the dehydrated powder was 1.41 ± 0.11 mgGAE g^{-1}. TC of the extraction was 0.26 ± 0.02 mg g^{-1} with an extraction efficiency (EE) of 50%. The composite of M: G (1:3) with the highest encapsulation efficiency (51.23%) showed L*a*b values of 24.08 ± 028, -0.87 ± 0.15 and 5.17 ± 0.73, respectively, indicating a warm yellowish golden colour with superior visual perceptions and solubility of 45%. The stability of the colour significantly changed ($p < 0.05$) during the 28 days of storage at ambient temperatures, signifying oxidation of carotenes irrespective of encapsulation. The jelly yoghurt prepared using the colourant showed no significant difference ($p < 0.05$) in overall acceptability in comparison with the commercially available synthetic colourant. Canistel-derived carotenoids reveal strong potential as a natural colourant and antioxidants in food applications.

Keywords: Canistel, Carotenoids, Colour, Encapsulation, Stability

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2656 - Quality and Reusability Assessment of Extra Virgin Coconut Oil and Its Market Substitutes

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Among the various edible oil types available, Extra Live Virgin Coconut Oil (ELVCO) stands out as the purest and least processed form, renowned for its superior nutritional value, aroma, and functional properties. However, the market is flooded with a variety of coconut oil (CO) substitutes such as RBD coconut oil (RBDCO), palm oil (PO), sunflower oil (SO), vegetable oil (VO), etc. This study aims to assess the physicochemical, nutritional, and functional attributes of ELVCO and its market alternatives, alongside their reusability potential, to provide valuable insights for consumers, manufacturers, and researchers seeking optimal oil quality and sustainability. Accordingly, the physicochemical, nutritional and functional properties and reusability of ELVCO, Virgin coconut oil (VCO), commercial RBDCO, CO from the mill, PO, SO and VO were examined using standard methods. The experiment was conducted using completed randomized design with 3 replicates. Compared to all the tested oil samples, the ELVCO maintained a higher stability in all the tested quality parameters, including smoke point, acid value, iodine value, peroxide value, saponification value, and pH. ELVCO proved significantly lower acid value, 0.33 ± 0.01 mg KOH/g. The peroxide value (0.299 ± 0.00 meq.O_2/kg) stayed within acceptable bounds, indicating that ELVCO had higher oxidative stability. According to the nutritional analysis, all the coconut-based oil types were found to be rich in medium-chain fatty acids, primarily lauric acid, while its content was comparatively low in ELVCO (44.89%). Evaluations of its functional properties, ELVCO had higher levels of flavonoids (2.36 ± 0.05 mg QE/g), phenolic content (7.46 ± 0.07 mg GAE/g), and antioxidant activity (13.71 ± 0.43 Trolox mmol/g) when compared to all tested oil types. Reusability testing proved that ELVCO maintained acceptable quality for up to four consecutive frying cycles, while PO, SO, VO, and CO oil from the mill are having limited reusability. In conclusion, the ELVCO is better in all the tested parameters and has higher reusability than widespread substitutes.

Key words: Coconut oil substitutes, Extra live virgin coconut oil, Physicochemical, Reusability, Virgin coconut oil

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2657 - Fertiliser Strategies and Their Influence on Grain Quality in the Bw 367 Rice Variety

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The grain quality of rice is significantly influenced by fertilizer management practices. Paddy seeds were collected from a long-term field experiment conducted with different fertilizer management practices such as organic+inorganic fertilizer (OIF), inorganic fertilizer only (IFO), organic fertilizer only (OFO) and no fertilizer (NF) at the Regional Rice Research and Development Center, Bombuwala, to evaluate their impact on the grain quality attributes of the Bw 367 rice variety. The experiment was conducted in randomized complete block design with four replicates. The physical properties (hardness, total milling percentage, brown rice percentage, and thousand seed weight), nutritional properties (proximate composition and mineral content), functional properties (phenol content, antioxidant activity, and flavonoid content), and sensory properties of the harvested grains were evaluated. Statistical significance was tested using One-Way ANOVA and Tukey's post-hoc comparison test, highlighting a significant difference ($P<0.05$). The results showed that hardness was significantly highest (48.8 ± 0.96N) under OFO treatment, while other physical properties were not significantly affected by fertilizer treatments. The highest protein percentage (0.59 ± 0.17) was observed in inorganic only fertilizer (IOF) treatment, while the highest fat percentage (5.33 ± 0.64) and fibre percentage (0.82 ± 0.08) were found in (OFO) treatment. The OFO and IFO treatments showed the highest ($P<0.05$) phenol content (152.75 ± 0.004 mg GAE/100 g) and flavonoid content (89.12 ± 1.02 mg QE/100 g), respectively. However, no significant difference ($P>0.05$) in antioxidant activity was observed among the four treatments. Compared to all the treatments, grains from NF showed the highest amount of Iron (29.7 ± 10.01 ppm), and the IOF treatment reported the highest Zinc content (1.37 ± 0.13 ppm). In contrast, OIF treatment gave the highest lead content (0.15 ± 0.02 ppm). Considering the sensory properties, the (OFO) treatment showed the highest acceptability for most of the tested attributes (colour, aroma, taste, texture and overall acceptability). Accordingly, the application of organic fertilizer (OFO) can be concluded as an ideal way to improve the majority of tested physicochemical, nutritional, functional and sensory properties of rice, specifically in the variety Bw 367.

Keywords: Fertilizer management, Grain quality, Nutritional properties, Physical properties, Rice

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2658 - The Association between Dietary Habits and Body Mass Index among Law Faculty Undergraduates at the University of Colombo

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Obesity and underweight are emerging nutritional concerns among undergraduates globally and locally. Although extensive research links unhealthy dietary habits with higher Body Mass Index (BMI) among undergraduates, evidence from Sri Lankan students in non–health-related faculties remains limited. Law students often experience high academic pressure, leading to poor dietary choices. This study aimed to evaluate the association between dietary habits and BMI of Law Faculty undergraduates at the University of Colombo. A descriptive cross-sectional study was conducted among 257 undergraduates of the Faculty of Law, University of Colombo, aged 20-26 years, selected using stratified random sampling. The sample comprised 57 (22%) males and 200 (78%) females. The weight and height of participants were measured using standard measuring tools to determine BMI. Dietary habits were assessed using a modified, pre-validated questionnaire tailored to local food types, requiring the frequencies of selected foods consumed over the past month, which reflect habitual dietary patterns of participants. Data were analysed using descriptive statistics and the Chi-square test. Results revealed that most participants (n=158, 61%) were in the normal weight category, and only three participants (1.2%) were obese. Vegetables were consumed frequently, with many respondents (n=113, 44%) reporting an intake of 2–3 times daily, while nuts were the least consumed, with only 6% (n=15) consuming nuts daily. No associations were found between BMI category and dietary habits, such as the intake of starchy foods, vegetables, fruits, pulses, fish, poultry, dairy products, and nuts. However, a significant association was found between BMI category and the intake of snacks and sugar-sweetened beverages (p=0.01). Findings suggest that frequent consumption of foods such as snacks and sugar-sweetened beverages may be a risk factor for overweight and obesity among participants. Therefore, promoting healthier dietary habits in universities through education, access to healthy foods, and policy measures is encouraged.

Keywords: Body mass index (BMI), Dietary habits, Law Faculty students, Nutritional status

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2662 - Past Dietary Patterns and Current Nutritional Status of the Patients with Alzheimer's Disease

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Epidemiological evidence indicates that midlife dietary habits, medical history, and lifestyle behaviours play a significant role in the development of Alzheimer's disease (AD). Moreover, individuals with AD are at a heightened risk of malnutrition due to cognitive decline and altered eating behaviours. This descriptive study aimed to assess past dietary patterns, medical history, lifestyle behaviours and the current nutritional status of patients with AD. Based on Mini-Mental State Examination (MMSE) score, 28 patients (14 females and 14 males) with mild to moderate cognitive impairment and their caregivers were recruited in Colombo. An Interviewer administered a lifestyle and health-related questionnaire, a food frequency questionnaire (FFQ), and the Mini Nutritional Assessment (MNA) to investigate the study objectives. Among the participants, 21% had smoked for more than 10 years, 11% reported consuming alcohol more than three times per week during midlife, and 14% had pursued education beyond the General Certificate of Education Advanced Level. Less than 40% of patients reported having at least one chronic condition (diabetes mellitus, hypercholesterolemia, hypertension, cardiovascular disease, or depression). Dietary assessment indicated that consumption of vegetables, fruits, legumes, whole grains, and fish (foods rich in antioxidants and essential nutrients) was limited to weekly consumption, while nuts were consumed infrequently (monthly). In contrast, foods high in fats and sugars were consumed daily by the majority of participants. According to the MNA, 50% of the AD patients were currently at risk of malnutrition. The findings highlight the presence of suboptimal dietary practices during midlife among patients with AD. In addition, the high proportion of participants currently at risk of malnutrition emphasizes the need for a comprehensive nutritional assessment and targeted nutrition intervention as part of AD management. While no comparisons can be made with individuals without AD, the results emphasize the importance of promoting healthier dietary and lifestyle practices earlier in life and addressing nutrition risk in patients with AD.

Keywords: Alzheimer's disease, Dietary pattern, Food frequency questionnaire (FFQ), Mini nutritional assessment (MNA), Nutritional status

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2663 - Modification and Determination of Acceptability of Waya One-Dish Meals (ODMs) for Sri Lankan Primary School Children

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Ensuring optimal nutrition for primary school children is crucial for their growth, cognitive development, and overall well-being. Dietary inadequacies and poor meal choices often contribute to nutrient deficiencies among children aged 5 to 10 years. One-dish meals (ODMs) offer a practical and innovative solution by incorporating essential nutrients in a single serving. This study aimed to design nutritionally balanced ODMs for Sri Lankan primary school children and to assess their sensorial attributes and acceptability. A 24-hour dietary recall was conducted among 20 Sri Lankan primary school children to identify energy and macronutrient intake gaps, which were used to guide the modification of the Waya one-dish meals. Previously developed Waya ODMs for University students were modified in alignment with child nutrition requirements. Three modified one-dish meals were selected and evaluated by 41 primary school children for appearance, aroma, and taste using a child-friendly seven-point facial hedonic scale. Mean daily energy and macronutrient intakes derived from 24-hour dietary recalls were used to guide the nutritional modification of the one-dish meals (1515 ± 307 kcal, 40 ± 9 g protein, 38 ± 14 g fat, and 271 ± 60 g carbohydrates). The mean ($\pm$ SD) energy and macronutrient content per serving of the modified one-dish meals were 386 ± 36 kcal, 48 ± 8 g of carbohydrates, 18 ± 3 g of protein, and 15 ± 2 g of fat. The three selected meals, Waya Chickpea Delight, Waya Pumpkinasia Patch, and Waya Veggie Burst, demonstrated high acceptability scores for appearance, aroma, and taste. In conclusion, the positive acceptance of developed ODMs by primary school children indicates the possibility of introducing cost-effective, nutritious, balanced meals to school meal programmes.

Keywords: Child nutrition, Nutrient deficiencies, One-dish meals, Primary school children

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2664 - Development of a Gluten-free Vegan Cupcake as an Alternative to Conventional Cupcakes

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The increasing prevalence of gluten-related disorders and the growing adoption of plant-based diets have created a demand for gluten-free and vegan food products. Cupcakes represent a widely consumed bakery product. This study was focused on developing a gluten-free vegan cupcake using locally available cereal and pulse flours. Initially, a vegan cupcake formulation was developed without adding eggs and dairy products. Subsequently, three gluten-free vegan cupcake (GFVC) samples were developed incorporating rice flour, chick pea flour and finger millet flour. Physicochemical and microbiological properties of the GFVCs were evaluated. Sensory attributes of the GFVCs were evaluated using a screened and trained sensory panel, and the most preferred GFVC was selected. Proximate composition and sensory properties of the selected GFVC were compared with a conventional cupcake (CC). Data from each experiment were statistically analyzed. According to results of the sensory evaluation, the preferences for appearance, colour, odour, texture, taste, after taste and overall acceptability of the chick pea flour incorporated GFVC (CPGFVC) were significantly ($p < 0.05$) higher than those of the rice flour and finger millet flour incorporated GFVCs. Consequently, the CPGFVC was selected as the most preferred cupcake among the tested cupcakes. The preferences for texture, taste, after taste and overall acceptability of the CC were significantly ($p < 0.05$) higher than those of the CPGFVC. However, there were no significant differences ($p > 0.05$) in the preferences for appearances, colours and odours. Moisture and fat contents of the CC were significantly ($p < 0.05$) higher than those of the CPGFVC. Protein and ash contents of the CPGFVC were significantly ($p < 0.05$) higher than those of the CC. This study demonstrates the feasibility of developing a CPGFVC as a healthy alternative to CC and highlights the potential of utilizing chickpea flour in the development of gluten-free vegan food products.

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2668 - Nutritional Recommendations for Menstrual Health in Young Adults: Integrating Cycle Tracking and Dietary Insights through a Mobile Application

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Menstrual health plays a pivotal role in women's overall well-being. However, menstrual disorders remain highly prevalent, especially among young adults, while posing detrimental effects on their quality of life. Although pharmacological approaches are popular in relieving menstrual discomfort, nutrition and diet present a promising approach. Available mobile applications provide some nutritional advice for a healthier menstrual cycle, but those may not be compatible with the Sri Lankan diet, highlighting the need for a country-specific solution. Therefore, this research aimed to develop a mobile application that provides nutritional recommendations for better menstrual health, while simultaneously tracking the menstrual cycle. The study was carried out in four phases: a literature review to identify the associations between nutrition and menstrual disorders, an online survey to assess the knowledge and practices regarding dietary management, formulation of nutritional recommendations for promoting menstrual health in consultation with medical and nutrition experts, and the development of the mobile application, "FemmeWell". The application encompasses cycle length prediction, symptom logging and general dietary advice intended to improve menstrual health alongside several additional functions. Flutter was used as an open-source interface framework, with Hive for local data storage, synchronized with Firebase for cloud storage. The recommendations derived from the research were incorporated into the app to ensure evidence-based guidance. A survey among 84 young adults recruited through selective sampling revealed a mean nutritional knowledge score of 3.98±1.12 (range: 0-5). Only 10% (n=8) of the participants used diet as a menstrual symptoms management method, while 95% (n=80) reported willingness to use a mobile application for nutritional information. Validation of three medical and nutrition experts revealed that the content of FemmeWell aligns with the standard recommendations. This study highlights the potential of tech-driven nutritional interventions and warrants further evaluation of the app's effectiveness for menstrual symptom relief.

Keywords: Behavioural change, Menstrual disorders, Menstrual health, Mobile application, Nutritional recommendations

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2670 - Comparative Analysis of Antioxidant Potential in Fresh and Stored Mushroom Soup Powder Formulated with *Agaricus bisporus* and *Lentinula edodes*

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Edible mushrooms are known to produce diverse antioxidants, including phenolics and flavonoids, which enhance the body's defence against oxidative stress-related diseases. However, most studies on mushroom-derived antioxidants have focused on raw mushrooms, with limited attention to the effects of processing in a ready-to-prepare food system. This study evaluated the antioxidant potential of a functional soup powder formulated using two commonly consumed edible mushrooms, *Agaricus bisporus* and *Lentinula edodes*, and examined the stability of its bioactive compounds after three months of storage at room temperature ($25 \pm 2°C$). The soup was prepared by mixing the formulated powder with water, boiling for 2–3 minutes, and then freeze-drying. Both freshly prepared and stored freeze-dried soup samples were extracted with 70% ethanol under continuous shaking for 24 h, followed by filtration and rotary evaporation. The dried extracts were analysed for antioxidant activity by using the DPPH radical scavenging and ferric reducing antioxidant power (FRAP) assay. Total phenolic content (TPC) was determined using the Folin-Ciocalteu method, and total flavonoid content (TFC) was determined using the Aluminum chloride method. The EC_{50} value from the DPPH assay increased from 502.63 ± 6.58 µg/mL to 600.03 ± 6.83 µg/mL, while FRAP values decreased from 24.90 ± 0.37 mg TE/g to 22.61 ± 0.40 mg TE/g, indicating a moderate reduction in antioxidant activity over time. The freshly prepared soup extract showed a TPC of 22.04 ± 0.50 mg GAE/g and a TFC of 16.94 ± 0.27 mg EGCE/g. After three months of storage, these values decreased to 19.17 ± 0.42 mg GAE/g and 14.34 ± 0.53 mg EGCE/g, respectively. These findings suggest that the mushroom-based soup powder retains substantial antioxidant potential even after thermal processing during cooking and storage, highlighting its promise as a convenient, shelf-stable functional food rich in natural bioactive compounds.

Keywords: *Agaricus bisporus*, Antioxidant activity, Edible mushrooms, Functional soup, *Lentinula edodes*

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