

# BOOK OF ABSTRACTS



THE 06<sup>TH</sup> INTERNATIONAL CONFERENCE ON  
FOOD, NUTRITION, HEALTH AND LIFESTYLE

## NUTRICON 2024

"Future-Proofing Society:  
Interdisciplinary Solutions to bridge Ecosystems and Health"

08<sup>TH</sup> – 09<sup>TH</sup> NOVEMBER 2024  
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## MESSAGE FROM THE CONFERENCE Co-CHAIR – NUTRICON 2024



It is with great pleasure that I welcome you to Nutricon 2024 in the vibrant city of Seoul, Korea. This year, we gather under the theme "Nutrition, Health, and Lifestyle," a topic of vital importance as the global community increasingly prioritizes health and well-being in the face of changing environments and lifestyles.

As we come together for this special occasion, I would like to express my heartfelt gratitude to all of you for your participation and contributions.

This conference brings together renowned experts, practitioners, and researchers in the field of nutrition, providing an invaluable platform for the exchange of ideas, collaboration, and the latest findings that will shape the future of health and wellness.

Seoul, with its rich cultural heritage and innovation-driven spirit, serves as the perfect backdrop for our discussions on how nutrition, health, and lifestyle choices are interconnected in shaping human well-being. Throughout this conference, we aim to explore not only the scientific aspects of nutrition but also the practical strategies for adopting healthier lifestyles that can positively impact both individuals and communities.

I encourage you to make the most of this opportunity, engage with the sessions, participate in the discussions, and network with fellow professionals from around the world. It is through these interactions that we can inspire positive change and drive forward the global conversation on nutrition and health.

Once again, welcome to Nutricon 2024. Let us work together to advance the understanding of how proper nutrition and conscious lifestyle choices can lead to healthier, happier lives.

Thank you, and I wish you all a successful and enriching conference.

감사합니다! (Gamsahamnida!)

Prof. Dr. Nurpudji A Taslim, MD, MPH, SPGK (K), FRSPH

[ Conference Co-Chair ]

Department of Nutrition, Faculty of Medicine

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## WELCOME MESSAGE FROM THE CONFERENCE CO-CHAIR

Dear Esteemed Colleagues, Participants, and Friends,

It is my great pleasure and privilege to welcome you all to Nutricon 2024, the International Conference on Food, Nutrition, Health, and Lifestyle. Set in the vibrant and modern district of Gangnam, Seoul, this year's conference is designed to bring together leading minds and innovators from across the globe to explore the theme: "Future-Proofing Society: Interdisciplinary Solutions to Bridge Ecosystems and Health."



As we gather here in Seoul from November 8th to 9th, 2024, we stand at a critical juncture for our planet and our health. The challenges of malnutrition, food insecurity, and rising chronic diseases demand urgent, coordinated efforts across multiple sectors. This conference aims to provide an open platform for collaboration between researchers, nutritionists, medical professionals, policymakers, and all stakeholders who are dedicated to creating healthier societies. We will delve into the complex relationships between food, nutrition, lifestyle, and health, and discuss sustainable, evidence-based solutions that can help build a resilient future for all.

Through a range of keynote speeches, interactive sessions, and panel discussions, Nutricon 2024 offers an opportunity for meaningful exchange of knowledge and best practices. By fostering interdisciplinary collaborations, we hope to make a lasting impact on how we address global food and health challenges, particularly in the face of the changing environmental and social landscapes.

I encourage all participants to actively engage in these discussions, share their insights, and forge new partnerships that will extend beyond this event. Together, we can contribute to shaping a healthier, more sustainable future.

I look forward to welcoming you to Best Western Premier Gang Nam Hotel, Gangnam, Seoul, and to a conference that promises to be both inspiring and transformative.

Warm regards,

Bonglee Kim M.D.(KMD), Ph.D.

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|                           |
|---------------------------|
| <b>ORAL PRESENTATIONS</b> |
|---------------------------|

|                           |
|---------------------------|
| <b>CLINICAL NUTRITION</b> |
|---------------------------|

|    |   |   |   |
|----|---|---|---|
| A1 | 2 | <p>Medical Nutrition Therapy in Traumatic Brain Injury: A Case Report of Geriatric Patient with Hypoalbuminemia, Increased Neutrophil-to-Lymphocyte Ratio, Depleted Immune System, Hypokalemia, and Malnutrition</p> <p><i>Jennifer, Taslim NA, Rani NA, Syam N</i></p> | 2 |
| A2 | 3 | <p>Nutritional Approach in Inflammation Phase Electrical Burns with Moderate Malnutrition, Hypoalbuminemia, and Increased Transaminase Enzyme: Case Report</p> <p><i>Rodia O, Syauki Y, Nurainun, Taslim NA, and Marniar</i></p>  | 3 |
| A3 | 4 | <p>The Role of Medical Nutrition Therapy in Improving the Functional Capacity of Bladder Cancer Patients with Chronic Kidney Disease: A Case Report</p> <p><i>Jayanti SR, Taslim NA, As'ad S, Faradilla A, Ainun N, and Ashari N</i></p>                                | 4 |
| A4 | 5 | <p>The Role of Antioxidant Micronutrients in Electrical Burn Injury with Moderate Malnutrition: A Case Report</p> <p><i>Trisna NA, Taslim N, Syauki Y, and Ashari N</i></p>   | 5 |
| A5 | 6 | <p>Lipid-Lowering Effect of Alpha-Lipoic Acid: A Systematic Review and Meta-Analysis of Randomized Controlled Trials</p> <p><i>Netsuksang P, Bunnag S, Thetsana P and Teng-umnuay P</i></p>   | 6 |

|   |
|---|
| <b>NUTRITION, FOOD SECURITY AND INNOVATION OF FOOD PRODUCTS</b> |
|---|

|    |   |  |   |
|----|---|--|---|
| B1 | 7 | <p>Development of Miki Noodles with Pako (<i>Diplazium esculentum</i>) Leaves Powder as Micronutrient Fortificant</p> <p><i>Ampoon CA, Canicon I, Dagdag MJ, Ducanes JMJ, Tacsiat RA and Descallar E</i></p> | 7 |
|----|---|--|---|

|    |    |  |    |
|----|----|--|----|
| B2 | 8  | Effect of Carbon Sources on Chemical and Anti-Oxidant Activity of Alcoholic Beverage from Coffee Berry Pulp  | 8  |
|    |    | <i>Rajchasom S, Vuthijumnonk JT, Panpattarachai P and Muangjai M</i>   |    |
| B3 | 9  | Generation of N-acyl Products of Canola Meal Protein Hydrolysates and Evaluation of Antimicrobial Activity   | 9  |
|    |    | <i>Sumudu N. Warnakulasuriya, Janitha PD, Wanasundara, and Tanaka T</i>  |    |
| B4 | 10 | Development of Pan De Sal with the Utilization of Avocado ( <i>Persea americana</i> ) Seed Flour   | 10 |
|    |    | <i>Morales KA, Aquino ANM, Cuadra GR, Valle DANA, Magdaluyo PG, Ramos RRR, and Descallar EL</i>  |    |
| B5 | 11 | Utilization of Adlai ( <i>Coix lacryma-jobi</i> L.) and Brown ( <i>Oryza sativa</i> L.) Rice in the Formulation and Acceptability of Low-Sugar Snack Bar | 11 |
|    |    | <i>Garcia GA, Mabale K, Nabong GA, Bayog CAR, Ventanilla K, and Coraños J</i>  |    |

|   |
|---|
| <b>NUTRITION AND DISEASE MANAGEMENT</b> |
|---|

|    |    |   |    |
|----|----|---|----|
| C1 | 12 | The Effect of Herbal Medicine on the Improvement of Postpartum Hypertension in Gorontalo City   | 12 |
|    |    | <i>Rauf EL and As'ad S</i>  |    |
| C2 | 13 | Knowledge, Attitudes, And Practices (KAP) Related to Sodium Intake Among Hypertensive Beneficiaries of Primary Health Care Facilities in Valenzuela, Metro Manila | 13 |
|    |    | <i>Abarre JJ, Bruce A, Cañalita, PR, Sallan, R, Taylo EJ, Viray MAM, Coraños J</i>  |    |
| C3 | 14 | Empowering Communities for Sustainable Health: Addressing Malnutrition, Food Insecurity, and Non-Communicable Diseases through Local Initiatives in India         | 14 |
|    |    | <i>Vaidya R and Chaudhury N</i>   |    |
| C4 | 15 | Citrus-Derived Bioflavonoids: An Alternative Approach towards Treating Diabetes, Neurodegenerative Diseases and Cancer  | 15 |
|    |    | <i>Anirban B, Sayan D, Kunal R, and Subhajit M</i>  |    |

|     |    |  |    |
|-----|----|--|----|
| C5  | 16 | Mechanistic Insights into the Anticancer and Anti-inflammatory Actions of Yellowfin Tuna Collagen Peptides Using Network Pharmacology                    | 16 |
|     |    | <i>Kairupan TS, Kapantow NV, Tallei TE, Niode NJ, Sanggelorang Y, Rotty LWA, Wungouw HIS, Kawengian SES, Maulydia NB, and Fatimawali</i>                 |    |
| C6  | 17 | Nutritional Therapy of Cystic Ovarian Neoplasma with Anemia, Hypoalbuminemia, and Immune System Depletion  | 17 |
|     |    | <i>January R, As'ad S, Safitri A, and Bamahry A</i>  |    |
| C7  | 18 | Omega-3 and Vitamin D: New Adjuvant Therapy for Cutaneous and Systemic Lupus Erythematosus   | 18 |
|     |    | <i>Arif SM, Fitriani DY, Wirawan A, and Khatifah FN</i>  |    |
| C8  | 19 | Clinical Outcomes in Acute Ischemic Stroke with Probiotic Intervention: The Role of Elevated Serum Level of Short Chain Fatty Acid (SCFA)                | 19 |
|     |    | <i>Sompa AW, Akbar M, Retnaningsih, As'ad S and Bukhari A</i>  |    |
| C9  | 20 | Principles of Nutritional Ethics: Inspiration from The Qur'an  | 20 |
|     |    | <i>Rauf IJ, Aras DU, Bahjah D, and January R</i>   |    |
| C10 | 21 | Improving PUFA Incorporation in Brain and Cell Membranes   | 21 |
|     |    | <i>Ma A, Kempen VT, Smolders L, and Hartog A</i>   |    |
| C11 | 22 | Evaluating Citrus Extract-Induced Brain-Derived Neurotrophic Factor Upregulation Effect to Identify Drug Candidates for Central Nervous System Disorders | 22 |
|     |    | <i>Nakajima K, Han A, Idegami A, Kayano A, Beppu M, Okubo S and Oiso S</i>   |    |
| C12 | 23 | Improving Membrane DHA Accretion in Adipose Tissue   | 23 |
|     |    | <i>Ma A, Kempen TV, Smolders L, and Hartog A</i>   |    |

|     |    |  |    |
|-----|----|--|----|
| C14 | 24 | The Formulation of Flakes Made from Pre-Cooked Peas and White Sweet Potato Composite Flour Based on Physicochemical and Organoleptic Properties  | 24 |
|     |    | <i>Mustikaningrum F, Zahrani F, Salsabila ES, Sekar DM and Universitas</i>   |    |
| C15 | 25 | The Effect of Gembili Tuber Analog Rice ( <i>Dioscorea esculenta</i> ) on Malondialdehyde Levels in Rats with Type 2 Diabetes Mellitus   | 25 |
|     |    | <i>Warajati KS, Arita W, Dwi S, and Fitriana M</i>   |    |
| C16 | 26 | Pharmacoinformatics and Cellular Studies of Algal Peptides as Functional Molecules to Modulate Type-2 Diabetes Markers   | 26 |
|     |    | <i>Kurniawan R, Taslim NA, Hardinsyah H, Syauki AY, Idris I, Aman AM, Mayulu N, Tjandrawinata RR, Tallei TE, Kim B, Tsopmo A, and Nurkolis F</i>   |    |
| C17 | 27 | The Role of Zinc in Non-Hemorrhagic Stroke Geriatric Patients with Severe Protein Energy Malnutrition, Hypoalbuminemia, Moderate Depletion of The Immune System: A Case Report                     | 27 |
|     |    | <i>Zelfia YR, Taslim NA, Rani NA, and Syam N</i>   |    |
| C18 | 28 | Online Education on Nutritional Anemia and the Improvement of Protein and Iron Food Sources among Adolescent Girls: Cluster Randomized Trials (CRTS) In Sukoharjo Regency, Central Java, Indonesia | 28 |
|     |    | <i>Hidayati L, Firmansyah F, Muwakhidah M, Zulaekhah S, Kisnawaty, SW, Wahyuni RD Wulandari IL, Mayguspin GA, and Dyah S</i>   |    |

|  |
|--|
| <b>SPORTS, NUTRITIONAL THERAPY, LIFESTYLE AND TREATMENTS</b> |
|--|

|    |    |  |    |
|----|----|--|----|
| D1 | 29 | Association Between Intake and Sleep Quality with Nutritional Status in University Students                    | 29 |
|    |    | <i>Rakhma LR, AA, and Noorsy NA</i>  |    |
| D2 | 30 | The Effect of VCO In HIV Stage 3 Patients with Oral Candidiasis and Protein Energy Malnutrition: A Case Report | 30 |
|    |    | <i>Yaze, Ulfa I, Nurpudji, Taslim, Nurainunrani, Syam, and Nurbaya</i>   |    |

|    |    |  |    |
|----|----|--|----|
| D3 | 31 | Thiamin Supplementation Roles In 15 Weeks of Pregnancy with Hyperemesis Gravidarum, Decreased Consciousness Caused by Wernicke Encephalopathy, Electrolyte Imbalance, and Severe Malnutrition: A Case Report | 31 |
|    |    | <i>Rosyidah HP, Taslim NA, As'ad S, Faradilah A, Syam N, Ainun N, and Ashari N</i>   |    |
| D4 | 32 | Food Supplementation, Financial Aid, and Health Awareness – Pathways to Stunting Prevention in Pakistan  | 32 |
|    |    | <i>Butt H, Shah SGS, Hameed A and Ali TM</i>   |    |
| D5 | 33 | Implementation of Halal Certification in Micro, Small, and Medium Enterprises in Indonesia: A Healthy Lifestyle Preferences for Consumers  | 33 |
|    |    | <i>Faradila S, Supardi A and Fatwa N</i>   |    |

|  |
|--|
| <b>NUTRITION AND LIFESTYLE INTERVENTIONS IN CHRONIC DISEASE MANAGEMENT</b> |
|--|

|    |    |  |    |
|----|----|--|----|
| E1 | 34 | Food, Nutrition, Health, and Lifestyle: Effects of Nutritional Modifications and Lifestyle Changes on the Remission of Chronic Diseases      | 34 |
|    |    | <i>Morghade RS</i>   |    |
| E2 | 35 | Obesity: Is It Simply Gluttony and Sloth?? A Case Report on Combating Obesity and Cardiovascular Disease through Healthy Lifestyle Behaviors | 35 |
|    |    | <i>Valk R and Solh H</i>   |    |
| E3 | 36 | Reliability of a New Biopsychosocial Symptoms-Based Thyroid Dysfunction Questionnaire (TDQ) as a Screening Tool in Iodine Deficiency Areas   | 36 |
|    |    | <i>Mutalazimah M, Mulyono B, Murti B, Azwar S, and Kurnia P</i>  |    |

|     |    |   |    |
|-----|----|---|----|
| E4  | 37 | Sugar-Sweetened Beverage and The Risk of Chronic Kidney Disease: A Scoping Review   | 37 |
|     |    | <i>Farah FL, Sam TJ and Muhammad A</i>  |    |
| E5  | 38 | Indonesia's Zillennials' Preferences for Halal Tourism: A Pathway to Sustainable Health Lifestyle   | 38 |
|     |    | <i>Fithrotunnisa DA, and Fatwa N</i>  |    |
| E6  | 39 | The Relationship Between Iron Intake, Hemoglobin Levels, and Nutritional Status with Physical Fitness of Female Adolescents at the High School Level            | 39 |
|     |    | <i>Wulandari F, and Khasanah AN</i>   |    |
| E7  | 40 | Promoting Traditional Foods for Sustainable Development: The Multifaceted Benefits of Kolakhar from Northeast India   | 40 |
|     |    | <i>Barman P and Vijayalaxmi KG</i>  |    |
| E8  | 41 | The Relationship Between Junk Food Consumption Habits and Nutritional Status with The Onset of Menarche in Children Aged 10-13 Years in Tunahan Village, Jepara | 41 |
|     |    | <i>Khasanah AN and Rosyada A</i>  |    |
| E9  | 42 | Food Safety Knowledge, Attitude and Hygiene Practices of Street-Cooked Food Handlers  | 42 |
|     |    | <i>Beldeniza, DM, Ecalne, JI, Guerra, V and Rasay, R III</i>  |    |
| E10 | 43 | Consumption of Caffeine-Containing Food in School-Age Children: Significant Factor of Malnutrition or Not?  | 43 |
|     |    | <i>Salar CJ</i>   |    |

|   |
|---|
| <b>ARTIFICIAL INTELLIGENCE AND MODERNIZATION OF COMMUNICATION</b> |
|---|

|    |    |   |    |
|----|----|---|----|
| F1 | 44 | Preliminary Screening of Bioactive Peptides in Coconut Milk Using in-Silico Tools | 44 |
|----|----|---|----|



|    |    |  |    |
|----|----|--|----|
| F2 | 45 | Factors Associated with Social Frailty: A Cross-Sectional Study among Older Adults | 45 |
|----|----|--|----|

*Vanoh D*

|    |    |   |    |
|----|----|---|----|
| F3 | 46 | Determinants of Ultra-Processed Food and Nutrient Intake among Reproductive-Aged Women in Indonesia | 46 |
|----|----|---|----|

*Latifani D, Prafiantini E, Santika D, and Agustina R*

|    |    |  |    |
|----|----|--|----|
| F4 | 47 | Sweet and Sharp: The Synergistic Power of Honey and Shallot Peel Extract ( <i>Allium cepa</i> L.) In Overcoming methicillin-resistant <i>Staphylococcus aureus</i> | 47 |
|----|----|--|----|

*Niode NJ, Tallei TE, Kapantow MG, Phoanda TC, Lukita S, Emor IO, and Tampi JA*

|    |    |  |    |
|----|----|--|----|
| F5 | 48 | Nutritional Composition of <i>Garcinia Huillensis</i> Pulp | 48 |
|----|----|--|----|

*Kumatso JM, and Sigge GO*

### **PLANT BASED DIET & THE GUT MICROBIOME**

|    |    |   |    |
|----|----|---|----|
| G1 | 49 | Impact of Preparation Methods on the Nutritional and Bioactive Properties of Broccoli Microgreens | 49 |
|----|----|---|----|

*Tallei TE, Savitri M, Lee D, Park MN, Syahputra RA, Taslim NA, Moon S, Nurkolis F and Kim B*

|    |    |   |    |
|----|----|---|----|
| G2 | 50 | Potential of Oat Components in Preventing Hypertension and Its Cardiovascular Complications | 50 |
|----|----|---|----|

*Netticadan T, Raj P, Yu L, Joseph S, and Malunga L*

|    |    |  |    |
|----|----|--|----|
| G3 | 51 | Effect of Soy Flour on Nutritional, Physicochemical, and Sensory Characteristics of Selected Staple Foods in Lesotho – Sorghum Porridge, Maize Meal Stiff Porridge and Wheat Bread | 51 |
|----|----|--|----|

*Nkhabutlane P, Morojele M and Lekota M*

|    |    |   |    |
|----|----|---|----|
| G4 | 52 | The FODMAP-diet for Gut Microbiome Restoration and Management of Symptoms in Irritable Bowel Syndrome | 52 |
|    |    | <i>Valk R and Valk MJ</i>   |    |
| G5 | 53 | Characterization of Heirloom (Ominio variety) Rice Flour  | 53 |
|    |    | <i>Bautista AB and Labartine, EC</i>  |    |

### FOOD PRODUCTION QUALITY, SAFETY AND SUSTAINABILITY

|    |    |  |    |
|----|----|--|----|
| H1 | 54 | Foodprint: The Environmental Impact of Dietary Patterns in Indonesia through a Planetary Health Lens                                   | 54 |
|    |    | <i>Arum NLP</i>  |    |
| H2 | 55 | The Effect of Blanching Temperature and Time to the Level of Flavonoid Compounds of Senggani Flower ( <i>Melastoma malabathricum</i> ) | 55 |
|    |    | <i>Mareta DT, Santoso U, Supriyadi and Setyaningsih W</i>  |    |
| H3 | 56 | Stability Analysis for Yield and Yield Contributing Traits of Potato ( <i>Solanum tuberosum</i> L.)                                    | 56 |
|    |    | <i>Johnson PL, Rohit and Rangare NR</i>  |    |
| H4 | 57 | Utilization of Aloe Vera Gel and Mango Powder in Preparation of Instant Beverage Mix   | 57 |
|    |    | <i>Firdous N, Jamil F, Farooq U, Batoool A, Ahmad S, Sibte-e-Abbas M, Raza N, and Usman M</i>  |    |

### FOOD PROCESSING, PRODUCTION, AND TECHNOLOGY

|    |     |  |    |
|----|-----|--|----|
| J1 | 58. | Photooxidation Stability of Crude and Refined Kenari Oil | 58 |
|    |     | <i>Djarkasi GSS, Maria F.Sumual, Lana E. Luluhan</i>     |    |

|    |     |   |    |
|----|-----|---|----|
| J2 | 59  | Development of Sweet Potato Leaves ( <i>Ipomoea batatas</i> Poir.) Powder as Partial Substitute to the Production of Crinkles: Fortification of Vitamin A               | 59 |
|    |     | <i>Cruz XCP, Lorenzo MA, Alejandrino ACB, Gastador JGL, and Mariano KMO</i>   |    |
| J3 | 60. | Analysis of Crude Fiber Content and Antioxidants of Nata De Papaya as Functional Food in the Management of Hypercholesterolemia   | 60 |
|    |     | <i>Dewi ES and Kadir S*</i>   |    |
| J4 | 61  | Acceptability of Malunggay ( <i>Moringa oleifera</i> ) Leaves Powder as a Main Ingredient in Making Breadsticks   | 61 |
|    |     | <i>Monteza DDT, Pacatan, AFR, Tayabas, EJM and Jao JH</i>   |    |
| J5 | 62  | Effect of Dehydration on the Physicochemical and Nutritional Properties of Stingless Bee Honey  | 62 |
|    |     | <i>Khong ZQ, Tan FA, HoAL, and Chye FY</i>  |    |
| J6 | 63  | Investigating Midwives' Perception of Portable Birthing Chair   | 63 |
|    |     | <i>Lestari MW, Purnamasari WM, Badriah S, Mulyani N, Nurcahyani L, Mardiani DE, Tajmiati A, Sofie M, Ismail R</i>   |    |
| J7 | 64  | Therapeutic Potential of Synthetic Alpha-Lactalbumin and Oleic Acid Complex (HAMLET- Like) in the Treatment of Lung and Cervical Cancer: An In Vitro Cytotoxicity Study | 64 |
|    |     | <i>Citrakesumasari, Najamuddin U, Syam A, Riskiyani S, and Nurahmi</i>  |    |
| J8 | 65  | From Fruit to Pharmacology: <i>Eriobotrya japonica</i> 's Potential in Managing Obesity and Alzheimer's Disease   | 65 |
|    |     | <i>Hendrawan AF, Kusuma RJ, Rampengan DDCH, Lele J, Tjandra KC, Mayulu N, Fatimawali, Taslim NA, Tjandrawinata RR, Tallei TE, Syahputra RA, and Nurkholis F</i>         |    |

|                                       |
|---------------------------------------|
| <b>FOOD PROCESSING AND TECHNOLOGY</b> |
|---------------------------------------|

|    |    |   |    |
|----|----|---|----|
| K1 | 67 | Development of Most Acceptable Formulation of Gluten-Free Biscuit using Okara and Chickpea Flour as Replacement for Wheat Flour | 67 |
|----|----|---|----|

|    |    |  |    |
|----|----|--|----|
| K2 | 68 | Impact of Pasteurization on the Physico-Chemical Properties of Seaweed Sheets Made from <i>Caulerpa lentillifera</i>                           | 68 |
|    |    | <i>Capule AB</i>   |    |
| K3 | 69 | Characterization of Veggie Snacks Made from Okara, Rice Flours, and Skimmed Milk Using Cold Extrusion Technology                               | 69 |
|    |    | <i>Elvira L</i>  |    |
| K4 | 70 | Rambutan Peel Anthocyanins for Intelligent Packaging Dyes: Ultrasound-Assisted Extraction with Varied Ethanol Concentrations and PH Conditions | 70 |
|    |    | <i>Perdani AW, Supriyadi, Purwono B, Setiowati AD, Setianingsih DA and Marliana I</i>  |    |

## **PUBLIC HEALTH NUTRITION**

|    |    |   |    |
|----|----|---|----|
| L1 | 71 | Exploring the Determinants of Stunting in Indonesia: A 2023 Analysis using Multiple Linear Regression   | 71 |
|    |    | <i>Sofiyulloh, Rahmaniati M and Latif YI</i>  |    |
| L2 | 72 | Association of the Academic Stress Level and Chrononutrition Profile of Junior Students Under Allied Health Programs in Polytechnic University of The Philippines – Sta. Mesa, Manila | 72 |
|    |    | <i>Bautista HG, Bugayong TF, Domondon FF, Ligo SL, Manlangit FA and Ermino MRA</i>  |    |
| L3 | 73 | Knowledge, Attitude, and Practices on Human Milk Donation and Banking of Mothers Living in Barangay Bancal, City of Meycauayan, Bulacan, Philippines                                  | 73 |
|    |    | <i>Umadhay SJA and Ebron VRM</i>  |    |

|    |    |   |    |
|----|----|---|----|
| L4 | 74 | Service Quality of the Therapeutic Dietary Department in a Government Hospital in Pasig City, Philippines | 74 |
|----|----|---|----|

*Calub DRL, Blaza AE, Estrope KP, Ignacio HMH, Mananap MJI, Palisoc DML, and Coraños JZ*

|    |    |   |    |
|----|----|---|----|
| L5 | 75 | Eat Right Campaign Initiative to Prevent Hypertension among Corporate Staff in Uganda | 75 |
|----|----|---|----|

*Musoga-KDM KD*

## PEDIATRIC NUTRITION AND EPIDEMIOLOGY

|    |    |  |    |
|----|----|--|----|
| M1 | 76 | Effectiveness of SustanSaya to the Nutrition Knowledge of Malnourished School-age Children (6-10 years old) in Selected Barangays of Manila City | 76 |
|----|----|--|----|

*Gajo MRJB, Grace DJG, Gudian LB, Lim MGE and Mendieta MRSZ*

|    |    |  |    |
|----|----|--|----|
| M2 | 77 | Understanding the Perception and Awareness of Filipinos in Mega Manila on Gluten-Free Bread Products | 77 |
|----|----|--|----|

*Descallar EL and Lorenzo ESJ*

|    |    |  |    |
|----|----|--|----|
| M3 | 78 | Identifying Picky Eating Disorders from the Parental Perception Aspect and its Effect on Adequacy of Food Intake, and Nutritional Status in Children | 78 |
|----|----|--|----|

*Firmansyah F and Susanti T*

|    |    |   |    |
|----|----|---|----|
| M4 | 79 | Development and Validation of Alternative Healthy Eating Index for Malaysian Adolescent | 79 |
|----|----|---|----|

*Azizan NA, Kah NA, Rahim TMA and Majid HA*

|    |    |  |    |
|----|----|--|----|
| M5 | 80 | Knee Height, Ulna Length, and Arm Span with Body Height as an Application of Nutritional Status Assessment in Children with Disability | 80 |
|----|----|--|----|

*Mardiyati NL, Mutalazimah M, Isnaeni FN, Puspitasari DI, Rakhma LR, Pangastuti NA, and Amalia ND*

|    |    |  |    |
|----|----|--|----|
| M6 | 81 | Understanding the Perceptions of Bakers in Mega Manila towards Aluminum-Free Baking Powder   | 81 |
|    |    | <i>Descallar EL</i>  |    |
| M7 | 82 | Strengthening Adolescents' Food Security, Nutrition, And Mental Health After the Covid-19 Pandemic in Yogyakarta: A Perspective of Multi-Level Stakeholders                      | 82 |
|    |    | <i>Auliani NA, Asrullah M, Dewi SL, Maula AW, L'Hoir M, Helmyati S, and Melse-Boonstra A</i>   |    |
| M8 | 83 | Medium Chain Triglycerides Administration after Cholecystectomy is Associated with Favorable Clinical Response: A Case Report  | 83 |
|    |    | <i>Aminuddin A, Jennifer, and Daud NA</i>  |    |
| M9 | 84 | Medical Nutrition Therapy in Patient with Acute Pulmonary Edema, Hypertensive Heart Disease, Diabetes Mellitus, Chronic Kidney Disease, and Moderate Malnutrition: A Case Report | 84 |
|    |    | <i>Ashari N, Rasyid YSH, Taslim NA</i>   |    |

|                                  |
|----------------------------------|
| <b>MATERNAL AND CHILD HEALTH</b> |
|----------------------------------|

|    |    |   |    |
|----|----|---|----|
| N1 | 85 | Visual Novel Games: A Breakthrough in Dental Health Education for Elementary School-Aged Stunting Children in Indonesia | 85 |
|    |    | <i>Gunawan E, Masse AFH, Biring GJ and Prasetyo HD</i>  |    |
| N2 | 86 | Determinants of Stunting in Toddlers at the Bulukerto Health Center, Central Java, Indonesia                            | 86 |
|    |    | <i>Puspitasari DI, Wati EK, Hanifah DN, and Persada TZ</i>  |    |
| N3 | 87 | Easily Assessment of Nutritional Status Children using Stunting Meter Digital   | 87 |
|    |    | <i>Siswati T, and Rialihanto MP</i>   |    |

|    |    |   |    |
|----|----|---|----|
| N4 | 88 | Socioeconomic and Environmental Risk Factors Associated with Malnutrition among Children Aged Younger than 5 Years in Rural Mpumalanga Province | 88 |
|----|----|---|----|

*Mbonane TP*

## NUTRITION AND HEALTH: FROM PREVENTION TO TREATMENT

|    |    |                                   |    |
|----|----|-----------------------------------|----|
| Q1 | 89 | Alzheimer's Disease and Nutrition | 89 |
|----|----|-----------------------------------|----|

*Sunar and Bahadur S*

|    |    |   |    |
|----|----|---|----|
| Q2 | 90 | An Audit on Parenteral Nutrition Compliance with Clinical Guidelines in Hospitalized Patients at Park Hospital's Oncology Department, India | 90 |
|----|----|---|----|

*Aziz MMD*

|    |    |  |    |
|----|----|--|----|
| Q3 | 91 | Drug Discovery of Anticancer Candidates from <i>Nigella sativa</i> (Black Cumin): An Integrative in Silico, in Vitro, and Phytochemical Approach Targeting Molecular Pathways in ER-Positive MCF-7 Breast Cancer Cells | 91 |
|----|----|--|----|

*Lele JAJMN, Kezia I, Rampengan DDCH, Silaban H, and Gaol MNL*

|    |    |   |    |
|----|----|---|----|
| Q4 | 92 | Identification of the Determinants of Adults' Food Purchasing Habits and Diet Quality | 92 |
|----|----|---|----|

*Dharmadasa MAMG and Adikari AMNT*

|    |    |  |    |
|----|----|--|----|
| Q5 | 93 | Enhancing the Fiber Content of Dumpling Meat Filling Using Saba Banana Peel as Meat Extender | 93 |
|----|----|--|----|

*Barrogo, Dinsay, Gamelo, Tarun, and Oñas*

## POSTER SESSION

|    |    |   |    |
|----|----|---|----|
| P1 | 95 | The Nutrition Knowledge, Eating Habits, and Food Attitudes of The Undergraduate Non-Health Science Students on Hybrid Learning Modality | 95 |
|----|----|---|----|

*Bontile HL, Calivo C2, Barrogo AM, Dinsay AR, Fiel YI, Paguio J*

|     |     |  |     |
|-----|-----|--|-----|
| P2  | 96  | Sensory Acceptability and Nutritional Characteristics of Chicken Nuggets Supplemented with Cowpea ( <i>Vigna unguiculata</i> L. Walp.)                               | 96  |
|     |     | <i>Aguila MS and Bagabaldo PA</i>  |     |
| P3  | 97  | Assessment of Knowledge and Attitude of College of Human Ecology (CHE) Undergraduate Students of The University of The Philippines – Los Banos Towards Vegetarianism | 97  |
|     |     | <i>Patalbo RFG and Talavera MTM</i>  |     |
| P4  | 98  | Formulation of Seaweed ( <i>Gracilaria edulis</i> ) and Rice Flour Incorporated Healthy Biscuit Supplement   | 98  |
|     |     | <i>Jayasingh PS, Hewage SHDY, and Laksmi PAC</i>   |     |
| P5  | 99  | Effect of Temperature on DNA Extraction Purity for Corned Beef   | 99  |
|     |     | <i>Nurhayati N, Tri C, Feza A, Yuni K, Anisa FAF, and Yani S</i>   |     |
| P6  | 100 | Planetary Health Diet Index among Women of Reproductive Age in Indonesia: Comparison of Two Ethnic Groups  | 100 |
|     |     | <i>Sumabrata JS, Agustina RA, and Chandra DNC</i>  |     |
| P7  | 101 | The Antioxidant and Nutritional Potential of Matcha Teas   | 101 |
|     |     | <i>Karolina JJK, and Kika J</i>  |     |
| P8  | 102 | Study of Nutritional Characteristics of Students of Special Medical Groups in Educational Institutions of Kazakhstan   | 102 |
|     |     | <i>Doszhanova GN and Abduldayeva AA</i>  |     |
| P9  | 103 | Selected Nutritional Values of Japanese Matcha Tea   | 103 |
|     |     | <i>Joanna K, Karolina J, and Katarzyna JM</i>  |     |
| P10 | 104 | Nutritional Status as a Risk Factor of Non-communicable Diseases among Adults in the City of Jakarta, Indonesia  | 104 |
|     |     | <i>Sunardi D, Insani PNC, Chandra DN</i>   |     |
| P11 | 105 | <i>Nutritional Status and Body Composition Profile of Neurovascular Patients</i>   | 105 |
|     |     | <i>Sunardi D, Wulandari Y, Sutanto K, and Sonia S</i>  |     |



|     |     |  |     |
|-----|-----|--|-----|
| P12 | 106 | The Evaluation of <i>Tagetes minuta</i> as Alternative Antimicrobial Agent Against Antibiotic Resistant Foodborne Pathogen Associated with Diarrhoea in Children Under the Age of Five | 106 |
|-----|-----|--|-----|

*Magunga BT*

|     |     |   |     |
|-----|-----|---|-----|
| P13 | 107 | In Vivo Antifungal Control of Citrus Black Spot (CBS) using Thyme Oil as an Alternative to Synthetic Fungicides | 107 |
|-----|-----|---|-----|

*Magunga BT*

# ORAL PRESENTATIONS

A1

[02]

**MEDICAL NUTRITION THERAPY IN TRAUMATIC BRAIN INJURY: A CASE REPORT OF GERIATRIC PATIENT WITH HYPOALBUMINEMIA, INCREASED NEUTROPHIL-TO-LYMPHOCYTE RATIO, DEPLETED IMMUNE SYSTEM, HYPOKALEMIA, AND MALNUTRITION**

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**ABSTRACT**

Traumatic brain injury (TBI) has a tremendous impact on global healthcare and become a concern among the elderly population with malnutrition. It exacerbates the consequences, complicates recovery, and prolonged length of hospital stay. We report a case of a 72-year-old female patient with moderate TBI after hit by motorcycle and severe protein energy malnutrition. On admission, she had GCS E3 M5 V2 and intubated with mechanical ventilation support. She underwent craniotomy to evacuate the hemorrhage in right temporoparietal region of her head. Medical Nutrition Therapy (MNT) was administered with low dose enteral nutrition and gradually increased from 345 kcal to 1500 kcal/day with macronutrient composition of 50% carbohydrate, 20% -23% protein, and 27 -30% fat. Multivitamin, mineral supplementation, and snakehead fish extract were given as supportive micronutrients for this patient. After 11 days of treatment, she fully gained her consciousness, biochemical markers including serum albumin, neutrophil-to-lymphocyte ratio (NLR), total lymphocyte count (TLC) and potassium were improved. MNT plays a crucial role to manage geriatric patients with malnutrition and traumatic brain injury in order to overcome hypercatabolic state of TBI, improve nutritional status, and facilitate recovery.

Keywords: traumatic brain injury, elderly, malnutrition

A2

[03]

**NUTRITIONAL APPROACH IN INFLAMMATION PHASE ELECTRICAL BURNS WITH MODERATE MALNUTRITION, HYPOALBUMINEMIA, AND INCREASED TRANSAMINASE ENZYM: CASE REPORT**

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**ABSTRACT**

Electrical burns are still the most devastating condition in emergency settings in developed and developing countries, leading to physical and psychological injuries. Delayed of wounds healing in general is caused by the wound stagnant in the inflammatory phase. Protein particularly Arginine and Glutamine plays an important role in the inflammatory process and buffers the response to infection. Vitamin A has an anti-inflammatory effect on open wounds, increasing the number of monocytes and macrophages at the wound site in the early inflammatory phase and facilitating epithelial cell differentiation. Vitamin C or ascorbic acid (AA) influences several important aspects of neutrophil function: migration in response to inflammatory mediators (chemotaxis), phagocytosis and killing of microbes, and apoptosis and clearance by macrophages. Case reports; A 23-year-old man with moderate protein energy malnutrition suffered burns from an electric shock while working on removing advertising boards, at that time the patient was wearing rubber sandals. Physical examination Mid-Dermal Electrical Injury TBSA 19%, armpit hair singed. Decreased of TLC (1132 mL<sup>-1</sup>) increased of transaminase enzymes (GOT 97.6 GPT 40.7) moderate hypoalbuminemia (2.7 g/dl). Medical nutritional therapy was given oral and parenteral gradually with a total energy requirement of 2800 kcal/day, protein 2g/day (Arginin 30g/day, Glutamin 50g/day). Supplementation with vitamin A 10000 iu/day, Vitamin C 500 mg/12 hours, Zinc 40mg/24 hours. After 10 days of wound care improved, immunity increased (1132-2040 mL<sup>-1</sup>), decreased of transaminase enzymes (GOT 97.6-23 GPT 40.7-35), mild hypoalbuminemia (2.7-3.1 g/ dl). Conclusion; nutritional therapy supported by high protein (particularly Arginine and Glutamine), vitamin A, vitamin C, and Zinc in the wound inflammation phase provides good clinical results in the wound healing process and decrease length of stay.

Keywords: Arginine, Glutamine, vitamin A, vitamin C, Electrical Burns

A3

[04]

**THE ROLE OF MEDICAL NUTRITION THERAPY IN IMPROVING THE  
FUNCTIONAL CAPACITY OF BLADDER CANCER PATIENTS WITH CHRONIC  
KIDNEY DISEASE: A CASE REPORT**

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**ABSTRACT**

Bladder cancer is the 9th most common cancer worldwide and the 13th most common in Indonesia. Chronic kidney disease (CKD) is structural or functional damage of the kidneys, accompanied by a reduction in the glomerular filtration rate and can lead to malnutrition. The nutritional management of bladder cancer patients with CKD aims to reduce the toxicity of uremia, improve metabolic disorders, prevent protein energy wasting and prevent vitamin deficiency. Extra-virgin olive oil (EVOO) is anti-inflammatory, antioxidant and may inhibit carcinogenesis. A case report of a 48-year-old male with a diagnosis of bladder cancer and chronic kidney disease with moderate protein energy malnutrition is presented. On physical examination, there were anemic conjunctiva and minimal loss of subcutaneous fat with a hand grip strength (HGS) of 10.8 kg. Laboratory results showed anaemia, leucocytosis, hypoalbuminemia, hyperkalemia and impaired kidney function. Nutritional management provided via oral with 2,300 kcal total energy consist of regular standard diet 883.2 kcal, milk 342 kcal, fruit 100 kcal, honey 96 kcal and EVOO 400 kcal with oral supplements of zinc, multivitamins, curcuma and cork fish extracts. After 14 days of nutritional support, the patient's functional capacity had improved (HGS day-1: 10.8 kg, day-7: 15.6 kg, day-14: 33.5 kg). The blood test results also improved, including leukocytes (36,700 to 12,700/ $\mu$ L), hemoglobin (8.7 to 10.5 g/dL), ureum (303 to 109 mg/dL), creatinine (44.32 to 9.52 mg/dL), albumin (2.7 to 3.2 g/dL), and potassium (8.7 to 5.2 mmol/l). In conclusion, the provision of optimal medical nutrition therapy can support the improvement of functional capacity in bladder cancer patients with CKD.

Keywords: bladder cancer, malnutrition, medical nutrition therapy

A4

[05]

**THE ROLE OF ANTIOXIDANT MICRONUTRIENTS IN ELECTRICAL BURN  
INJURY WITH MODERATE MALNUTRITION: A CASE REPORT**

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**ABSTRACT**

Electrical burn is an injury caused by contact with an object that has an electric current. The American Burn Association (ABA) estimates that 4,400 people are affected by electro-trauma each year in the United States, 400 of whom die. Post-burn hypermetabolism leads to a deficiency of vitamins and minerals that require substitution. Antioxidant micronutrients are beneficial to burn patients due to their role in capturing free radicals in the wound healing process-homeostasis, inflammatory phase, proliferation phase, and remodeling as well as their role in fighting infection. Case report: a 41-year-old male, with Superficial Mid Dermal-Full Thickness Electrical Burn Injury TBSA 49% accompanied by Moderate Protein Energy Malnutrition. Nutritional therapy is given based on the Harris-Benedict formula through oral and parenteral with a total energy requirement of 2200 kcal, and protein 2 g per kilogram of body weight per day. He was given supplementation Zinc 40 mg, Vitamin B. Complex 3x2 tablet, Curcuma 3x400mg, Vitamin C 500mg, Vitamin E 3x400 mg, Vitamin A 6000 IU, Vitamin D 1000 IU, Snakehead fish extract capsules 3x2 capsul. After 14 days of treatment, he was discharged with adequate oral nutrition intake and increased functional capacity. Blood test results improved such as Hypoalbuminemia (2.5 - 2.7 g/dl), Leukocytosis (17.100 - 10.800  $\mu$ L), Improvement of Thrombocytosis (457.000 – 287.000  $\mu$ L), Moderate Depletion of the Immune System (1111.5 - 1306.8  $\mu$ L), Increase in NLR (13.4 - 9.06), Mild hyponatremia (128 - 131 mmol/L), Improvement in liver function SGOT/SGPT (657/276 - 34/24 U/L). In conclusion, nutritional therapy supported with antioxidant micronutrients was found to reduce inflammatory status, and improved nutritional status was associated with improved quality of life and clinical outcomes in burn patients.

Keywords: electrical burn, hypermetabolism, micronutrient, malnutrition, antioxidant

A5

[06]

**LIPID-LOWERING EFFECT OF ALPHA-LIPOIC ACID: A SYSTEMATIC REVIEW  
AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS**

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**ABSTRACT**

Alpha-lipoic acid (ALA) has various effects on the body, one of which is its impact on lipid levels in the blood. Preclinical studies have demonstrated this effect; however, the results of clinical studies have been inconsistent. Systematic reviews on this subject have also yielded conflicting findings. This study conducted a systematic review and meta-analysis of randomized controlled trials to evaluate the effects of ALA on changes in various blood lipid levels. We discovered that ALA significantly reduced triglyceride (TG) levels (-6.299 mgdL-1 95% CI -10.104 to -2.494); however, the studies contributing to this significant finding were associated with a high risk of bias. In contrast, no significant effects were observed on the levels of total cholesterol (TC; 0.304 mgdL-1 95% CI -3.436 to 4.044), High-density Lipoprotein (HDL; -1.460 mgdL-1 95% CI -5.445 to 2.525), or Low-density Lipoprotein (LDL; 0.226 mgdL-1 95% CI -0.711 to 1.163). Although the dose of ALA and the duration of administration did not show statistically significant effects, it was observed that ALA doses not exceeding 1,200 mg per day and administration for approximately 16 weeks were more effective in reducing TG levels. These findings highlight the potential lipid-modifying effects of ALA, emphasizing the importance of appropriate dosing and duration of treatment.

Keywords: Alpha-lipoic acid, lipid profile, systematic review, meta-analysis

B1

[07]

**DEVELOPMENT OF MIKI NOODLES WITH PAKO (DIPLAZIUM ESCULENTUM)  
LEAVES POWDER AS MICRONUTRIENT FORTIFICANT**

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**ABSTRACT**

This study utilized and evaluated pako leaves (*Diplazium esculentum*) powder to enhance nutritional value of one of the staple foods, fresh miki noodles. Six formulations (2%, 4%, 6%, 8%, and 10% pako powder), including the reference sample (0%), underwent sensory evaluation, physicochemical and nutrient analysis, and consumer preference testing. Sensory evaluation showed a decrease in acceptability as pako concentration increased, with the 2% formulation being the most acceptable and optimum formulation within the semi-trained and trained panelists. Physicochemical analysis also revealed significant influences on cooking quality, water uptake, and disintegration resistance. Furthermore, in nutrient analysis, the best formulation showed an increase in crude fat, fiber, ash, moisture, iron, and phosphorus, with a decrease in protein, energy, carbohydrates, and calcium compared to the control. Consumer testing with 120 random panelists in Metro Manila demonstrated high acceptability for 2% pako miki noodles. Thus, the study concludes that incorporating 2% pako powder into miki noodles can enhance nutritional value, specifically iron, while maintaining its consumer acceptability. This research contributes to the development of value-added and nutrient-enriched food products of iron fortificants and promotes the sustainable utilization of underutilized and indigenous resources. Future research should optimize the formulation and the process to address the decrease in protein and calcium content and explore the other potential health benefits through clinical studies.

Keywords: Pako, *Diplazium esculentum*, Miki Noodles, Iron, Consumer acceptability, Fortification



B2

[08]

**EFFECT OF CARBON SOURCES ON CHEMICAL AND ANTI-OXIDANT  
ACTIVITY OF ALCOHOLIC BEVERAGE FROM COFFEE BERRY PULP**

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**ABSTRACT**

Coffee pulp is a by-product of coffee bean production, typically used as fertilizer valued at less than \$1 per kilogram. The Plangyai Coffee Baan Pok community enterprise in Chiang Mai, Thailand, produces over 1,000 tons of fresh coffee berries annually, resulting in substantial amounts of coffee pulp. Aligned with Sustainable Development Goal 12 (responsible consumption and production), there is a focus on reducing food waste and creating unique local products. This study investigates the effects of various carbon sources—dextrose, honey, cane sugar, and granulated sugar—on the chemical properties and antioxidant activity of an alcoholic beverage made from coffee berry pulp. The findings indicated that different carbon sources significantly influenced the pH, color, total sugar content, and alcohol levels of the beverage. Antioxidant activity, measured using the Ferric Reducing Antioxidant Power (FRAP) method with gallic acid as the standard, varied across samples. The highest antioxidant activity was observed with cane sugar as the carbon source, with FRAP value of 26.92 mg GAE/g FW. This antioxidant activity positively correlated with total phenolics content,  $R^2 = 0.67$  but showed weak correlation with total flavonoids content with  $R^2 < 0.3$ . Interestingly, total phenolics content and FRAP values increased significantly after fermentation process. These results suggest that utilizing coffee pulp in beverage production not only adds value to this by-product but also contributes to sustainable practices by reducing waste and promoting the development of local products with potential health benefits.

Keywords: Alcoholic beverage, coffee pulp, antioxidants, phytochemicals

B3

[09]

**GENERATION OF N-ACYL PRODUCTS OF CANOLA MEAL PROTEIN  
HYDROLYSATES AN EVALUATION OF ANTIMICROBIAL ACTIVITY**

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**ABSTRACT**

Canola protein prepared by aqueous extraction of desolventised-toasted canola meal at pH 12, membrane separation (5 kDa MWCO) and freeze-drying (87% protein, dry weight basis) was hydrolysed with 4 M sulphuric acid. Chromatographic separation of canola protein hydrolysate (CPH) yielded three fractions according to charge and polarity of consisting amino acids (AAs): Fraction 1 with negatively charged and polar AAs, Fraction 2 with AAs with hydrophobic side chains, and Fraction 3 with positively charged AAs. The unfractionated CPH and the fractions were reacted with lauric acid to obtain their respective N-lauroyl products following the Schotten Baumann reaction. Fraction 1 provided sufficient yields of acylated products, and their respective sodium salts were prepared by reacting with 20% (w/v) ethanolic NaOH. The antimicrobial activity of these sodium salts of N-lauroyl products was tested against two pathogenic (*Salmonella enteritidis*, *Listeria monocytogenes*) and four non-pathogenic (*Escherichia coli*, *Pseudomonas fragi*, *Lactobacillus plantarum*, *Lactococcus lactis*) bacterial strains. The sodium N-lauroyl product of hydrolysate showed higher activity against the test strains than the sodium salt of N-lauroyl product of Fraction I. The highest effectiveness was observed against *L. lactis* (100%) and *S. enteritidis* (98%), reporting a MIC of 25 ppm for sodium N-lauroyl product of the unfractionated hydrolysate. The sodium salt of N-lauroyl product of Fraction I required more than 250 ppm to provide any growth inhibition for all the organisms except *L. lactis*. This study presents a route for converting canola meal protein into an antibacterial agent, a value addition option for plant processing co-product streams.

Keywords: canola protein, hydrolysis, N-lauroyl amino acids, antimicrobial activity Themes: Food Value Chains and Their Sustainability, Food Production and Sustainability

B4

[10]

**DEVELOPMENT OF PAN DE SAL WITH THE UTILIZATION OF AVOCADO  
(PERSEA AMERICANA) SEED FLOUR**

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**ABSTRACT**

Avocado seeds are usually discarded despite its proven nutritional benefits. Thus, this study, in line with promoting sustainability, aimed to develop Avocado Seed Flour (ASF), identify its chemical characteristics, and use it as a flour portion substitute to Pandesal. This study conducted a sensory evaluation using a 9-point Hedonic Scale to determine the acceptability of pandesal with ASF in five formulations (0%, 2%, 4%, 6%, and 8%), assessing parameters such as appearance, color, aroma, texture, taste, aftertaste, and overall acceptability. The results revealed that there is a significant difference between the five formulations of pandesal in all of the sensory parameters. The pairs of formulations with no significant difference per parameter were also identified. Based on the findings of the study, Formulation A (2% ASF, 98% bread flour) is the most acceptable formulation with ASF in the aspect of overall acceptability. The Formulation A (2%) Pandesal is observed to have a higher percentage of Crude Protein (6.43%), Crude Fat (7.34%), and Carbohydrates (64.63%) than the Standard Formulation Pandesal. Formulation A (2%), is also noted to be “Liked Very Much” in all of the sensory parameters through the second sensory evaluation for consumer acceptability. The findings also showed that there is a decrease to the level of acceptability as higher proportions of ASF were added to Pandesal. The results obtained in this study can be used as a point of reference for further studies to improve and modify existing products and develop new ones using ASF.

Keywords: avocado, avocado seed flour, pandesal, sustainability, sensory evaluation

B5

[11]

**UTILIZATION OF ADLAI (COIX LACRYMA-JOBI L.) AND BROWN (ORYZA SATIVA L.) RICE IN THE FORMULATION AND ACCEPTABILITY OF LOW-SUGAR SNACK BAR**

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**ABSTRACT**

The emergence of high-sugar cereal bars has been rampant in the market in recent years due to their remarkable palatability, which increases the risk of developing chronic diseases among consumers. This study aims to utilize Adlai (*Coix lacryma-jobi* L.) and Brown (*Oryza sativa* L.) rice in developing a low-sugar snack bar. The rice grains underwent extrusion, in which three formulations (70:30, 50:50, and 30:70 w/w) of varying Adlai to brown rice ratios were prepared, then further processed involving bar making. The snack bars were tested through sensory evaluation and acceptability test conducted by 50 trained panelists composed of third-year Nutrition and Dietetics and Food Technology students. Among the sensory attributes (i.e., appearance, texture, aroma, taste), only texture (handfeel) had a significant difference across formulations whereas formulation 1 composed of 70% Adlai rice and 30% Brown rice was the most acceptable formulation. Formulation 1 proceeded to further testing including proximate analysis, sugar analysis, and microbiological analysis. Proximate analysis showed that the snack bar has relatively low crude protein, high crude fat, and a substantial amount of fiber, ash, moisture, starch, carbohydrate, and gross energy. Sugar analysis revealed that the snack bar only has 4.26 grams/100 grams of snack bar and is considered a low-sugar product. Lastly, the snack bar passed the microbiological analysis including screenings for aerobic plate count, *E. coli* count, *Salmonella* spp. detection, *S. aureus* count, and yeast and mold count; therefore, the snack bar is safe for human consumption. Further research studies are highly recommended.

Keywords: Adlai rice, Brown rice, low sugar, extrusion, Bachelor of Science in Nutrition and Dietetics, Polytechnic University of the Philippines

C1

[12]

**THE EFFECT OF HERBAL MEDICINE ON THE IMPROVEMENT OF  
POSTPARTUM HYPERTENSION IN GORONTALO CITY**

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**ABSTRACT**

Postpartum hypertension is an increase in blood pressure  $>140/90$  mmHg during the postpartum period. Herbal products of garlic, apple cider vinegar, honey, red ginger, and lemon are consumed by Indonesians to manage hypertension, reduce food intake, and the risk of heart disease. This study aims to determine the effect of Herbal Medicine on improving postpartum hypertension. The experimental research design involved pre- and post-test control groups. The results of this study indicate there were changes in blood pressure, both systolic and diastolic, in postpartum hypertensive mothers, a decrease in the mean results with the pretest  $153.55/98.39$  with posttest results of  $120.32/79.68$ , and changes in systolic and diastolic blood pressure in normotensive postpartum mothers, changes in mean blood pressure results with pretest  $117.74/76.45$  with posttest results of  $119/79.03$  ( $p < 0.005$ ) occur significant changes in blood pressure from pretest and posttest results. There was an equal number of hypertensive and normotensive postpartum mothers in providing exclusive breastfeeding 19 (61.3%) and not providing breastfeeding 12 (38.7%) with  $p < 0.209$ , there was no effect of herbal medicine consumption on breast milk production in postpartum mothers, both hypertensive and normotensive. Observations of normal lochia in hypertensive postpartum mothers were 30 (96.8%) and abnormal 1 (3.2%) with  $p < 0.004$  and  $p < 0.001$  so that there is an effect of consuming herbal medicine on lochia. The results of observations of uterine involution carried out on postpartum mothers with hypertension and normotensive conditions were normal, with 62 (100%) results showing normal involution with a  $p$  value  $< 0.000$ , so there is an effect of giving herbal medicine on lochia and uterine involution. It was concluded that there was a significant influence of herbal medicine on improving hypertension in postpartum mothers.

Keywords: Postpartum Hypertension, Herbal Medicine

C2

[13]

**KNOWLEDGE, ATTITUDES, AND PRACTICES (KAP) RELATED TO SODIUM  
INTAKE AMONG HYPERTENSIVE BENEFICIARIES OF PRIMARY HEALTH  
CARE FACILITIES IN VALENZUELA, METRO MANILA**

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**ABSTRACT**

This study determines the knowledge, attitude, and practices (KAP) related to sodium intake among hypertensive beneficiaries of primary health care facilities in Valenzuela, Metro Manila. An administrative order mandates that primary health care facilities educate patients on managing diseases through medicine, diet, and lifestyle changes. However, limited data exists on the adherence of these facilities to this order, particularly in terms of nutrition counseling and lifestyle education for hypertension management. Using a quantitative research design, this study employs descriptive and inferential statistics. 385 respondents were selected through convenience sampling from 11 barangays, that were selected using multistage sampling. A validated, reliability-tested research tool was used to gather sociodemographic data and KAP scores. Data shows that the majority of the respondents are knowledgeable about sodium intake, yet generally considered as Insufficient Knowledge. Their level of attitude and practice is positive, yet a high standard deviation indicates the respondents' answers are diverse. Female respondents have more favorable attitudes; college graduates are more knowledgeable and have more favorable attitudes. Respondents with a high income level are more knowledgeable, compared to other income levels. A minimal association exists between the respondents' educational attainment and their knowledge of sodium intake. Sex, age, and income status showed a significant relationship with the level of attitudes. Data indicates that the KAP categories have a significant relationship and positive correlation with each other, however, presenting low association. This study would mainly contribute to the recalibration of existing programs, thereby improving the strategies of concerned organizations in addressing hypertension. The results can also be further utilized as guidance on implementing strategies for hypertensive individuals.

Keywords: knowledge, attitude, practices, salt, sodium, hypertension

C3

[14]

**EMPOWERING COMMUNITIES FOR SUSTAINABLE HEALTH: ADDRESSING MALNUTRITION, FOOD INSECURITY, AND NON-COMMUNICABLE DISEASES THROUGH LOCAL INITIATIVES IN INDIA**

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**ABSTRACT**

In our pursuit of providing wholesome and sustainable nourishment for a burgeoning global population, we encounter multifaceted challenges like malnutrition, food insecurity, and diet-related non-communicable diseases (NCDs). These challenges intersect public health, environmental impact, and social equity. Local communities play a crucial role in transforming food systems, as their involvement in decision-making, nutrition education, and support for local food systems fosters self-reliance and resilience. Empowering communities ensures culturally appropriate, locally relevant, and sustainable solutions. The ACE-ME (Accessing Care through Empathy, Motivation, and Edutainment) program aims to empower individuals with diabetes and hypertension, caregivers, and community health workers to enhance chronic care management through semi-structured peer support groups known as Swasthya Samithi (SS) and capacity-building activities. This program underscores lifestyle modifications and community empowerment in the prevention and management of NCDs. Implemented in rural Karnataka, India the program has demonstrated significant lifestyle improvements, including reductions in tobacco and alcohol use, as well as decreased consumption of processed foods high in salt (from 16.3% to 3.3%). The Adolescent Health and Nutrition Initiative (AHANI)- India is another innovative program designed to equip adolescents with knowledge and skills for healthy living through peer support and leadership development. The program's outcomes include the establishment of plastic-free zones on campuses, the cultivation of vegetables and medicinal plant gardens in school campuses, the performance of educational skits on healthy eating and lifestyle, and commitments to reduce social media use and screen time. Community empowerment, cross-sector collaboration, and sustainable agricultural practices form the bedrock. As we champion sustainable healthy diets, we concurrently safeguard human health and our precious environment.

Keywords: Community empowerment, Sustainable health, Food systems, Malnutrition, Non-communicable diseases

C4

[15]

**CITRUS-DERIVED BIOFLAVONOIDS: AN ALTERNATIVE APPROACH  
TOWARDS TREATING DIABETES, NEURODEGENERATIVE DISEASES AND  
CANCER**

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**ABSTRACT**

Diabetes, neurodegenerative diseases and cancer are some of the major public health issues worldwide. Various synthetic drugs are available for the treatment of these diseases, however, most of them exhibit side-effects. Despite their availability, most of these drugs are unaffordable for a particular sect of population. Also, most of the commercial drugs exhibit critical effects upon long term consumption and sometimes can also be lethal. Flavonoids are bioactive polyphenols that has potent pharmacological properties. In the recent times, apigenin, quercetin and naringenin, derived from citrus plants, are used extensively in the treatment of various diseases and being herbal in nature, these compounds are reported to show no significant side-effects. These said dietary flavonoids do possess high antioxidant, anti-inflammatory, anti-hyperglycemic and anti-apoptotic properties. This review summarises the adverse effects of synthetic drugs available for treatment, suggesting the efficacy of the mentioned flavonoids as possible alternative medicinal approach against the usage of the commercial drugs. In experimental researches like cell culture and animal models, these dietary flavonoids can be used alternatively towards treating those diseases, considering their positive effects. However, further clinical trials are required on humans to check for toxicity.

Keywords: Synthetic drugs, Side-effects, Flavonoids, Citrus, Herbal, Alternative medicine



C5

[16]

**MECHANISTIC INSIGHTS INTO THE ANTICANCER AND  
ANTIINFLAMMATORY ACTIONS OF YELLOWFIN TUNA COLLAGEN  
PEPTIDES USING NETWORK PHARMACOLOGY**

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**ABSTRACT**

Collagen peptides derived from yellowfin tuna (YFTCP) have been widely recognized for their potential therapeutic applications, particularly in cancer therapy and inflammation management. In this study, the molecular mechanisms underlying the anticancer and anti-inflammatory effects of YFTCP were investigated. Collagen was extracted from the bones of yellowfin tuna (*Thunnus albacares*), and the dried collagen was subsequently digested using the protease enzyme trypsin. Through Liquid Chromatography-High Resolution Mass Spectrometry (LC-HRMS), 18 peptides were identified. A network pharmacology approach was utilized to explore the interactions between these peptides and their biological targets, while enrichment analyses using Gene Ontology (GO) and the Kyoto Encyclopedia of Genes and Genomes (KEGG) were performed to determine the key pathways involved. Strong associations between YFTCP and crucial genes implicated in cancer and inflammation, including CCND1, SRC, AKT1, IL1B, TNF, and PPARG, were revealed through GO analysis, all of which exhibited significant interactions. These genes were found to play central roles in biological processes such as cell cycle regulation, inflammatory responses, and tumor development. Additionally, KEGG pathway analysis indicated that YFTCP are involved in several critical pathways, including the Cancer Pathways, Endocrine Resistance, Kaposi Sarcoma-Associated Herpesvirus Infection, Proteoglycans in Cancer, and Human Cytomegalovirus Infection. These findings suggest that key molecular pathways related to cancer progression and inflammatory processes are modulated by YFTCP, highlighting their potential as multifunctional therapeutic agents. Insights into the pharmacological properties of YFTCP have been provided by this study, laying the foundation for future research and drug development based on these bioactive peptides.

Keywords: Yellow fin tuna collagen, inflammation, cancer pathways, network pharmacology, peptides

C6

[17]

**NUTRITIONAL THERAPY OF CYSTIC OVARIAN NEOPLASMA WITH ANEMIA,  
HYPOALBUMINEMIA, AND IMMUNE SYSTEM DEPLETION**

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**ABSTRACT**

Malnutrition is a common issue among cancer patients, with its prevalence varying depending on tumor type, affected organs, disease stage, treatment response, and comorbidities. Cancer-related cachexia affects 50-80% of patients. This case report examines the nutritional management of a 57-year-old woman diagnosed with malignant cystic ovarian neoplasm and suffering from severe malnutrition, with a focus on improving her nutritional and metabolic status for better survival outcomes. The patient experienced a two-month decline in oral intake due to worsening abdominal pain, particularly in the last eight days, along with nausea and vomiting more than five times a day. Significant weight loss was noted, though the exact amount was unknown. Physical examination revealed anemia, subcutaneous fat loss, ascites, wasting, and dorsum pedis edema. Laboratory findings indicated anemia, severe immune depletion, hyponatremia, azotemia, and hypoalbuminemia. The patient had no history of hypertension or diabetes and was a mother of seven children. On day 8 of treatment, the patient underwent surgery for tumor removal and ascites drainage. Nutritional therapy was initiated with a target of 1750 kcal/day, gradually increasing to 2250 kcal/day to aid in weight management. Protein intake was adjusted to 1.2-1.5 g/ideal body weight/day, with fat derived primarily from monounsaturated fatty acids (MUFA). Multivitamins and minerals were administered to support anti-inflammatory, antioxidant, and wound-healing processes post-surgery. After 23 days of treatment, the patient showed significant improvements in oral intake, clinical condition, and metabolic status, highlighting the importance of nutritional interventions in cancer care.

Keywords: Cancer, Malnutrition, Nutritional Management

C7

[18]

## OMEGA-3 AND VITAMIN D: NEW ADJUVANT THERAPY FOR CUTANEOUS AND SYSTEMIC LUPUS ERYTHEMATOSUS

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### ABSTRACT

Systemic Lupus Erythematosus (SLE) and Cutaneous Lupus Erythematosus (CLE) are complex autoimmune disorders, primarily characterized by chronic inflammation that can significantly impact various physiological systems within the body. Recent investigations in nutritional immunology have revealed the promising potential of omega-3 fatty acids, in conjunction with vitamin D, as adjunctive therapeutic agents in managing these complex diseases. This literature review was meticulously designed with the primary objective of critically evaluating the efficacy of the synergistic combination of omega-3 fatty acid and vitamin D supplementation in achieving disease activity reduction, improved quality-of-life metrics, and modulated immune responses in well-diagnosed individuals with systemic lupus erythematosus (SLE) and cutaneous lupus erythematosus (CLE). The findings of this comprehensive review indicate that there is substantial and consistent evidence to support the anti-inflammatory and immunomodulatory properties associated with these two essential nutrients. Moreover, the strategic combination of omega-3 fatty acids and vitamin D may yield synergistic effects that enhance the efficacy of therapeutic management strategies employed for these autoimmune conditions. It is nevertheless important to recognize that further research is required to develop a more robust methodology to determine the optimal dosage and duration of administration of these nutrients, as well as to identify specific patient subgroups that may derive the greatest benefit from such interventions.

Keywords: Autoimmune disease, Systemic Lupus Erythematosus (SLE), Cutaneous Lupus Erythematosus (CLE), Omega-3 fatty acids, Vitamin D

C8

[19]

**CLINICAL OUTCOMES IN ACUTE ISCHEMIC STROKE WITH PROBIOTIC INTERVENTION: THE ROLE OF ELEVATED SERUM LEVEL OF SHORT CHAIN FATTY ACID (SCFA)**

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**ABSTRACT**

Stroke is an acute cerebrovascular disease, noted as the second leading cause of global mortality after ischemic heart disease. An understanding of the brain-gut axis has shed light on the role of the immune system in the pathogenesis of stroke. Currently, the use of probiotics in overcoming intestinal microbiota imbalances is very broad, including in vascular disorders. This study aimed to assess the effect of probiotic (*Lactobacillus acidophilus*) intervention on changes in Short Chain Fatty Acid (SCFA) serum levels in acute ischemic stroke clinical outcome. Methods: This study was a pre and post-test control group design. A total of 35 samples were collected consecutively and divided into two groups, with the intervention group given probiotic for 14 days as an add-on to standard therapy, and the control group only given standard therapy. Results: The intervention group showed alteration of serum SCFA level higher than the control group ( $\Delta$  10.19 vs  $\Delta$  4.23). NIHSS Score after 14 days showed a significant result in both groups, but the alteration in the intervention group was highly changed ( $\Delta$  -3.77 vs  $\Delta$  -1.23). Based on the Spearman Correlation test, there is a negative correlation between Serum SCFA Level with NIHSS score in the intervention group ( $p < 0.05$ ;  $r = -0.494$ ). Conclusion: Probiotic intervention plays an important role in increasing SCFA levels and thus improves the outcome of acute ischemic stroke seen by lower NIHSS score after 14 days.

Keywords: Acute ischemic stroke, SCFA, NIHSS, probiotic

C9

[20]

## PRINCIPLES OF NUTRITIONAL ETHICS: INSPIRATION FROM THE QUR'AN

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### ABSTRACT

**Introduction:** This study examines ethical principles in nutritional consumption based on the Qur'an, highlighting the balance between physical and spiritual health amidst the challenges of modern lifestyles. With unlimited access to information and global interaction, many individuals overlook essential nutritional goals, leading to various health issues worldwide. **Methods:** A descriptive-analytical method was used to analyze Qur'anic verses related to food and drink, alongside a review of literature on ethical nutrition. **Results:** Key ethical principles identified include halal, sustainability, balance, diversity, quality, and social responsibility. Additionally, the study emphasizes the importance of intentionality and awareness when eating, connecting spiritual values with daily eating habits. The role of community in promoting ethical consumption and knowledge sharing also emerged as critical. **Conclusion:** The application of Qur'anic nutritional ethics fosters healthier, more balanced eating patterns, benefiting both individuals and public health. Awareness of these principles can contribute positively to overall well-being and sustainable food practices.

**Key words:** Qur'an-based nutritional ethics, Balanced nutrition, Spiritual health, Ethical food consumption.

C10

[21]

## IMPROVING PUFA INCORPORATION IN BRAIN AND CELL MEMBRANES

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### ABSTRACT

Docosahexaenoic acid (DHA), choline and phospholipids are indicated to play an important role in supporting neurological and cellular development in early life. Exploring the collective influence of DHA and phosphatidylcholine (PC), a source of phospholipids and choline, on DHA uptake and brain incorporation presents a valuable avenue for refining infant formula compositions, promoting optimal cognitive development and overall health. This study examines DHA accumulation in several brain regions, including the hippocampus, cerebellum, cerebral cortex, and striatum, as well as in serum and adipose tissue, of young mice. The conditions tested include a control without DHA, triglyceride-bound DHA alone (algal oil, 2mg DHA/day), and a combination of algal DHA with phosphatidylcholine (2mg DHA/day, 2mg PC-derived choline/day). The test components were administered orally by gavage daily for 28 days. The results indicate that the combination of algal DHA and PC significantly improves DHA accretion in two of the tested brain areas - the hippocampus and the cerebellum - where algal DHA alone did not show a significant increase. DHA serum levels increased equally for both DHA test conditions. However, in the adipose tissue, the combination of DHA with PC resulted in an increase that was twice as high as the increase from DHA alone, effectively doubling the initial DHA storage. The results demonstrate increased DHA uptake in several key brain regions associated with cognitive functions. These findings indicate that infant formulas enriched with both algal DHA and PC may offer enhanced support for brain development, potentially leading to improved cognitive outcomes in infants.

Keywords: algal DHA, phosphatidylcholine, brain, infant

C11

[22]

**EVALUATING CITRUS EXTRACT-INDUCED BRAIN-DERIVED NEUROTROPHIC  
FACTOR UPREGULATION EFFECT TO IDENTIFY DRUG CANDIDATES FOR  
CENTRAL NERVOUS SYSTEM DISORDERS**

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**ABSTRACT**

Brain-derived neurotrophic factor (BDNF), a neurotrophin, is vital for neuronal survival and synaptic plasticity. Reduced BDNF levels are associated with central nervous system (CNS) disorders, including depression, Alzheimer's disease, and Parkinson's disease. An increase in BDNF levels in the brain can effectively prevent and treat these CNS disorders. However, it is challenging to develop drugs that enhance BDNF expression in the brain because many substances cannot penetrate sufficiently into the brain. BDNF is synthesized in the kidney as well as brain and transported into the brain via peripheral circulation. Therefore, substances upregulating BDNF in the kidney might help prevent and treat CNS disorders. Here, we investigated whether citrus cultivars could upregulate BDNF levels in the human renal adenocarcinoma cell line ACHN to identify drug candidates for BDNF-related CNS disorders. We evaluated the effects of citrus methanol extract samples on BDNF production by measuring BDNF levels in the culture medium after incubating ACHN cells with these extracts for 24 hours. BDNF-upregulating mechanisms were investigated using qRT-PCR and western blotting. Our results revealed that the peels, pulp, and unripe fruit extracts of Aurantium and Acrumen citrus varieties significantly upregulated BDNF, while Limonellus, Citrophorum, and Cephalocitrus citrus varieties had no significant upregulating effects. Additionally, treatment with certain Aurantium and Acrumen citrus species significantly elevated BDNF transcripts in ACHN cells. The peel and pulp of Citrus depressa Hayata (Shiikuwasha) and unripe fruit extracts of Citrus tankan Hayata substantially increased BDNF levels and phosphorylated cyclic adenosine monophosphate response element-binding protein, a transcription factor upregulating BDNF expression. Our results suggest that Aurantium and Acrumen cultivars could potentially serve as BDNF-upregulating foods and act as drug candidates against BDNF-related CNS disorders.

Keywords: brain-derived neurotrophic factor, citrus, central nervous system disorders, depression, Alzheimer's disease, Parkinson's disease

C12

[23]

## IMPROVING MEMBRANE DHA ACCRETION IN ADIPOSE TISSUE

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### ABSTRACT

The long-chain omega-3 polyunsaturated fatty acids (omega-3 LCPUFAs) docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) are known to reduce inflammation and promote its resolution, suggesting a beneficial role in various therapeutic areas, including obesity and metabolic disease. Blood levels of DHA and EPA are highly related to intake. However, the anti-inflammatory effect is mainly facilitated by DHA and EPA incorporated in cell- and mitochondrial membranes, which are difficult to affect with the diet. This study investigates how the lipid mixture and DHA structure affect (1) DHA storage in triglycerides and (2) DHA incorporation into cell membranes. It focuses on combining two sustainable, plant-based lipid sources: high phosphatidylcholine (PC) lecithin from sunflower oil and triglyceride-bound DHA from algal oil. These effects are compared to those of algal oil alone and phospholipid-bound DHA from krill oil. The research targets the abdominal adipose tissue of young mice. Each test condition involved an oral DHA intake of about 2 mg/day/mouse, with an additional 2 mg of PC-derived choline per day in the DHA with PC condition. Sunflower oil without DHA and PC served as the control. The components were administered orally for 28 days. It was found that both krill oil and the combination of algal DHA with PC significantly increased triglyceride-bound DHA levels in abdominal adipose tissue by a factor of 3 and 2, respectively. In the phospholipid fraction of the adipose tissue, neither krill oil nor algal oil alone altered DHA levels. In contrast, the combination of algal DHA and PC more than doubled the levels of phospholipid-bound DHA. These findings, when confirmed in humans, suggest that dietary strategies incorporating algal DHA and high PC lecithin could be more effective in mitigating inflammation through improved membrane DHA bioavailability.

Keywords: inflammation, algal DHA, phosphatidylcholine, adipose tissue



C14

[24]

**THE FORMULATION OF FLAKES MADE FROM PRE-COOKED PEAS AND  
WHITE SWEET POTATO COMPOSITE FLOUR BASED ON PHYSICOCHEMICAL  
AND ORGANOLEPTIC PROPERTIES**

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**ABSTRACT**

Background: One of the dietary management strategies for diabetes mellitus patients is regulating eating patterns, including consume foods high in fiber, amylose and less on fat. However, less reference of flakes for diabetes mellitus. Some studies suggest that fiber and amylose content will affect the starch's ability to absorb water and will impact the texture and sensory of the flakes. Objective: This study aims was to investigate the best proportion of white sweet potato and pre-cooked pea flour to make flakes based on psychochemical properties such as total dietary fiber, amylose, fat content, hardness and sensory. Method: This experimental study used wheat flour formulation (35 grams) and different proportions of white sweet potato flour and pre-cooked pea flour: F1 (30:35), F2 (35:30), and F3 (40:25). Hedonic test with 30 untrained panellists were used to analyse organoleptic. One way ANOVA followed with Duncan test was used to see the effect of different formulations of Pre-cooked peas and white sweet potatoes flour with psychochemical properties and sensory, while the effect of different formulations on hardness was tested using the Kruskal-Wallis test followed by the Dunnett test with P-value < 0.05. Results: The differences proportion of white sweet potato flour and pre-cooked pea flour significantly affected hardness (P-value = 0.01), fiber (P-value < 0.01), amylose (P-value = 0.01), fat (P-value = <0.01), aroma (P-value = 0.01), texture, and overall acceptability (P-value < 0.01). The F2 formulation has the highest amylose and fiber, moderate of hardness, lowest fat, and high acceptance. Conclusion: The F2 formula is the recommend formula for making flakes for diabetes mellitus based on all variables.

Keywords: flakes, psychochemical properties, hardness, organoleptic, diabetes mellitus.

C15

[25]

**THE EFFECT OF GEMBILI TUBER ANALOG RICE (DIOSCOREA ESCULENTA)  
ON MALONDIALDEHYDE LEVELS IN RATS WITH TYPE 2 DIABETES  
MELLITUS**

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**ABSTRACT**

Malondialdehyde is an indicator to measure oxidative stress and free radicals in the body. The decrease in malondialdehyde (MDA) levels is influenced by the food diet consumed. Rice Analog gembili tubers have inulin water soluble fiber content and antioxidants that have the potential to reduce malondialdehyde levels in type 2 diabetes mellitus (T2DM) rats. To determine the effect of giving gembili tuber analog rice (*Dioscorea esculenta*) on malondialdehyde levels in type 2 diabetes mellitus rats. This type of research was true experimental with pre test-post test control group design. This study used Albino Wistar male rats with a total sample of 28 heads divided into four groups. Making T2DM model rats by giving streptozotocin and nicotinamide induction. The treatment of giving gembili tuber analog rice was carried out for 14 days. Examination of MDA levels using the thiobarbituric acid reactive substance method. The effect of the dose of gembili tuber analog rice on MDA levels using the one way anova test and knowing the difference in the diet of gembili tuber analog rice on malodialdehyde levels using paired t test and kruskal walis test. The results showed that there was a significant decrease ( $p < 0.001$ ) in MDA levels in male rats of Albino Wistar strain of T2DM model with BAG dose treatment of 4.16 and 6.17 g/mouse/day for 14 days. The BAG1 group experienced a decrease in MDA levels of 5.02 nmol/g while the BAG2 group experienced a decrease in MDA levels of 7.06 nmol/g. There was an effect of giving gembili tuber analog rice at doses of 4.16 and 6.17 g/mouse/day for 14 days on MDA levels which decreased by 50-70% in T2DM rats.

Keywords: rice analog of gembili tuber, type 2 diabetes mellitus rats, MDA levels

C16

[26]

## PHARMACOINFORMATICS AND CELLULAR STUDIES OF ALGAL PEPTIDES AS FUNCTIONAL MOLECULES TO MODULATE TYPE-2 DIABETES MARKERS

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### ABSTRACT

"This study aims to delve into the process and impact of implementing the Learning Value Chain (LVC) in developing the competencies of government public relations professionals at the West Java Corporate University (Jabar CorpU). In the digital era, the demands on government public relations performance are increasingly complex, requiring proficient competencies. However, there is still a gap between the required competencies and the actual competencies possessed. This study employs a phenomenological approach to explore the experiences and perceptions of government public relations training participants based on the West Java Corporate University. Data was collected through in-depth interviews and document analysis of evaluation results. The research findings can provide a comprehensive overview of: (1) the competencies required for government public relations professionals in the current context, (2) the factors supporting and hindering the development of government public relations competencies at the West Java Corporate University, and (3) recommendations for a more effective competency development model. The findings of this study are expected to contribute to the development of more relevant and impactful policies and training programs to enhance the performance of government public relations, and serve as a reference for future research in the field of public sector competency development.

Keywords: Government Public Relation, Corporate University, Communication Strategies, Public Relations Competence

C17

[27]

**THE ROLE OF ZINC IN NON-HEMORRHAGIC STROKE GERIATRIC PATIENTS  
WITH SEVERE PROTEIN ENERGY MALNUTRITION, HYPOALBUMINEMIA,  
MODERATE DEPLETION OF THE IMMUNE SYSTEM: A CASE REPORT**

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**ABSTRACT**

According to WHO data 2024 the incidence of stroke as a cause of death in Indonesia in 2019 was 132 per 100,000 population. Stroke patients are at risk of developing hypoalbuminemia due to poor intake and the presence of a chronic inflammatory process. Zinc is one of the most important micronutrients in geriatrics with non-hemorrhagic stroke and the most important role in the physiological and pathological functions of the brain. Case report of a 84-year-old male patient with Cerebral Infarction ,Loss Of Consciousness and severe protein energy malnutrition, history of uncontrolled hypertension, history of smoking since the age of 20, history of 8% weight loss in 1 month, GCS is E3M4Vaphasia, weakness of the left side, loss of subcutaneous fat and muscle wasting of extremities, msct brain showed infarction with brain atrophy, blood test showed hypoalbuminemia (2,5 gr-dl), moderate depletion of the immune system ( 938,4 x 10<sup>12</sup> m-3), increased NLR ( 11,86 % ). Medical nutritional therapy was given enteral via NGT with a total energy requirement 1200- 1400 kcal-day, Protein 1 -1.5 gram per kilogram of body weight daily (15-20%), Carbohydrate 150gr-175gram (50%) and Fat 46gram (34%). Additional Supplementation, zinc 20mg per day, Vitamin B complex, and folic acid. During follow up period after the 22 days hospitalization, the patient's consciousness improvement GCS E4M6V3, handgrip strenght 2kilogram, blood test results improved leukosytosis (13.800 to 9500 mL-l), improved hypoalbuminemia ( 2,5 gr-dl to 3,2 gr-dl), moderate depletion of the immune system ( 938,4mL-l to 1244,5 ml-l), decreased NLR ( 11,86% to 5,72% ), Conclusion: Medical nutritional therapy can improved nutritional status and clinical outcomes in patients with stroke non hemoragic.

Keywords: Zinc, malnutrition, stroke non Hemoragic.

C18

[28]

**ONLINE EDUCATION ON NUTRITIONAL ANEMIA AND THE IMPROVEMENT  
OF PROTEIN AND IRON FOOD SOURCES AMONG ADOLESCENT GIRLS:  
CLUSTER RANDOMIZED TRIALS (CRTS) IN SUKOHARJO REGENCY,  
CENTRAL JAVA, INDONESIA**

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**ABSTRACT**

Nutritional anemia education is a strategy aimed at improving knowledge and dietary behaviors related to food consumption. Delivering education online can serve as an alternative to conventional nutrition education methods. The objective of this study was to analyze the impact of nutritional anemia education on changes in the intake of protein-rich foods and heme and non-heme iron sources. This study employed a Cluster Randomized Trial (CRT) design. The subjects were 99 adolescent girls in the intervention group and 101 in the control group. The education was provided online via YouTube links and WhatsApp groups, utilizing video presentations and narrated PowerPoint slides, with a one-month reflection period on the material. Food intake data were collected using the SQ-FFQ method, capturing data from the month prior to and following the online education. Data analysis was conducted using a t-test for normally distributed data and the Mann-Whitney test for non-normally distributed data. The results indicated an increase in delta average intake of meat (17.4 vs. 17.1 gday<sup>-1</sup>), fish (8.9 vs. -1.6 gday<sup>-1</sup>), and eggs (10.6 vs. 1.4 gday<sup>-1</sup>) in both the intervention and control groups, with significant differences observed only in fish (p=0.001) and egg (p=0.003) intake. A significant difference in the change in delta average iron intake was also found between the two groups, with an increase of 1.51 vs. 0.78 mgday<sup>-1</sup> (p=0.038) for heme iron, and 2.3 vs. 0.2 mgday<sup>-1</sup> (p=0.001) for non-heme iron. In conclusion, online education can effectively improve the average intake of protein and iron-rich foods in adolescent girls, and may serve as a viable alternative method for nutrition education.

Keywords: adolescent girls, intake, iron, online education, protein

D1

[29]

## ASSOCIATION BETWEEN INTAKE AND SLEEP QUALITY WITH NUTRITIONAL STATUS IN UNIVERSITY STUDENTS

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### **ABSTRACT**

Based on the 2018 Indonesian's National data, the prevalence of BMI nutritional status for ages >18 years in Central Java is 10.4%, underweight 56.3%, normal 13%, overweight, and 20.4% obese. Nutritional status is an indicator of body health influenced by the intake of nutrients obtained by the body from eating habits, hereditary factors, lifestyle and environment. Eating habits and lifestyle can affect food consumption and nutrient intake. A person's good breakfast habits are very important in meeting nutritional needs and sources of energy in the morning, someone who does not eat breakfast can affect their nutritional status. Lifestyle is a factor that affects sleep quality, this is because an unhealthy lifestyle by consuming high-caffeine drinks and smoking will affect sleep quality and cause individuals to have poor sleep quality. Objective: To determine the relationship between breakfast habits and sleep quality with nutritional status in students of the Muhammadiyah University of Surakarta. Research Method: This study is an observational study with a cross-sectional approach. The number of samples is 101 students. The data collected were respondents' identities, breakfast habits, sleep quality, and nutritional status using the PSQI questionnaire and food recall form for 3 days, and nutritional status assessment in the form of anthropometric measurements of weight and height. Statistical tests to determine the relationship between breakfast habits and sleep quality with nutritional status used Chi-square. Results: the results of the study showed that as many as 37.5% had poor habits with normal nutritional status, and 53.3% had good breakfast habits with normal nutritional status, while students who had good sleep quality were (25%) with normal nutritional status and (49.4) had poor sleep quality with normal nutritional status. Conclusion: there is a relationship between breakfast habits and nutritional status with a p-value of 0.009 (<0.05) and there is no relationship between sleep quality and nutritional status with a p-value of 0.143 (>0.05).

Keywords: breakfast habits, sleep quality, nutritional status.

D2

[30]

**THE EFFECT OF VCO IN HIV STAGE 3 PATIENTS WITH ORAL CANDIDIASIS  
AND PROTEIN ENERGY MALNUTRITION: A CASE REPORT**

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**ABSTRACT**

Oral candidiasis often occurs in individuals with weakened immune systems, such as those infected with the Human Immunodeficiency Virus. Several studies have reported the use of natural ingredients as an alternative in the treatment of oral candidiasis. The use of Virgin Coconut Oil (VCO) is one of the alternatives in this treatment because it is known to have the ability as an antimicrobial against gram-positive bacteria and some viruses and fungi. Case report: The 23-years-old male was consulted with complaints of white plaques on the tongue and palate for 2 months, accompanied by decreased intake. The patient was diagnosed with Pulmonary Tuberculosis, HIV Stage 3, Oral Candidiasis, Severe Protein-Energy Malnutrition. Before the nutritional consultation, the patient was given 5 ml nystatin drop therapy every 8 hours but the complaints did not decrease then the patient was given nutritional therapy and oral candidiasis therapy using VCO, 5 cc every 8 hours for 3 minutes. After receiving VCO for 5 days, clinical improvement was seen in patients with observed with a reduction in plaques on the tongue and palate.

Keywords: human immunodeficiency virus, oral candidiasis, virgin coconut oil

D3

[31]

**THIAMIN SUPPLEMENTATION ROLES IN 15 WEEKS OF PREGNANCY WITH HYPEREMESIS GRAVIDARUM, DECREASED CONSCIOUSNESS CAUSED BY WERNICKE ENCEPHALOPATHY, ELECTROLYTE IMBALANCE, AND SEVERE MALNUTRITION: A CASE REPORT**

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**ABSTRACT**

A mother's nutritional intake directly impacts the growth and development of the fetus during this crucial time of pregnancy. Healthy fetal development depends on adequate nutrition. Thiamin is a water-soluble vitamin vital in several biological processes, especially glucose metabolism. Hyperemesis gravidarum increases the risk of Wernicke Encephalopathy and causes thiamin insufficiency. In cases of grade 3 hyperemesis gravidarum, thiamin supplementation and nutritional treatment are crucial to preventing low birth weight, small gestational age, fetal malnutrition, avoiding pregnancy problems, and lowering the chance of premature birth. Thiamine supplementation dosages for the treatment of hyperemesis gravidarum are still varied. Report: A 19-year-old woman, fifteen weeks pregnant with decreased consciousness, caused by Wernicke encephalopathy and Grade III hyperemesis gravidarum. Was considered severely malnourished, had a weight loss of 6.6 kg in 3 months (15.3%), and food intake < 50% during pregnancy. Found Hypokalemia (2.2 mmol/L), Hypochrome Microcytic Anemia (8.5 g/dl), and severe immune system depletion (TLC 550.8 mL<sup>-1</sup>). Strabismus, ataxia, and hallucinations were found in the Physical examination. Nutritional therapy was given 2100 Kcal via enteral for 43 days with macronutrient composition: Protein 1.8 grams/kg/day = 84.2 grams (16%) Carbohydrate 50% = 262.5 grams, and Fat 34% = 79.3 grams. Thiamin supplementation was given via enteral at 100 mg/8 hours daily for two weeks. Consciousness and metabolic status were improved; a healthy baby was born weighing 3300 g at 38 weeks. In conclusion, Thiamin Supplementation of 100 mg/8 hours daily for two weeks with optimal nutritional therapy via enteral improved nutritional status and clinical outcomes in patients with Hyperemesis gravidarum gr III.

Keywords: thiamin, malnutrition in pregnancy, hyperemesis gravidarum



D4

[32]

**FOOD SUPPLEMENT, FINANCIAL AID, AND HEALTH AWARENESS- PATHWAY  
TO STUNTING PREVENTION IN PAKISTAN**

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**ABSTRACT**

Stunting is a serious public health concern influenced by a multitude of factors, which increases morbidity and mortality in children. There have been several attempts to combat stunting in Pakistan, with gradual improvements. This study evaluates the efficacy of Pakistan's national stunting prevention program, known as the Benazir Nashonuma Program (BNP). It targets participants who meet eligibility requirements based on socioeconomic factors. The program uses a multimodal strategy that includes nutritional supplementation and food education. This study was conducted in District Muzaffarabad in Azad Jammu Kashmir, Pakistan. Participants included pregnant women, lactating women, and children aged 6–24 months who were recruited using a simple random sampling technique. The participants were assigned to intervention and control groups depending whether they were beneficiaries of the Benazir Income Support Program. A cross-sectional questionnaire survey was used to collect data relating to socio-demographic characteristics, anthropometric measurements and aspects of BNP. Descriptive statistics and logistic regression were used for analysis and result findings demonstrated the effectiveness of the BNP in reducing malnutrition among specific age groups, showed that stunting was significantly reduced in children aged 16-24 months in the intervention group ( $p < 0.05$ ). Maternal characteristics, including height and age, suggesting the importance of maternal health in mitigating stunting. Moreover, there was also higher adherence to recommended dietary practices in the intervention group, which improved complementary feeding practices and solid food introduction ( $p < 0.05$ ). However, socio-economic disparities, including parental education and occupation, significantly influenced program outcomes. The findings highlight the program potential for scalability across Pakistan, but further improvements, such as increasing cash transfers amounts and incorporating context-specific, community-driven strategies, are essential to address the diverse factors contributing to malnutrition and enhance its overall effectiveness.

Keywords: Stunting, Nutritional Intervention, Early Childhood Health, Poverty Alleviation, Program Evaluation, Pakistan

D5

[33]

**IMPLEMENTATION OF HALAL CERTIFICATION IN MICRO, SMALL, AND  
MEDIUM ENTERPRISES IN INDONESIA: A HEALTHY LIFESTYLE  
PREFERENCES FOR CONSUMERS**

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**ABSTRACT**

This article discusses the problems related to the implementation and obstacles of halal certification by Micro, Small, and Medium Enterprises (MSMEs) in Indonesia, as well as consumer preferences in choosing halal-certified food and beverage products from MSMEs as part of a healthy lifestyle. Halal certification is an important aspect of the halal industry and is mandatory for business actors, including MSMEs, in Indonesia. This certification can also attract consumer buying interest, as halal-certified products are considered more trustworthy and encourage a healthy and clean lifestyle. The Halal Product Guarantee Agency reports that over 2 million MSMEs have obtained halal certification this year. The purpose of this research is to analyze the extent to which halal certification influences consumer decisions in selecting healthy and hygienic products, as well as the challenges faced by MSMEs in obtaining certification. This article uses a qualitative method through interviews with MSME actors and consumers, along with a literature review. The results of this research indicate that halal certification not only increases consumer trust, but also enhances product quality. Health-conscious consumers tend to prefer halal-certified products, showing that halal certification is part of a healthy lifestyle adopted by the society. The motivation for MSMEs to pursue halal certification is driven by extrinsic factors, including compliance with government regulations and providing consumer trust. This article is expected to provide insights for MSMEs in developing sustainable business strategies and halal education to raise awareness of quality and healthy products.

Keywords: Sertifikasi Halal, UMKM, Gaya Hidup Sehat, Preferensi, Konsumen

E1

[34]

**FOOD, NUTRITION, HEALTH, AND LIFESTYLE: EFFECTS OF NUTRITIONAL  
MODIFICATIONS AND LIFESTYLE CHANGES ON THE REMISSION OF  
CHRONIC DISEASES**

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**ABSTRACT**

Chronic diseases such as cardiovascular diseases, diabetes, and obesity represent significant global health challenges, contributing to increased morbidity and mortality rates. This study explores the impact of nutritional modifications and lifestyle changes on the remission and management of chronic diseases, focusing on detailed case studies. The objectives include assessing dietary patterns, physical activity levels, and other lifestyle factors that contribute to disease progression and remission. Methodologies employed involve a comprehensive analysis of case studies documenting patient outcomes following specific lifestyle and dietary interventions. Preliminary findings suggest that a diet rich in fruits, vegetables, whole grains, and lean proteins, combined with regular physical activity, stress management, and adequate sleep, can significantly improve health outcomes. Results indicate not only a reduction in disease symptoms but also instances of complete remission in some patients. This research underscores the necessity of integrating holistic lifestyle approaches in chronic disease management, emphasizing the potential for non-pharmacological interventions to transform patient care. The implications of this study extend to clinical practices and public health policies, advocating for proactive lifestyle changes as a cornerstone in the prevention and management of chronic diseases.

Keywords: chronic diseases, nutritional modifications, lifestyle changes, remission, non-pharmacological interventions

E2

[35]

**OBESITY: IS IT SIMPLY GLUTTONY AND SLOTH?? A CASE REPORT ON  
COMBATING OBESITY AND CARDIOVASCULAR DISEASE THROUGH  
HEALTHY LIFESTYLE BEHAVIORS**

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**ABSTRACT**

Obesity is a neuroendocrine disease with a complex and multifactorial etiology and pathogenesis related to genetic, biological, psychosocial, sociocultural, economic and environmental factors. Obesity and related cardiometabolic disorders are highly prevalent in the United Arab Emirates (UAE). 1 in 4 adults in the UAE are living with obesity, which poses significant individual and economic burdens. Hence, obesity and its comorbidities are a great public health concern. This case report presents an illustrative case of a UAE resident who, in 2013, at the age of 38, suffered from a heart attack, being morbidly obese at the time. This case report addresses factors leading to the development of his obesity and the resulting adverse cardiometabolic health outcomes. Treatment of his obesity and CVD included years of lifestyle behavioral modifications to battle his relapsing obesity condition. Results show that dietary modification, intermittent fasting and physical exercise regimes are potent in reversing obesity and improving cardiometabolic markers. Key lessons learned from this case study are to emphasize the importance of adopting a holistic approach to health, focusing not only on diet or weight loss, but also on developing lifelong sustainable healthy habits. Personal qualities, such as willpower, mental resilience, goal-setting and persistence play pivotal roles in overcoming obesity and CVD, because results and positive health outcomes are not immediately seen. It takes time, patience and commitment. Implications for policy and practice are that prevention and treatment of obesity and CVD require a multipronged, holistic, integrative, patient-centered approach. Practical, clinically meaningful personalized lifestyle interventions tailored to an individual's cultural goals and preferences are most effective in combating obesity and promoting cardiometabolic health.

Keywords: obesity, cardiovascular disease, nutrition, intermittent fasting, physical activity, lifestyle behavioral change

E3

[36]

## RELIABILITY OF A NEW BIOPSYCHOSOCIAL SYMPTOMS-BASED THYROID DYSFUNCTION QUESTIONNAIRE (TDQ) AS A SCREENING TOOL IN IODINE DEFICIENCY AREAS

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### ABSTRACT

Thyroid Stimulating Hormone (TSH) and Free Thyroxine (FT4) tests are considered complicated and technically expensive if implemented on a large scale and regular basis in low-and middle-income countries. Therefore, inexpensive, compatible, reliable and valid screening tools to identify hypothyroidism and hyperthyroidism are required. To meet this need, this study aimed to determine the reliability of a new screening tool entitled Thyroid Dysfunction Questionnaire (TDQ). At the early phase, TDQ questionnaire was developed for the early detection of thyroid dysfunction. TDQ contains 42 items which include the aspects of clinical signs, symptoms as well as psychological and social disorders. This study was done by analysing the inter-item correlation on 42 items of TDQ, test-retest reliability, inter-rater agreement reliability, and the duration of measurement. The TDQ field trial recruited 115 women of reproductive age and three doctors as the observers and raters. The results was analysed using Cronbach's alpha test, Pearson correlation, intraclass correlation coefficient (ICC), and Anova followed by post hoc least significant difference (LSD) test. This paper followed guidelines for reporting reliability and agreement studies (GRRAS). The values of Cronbach's alpha of hypothyroid domain and hyperthyroid domain were 0.87 and 0.82, respectively. Pearson correlation coefficient of test-retest analysis could be considered as an indicator of measurement stability, with  $r = 0.93$  and ICC value was 0.96 (95% CI 0.89 – 0.98). Anova analysis on TDQ scores among the three raters was insignificantly different ( $p=0.407$ ). The average duration required by the raters to implement TDQ was 9.8 or 10 minutes for each subject with a range from 5 to 20 minutes. TDQ has very good test-retest and inter-rater reliability for identifying hypothyroidism and hyperthyroidism.

Keywords: inter-item correlation, test-retest, inter-rater reliability, TDQ

E4

[37]

## SUGAR-SWEETENED BEVERAGE AND THE RISK OF CHRONIC KIDNEY DISEASE: A SCOPING REVIEW

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### ABSTRACT

Chronic kidney disease (CKD) is a condition in which the kidneys are damaged or unable to filter blood as well as healthy kidneys. CKD may cause other health problems and even mortality. Several previous studies have assessed the relationship between sugar-sweetened beverage consumption and the risk of kidney failure. The purpose of this study was to summarize and map research evidence related to sugar-sweetened beverages (SSB) and the risk of chronic kidney disease. The search was conducted through five databases, namely Medline (Pubmed), Cochrane Library, Scopus, Science Direct, and Medical Health Collection (Proquest), to identify research articles that discuss the relationship between sugar-sweetened beverages and the incidence of chronic kidney disease. A scoping review is needed in this study to summarize previous studies and find research gaps related to the relationship between the consumption of sugar-sweetened beverages and the risk of chronic kidney disease. A total of 1398 articles were found from 5 databases using Mesh and Key terms, and then screening was carried out on the title, abstract, and full text so that 7 articles were obtained. The results of the scoping review showed that the prevalence of chronic kidney failure reached 17.8% in a study with a cohort population-based study design. The risk of incident CKD increased with the consumption of four servings per week, compared to less than 0.5 servings per week of SSB (OR: 1.96, 95% CI: 1.23–3.15). The relationship was found between SSB consumption and the risk of chronic kidney failure. Consuming additional sugar in CKD patients can increase the risk of death in sufferers. This study has limitations regarding the possibility of bias in the articles reviewed.

Keywords: sugar-sweetened beverage, chronic kidney disease, review

E5

[38]

**INDONESIA'S Z GENERATIONS' PREFERENCES FOR HALAL TOURISM: A  
PATHWAY TO SUSTAINABLE HEALTH LIFESTYLE**

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**ABSTRACT**

Amid the global demographic shift, understanding the preferences and perceptions of Generation Z is critical to shaping the future of the halal tourism industry. This research investigates the role of Generation Z in driving sustainable development in halal tourism, with a particular focus on Indonesia. Employing a quantitative approach through a Likert scale-based survey, this study reveals that 93% of Generation Z respondents in Indonesia believe that halal tourism should be available nationwide, emphasizing the necessity for inclusive and accessible tourism services. The findings highlight a strong preference for tourism offerings—such as accommodations, restaurants, and recreational facilities—that integrate prayer spaces, positioning this as a fundamental standard for industry players. However, sharia-compliant financial services remain underutilized among this demographic. This paper argues that the evolving preferences of Generation Z not only reflect a demand for religiously aligned tourism but also underscore the importance of integrating ecological sustainability and health-conscious practices into the tourism ecosystem. By prioritizing these needs, tourism stakeholders can contribute to a more resilient and inclusive industry, thereby future-proofing society against emerging challenges. The study calls for a concerted effort to enhance the infrastructure and awareness around sharia financing, while simultaneously promoting the health and ecological benefits of halal tourism, thus bridging the gap between ecosystems and societal well-being.

Keywords: Generation Z, halal tourism, sustainability, health-conscious tourism  
Keywords: Generation Z, halal tourism, sustainability, health-conscious tourism

E6

[39]

**THE RELATIONSHIP BETWEEN IRON INTAKE, HEMOGLOBIN LEVELS, AND  
NUTRITIONAL STATUS WITH PHYSICAL FITNESS OF FEMALE  
ADOLESCENTS AT THE HIGH SCHOOL LEVEL**

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**ABSTRACT**

Adolescents need adequate iron intake, normal hemoglobin levels, and good nutritional status to maintain physical fitness, which supports academic achievement. Inadequate iron intake can reduce hemoglobin production, leading to disrupted oxygen transport and cellular energy metabolism. Poor nutritional status can impair mobility, affecting physical fitness. This study aimed to investigate the relationship between iron intake, hemoglobin levels, and nutritional status with physical fitness among young women at MA Al-Irsyad Gajah. The research used a cross-sectional design with 65 respondents. Iron intake was measured via the food recall method, hemoglobin levels with the Easytouch GCHB tool, nutritional status through BMI/U, and physical fitness using the beep test. Bivariate analysis with gamma correlation tests and multivariate analysis using ordinal logistic regression were performed. Results showed that 41.5% of respondents had insufficient iron intake, while 58.5% had adequate intake. Most respondents (69.2%) had normal hemoglobin levels, and 55.4% had normal nutritional status. Physical fitness was average in 60% of respondents. Bivariate analysis indicated a significant relationship between iron intake and physical fitness ( $p < 0.005$ ), as well as hemoglobin levels and physical fitness ( $p < 0.005$ ). However, nutritional status was not significantly related to physical fitness ( $p > 0.005$ ). Multivariate analysis revealed hemoglobin levels had a greater impact on physical fitness (1.73 times) compared to iron intake (1.1 times). The study concluded that iron intake and hemoglobin levels are linked to physical fitness, but nutritional status is not.

Keywords: iron intake, hemoglobin levels, nutritional status, physical fitness, female adolescents



E7

[40]

**PROMOTING TRADITIONAL FOODS FOR SUSTAINABLE DEVELOPMENT:  
THE MULTIFACETED BENEFITS OF KOLAKHAR FROM NORTHEAST INDIA**

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**ABSTRACT**

Khar, or Kolakhar, is a traditional alkaline food additive derived from the banana plant (*Musa balbisiana* Colla) and is widely used in Assam, Northeast India. This review explores its chemical composition, physicochemical properties, and medicinal benefits. Kolakhar is made by filtering water through the ashes of banana plant parts such as the stem, rhizome, and peel. The preparation is rich in minerals like potassium, sodium, calcium, magnesium, and trace elements such as vanadium and zinc. It exhibits high alkalinity, with a pH ranging from 10.05 to 13.0, making it a potent antacid. Kolakhar is employed in Assamese cuisine for its unique flavour and health benefits. It normalizes digestive disorders, acts as an antacid, and is used to treat conditions like cough, gastritis, and high blood pressure due to its high potassium content and low sodium levels. Its antimicrobial properties are significant, with studies showing effectiveness against pathogens, particularly *Pseudomonas aeruginosa*. Kolakhar also demonstrates anthelmintic activity, providing a natural remedy against intestinal worms. Additionally, Kolakhar serves as a salt substitute, beneficial for individuals with hypertension, and has applications in wound healing and leech prevention in agriculture. Kolakhar may also play a role in managing conditions like *Verruca vulgaris* through Kshar Karma, showcasing its versatility in both dietary and medicinal applications. Promoting traditional foods like Khar not only preserves cultural heritage and supports sustainable agricultural practices but also aligns with the United Nations' Sustainable Development Goals (SDGs) by enhancing food security, improving health outcomes, and fostering sustainable communities.

Keywords: SDG, India, health, alkaline

E8

[41]

**THE RELATIONSHIP BETWEEN JUNK FOOD CONSUMPTION HABITS AND  
NUTRITIONAL STATUS WITH THE ONSET OF MENARCHE IN CHILDREN  
AGED 10-13 YEARS IN TUNAHAN VILLAGE, JEPARA**

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**ABSTRACT**

Menarche, the onset of first menstruation, typically occurs in children before the age of 11 and is influenced by factors such as genetics, nutrition, and nutritional status. This study aims to examine the relationship between junk food consumption habits and nutritional status with the incidence of menarche in children aged 10-13 years in Tunahan Village, Jepara. Using a cross-sectional method, the research involved 64 respondents selected through total sampling. Junk food consumption was assessed using the SQ-FFQ questionnaire, and nutritional status was evaluated using BMI/U. Data were analyzed with Chi-Square and Gamma correlation tests at a significance level of 0.05. The results showed that the majority of respondents frequently consumed junk food (70.3%), had good nutritional status (81.3%), and experienced normal menarche (71.9%). A significant relationship was found between junk food consumption and the onset of menarche ( $p < 0.001$ ), while no significant relationship was observed between nutritional status and menarche ( $p = 0.817$ ), with a weak correlation ( $r = -0.066$ ). The study concludes that there is a significant relationship between junk food consumption habits and the onset of menarche, whereas no relationship exists between nutritional status and the incidence of menarche.

Keywords: junk food consumption habits, menarche, nutritional status

E9

[42]

**FOOD SAFETY KNOWLEDGE, ATTITUDE AND HYGIENE PRACTICES OF  
STREET-COOKED FOOD HANDLERS**

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**ABSTRACT**

In the age of globalization and fast-paced world, street foods held significant roles in our contemporary lives as they generally provide food security with cheap and readily available foods. With billions of street foods consumers and millions of food related medical cases worldwide, there is a need to ensure food hygiene among street-cooked food handlers. This descriptive – quantitative research sought to examine the food safety knowledge, attitudes and practices of street-cooked food handlers or vendors in a municipality in South Cotabato, Philippines and to propose relevant interventions. The respondents of the study were stratifiedly sampled 100 street-cooked food handlers who were equally taken from 10 selected barangays of the municipality. Data were gathered through survey questionnaires, and were analyzed by means of frequency distribution, percentage, mean and standard deviation. Result of the study revealed that 39% of the street-cooked food handlers have two (2) to five (5) years experience on food selling, and 70% of the respondents did not have any food safety training. The respondents manifested having high levels of food safety knowledge, attitude and practice. Proposed interventions are deemed necessary especially on the least scored items of the survey which covers on the ideas of street food cooking, packaging, sanitation, and safety precautions. It was recommended that enactment of street food interventions like sanitation and packaging trainings and seminars for street-cooked handlers is regarded to be imperative to further secure food safety among the public street food consumers.

Keywords: street-cooked food handlers, food safety, street food safety interventions

E10

[43]

**CONSUMPTION OF CAFFEINE-CONTAINING FOOD IN SCHOOL-AGE CHILDREN: SIGNIFICANT FACTOR OF MALNUTRITION OR NOT?**

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**ABSTRACT**

The widespread availability of caffeinated food products suggests a rising trend in caffeine consumption among children. Concerns about its impact on their nutritional well-being have emerged, yet the relationship between caffeine intake and nutritional status remains underexplored. This study aims to address this gap by investigating the correlation between caffeine consumption and the nutritional status of school-age children in Malaybalay City, Bukidnon. Fifty-two participants were included in the analysis, with data collected via a pilot-tested research questionnaire, Food Frequency Questionnaire (FFQ), and 24-hour Food Recall method. The findings reveal a significant negative correlation with coefficients of -0.164 and -0.158 for caffeine intake and monthly income, respectively, and a p-value of 1.9E-23 between caffeine intake and nutritional status, indicating that higher caffeine consumption is associated with poorer nutritional status. Additionally, females exhibited higher mean caffeine intake (22.37 mg) and a greater prevalence (46% are wasted, 8% are overweight and 38% are stunted) of malnutrition compared to males. However, family income, identified as a potential confounding variable, showed no significant association with nutritional status. These results suggest that caffeine consumption may play a significant role in malnutrition among children. Further research involving a larger population is recommended to strengthen these findings.

Keywords: school-age children, caffeine, caffeinated products, caffeine consumption, malnutrition

F1

[44]

**PRELIMINARY SCREENING OF BIOACTIVE PEPTIDES IN COCONUT MILK  
USING IN-SILICO TOOLS**

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**ABSTRACT**

Coconut milk protein sequences obtained from literature were subjected to in silico digestion to determine the presence of bioactive compounds. Coconut milk protein sequences were obtained from a separate study and were selected based on mascot scores. proteins with passing scores were accessed in UNIPROT to obtain the full sequence. The sequences were then subjected to different enzymes, whether in preparation or as the sole enzyme using BIOPEP software. Peptide sequences in the BIOPEP database were also used to identify bioactive peptides of clinical or functional significance. Products of enzyme digestion were classified and grouped based on the combination of enzymes used and the theoretical parameters present in the software. 11 out of 200 proteomes were qualified based on their mascot score and was subjected to several different preparations of enzymes. Enzyme combinations were also applied to mimic certain conditions of preparations of coconut milk as well as the process of digestion. Enzyme preparations were assessed based on the BIOPEP parameters with respect to peptide activity, relative frequency of the activity, theoretical degree of hydrolysis and relative activity of fragments released. Enzyme digestion products show potential for bioactive peptides with clinical importance such as ACE inhibitors and DPP IV inhibitors.

Keywords: In-Silico digestion, proteins, bioactive components

F2

[45]

**FACTORS ASSOCIATED WITH SOCIAL FRAILITY: A CROSS-SECTIONAL  
STUDY AMONG OLDER ADULTS.**

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**ABSTRACT**

Social frailty is the limited social resources, social activities and self-management skills for meeting the basic social needs. Social frailty is associated with poor quality of life, physical frailty, functional dependency, cognitive impairment, and depression. Thus, the current study aimed to identify the possible factors associated with social frailty after adjusting for possible confounders. This was a cross-sectional study conducted among 285 older adults aged 60 years and above consisting of 62.5% of men and 37.5% of women. The study site was one of the poorest states in Malaysia known as Kelantan. Data collected from this study were socio-demography, cognitive function, dietary intake, psychosocial and quality of life. Social frailty was assessed via the five item social frailty questionnaire. Univariate analysis of the study showed that selenium(19.1(18.2) $\mu$ g ) and saturated fatty acid (4.9(5.9)g) intake was significantly lower among those with pre-and social frailty. Muscle strength was lower among those with pre-and social frailty (20.5(9.3)kg). Multivariate analysis revealed that lower selenium intake was associated with higher risk of being in the pre and social frailty group (OR: 0.979; 95%CI: 0.960-0.998). Social frailty is associated with poor dietary intake especially antioxidant vitamin and minerals. Future studies must investigate the molecular biomarkers related to social frailty.

Keywords: cognitive, dietary, psychosocial, social frailty, older adults

F3

[46]

**DETERMINANTS OF ULTRA-PROCESSED FOOD AND NUTRIENT INTAKE  
AMONG REPRODUCTIVE-AGED WOMEN IN INDONESIA**

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**ABSTRACT**

Consumption of Ultra-processed foods (UPF) raises potential health risks, which are more prevalent in women. We investigated the determinants of UPF consumption and its nutrient intake profile among women from two ethnic communities and dietary patterns. We conducted a cross-sectional study among 360 reproductive-aged Minang and Sundanese women in West Sumatra and West Java, Indonesia. We assessed food intake over the past month using a semi-quantitative food frequency questionnaire (SQ-FFQ). We performed logistic regression to identify UPF consumption determinants and the Mann-Whitney test to compare the mean nutrient intake between lower and higher UPF consumption groups. The average UPF contribution to total energy intake among 341 out of 360 subjects is 8.1%. After controlling for other variables, the determinants influencing higher UPF intake were age, ethnicity, and geographic area. The adjusted odds ratio (aOR) for age 19–35 was 1.85 (95% CI: 1.1–3.0) compared to age 36–49. The aOR for the Sundanese ethnic group was 2.74 (95% CI: 1.54–4.86) compared to the Minang ethnic group, and the aOR for living in highland areas was 1.89 (95% CI: 1.13–3.18) compared to coastal regions ( $p < 0.05$ ). The highest UPF consumption quartile had higher calories, fat, sodium, saturated fatty acid, and sugar than lower UPF consumers ( $p < 0.05$ ). In conclusion, age, ethnicity, and geographic area emerged as critical factors in UPF consumption patterns. The nutrient intake of subjects in the highest quartile of UPF intake significantly differed from that of lower consumers. These findings highlight the need for tailored preventive strategies based on population-specific characteristics in nutrition interventions.

Keywords: Ultra-processed foods, determinant, SQ-FFQ, NOVA food classification, nutrient intake, women of reproductive age

F4

[47]

**SWEET AND SHARP: THE SYNERGISTIC POWER OF HONEY AND SHALLOT  
PEEL EXTRACT (*ALLIUM CEPA* L.) IN OVERCOMING METHICILLIN-  
RESISTANT *Staphylococcus Aureus***

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**ABSTRACT**

Honey is a natural product with a sweet flavor, produced by honeybees utilizing plant nectar and insect secretions. It has been recognized for its anti-inflammatory, antimicrobial, antioxidant, and antineoplastic properties, and has traditionally been used to treat various bacterial infections and other ailments since ancient times. Shallots (*Allium cepa* L.) belong to the *Liliaceae* family and the genus *Allium*, they are known to possess antioxidant, antibacterial, and antifungal activities. *Staphylococcus aureus* is a Gram-positive pathogenic bacterium and the most common cause of skin infections, residing on the skin and mucous membranes and capable of penetrating the bloodstream. The challenge associated with these infections is the emergence of bacterial strains that have become resistant to treatments, known as Methicillin-Resistant *Staphylococcus aureus* (MRSA). Given the growing global issue of antibiotic resistance, the synergy between honey and shallot peel extract presents a promising alternative in the management of infections. This study aims to identify the potential synergy of honey produced by honeybees from the forests of Minahasa, North Sulawesi, in conjunction with shallot as an antibacterial agent against MRSA. The effectiveness of honey and shallot peel extract was evaluated using the agar well diffusion method, with concentrations of honey and shallot peel extract ranging from 12.5% to 50%, respectively. The most effective composition against MRSA was honey at a 50% concentration combined with shallot peel extract at a 50% concentration. The result highlights the potential of natural resource-based approaches in addressing antibiotic-resistant bacteria, positioning this combination as a promising candidate for further exploration in the development of alternative antimicrobial therapies.

Keywords: honey, shallot peel, *methicillin-resistant Staphylococcus aureus*, antimicrobial



F5

[48]

## NUTRITIONAL COMPOSITION OF GARCINIA HUILLENSIS PULP

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### **ABSTRACT**

Wild edible fruits are rich in proteins, vitamins, carbohydrates and phytochemicals. The genus *Garcinia* is one of the underutilized plants. The species are known for their therapeutic properties. Elsewhere, some species have been extensively studied. *Garcinia huillensis* is a polygamous evergreen tree of the Clusiaceae family. The species grow in forest areas. *G. huillensis* is known as a medicinal plant with edible fruits. In some local communities in Africa, the stem bark, root and leaves are used to treat arthritis, diarrhea, bronchitis, sores, stomach pain, measles, and dermatitis. The fruits therefore present a potential for integral use to provide nutrients with additional physiological advantage. Although the fruits of *G. huillensis* are consumed, little is known about their nutritional composition. Considering that there is limited information on the fruits, we decided to conduct this study. The present study aimed at determining the nutritional composition of the fruit pulp. Standard analytical methods were used to analyse proximate, mineral, vitamin C, organic acids, and total carotenoid content. The fruits are good sources of carbohydrate (2.20%), energy (72.01 kcal), protein (8.77%), fat (3.05%), and fiber (2.37%). The fruits contain significant amount of vitamin C (9.30 mg100g<sup>-1</sup>) and carotenoids (48.01 µgg<sup>-1</sup>). The minerals present in the fruits include K, Ca, Mg, Fe and Zn ranging from 1.69 to 86.93 mg100g<sup>-1</sup>. However, the most abundant mineral was potassium. Some of the organic acids present in the pulp are oxalic, tartaric, citric and hydroxycitric acids. The major acid detected in the samples was citric acid (616.23 mg100g<sup>-1</sup>) followed by hydroxycitric acid (70.75 mg100g<sup>-1</sup>). The presence of hydroxycitric acid in the pulp suggests that the fruits can help in managing weight. The results of this study can be a baseline database on the nutritional profile of the fruits for the food industry and consumers regarding its value and in conserving the biodiversity.

Keywords: *Garcinia huillensis*, Hydroxycitric acid, Vitamin C, Mineral, Forest food trees

G1

[49]

## IMPACT OF PREPARATION METHODS ON THE NUTRITIONAL AND BIOACTIVE PROPERTIES OF BROCCOLI MICROGREENS

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### ABSTRACT

The preparation technique is a critical factor in maintaining the nutritional composition and bioactive compounds within broccoli (*Brassica oleracea* var. *italica*) microgreens. This study aimed at evaluating the influence of three preparation methods—fresh, microwave drying, and air fryer drying—on the bioactive compounds in broccoli microgreens. The methods included the following steps: Broccoli microgreens, harvested 12 days after sowing, were dried using either air-fryer or microwave methods. For microwave drying, samples were microwaved at 600 watts for 3 minutes. For air-fryer drying, samples were heated at 160°C for 10 minutes. Metabolites were analyzed with LC-MS/MS. The data analysis involved ANOVA, correlation heatmap, PCA, hierarchical clustering, biplot, and KEGG Annotations and Enrichment Analysis. The one-way ANOVA showed no significant difference in compound quantity across treatments. However, the presence or absence of compounds differed significantly among Fresh, Microwave, and Air Fryer samples. Additionally, correlation heatmap analysis showed a moderate positive correlation between the compound concentrations of the Fresh Sample and those of both the Microwave and Air Fryer methods. PCA with KMeans clustering revealed significant variability in compound concentrations across preparation methods and clusters. Box plots highlighted the differing impacts of preparation methods within each cluster. Hierarchical clustering heatmap analysis demonstrated distinct clustering patterns among the methods, showing their unique effects on metabolites with some similarities. Notably, the dominant compounds varied among the preparation methods, with the Fresh Sample showing the highest mean antioxidant and anticancer activity. The main KEGG pathways for all methods were metabolic pathways and the biosynthesis of secondary metabolites. There was significant variability in compound concentrations depending on the preparation method used, underscoring the substantial influence of processing methods on compound types and quantities. In conclusion, this study demonstrated the significant impact of preparation methods on the nutritional and bioactive compound composition of broccoli microgreens.

Keywords: broccoli microgreens, metabolomics, phytochemicals, functional foods, bioactive compounds, nutritional composition

G2

[50]

## POTENTIAL OF OAT COMPONENTS IN PREVENTING HYPERTENSION AND ITS CARDIOVASCULAR COMPLICATIONS

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### ABSTRACT

Hypertension is one of the major risk factors for developing cardiovascular disease. Food components have been reported to provide cardiovascular health benefits. Our goal was to assess the potential of oat components in preventing cardiovascular disease secondary to hypertension. In the first study we examined the effects of oat avenanthramide C (AVc) and beta-glucan (BG) alone, or in combination, in an animal model of hypertension, the spontaneously hypertensive rats (SHR); normotensive Wistar Kyoto rats (WKY) were utilized as controls. Blood pressure, heart function, vascular function, oxidative stress and inflammation were measured in all animals. In the second study we examined the cardiovascular effects of BG in male SHR vs. female SHR, as well as the comparative and combinatorial effects of BG and hydrochlorothiazide (HCT) which is a standard antihypertensive medication. The results of our first study showed that SHR had very high blood pressure and abnormal heart function in comparison to WKY. Administration of BG alone prevented the elevation of blood pressure and heart dysfunction in SHR, however AVc alone or the combination were not effective. It is not clear why AVc was ineffective in this study, further studies need to be done in this regard. The results of the second study showed that administration of BG was only effective in preventing elevation in blood pressure in male SHR but not in female SHR. Furthermore, BG prevented elevation in blood pressure in male SHR as much as HCT. The results of our preclinical studies suggest that BG has blood pressure lowering potential in male hypertensive animals, but not in female hypertensive animals. Our results also suggest that in male hypertensive animals, BG was as potent as HCT.

Keywords: Hypertension, cardiovascular disease, oats, beta-glucan, avenanthramide. Hydrochlorothiazide

G3

[51]

**EFFECT OF SOY FLOUR ON NUTRITIONAL, PHYSICOCHEMICAL, AND SENSORY CHARACTERISTICS OF SELECTED STAPLE FOODS IN LESOTHO – SORGHUM PORRIDGE, MAIZE MEAL STIFF PORRIDGE AND WHEAT BREAD**

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**ABSTRACT**

Effect of soy flour on nutritional, physicochemical, and sensory characteristics of selected staple foods in Lesotho – sorghum porridge, maize meal stiff porridge and wheat bread. Sorghum based porridge (Lesheleshele), Maize meal stiff porridge (papa) and wheat bread (bohobe ba koro) are the main staple foods for consumers in Lesotho contributing significantly to the diet of rural and urban population in the country. The flours used in these traditional products are deficient in some amino acids and over-dependency on these products as practiced by Basotho may lead to high prevalence of malnutrition-related health conditions. Soybeans are known to contain substantial amounts of proteins including all the essential amino acids that are important for health. The purpose of this study was to determine the effect of soy flour on the nutritional, physicochemical and sensory properties of selected Basotho staple foods. The three staple foods were formulated and developed by compositing the main flours – sorghum, maize, and wheat with soy flour respectively at different ratios to produce more nutritionally balanced products. The sensory characteristics and acceptance of Basotho soy fortified staple products were evaluated using farmers focus groups. The moisture, protein, fat, fibre, ash and carbohydrate contents of samples were analysed according to Association of Official Analytical Chemists. The results revealed that samples with fortified soy flour were significantly higher in protein content than the control samples. Moisture (28.8%– 26.9%) and carbohydrate (56.3–51.6) content decreased with the incremental addition of soybean flour. Focus group sensory analysis showed that colour texture and taste of fortified staple foods were preferred by consumers and were described as having beany and milky flavour. In conclusion, fortifying Basotho staple foods (sorghum porridge -lesheleshele, maize meal stiff porridge - papa and bread -bohobe) with soybean flour can improve their quality, sensory characteristics, and nutritional properties. Key words: Sorghum, maize, wheat, porridge, staple, soybean. However, it is recommended that further studies be conducted to assess the implementation of soy fortification in Lesotho with regard to the acceptance, cost, and shelf life of the products, as soy bean is new to the Basotho people.

Key words: Sorghum, maize, wheat, porridge, staple, soybean.

G4

[52]

**THE FODMAP-DIET FOR GUT MICROBIOME RESTORATION AND  
ANAGEMENT OF SYMPTOMS IN IRRITABLE BOWEL SYNDROME**

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**ABSTRACT**

Irritable Bowel Syndrome (IBS) is a multifactorial, debilitating, complex, chronic, disorder of gut-brain interaction (DGBI) of heterogeneous pathogenesis, pathophysiology and clinical phenotype. There is increasing evidence supporting the important role of gut microbiota in the pathophysiology of IBS. Gut dysbiosis-an imbalance and alterations in the luminal and mucosal colonic gut microbiota function and composition, contribute to the pathogenesis of IBS. Diet is one of the key modulators that shape the gut microbiota composition, function and structure. Diet influences host homeostasis and biological processes in the GI tract and plays an integral role in maintaining the gut microbiota equilibrium. Dietary alterations can affect gut microbiota equilibrium, hence playing a pivotal role in the pathophysiology and treatment of IBS. The most evidence-supported dietary treatment for IBS is the FODMAP-diet. Given that diet is one of the major drivers of gut microbiota composition and function raises the question of whether the FODMAP-diet could correct gut dysbiosis, aid in partial restoration of gut microbial equilibrium, and promote the development of a microbe-rich biodiverse environment to help manage IBS-symptoms. The objectives of this paper are to a) elucidate the pathophysiological central and peripheral gut-related mechanisms through which FODMAPs induce IBS-symptoms; b) the mechanisms of actions of the FODMAP-diet to reduce IBS-symptoms via actions on the gut microbiome; c) to expound the implementation of the FODMAP-diet; d) and to challenge the conventional wisdom that the FODMAP-diet has deleterious long-term gut health consequences. We propose two alternative dietary therapies that will help in restoring and rebuilding the gut microbiota, aiding symptoms control in IBS-patients. Implications for practice entail the design and implementation of a gut microbiota-based personalised precision-nutrition tailored to each individual IBS-patient to generate beneficial patient-reported outcomes.

Keywords: Irritable Bowel Syndrome, gut microbiota, FODMAP-diet, personalized precision-nutrition

G5

[53]

## CHARACTERIZATION OF HEIRLOOM (OMINIO VARIETY) RICE FLOUR

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### **ABSTRACT**

The heirloom rice varieties of the Cordillera Autonomous Region in the northern Philippines are at risk of extinction due to various factors. (Cuevas et.al 2017). Due to the decreasing demand for heritage rice and market struggles, this study aims to determine the characterization of heirloom (Ominio variety) based on their functional and physicochemical properties. The heirloom rice (Ominio variety) was pulverized and passed through a 60-80 mesh sieve (ASTM), packed, and stored at 28-31°C. The purple-colored rice flour exhibited low moisture content (11.99) with (6.55) acidity and water activity (0.534) and its functional properties were characterized by (1.41g/g) high water absorption capacity (WAC), and (3.13g/100g) low water solubility index (WSI). The pasting properties were classified as glutinous due to high peak viscosity (2,427cP) with moderate final viscosity of (2,322cP) on its peak time of 4.65 min and pasting temperature of 75.88°C. Therefore, this heirloom rice can be used as specific food products such as gluten-free foods, thickening agents, and the development of rice-based products.

Keywords: heirloom rice, purpled-rice flour, functional properties, physico-chemical properties

H1

[54]

## "FOODPRINT"- THE ENVIRONMENTAL IMPACT OF HUMAN DIET IN INDONESIA: CHALLENGES AND OPPORTUNITIES

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### **ABSTRACT**

Food consumption patterns globally exert a substantial ecological footprint, particularly in countries like Indonesia, which confronts significant demographic changes amidst rapid urbanization and increasing affluence. This paper examines Indonesia's developmental context, where dietary preferences are shifting towards higher consumption of animal products, exacerbating environmental degradation through greenhouse gas emissions, water depletion, and land conversion associated with animal agriculture. Drawing on current literature, this review underscores the environmental impacts and sustainability dilemmas posed by Indonesia's evolving dietary habits. It advocates for strategies to mitigate these impacts, emphasizing the importance of dietary transitions and sustainable agricultural practices. By promoting reduced meat consumption, promoting plant-based diets, and implementing sustainable farming techniques, Indonesia can address these challenges. The paper proposes pathways for achieving a more sustainable future, suggesting that by balancing food security imperatives with environmental stewardship, Indonesia can navigate the complexities of demographic growth and economic pressures. Embracing these changes not only supports environmental conservation but also enhances resilience against future ecological uncertainties, ensuring a more sustainable path forward for Indonesia's food systems. In conclusion, while Indonesia faces formidable challenges in reconciling food security and environmental sustainability, proactive measures such as dietary diversification and sustainable agricultural innovations offer promising avenues for achieving a harmonious balance between human needs and ecological integrity.

Keywords: foodprint, ecological footprint, sustainable agriculture, dietary shifts, environmental impact

H2

[55]

**THE EFFECT OF BLANCHING TEMPERATURE AND TIME TO THE LEVEL OF  
FLAVONOID COMPOUNDS OF SENGGANI FLOWER (MELASTOMA  
MALABATHRICUM)**

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**ABSTRACT**

This study examined the impact of blanching Senggani flowers at temperatures of 70 °C, 80 °C, and 90 °C on the levels of flavonoid compounds. Blanching is a cooking process where food, usually vegetables, is briefly boiled and then quickly cooled to preserve color, texture, and nutrients. Flavonoids, such as rutin, quercetin 3-glucoside, trifolin, and astragalin, are bioactive compounds known for their antioxidant properties. However, these compounds are sensitive to heat, and their concentration can be significantly reduced during blanching. Using High-Performance Liquid Chromatography (HPLC), the flavonoid content of flowers blanched at different temperatures for varying durations (30 to 180 seconds) was analyzed. The findings indicated that blanching flowers at all three temperatures resulted in a substantial decrease in flavonoid levels compared to unblanched flowers. The highest loss occurred at 90 °C, where even short blanching times led to a marked reduction in flavonoid concentration. At 70 °C and 80 °C, the decline in flavonoid content was also significant, particularly with prolonged blanching. In contrast, unblanched flowers retained higher concentrations of flavonoids, highlighting the detrimental effect of heat on these sensitive compounds and the dissolution of phenolic compounds in water during blanching. This study suggested that to preserve the flavonoid content in Senggani flowers, blanching should be eliminated. Flowers are best stored frozen or freeze-dried. These findings are very important for industries processing Senggani flowers for their health benefits, emphasizing the need for careful pre-treatment control to retain the beneficial compounds in the flowers.

Keywords: Senggani, Melastoma malabathricum, blanching, flavonoid, HPLC.



H3

[56]

**STABILITY ANALYSIS FOR YIELD AND YIELD CONTRIBUTING TRAITS OF  
POTATO (SOLANUM TUBEROSUM L.)**

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**ABSTRACT**

Potato (*Solanum tuberosum* L.) belongs to family Solanaceae with chromosome number  $2n = 2x = 48$ . Potato is one of the most important staple food crops among the vegetables; which is utilized throughout the year in India. The experiment was grown in Randomized Complete Block Design with three replications. The row to row 60 cm and plant to plant distance was 20 cm with plot size 7.2m<sup>2</sup>. The Stability analysis for the characters total tuber yield plot-1 the genotypes had high total tuber yield plot-1 were reported in K. Garima K. Khyati, K. Chipsona-1(check), K. Surya and K. Arun with above average stability ( $b_i < 1$ ) and non significant deviation from regression line, therefore, its performing stable genotypes over all the environment. The value of environmental index (I<sub>j</sub>) reflected the favorable and unfavorable environments for the yield character. According to Eberhart and Russell (1965), environmental index indicate relative land productivity; locations with higher environmental index are more suitable for plant growth than other locations with lower I<sub>j</sub> value also stated that land is more productive when its I<sub>j</sub> value is higher. Environment index values showed the importance of variability as well as the difference with other induced factors in detecting the performance of genotypes under different environments.

Keywords: Potato, Stability analysis and G x E interaction

H4

[57]

## UTILIZATION OF ALOE VERA GEL AND MANGO POWDER IN PREPARATION OF INSTANT BEVERAGE MIX

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### ABSTRACT

Aloe vera (*Aloe barbadensis* Miller), a perennial herbaceous plant, belongs to Aloeaceae family. The phrase "Aloe vera" has its roots in the Arabic word "Alloeh," which means "glistening bitter substance," and the Latin word "vera," which means "authenticity" or "truth." Because of its antibacterial, antiviral, anti-allergic, and other medicinal properties, aloe vera is one of the most often used therapies for many human disorders. Therefore, present study were carried out for the preparation of aloe vera gel and mango powder-based instant beverage mix. Proximate analysis (crude protein, fiber, fat, moisture and ash) of beverage powder were performed. The results showed that the proximate composition of aloe vera powder indicated that it contained  $6.97\pm 0.45\%$ ,  $20.52\pm 0.50\%$ ,  $0.41\pm 0.20\%$ ,  $14.93\pm 0.50\%$  and  $18.32\pm 0.71\%$  of moisture, crude protein, crude fat, crude fiber, and ash respectively. The proximate composition of mango powder showed  $5.04\pm 0.03\%$ ,  $4.05\pm 0.04\%$ ,  $1.21\pm 0.06\%$ ,  $11.30\pm 0.22\%$  and  $3.80\pm 0.31\%$  of moisture, crude protein, crude fat, crude fiber and ash respectively. After product development, various physio-chemical analysis of the beverage like, pH, total phenolic content, color, minerals, antioxidants, sensory evaluation and statistical analysis were performed. Drinks made with aloe vera and mango may aid in digestion, skin health, and hydration, among other favorable health effects. The results were analyzed statistically. Color determination of product was done on the basis of L\*, a\* and b\* values. Sensory evaluation of the product was done based on following parameters like color, flavor, taste, appearance, and overall acceptability.

Keywords Aloe vera, mango powder, instant beverage mix, proximate analysis, antioxidant properties, sensory evaluation, health benefits.

J1

[58]

## PHOTOOXIDATION STABILITY OF CRUDE AND REFINED KENARI OIL

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### ABSTRACT

Deterioration of cooking oil is usually caused by the presence of oxygen and exposure to light. This research is aimed to determine the oxidative stability of kenari (*Canarium* sp.) kernel oil under exposure to light. The experimental design used in this research was CRD (Completely Randomized Design). Two species of kenari nut, *Canarium indicum* and *C. vulgare*, were extracted for its oil exposed to fluorescent light at 4000 lux for 8 hours. The results showed an increase in the formation of peroxide and TBARS numbers in both crude and refined kenari kernel oil of *C. indicum* and *C. vulgare*. The peroxide values of refined oil after 8 hours of exposure to light were  $10.05 \pm 0.33$  meq.kg<sup>-1</sup> oil of *C.indicum* and  $14.80 \pm 1.35$  meq.kg<sup>-1</sup> oil of *C. vulgare*, whereas those in crude oil were  $3.12 \pm 0.17$  meq.kg<sup>-1</sup> oil and  $3.85 \pm 0.28$  meq.kg<sup>-1</sup> oil, respectively. The hydroperoxide formation rates for crude and refined kenari kernel oil were 0.25 and 1.42 (*C.indicum*) and 0.31 and 2.20 (*C.vulgare*), respectively. The TBARS of refined kenari kernel oil was higher ( $24.15 \pm 2.78$   $\mu$ mol MDA.kg<sup>-1</sup> oil of *C. indicum* and  $21.85 \pm 4.38$   $\mu$ mol MDA.kg<sup>-1</sup> oil of *C. vulgare*) than that of crude kenari kernel oil ( $9.20 \pm 0.27$   $\mu$ mol MDA.kg<sup>-1</sup> oil of *C. indicum* and  $12.80 \pm 1.09$   $\mu$ mol MDA.kg<sup>-1</sup> oil of *C. vulgare*). The increasing rate in TBARS of *C. indicum* kenari kernel oil was 1.41 and 3.46 and *C. vulgare* was 2.02 and 3.29. In conclusion, purified kenari kernel oil is more prone to photooxidation compared to its crude oil. This may due to the lack of tocopherols and carotenes in refined oil which act as singlet oxygen quenchers.

Keywords: kenari oil; photooxidation; oxidative stability.

J2

[59]

**DEVELOPMENT OF SWEET POTATO LEAVES (*IPOMOEA BATATAS POIR.*)  
POWDER AS PARTIAL SUBSTITUTE TO THE PRODUCTION OF CRINKLES:  
FORTIFICATION OF VITAMIN A**

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**ABSTRACT**

Vitamin A deficiency (VAD) is considered a public health concern around the globe, especially in areas such as Africa and South-East Asia. In the Philippines, children aged 6-59 months, and pregnant and lactating women are the most affected by VAD. The objective of the research is to develop crinkle cookies made with partial substitution of sweet potato leaf (*Ipomoea batatas Poir.*) powder as a nutritious snack to aid in VAD prevention. The sweet potato leaf powder (SPLP) was produced via hot-air drying using a dehydrator before being grinded into powder. Two formulations (4% and 5%) are then made by partially substituting the amount of SPLP to flour in the crinkles. The crinkles are subjected to a sensory evaluation test using a consumer-preference 9-point hedonic scale conducted by 80 respondents from Barangay Congbalay-Legaspi, Binakayan in Kawit, Cavite, Philippines. No significant differences were found between the two formulations across all sensory criteria (appearance, color, flavor, taste, texture, and overall acceptability). The 5% formulation proceeded in the nutrient content analysis as selected by the researchers. Nutrient content analysis shows that this formulation has relatively low moisture (8.94 g/100g), ash (0.92 g/100g), crude protein (4.66 g/100g), total fat (9.84 g/100g), Calcium (75.64 g/100g), Phosphorus (111.56 g/100g), and Potassium (65.62 g/100g). Calories (409.76 Kcal/100g) and especially Vitamin A as  $\beta$ -Carotene (3251  $\mu$ gRE/100g) are relatively high. One piece of the crinkles (15 g) can fulfill the daily requirements for Vitamin A in children, while two to three pieces for pregnant and lactating women. Further studies are recommended to test additional analysis such as dietary fiber, antioxidants, and stability along with other uses of SPLP in the food production of different products.

Keywords: Vitamin a, Vitamin a deficiency, Sweet potato leaf, Sweet potato leaf powder, Sensory evaluation, Nutrient content analysis

J3

[60]

**ANALYSIS OF CRUDE FIBER CONTENT AND ANTIOXIDANTS OF NATA DE  
PAPAYA AS FUNCTIONAL FOOD IN THE MANAGEMENT OF  
HYPERCOLESTEROLEMIA**

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**ABSTRACT**

Papaya is a fruit that experiences high production every year. Papaya is classified as a climacteric fruit because it produces high ethylene gas so that it quickly deteriorates. processing papaya fruit into functional foods such as nata is a solution to overcome the relatively short shelf life of papaya fruit. In addition, processing papaya into nata de papaya can increase fiber content due to *Acetobacter xylinum* fermentation which converts glucose into cellulose. Papaya fruit contains secondary metabolite compounds in the form of carbohydrates, sugars, minerals, proteins and vitamins that support the growth and fermentation of *Acetobacter xylinum* so that it has the potential to be processed into nata. Processing papaya fruit into nata or known as nata depaya can be used as an alternative in the management of hypercholesterolemia by utilizing fiber content and which has an antihypercholesterolemia mechanism. This study aims to determine the levels of crude fiber and antioxidants in nata de papaya as antihypercholesterolemia functional food. The methods used in testing the levels of crude fiber and antioxidants are gravimetric and spectrophotometric methods. The results obtained crude fiber content in nata de papaya is 3.02% and antioxidant levels of 12.60 ppm. It is concluded that nata de papaya contains fiber and antioxidants.

Keywords: nata de papaya, fiber, antioxidant, antihypercholesterolemia

J4

[61]

**ACCEPTABILITY OF MALUNGGAY (*Moringa oleifera*) LEAVES POWDER AS A  
MAIN INGREDIENT IN MAKING BREADSTICKS**

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**ABSTRACT**

Malunggay (*Moringa oleifera*), also known as the Philippines' miracle tree, and its recognized health benefits and versatility. It has not been utilized commonly in bakery food products. Hence, this study was conducted to address the underutilization of Malunggay (*Moringa oleifera*). This research aimed to fill this gap by assessing the acceptability of Malunggay breadsticks considering its palatability, texture, aroma, color, and appearance. A total of 150 respondents were randomly selected which includes 50 housekeepers, 50 vendors from Barangay Aplaya, Digos City and Poblacion Sulop Davao del Sur, and 25 students and 25 teachers from a higher education institution. The study utilized an adapted research instrument in a 5-point Likert scale to rate the sensory components of the Malunggay breadsticks. The results revealed that Formulation 3, incorporating Malunggay leaves powder was consistently rated as the most acceptable across all age groups. The overall average rating for Formulation 3 signifies high acceptability. This study recommends further refinement in taste and texture for optimal consumer satisfaction, emphasizing the potential of Malunggay breadstick's marketability, while suggesting collaboration with the BTVTED program for potential community extension programs and technology transfer. Microbial testing, nutritional facts analysis, and consideration of labeling and packaging standards are also recommended for further product improvement. Future researchers may explore the shelf-life of Malunggay breadsticks.

Keywords: Moringa Oleifera, malunggay, leaves powder, breadsticks, Philippines

J5

[62]

## EFFECT OF DEHYDRATION ON THE PHYSICOCHEMICAL AND NUTRITIONAL PROPERTIES OF STINGLESS BEE HONEY

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### ABSTRACT

Stingless bee honey is susceptible to microbial fermentation due to high moisture content and this could lead to the quality deterioration during storage. This study aimed to evaluate the effect of dehydration methods on the physicochemical and nutritional properties of stingless bee honey. The honeys were subjected to three different methods of dehydration namely oven drying (40-60°C), vacuum drying (40-60°C) and dehumidification. The moisture contents of the dehydrated honey samples were standardized to 20%, which is a regulatory requirement for general honeys in Malaysia. There was a significant reduction in the water activity but an increase in pH values. The color of the honeys seemed darken (lower L\* value and higher b\* value) after dehydration as compared to the raw honey. However, the sugar composition (fructose, glucose and maltose) remained similar in all dehydrated honey samples. A high-temperature (60°C) vacuum drying produced honey with the highest total phenolic content ( $414.28 \pm 0.76$  mg GAEkg<sup>-1</sup>) and a darker color ( $L^*=11.36 \pm 0.13$ ;  $a^*=3.05 \pm 0.31$ ;  $b^*=4.85 \pm 0.14$ ) whereas dehumidification produced honey with increased total phenolic content ( $346.53 \pm 3.62$  mg GAEkg<sup>-1</sup>) but the color intensity was less affected. A total of three phenolic acids and four flavonoids were identified using highperformance liquid chromatography in both the raw and dehydrated samples. Rutin and chlorogenic acid are the most dominant phenolic compounds found in the dehydrated honeys. In conclusion, vacuum drying could be used to reduce the moisture content of stingless bee honey without any detrimental effect on its quality and functional characteristics.

Keywords: stingless bee honey, moisture content, drying methods, physicochemical, phenolic compounds

J6

[63]

## INVESTIGATING MIDWIVES' PERCEPTION OF PORTABLE BIRTHING CHAIR

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### ABSTRACT

The focus of normal birth care is clean, safe delivery and preventing complications. One of the proactive actions in preparing for childbirth is to provide support for the mother, including birth position. Researchers have produced an innovative portable birthing chair that aims to provide comfort to birthing mothers by paying attention to gravitational forces so as to shorten the length of labor, help with the birthing position, and facilitate delivery assistance. The chair is designed to be foldable using sturdy but light material so that it can be carried easily, including to disaster areas. This research aims to determine midwives' perceptions regarding the need for the use of portable birthing chairs. This research is a descriptive, cross-sectional design using questionnaires to obtain information from 196 midwives in various healthcare facilities in the East Priangan and Cirebon areas. The research results showed that the birthing chair design was suitable for use in healthcare facilities (53%). Midwives thought that portable chairs are very necessary for ease of delivery assistance (55.6%), so 86% of them are interested in using this portable birthing chair. Most (54.6%) of respondents are willing to buy a maternity chair, and 54.1% of respondents are willing to recommend it to others. Most midwives expect the price of a birthing chair to be in the range of 1 -3 million rupiah. Portable birthing chairs are in great demand by midwives for use in practice services, so midwives are willing to buy them.

Keyword: Birthing chair; portable; midwives; perception



J7

[64]

**THERAPEUTIC POTENTIAL OF SYNTHETIC ALPHA-LACTALBUMIN AND OLEIC ACID COMPLEX (HAMLET-LIKE) IN THE TREATMENT OF LUNG AND CERVICAL CANCER: AN IN VITRO CYTOTOXICITY STUDY**

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**ABSTRACT**

Current cancer treatments generally have systemic side effects that risk causing malnutrition in patients. There is a need for cancer treatments that minimize or have no systemic side effects. This study aims to investigate the therapeutic potential of a synthetic Alpha-Lactalbumin and Oleic Acid complex (HAMLET-like) in the treatment of colon and breast cancer. The research method is an in vitro study using ion-exchange chromatography and evaluating the cytotoxic properties of the Alpha-Lactalbumin and Oleic Acid complex on colon and breast cancer cells. The research was conducted at the HUM-RC Laboratory, Faculty of Medicine, Hasanuddin University. The results showed that the HAMLET-like formula inhibited the growth of MCF7 (breast) and WiDR (colon) cancer cell lines, with WiDR showing a dose-response relationship. The cytotoxicity test results of the synthetic HAMLET formula on WiDR indicated that this synthetic HAMLET formula is cytotoxic and can inhibit the growth of various cancer cells in a dose-dependent manner, meaning that the cytotoxic effect increases with concentration. It is recommended to observe the effects of HAMLET-like on normal cells, develop appropriate extraction methods to separate alpha-lactalbumin from other milk sources such as cow (bovine) or goat milk, and then continue with in vivo studies.

Keywords: HAMLET, Cancer, Alpha-Lactalbumin, Oleic Acid, In Vitro

J8

[65]

**FROM FRUIT TO PHARMACOLOGY: *ERIOBOTRYA JAPONICA*'S POTENTIAL IN  
MANAGING OBESITY AND ALZHEIMER'S DISEASE**

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### **ABSTRACT**

*Eriobotrya japonica*, a fruiting tree in the family Rosaceae, is renowned for its potential medicinal properties due to its bioactive compounds. This study aims to analyse the biological properties of the fruit of *Eriobotrya japonica* L. against anti-obesity and anti-Alzheimer's disease, and to elucidate the mechanisms involved through molecular docking and in vitro analyses. Metabolite profiling, performed using HPLC-ESI-HRMS/MS, leading to the identification of eight key compounds from *E. japonica*. In silico analysis was carried out using WAY2DRUG PASS and molecular docking via CB-Dock2. The compounds C6, C7, and C8 demonstrated significant interactions related to anti-obesity and anti-Alzheimer's properties. Two of the compounds, hyperoside (C6) and afzelin (C8), showed strong affinities for HMG-CoA reductase (HMGCR) and acetylcholinesterase (AChE) with  $\Delta G$  values of -9.1 and -10.7, respectively. In vitro assays were used to evaluate anti-obesity effects via lipase inhibition activity, and anti-Alzheimer's effects via AChE inhibition activity. Hyperoside (C6) showed significantly higher anti-Alzheimer's potential ( $EC_{50}$  26.11  $\mu\text{g/mL}$ ) compared to afzelin (C8) and physostigmine (control), which had  $EC_{50}$  values of 21.61  $\mu\text{g/mL}$  and 21.48  $\mu\text{g/mL}$ , respectively. Hyperoside (C6) also exhibited the most potent anti-obesity activity ( $EC_{50}$  25.46  $\mu\text{g/mL}$ ) compared to afzelin (C8) and orlistat (control), with  $EC_{50}$  values of 21.66  $\mu\text{g/mL}$  and 23.14  $\mu\text{g/mL}$ , respectively. These findings suggest that *E. japonica* has promising medicinal potential for developing anti-obesity and anti-Alzheimer's agents.

Keywords: *Eriobotrya japonica*; anti-obesity; anti-Alzheimer; molecular docking; in vitro

K1

[67]

**DEVELOPMENT OF MOST ACCEPTABLE FORMULATION OF GLUTEN-FREE  
BISCUIT USING OKARA AND CHICKPEA FLOUR AS REPLACEMENT FOR  
WHEAT FLOUR**

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**ABSTRACT**

The increasing prevalence of gluten-related disorders and the growing popularity of gluten-free diets have led to a global demand for gluten-free products. This study sought to determine the potential of using okara and chickpea flour as an alternative to wheat flour to develop the most acceptable gluten-free biscuits between varying ratios of okara and chickpea flour. Thus, six formulations (GFB1 to GFB6) were evaluated in terms of dough characteristics, physical properties, sensory properties, chemical composition, and microbiological properties. Furthermore, a descriptive analysis involving trained panelists correlated with consumer testing results provided a comprehensive understanding of sensory attributes that influenced consumer preferences. Results showed that the lower the okara flour, the higher the quality of the samples. This corresponded with GFB4 containing 20% okara and 80% chickpea flour producing larger and thicker biscuits, while GFB2 containing 40% okara and 60% chickpea flour resulted in thinner ones with more spread. Chemical analysis revealed a neutral pH level, contributing to the desirable sensory and physical qualities of biscuits. Sensory evaluation revealed GFB4 as the most acceptable formulation, citing its superior appearance, aroma, texture, flavor, aftertaste, and overall acceptability. The formulations also complied with the required microbiological safety standards of the Food and Drug Administration (FDA). The proximate analysis of GFB4 resulted in elevated protein levels and lower total fat content compared to other variants; the crude fiber also resulted in a relatively high amount, making it a nutritious and quality biscuit option. Therefore, this study represents a significant step forward in developing nutritious and appealing gluten-free options, promising substantial benefits for individuals with gluten-related disorders, and addressing prevalent nutritional deficiencies among vulnerable populations in the Philippines.

Keywords: gluten-free biscuit, okara flour, chickpea flour, gluten-free diet

K2

[68]

## IMPACT OF PASTEURIZATION ON THE PHYSICO-CHEMICAL PROPERTIES OF SEAWEED SHEETS MADE FROM CAULERPA LENTILLIFERA

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### ABSTRACT

The Philippines, a global leader in seaweed farming, cultivates various species, including the underutilized *Caulerpa lentillifera* (lato). This study explores the potential of *C. lentillifera* for producing seaweed sheets, a novel application that could enhance its market value. The research designed a process flow involving mashing, pasteurization (optional), drying, and analysis of physico-chemical properties. The key objectives were to determine the impact of pasteurization on color, moisture content, and water activity of the final sheets, and to monitor mass balances throughout the process. Pasteurization emerged as a significant factor influencing the seaweed sheets' characteristics. Compared to non-pasteurized counterparts, pasteurized sheets displayed a brighter green color, indicating better color retention. They also exhibited lower moisture content and water activity, suggesting potential benefits for shelf-life extension by inhibiting microbial growth. These findings highlight the promise of pasteurization for creating high-quality *C. lentillifera* seaweed sheets. However, limitations exist. The study lacked proper replication and did not employ rigorous statistical analyses, necessitating further research to validate the observations. Future investigations should incorporate replication and statistical methods to strengthen the results. Additionally, sensory evaluation and shelf-life testing are crucial to assess consumer acceptance and product longevity. Furthermore, microbial analyses and proximate chemical composition determination are essential to ensure food safety and evaluate the nutritional value of the seaweed sheets. Finally, optimizing processing parameters, such as temperature and drying time, holds promise for enhancing product quality and production efficiency. Overall, this study paves the way for the development of novel *C. lentillifera* seaweed sheets with desirable characteristics, potentially contributing to the economic value of this underutilized seaweed.

Keywords: *Caulerpa lentillifera*, seaweed sheets, pasteurization, physico-chemical properties

K3

[69]

**CHARACTERIZATION OF VEGGIE SNACKS MADE FROM OKARA, RICE  
FLOURS, AND SKIMMED MILK USING COLD EXTRUSION TECHNOLOGY**

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**ABSTRACT**

This study explores the characterization for veggie chips snack food establishing physical properties, and quantitative descriptive analysis in creating a healthy snack. A mixture design of the experiment (Optimal R Software ver.4.3.1 Xvert function) was employed utilizing composite rice-okara flour blends which uses a cold-extrusion process of eight(8) veggie chips formulations (VC) were derived. Statistical analysis employed ANOVA, a post-hoc test, a linear mixed model, and cluster analysis was also used to reveal distinct characteristics exhibited by the different formulations. Highest expansion ratio of 1.832 indicated significantly after frying among formulations in alignment with superior expansion ratio (1.085) and bulk density (0.506) were noted. Results showed slight differences in characteristics across formulation, VC3 with 62%RF;30%OF;8%SM posted the highest mean for sweetness while VC4 containing 80% rice flour, 12% okara flour, and 8% skimmed milk resembles commercial product's sweetness and color. The linear mixed model indicated fracturability, and hardness statistically significant differences at a 5% level. Post-hoc analysis of crust color levels resulted to highest membership, includes VC1, VC6,VC7, and VC9 which are statistically similar in crust color. Moreover, crispness level cluster diagram shows no significant differences between formulations. Overall, veggie chips contain 8.46% protein and 11.60% fat content. In conclusion, results showed increasing okara flour from 12-30% in the mixture blend increases sweetness, bulk density and hardness while decreasing expansion ratio and crispness of veggie chips snack food.

Keywords: veggie chips snackfood, okara flour, multi blends flour, cold extrusion, texture profile

**K4**

**[70]**

**RAMBUTAN PEEL ANTHOCYANINS FOR INTELLIGENT PACKAGING DYES:  
ULTRASOUND-ASSISTED EXTRACTION WITH VARIED ETHANOL  
CONCENTRATIONS AND PH CONDITIONS**

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**ABSTRACT**

Intelligent packaging systems are designed to preserve food, extend shelf life, and monitor food quality in real time. Anthocyanins, known for their pH-sensitive color change, are promising candidates as sensitive dyes for detecting food degradation. This study aimed to extract anthocyanins from rambutan peels using ultrasound-assisted extraction (UAE) under varying ethanol concentrations and pH conditions and to evaluate their potential applications in intelligent packaging. Anthocyanins were extracted from rambutan peel using UAE in aqueous ethanol (EtOH) at concentrations of 25%, 50%, and 75% (v/v). The extraction was conducted under acidic conditions with the addition of 1% HCl (pH 1) and 0.2% citric acid (pH 3). Anthocyanin extracts were evaluated for total anthocyanins, IC<sub>50</sub>, total phenolic content, and chromatic color. Anthocyanin extraction from rambutan peels using 75% EtOH at pH 3 yielded the highest ( $p < 0.05$ ) total anthocyanins ( $46.11 \pm 0.46$  mg/100g) and total phenolics ( $166.355 \pm 9.369$  mg GAE/100g). The IC<sub>50</sub> of rambutan peel anthocyanins in EtOH 75% at pH3 was higher ( $115.21 \pm 0.39$  ppm) compared to vitamin C ( $11.90 \pm 0.07$  ppm). Chromatic color analysis using a chromameter revealed that anthocyanins exhibited pH-dependent color changes. At low pH, the red (a) color was prominent but decreased as the pH increased to 7, while the blue (b\*) color increased with pH above 7. The color range from pH 1–11 transitioned from red-pink to pale yellow and then to greenish yellow. Rambutan peel contains a high level of anthocyanins, making it suitable for use as sensitive dyes in intelligent packaging to monitor food degradation based on pH changes.

Keywords: anthocyanins, rambutan peel, ultrasound-assisted extraction, intelligent packaging, sensitive dyes

L1

[71]

**EXPLORING THE DETERMINANTS OF STUNTING IN INDONESIA: A 2023  
ANALYSIS USING MULTIPLE LINIER REGRESSION**

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**ABSTRACT**

Stunting, a persistent consequence of chronic malnutrition and repeated infections, presents a major obstacle to a nation's overall health and its ability to achieve sustainable development. This condition, characterized by impaired growth and development in children, underscores the urgent need for effective interventions. Despite a decline in stunting prevalence in Indonesia from 24.4% in 2021 to 21.6% in both 2022 and 2023, the reduction remains insufficient to meet projected targets. This study aims to investigate the contributing factors to stunting incidence in Indonesia within the specific timeframe of 2023. The statistical test used is multiple linear regression using secondary data sourced from the Ministry of Health and the Central Statistics Agency. Using secondary data can be limiting for the research, because it may have bias and may affect the accuracy of the findings. The dependent variable is the prevalence of stunting, while the independent variables used are poverty, adequate sanitation and low birth weight (LBW). A significant correlation was observed between the dependent and independent variables ( $<0.005$ ). Regression analysis shows a strong positive linear correlation between poverty and stunting, while adequate sanitation exhibited a strong negative linear correlation. LBW shows a moderate positive linear correlation with stunting. Multiple linear regression analysis revealed that the included independent variables explained 58.2% of the variance in stunting incidence. This suggests that while the model captured a significant portion of the variability in stunting, 41.8% of the variance can be attributed to factors not included in the current model. Further research incorporating additional variables is warranted to better understand the complex interplay of factors influencing stunting incidence. Effective stunting reduction interventions necessitate a comprehensive approach characterized by multi-sectoral collaboration and coordinated efforts across multiple levels of influence.

Keywords: stunting, poverty, sanitation, lbw



L2

[72]

**ASSOCIATION OF THE ACADEMIC STRESS LEVEL AND CHRONONUTRITION  
PROFILE OF JUNIOR STUDENTS UNDER ALLIED HEALTH PROGRAMS IN  
POLYTECHNIC UNIVERSITY OF THE PHILIPPINES - STA. MESA, MANILA**

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MRAF

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**ABSTRACT**

Chrononutrition has a significant influence on overall health. However, numerous studies revealed that interplaying variables of chrononutrition can be controlled by internal and external stimuli, such as stress. The presence of stress is highly prevalent among university students, where various studies claim a link between academic stress and its impact on students' chrononutrition behaviors. This study used an analytical cross-sectional study to determine the relationship of academic stress to chrononutrition profile wherein, academic stress level is tested to associate to the following chrononutrition behaviors: (1) breakfast skipping; (2) largest meal; (3) evening eating; (4) evening latency; (5) night eating; and (6) eating window among junior allied health students in the Polytechnic University of the Philippines - Sta. Mesa, Manila. Results revealed significant associations between academic stress and four (largest meal, evening eating, evening latency, and night eating) out of six chrononutrition behaviors earning a p-value = <0.05 while breakfast skipping (p=0.077) and eating window (p=0.063) portrayed no significant association to academic stress. Majority of the respondents were under moderate academic stress level and reported no significant differences in the academic stress levels in terms of their sex, age, type of residence and programs which yielded  $p \geq 0.05$ . Findings in this study provide extensive understanding regarding academic stress and chrononutrition behaviors. Directing future research efforts in incorporating the subject of chrononutrition, with emphasis on meal timings and sleep in the healthcare settings, holds potential to be an efficient nutritional tool.

Keywords: academic stress, chrononutrition, circadian rhythm, temporal eating patterns, metabolic health

L3

[73]

**KNOWLEDGE, ATTITUDE, AND PRACTICES ON HUMAN MILK DONATION  
AND BANKING OF MOTHERS LIVING IN BARANGAY BANCAL, CITY OF  
MEYCAUAYAN, BULACAN, PHILIPPINES**

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**ABSTRACT**

Infants rely on breast milk for crucial nourishment; however, when unavailable, human milk banks and donor human milk are recommended for improved outcomes. This study utilized a descriptive cross-sectional design with purposive sampling to assess the knowledge, attitudes, and practices regarding human milk donation and banking among 107 mothers aged 18-49 years in Barangay Bancal, City of Meycauayan, Bulacan, Philippines. Data were collected through surveys during health center visits, and statistical tests including, Spearman Rank Correlation, Rank Biserial Test, and Phi Coefficient, were used to determine relationships between demographic characteristics and study variables. Results revealed significant awareness of human milk donation and banking, but only a low proportion (10.28%) possessed good knowledge. Attitudes were generally positive (81.31%), yet the actual practice was less common, with about two-fifths (38.32%) donating and a quarter (25.23%) using donor human milk. Correlation tests indicated that lactating mothers exhibited a weak positive relationship with knowledge ( $r = 0.253$ ,  $p = 0.009$ ). The primary feeding pattern (exclusively breastfed) showed a weak positive relationship with both knowledge ( $r = 0.297$ ,  $p = 0.002$ ) and attitude ( $r = 0.225$ ,  $p = 0.020$ ), and a strong association with the practice of donating human milk ( $\Phi = 0.230$ ,  $p = 0.017$ ). Educational attainment also demonstrated a weak positive relationship with donating human milk ( $r = 0.226$ ,  $p = 0.019$ ). History of delivering premature or low birth weight infants was strongly associated with the practice of using donor human milk ( $\Phi = 0.199$ ,  $p = 0.040$ ). The study highlights the need for enhanced education and community support to promote human milk donation and banking, and targeted interventions to address existing gaps in knowledge and practice.

Keywords: donor human milk, human milk banks, human milk donation

L4

[74]

**SERVICE QUALITY OF THE THERAPEUTIC DIETARY DEPARTMENT IN A  
GOVERNMENT HOSPITAL IN PASIG CITY, PHILIPPINES**

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**ABSTRACT**

This study assessed the service quality of the therapeutic dietary department in a government hospital in Pasig City, Philippines based on the gap between patients' perceptions and expectations of the services using the HEALTHQUAL model. The study employed a descriptive and quantitative research methodology and used a survey questionnaire as a research instrument. The respondents consisted of 88 patients from three departments: surgery, medicine, and obstetrics, with age parameters of 19–40 years old (early adult) and 41–60 years old (middle adult). The statistical treatments used in the study were descriptive statistics, and inferential statistics: Wilcoxon Signed-Rank Test, Mann-Whitney U Test, and Kruskal Wallis Test. The results revealed positive gap scores in all dimensions—empathy, tangible, safety, efficiency, and improvements of care services—indicating that patients' perceptions exceeded their expectations. The dimensions "improvements of care services" and "empathy" showed the highest gap scores, implying that patients are most satisfied with these dimensions. On the other hand, regardless of their age and hospital department where they received medical care, the study found no significant difference in the perceived quality of the therapeutic dietary service.

Keywords: therapeutic dietary service, HEALTHQUAL, patients' expectations, patients' perceptions, government hospital

L5

[75]

**EAT RIGHT CAMPAIGN INITIATIVE TO PREVENT HYPERTENSION AMONG  
CORPERATE STAFF IN UGANDA**

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**ABSTRACT**

Eat Right Campaign is an initiative that was started by the Nutrition Unit of Uganda Heart Institute with an objective of informing the cooperate workers in both Government and Private sectors of how to eat to prevent Hypertension. In Uganda, according to the recent research undertaken by Ministry of Health, 1 out of 4 adults is hypertensive and yet over 80% of those are not aware. This is attributed largely to the poor eating habits influenced by lack of knowledge. The major objective of the campaign was to demonstrate the need of effective strategic communication among the corporates by organizing of workshops that involved dietary education, food demonstrations, food preparation in an effort to prevent Hypertension. Permission from various Organizations was sought to carry out sensitization and health education while highlighting the significance in reducing financial losses to health care. The Campaign provided strategies of how to influence positive dietary changes. It involved screening for risk factors. A Pretest was given to the staff to ascertain their knowledge on how to eat right to prevent hypertension and thereafter the campaign, a post test was given to the same staff. This was done in all the 10 Organizations that we carried out the campaign. over 80% of the staff had learnt significantly and promised to practice what they had learnt, Also, majority who had a higher Blood pressure measurement prior to the campaign, returned with significantly lower blood pressure. Food demonstrations, preparations, and regular dietary education should be woven into the entire clinical and Public Health practice.

Relevant keywords; Eat Right Campaign Initiative, Corporate staff, strategic communication, health education, regular dietary education.

M1

[76]

**EFFECTIVENESS OF SUSTANSAYA TO THE NUTRITION KNOWLEDGE OF  
MALNOURISHED SCHOOL-AGE CHILDREN (6-10 YEARS OLD) IN SELECTED  
BARANGAYS OF MANILA CITY**

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**ABSTRACT**

In 2018, the city of Manila recorded a high prevalence of malnutrition among school-aged children (5-10 years old). Nutrition education through guided play is among the ways to address this public health concern as it promotes positive change in behavior and food preferences through increased knowledge of nutrition-related topics. This study aimed to investigate the effectiveness of SustanSaya, an interactive nutritional educational board game designed to increase the nutrition knowledge (NK) of malnourished school-aged children (6-10 years old). A quasi-experimental study was employed and a total of 54 school-aged children were sampled from the selected barangays in Manila using purposive sampling. The study had four phases — (1) development of initial assessment questionnaire, (2) anthropometric screening and implementation of initial assessment questionnaire, (3) development, validation, and pretesting of SustanSaya and the NK Questionnaire, and (4) testing for effectiveness of SustanSaya. The NK Questionnaire was used for the pretest and posttest and the scores were compared if there is a significant difference after the intervention. A paired t-test showed that there is a statistically significant difference between the two scores ( $t=16.68$ ,  $p=0.0001$ ); thus, indicating an increase in NK. The SustanSaya nutrition educational board game that was developed and validated for malnourished Filipino school-aged children, 6-10 years old, is effective in increasing NK. This intervention will be helpful to be utilized by nutrition educators and/or schools in the Philippines as part of their Information, Education and Communication (IEC) material focusing on topics relevant for the prevention and management of malnutrition among school-age children.

Keywords: nutrition education, nutrition knowledge, malnutrition, school-age children, guided play

M2

[77]

**UNDERSTANDING THE PERCEPTIONS AND AWARENESS OF BAKERS IN  
MEGA MANILA TOWARDS ALUMINUM-FREE BAKING POWDER**

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**ABSTRACT**

Baking powder is widely used in baking as leavening agent for cakes and pastries. However, there is a rising health concern with most baking powder because of its aluminum content. Due to this, aluminum-free baking powder was developed to address this health issue. The main purpose of this study is to assess the level of awareness of the Filipino baking industry about aluminum-free baking powder and to determine the state of readiness of the Filipino market for this type of baking powder. A mixed-methods design was used, incorporating a quantitative-descriptive and pre-post experimental design. Total of 100 Filipino bakers from Mega Manila voluntarily participated in the online survey conducted, while a home-use test was executed to evaluate the internal and external characteristics of *puto* and identify the differences in the effects of aluminum-free and aluminum-containing baking powder in the aforementioned food. Based on the results, 73/100 Filipino bakers were not aware of aluminum-free baking powder. Price and availability were the most influential factors affecting their awareness. Those Filipino bakers who used aluminum-free baking powder were aware of the aluminum content of common baking powders, while those who had not used aluminum-free baking powder were willing to try the product. In terms of the home-use test, *puto* made with aluminum-free baking powder has a more desirable internal characteristic than *puto* made with aluminum-containing baking powder. Moreover, it is statistically proven that there is no significant difference between the two baking powders in terms of volume or selected quality parameters. Ultimately, with these results, the Philippine market is still not ready for aluminum-free baking powder to be used in baking powder.

Keywords: *Aluminum-free baking powder, Leavening agent, Puto, Bakery industry,*

M3

[78]

**IDENTIFYING PICKY EATING DISORDERS FROM THE PARENTAL  
PERCEPTION ASPECT AND ITS EFFECT ON ADEQUACY OF FOOD INTAKE,  
AND NUTRITIONAL STATUS IN CHILDREN**

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**ABSTRACT**

This research examined the individual components that make up the concept of picky-eating disorders and explored how each component relates to parental perceptions of their child's nutritional status, parental pressure to eat, and the child's BMI z-score (BMIz). To do this, we created a questionnaire with 7 widely used picky eating measures, which was filled out by parents of children aged 3-6 years in pre-elementary school. We conducted exploratory and confirmatory factor analyses to evaluate the model fit. Regression analyses were used to determine the relationship between each picky eating factor and weight perception, pressure to eat, and BMIz. We identified three separate picky eating factors: willingness to try new foods, adequacy of food intake, and preference for specific food preparations. Each factor demonstrated a Cronbach's alpha greater than 0.8 and an acceptable model fit. None of the factors were linked to weight perception. Parents who were more worried about their child's food intake tended to apply more pressure to eat, and these children had lower BMIz. Pre-elementary school needs to address these aspects of picky eating.

Keywords: adequacy of food intake, parental perceptions, picky-eating disorders.

M4

[79]

## DEVELOPMENT AND VALIDATION OF ALTERNATIVE HEALTHY EATING INDEX FOR MALAYSIAN ADOLESCENT

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### ABSTRACT

The diet quality of adolescent is a growing concern worldwide, with significant implications for their current and future health. Assessment tools like the Alternative Healthy Eating Index (AHEI) can be used to identify dietary inadequacies and guiding interventions to promote healthier eating patterns. Although the AHEI is a valid and reliable measure of diet quality in many countries, it may not be directly applicable to Malaysians due to cultural and religious differences. Therefore, this study aims to develop an AHEI tailored to Malaysian adolescents' specific food and nutrient concerns and assess their dietary quality. The Malaysian Dietary Guidelines 2010 and the MDG for Children and Adolescents 2013 were used to categorize dietary components for each subject, with fat, sugar, and salt intake calculated based on the 2017 Recommended Nutrient Intake for Malaysian adolescents. Each subject's total average score was calculated using:  $(\text{Total Score from 10 Components} / 10) \times 100\%$ . The AHEI scores were categorized as poor diet (<51%), diet requiring improvement (51–80%), and good diet (>80%). The AHEI components were analyzed using a 7-day dietary history from the 2016 MyHeART study. Findings showed that urban adolescents had a mean diet quality score of 52.35%, needing improvement, while rural adolescents had a poor diet quality score of 48.55%. Female adolescents had better diet quality than males (62.79% vs. 27.03%). Analyzing adolescents' AHEI can provide valuable insights for school health nutrition guidelines. Validation and reliability research are essential to enhance the AHEI's use in evaluating dietary patterns and reducing non-communicable disease risk.

Keywords: HEI, Diet quality, Adolescent, Malaysia, Non-communicable diseases



M5

[80]

**KNEE HEIGHT, ULNA LENGTH, AND ARM SPAN WITH BODY HEIGHT AS AN APPLICATION OF NUTRITIONAL STATUS ASSESSMENT IN CHILDREN WITH DISABILITY**

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**ABSTRACT**

In several children with disability, measuring height (H) could be difficult to do in an optimal position. When measuring height in a standing position cannot be done, segmental measurements can be used, one of which are measuring knee height (KH), arm span (AS) and ulna length (UL). This study aimed to investigate the relationship between knee height, ulna length and arm span with actual body height in healthy children so that it can then be applied to children with disability in Indonesia. This research used an observational method with a cross-sectional design. The research subjects were 32 healthy children aged 6-12 years. The inclusion criteria were that the child had good nutritional status and healthy. This research used primary data which includes data on date of birth, age, gender, height, body length, knee height, ulna length and arm span. The tools used include respondents' personal data questionnaires, stadiometers, tape measure and knee-height caliper. Statistical analysis used the Shapiro-Wilk normality test. For the difference test with one-way ANOVA, it is said to be significant if  $p < 0.05$ . After testing the differences between each H estimation formula from KH, AS and UL measurements and the actual H measurement results, it was discovered that these three H estimation formulas were significantly different from the actual H measurement results ( $p < 0.000$ ). Based on the data, the new formulas for height measurement using KH, AS, and UL data was  $23.155 + (2.737 * KH)$ ;  $20.847 + (0.848 * AS)$ ; or  $11.690 + (0.878 * UL)$ , respectively. Further research is needed to find an estimation formula that is more suitable for a larger number of subjects and considers other factors such as race, age, gender and body weight. Preparing measurement guidelines and designing special tools to measure height and/or other anthropometry in children with CP also needs to be carried out

Keywords: children, disability, estimation, height, nutritional assessment

M6

[81]

**UNDERSTANDING THE PERCEPTIONS OF BAKERS IN MEGA MANILA  
TOWARDS ALUMINUM-FREE BAKING POWDER**

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**ABSTRACT**

Baking powder is widely used in baking as a leavening agent for cakes and pastries. However, there is rising health concern due to its aluminum content. Aluminum-free baking powder was developed to address this issue. The main purpose of this study is to assess the level of awareness of the Filipino baking industry about aluminum-free baking powder and to determine the state of readiness of the Filipino market for this type of baking powder. A mixed-methods design was used, incorporating a quantitative-descriptive survey and a pre-post experimental design. A total of 100 Filipino bakers from Mega Manila voluntarily participated in the online survey. The survey results indicate that 73% of Filipino bakers were not aware of aluminum-free baking powder. Price and availability were the most influential factors affecting their awareness. Those who had used aluminum-free baking powder were aware of the aluminum content in common baking powders, while those who had not used aluminum-free baking powder were willing to try the product. In addition, a home-use test was conducted to evaluate the internal and external characteristics of puto and identify the differences in the effects of aluminum-free and aluminum-containing baking powder. Based on the statistical analysis, a significant difference was found in the volume of puto samples, with aluminum-free baking powder resulting in a larger volume ( $p = 0.0409$ ). However, there were no significant differences in external characteristics such as color, crust character, and symmetry, nor in internal characteristics like grain, crumb color, taste, and texture. This suggests that while aluminum-free baking powder affects the volume of puto, it performs comparably to aluminum-containing baking powder in other quality parameters. Results showed that the Philippine market is not yet ready for the widespread adoption of aluminum-free baking powder. The lack of awareness, influenced by factors such as price and availability, plays a significant role in this readiness.

Keywords: Aluminum-free baking powder, Leavening agent, Puto, Bakery industry

M7

[82]

**STRENGTHENING ADOLESCENTS' FOOD SECURITY, NUTRITION, AND MENTAL HEALTH AFTER THE COVID-19 PANDEMIC IN YOGYAKARTA: A PERSPECTIVE OF MULTI-LEVEL STAKEHOLDERS**

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**ABSTRACT**

The COVID-19 pandemic has impacted many aspects of life, including access to food, nutrition, and mental health. Furthermore, the studies on these topics are limited, particularly among adolescents in Indonesia. This study aims to identify the need to formulate applicable solutions to advance food security, better mental health, and nutrition in adolescents from the perspective of multi-level stakeholders. As the continuation study on adolescent nutrition in 2020-2022 in Gunungkidul District, DI Yogyakarta Province, Indonesia, the need assessment was performed in the same area using Focus Group Discussions (FGD) from February until April 2024. A total of 61 informants, consisting of parents, health cadres, teachers, health workers, and government offices in villages, sub-districts, and district levels were included through 8 sessions of FGDs. FGDs were recorded, transcribed, translated, and thematically analyzed. Atlas.ti computer software was employed for data management and coding. Based on adolescents' caregivers' and stakeholders' perceptions, adolescents' basic dietary and physical activity needs were rarely met by the resources available. The school health programs, such as a balanced nutrition campaign, iron and folic acid supplementation, and mental health screening, were hindered by adherence, economic resources, and lack of awareness. The aftermath of COVID-19, which included increased use of digital media and less nutritious food environments, signaled the beginning of a social and economic shift. Shortage of primary resources limited adolescents' diet, lesser physical health, and disrupted mental health. Therefore, investing in school health programs, expanding capacity building, and empowering adolescents and stakeholders are needed.

Keywords: Food security, Nutrition, Mental health, Adolescence, COVID-19, Indonesia

M8

[83]

**MEDIUM CHAIN TRIGLYCERIDES ADMINISTRATION AFTER  
CHOLECYSTECTOMY IS ASSOCIATED WITH FAVORABLE CLINICAL  
RESPONSE: A CASE REPORT**

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**ABSTRACT**

**BACKGROUND** Cholecystectomy is a surgical procedure to remove the gallbladder, mostly due to gallstones. Eighty percent of gallstones are primarily caused by excessive level of cholesterol. Post-cholecystectomy intolerance to fat intake may occur to patients that may pose a clinical problem. Medium chain triglycerides (MCTs) usage in post cholecystectomy are recommended because they absorbed directly from small intestine without any bile requirement for digestion. Here, we present a case in which the use of MCT was accompanied by favorable effect on patient clinical course. **CASE REPORT** A-55-year-old women was diagnosed with cholelithiasis and underwent cholecystectomy, referred for medical nutrition therapy at 2<sup>nd</sup> day post operation. MCTs in a form of VCO (virgin coconut oil) was administered post-operatively 15 cc/day resulted in favorable patient clinical response. Patient showed no fat intolerance and digestive issues, improvement of functional status and maintenance of nutritional status after the procedure. **CONCLUSION** Incorporating MCTs post-cholecystectomy will improve fat tolerance, provide a quick source of energy, and alleviate gastrointestinal discomfort associated with fat malabsorption.

Keywords: cholecystectomy, medium chain triglycerides, VCO

M9

[84]

**MEDICAL NUTRITION THERAPY IN PATIENT WITH ACUTE PULMONARY  
EDEMA, HYPERTENSIVE HEART DISEASE, DIABETES MELLITUS, CHRONIC  
KIDNEY DISEASE, AND MODERATE MALNUTRITION: A CASE REPORT**

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**ABSTRACT**

Disease-related malnutrition is a prevalent comorbidity across healthcare settings, significantly increasing hospital length of stay (LOS), morbidity, and mortality, as well as the need for post-discharge care. We report a case of a 59-year-old woman with moderate malnutrition and multiple comorbidities. She was admitted with chest pain, shortness of breath, and a decreased level of consciousness. A thoracic x-ray revealed cardiomegaly and pulmonary edema. Blood tests indicated anemia, leukocytosis, an elevated neutrophil-lymphocyte ratio (NLR), hyponatremia, elevated procalcitonin, and an HbA1c of 9.1%. She was on regular hemodialysis, with increase of urea and creatinine of 210 mg/dl and 2.85 mg/dl, respectively. Medical nutrition therapy was initiated with 25 kcal/kgBW/day via enteral feeding, gradually increased to 1600 kcal, protein was given 1 g/kgBW/day and increased to 1.2g. She also received supplementation with 20 mg/day of zinc, 100mg/8 hours of thiamine and multivitamins. After 13 days of nutritional therapy, she was discharged with significant clinical improvement. She achieved 95% of the macronutrient targets orally, with notable improvements in inflammation markers (leukocytes decreased from 28.5 to 10.2, procalcitonin from 10.3 ng/dl to 0.6 ng/dl, NLR from 15.5 to 2.7) and kidney function (urea decreased from 210 mg/dl to 75 mg/dl, creatinine from 2.85 mg/dl to 1.42 mg/dl). In conclusion, medical nutritional therapy in polymorbid patient can significantly improve clinical outcomes, accelerate recovery, and reduce the length of hospital stay.

Keywords: Medical Nutrition Therapy, Acute Pulmonary Edema, Hypertensive Heart Disease, Chronic Kidney Disease, Moderate Malnutrition.

N1

[85]

## **VISUAL NOVEL GAME AS A NEW BREAKTHROUGH DENTAL HEALTH EDUCATION MEDIA FOR *STUNTED* CHILDREN IN INDONESIA**

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### **ABSTRACT**

Stunting is a growth and development disorder of children under 5 years of age who appear shorter than their age due to nutritional deficiencies. Education level is one of the factors that can affect children's dental health status. For this reason, it is necessary to provide qualified knowledge for maintaining children's oral health. Elementary school-age children are targeted in this research because they are not yet able to think formally. Therefore, health promotion media are needed so that students understand how to improve their dental health status. In the current era of digitalization, children tend to have a large portion of digital technology users and are predicted to increase significantly in the coming years. Educational games are one type of game that not only provides entertainment but also contains knowledge that is conveyed to its users. One example is visual novel games. Visual novel games are an innovative and interactive work that can be used as a new breakthrough to improve oral health status, especially in stunted children in Indonesia. The method of implementing this activity is data presentation, preparation for implementation, implementation of activities, evaluation using pretest-posttest, and making reports. The progress to date has reached the release stage of making visual novel games and testing on several elementary school students ranging from grades one to six. From the interim results obtained, the level of children's knowledge has a significant difference between before and after giving the game, with an average satisfaction score of 8.51. It can be concluded that visual novel games can improve oral health knowledge, especially for stunted and non-stunted children in Indonesia.

Keywords: Dental Health, Education, Visual Novel Game, *Stunting*

N2

[86]

**DETERMINANTS OF STUNTING IN TODDLERS AT THE BULUKERTO HEALTH CENTER, CENTRAL JAVA, INDONESIA**

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**ABSTRACT**

Background: The prevalence of stunting in the Bulukerto Health Center area, Indonesia is quite high (32%) exceeding the national stunting prevalence (30.8%). Stunting is caused by various determinant factors such as parity, mother's education, maternal age, gestational age at delivery, child's birth weight, history of breastfeeding, and child's age. Objective: This study aims to analyze the determinants of stunting in toddlers at the Bulukerto Public Health Center, Wonogiri, Central Java, Indonesia. Methods: This research is an observational study with a cross sectional approach. The population of this study were children aged 6-59 months. The number of samples in this study were 138 respondents. The research data were obtained from the Nutrition Surveillance Report of the Bulukerto Health Center. Bivariate and multivariable logistic regression analyses were carried out to identify predictors of stunting. Results: The prevalence of stunting in this study was 62.4%. Factors that have a relationship with the prevalence of stunting are gestational age at delivery (RR=1.658, 95% CI: 1.443-1.905, p=0.035), history of breastfeeding (RR=0.643, 95% CI:0.463-0.892, p=0.003), and the child's age (RR=1.484, 95% CI:1.090-2.019, p=0.006). The factor most related to the prevalence of stunting is history of breastfeeding. Conclusion: Gestational age at delivery, history of breastfeeding, and child's age are factors related to stunting among children aged 6-59 months in the Bulukerto Health Center, Indonesia, with non exclusive breastfeeding being the major determinant of stunting. Education for prospective mothers about the importance of exclusive breastfeeding and early detection of stunting is very important in order to prevent the risk of stunting in toddlers.

Keywords: determinant, stunting, premature, breastfeeding, age, toddler

N3

[87]

**EASILY ASSESSMENT OF NUTRITIONAL STATUS CHILDREN USING  
STUNTING METER DIGITAL**

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**ABSTRACT**

Malnutrition in toddlers is a significant health problem in many developing countries, including Indonesia. Determination of nutritional status requires anthropometric measurements, such as height and weight. However, current anthropometric measurements are often inaccurate, difficult to use, require long data entry times, and can only be interpreted by nutritionists. This research aims to develop a New Advanced Digital Stunting Meter to facilitate and improve the accuracy of determining the nutritional status of toddlers. This research and development study includes needs analysis, technology specifications, system design, prototyping, validation tests, user acceptance tests, and feedback. The success of the development is measured based on the level of accuracy that does not differ significantly from the gold standard and user acceptance with a rate of >80% according to the diffusion theory of innovation. As a result, digital stunting meters show higher accuracy than conventional anthropometric measurement tools. This tool was well received by users, with a score of 85% and was considered easy to use by cadres, the general public, nutritionists, doctors, midwives, and other practitioners. User feedback shows that this tool was practical, effective, and efficient in providing nutritional status information for toddlers. This stunting meter was considered to facilitate the measurement process in the field. Implementing this tool in the toddler health program can potentially improve the quality of services and the durability of medical devices. Collaboration between government, industry, and academia is needed to support mass production and integration of these devices into health programs.

Keywords: accurate, toddlers, malnutrition, digital stunting meter



N4

[88]

**SOCIOECONOMIC AND ENVIRONMENTAL RISK FACTORS ASSOCIATED  
WITH MALNUTRITION AMONG CHILDREN AGED YOUNGER THAN 5 YEARS  
IN RURAL MPUMALANGA PROVINCE**

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**ABSTRACT**

Socioeconomic status and environmental risk factors have been linked to malnutrition in children within rural and disadvantaged communities. In South Africa, many children living in rural areas are at risk of malnutrition. Therefore, studying the malnutrition risk factors in these communities is important. This study aimed to determine the prevalence and risk factors associated with malnutrition in rural Mpumalanga children under 5 years old. From August to September 2019, a cross-sectional analytical study was conducted in the Barberton Township of Mpumalanga. Participants were recruited using purposive sampling, and data was collected through an administered semi-structured questionnaire. Binary regression was used to determine the risk factors associated with malnutrition. A total of 162 caregivers/mothers and their children participated in the study. The prevalence of underweight was high among female children (37.5%), and overweight was high among male children (45.7%). The study found that malnutrition was associated with household socioeconomic status ( $p=0.020$ ), drinking stored water ( $p<0.001$ ), poor mother personal hygiene ( $p=0.042$ ), and type of ablution facility ( $p=0.011$ ). These findings highlight the influence of household socioeconomic and environmental risk factors on malnutrition. Therefore, it is important to design and implement public health action programs that address these risk factors and improve the socioeconomic status of the area. These actions should be multi-sectoral and promote community sustainability.

Keywords: malnutrition, underweight, overweight, children, socio-economic, environmental factors, nutritional status, rural areas.

Q1

[89]

## ALZHEIMER'S DISEASE AND NUTRITION

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### **ABSTRACT**

Alzheimer's disease is a progressive neurological disorder that affects memory, thinking, and behavior. It is the most common form of dementia, accounting for 60-80% of total cases of Dementia. It is characterized by memory loss, behavioral change, cognitive decline, language difficulty and disorientation. People with Alzheimer's dementia are vulnerable to malnutrition or nutritional deficiency as they might not get appropriate nutritional supplements. Nourishment plays a significant role in brain health, and while there's no cure for Alzheimer's disease, a well-balanced diet may help support cognitive function and overall well-being. Emphasis should be given to the food such as fruits, vegetables, fish, antioxidant rich diet, vitamin and mineral rich diet along with adequate hydration to the people with Alzheimer's. Reducing the consumption of food rich in refined sugars and processed food may help to manage inflammation and improve overall health. Appropriate consultation with a healthcare provider or a registered dietitian for personalized nutrition plans, especially for individuals with dietary restrictions or specific health needs is always advised. Incorporating these nutritional strategies may help to support brain health and enhance quality of life for individuals with Alzheimer's disease and their caregivers.

Key words: Alzheimer's Disease, Malnutrition, Cognitive Function, Nutritional Strategies, Brain Health.

Q2

[90]

**AN AUDIT ON PARENTERAL NUTRITION COMPLIANCE WITH CLINICAL  
GUIDELINES IN HOSPITALIZED PATIENTS AT PARK HOSPITAL'S ONCOLOGY  
DEPARTMENT, INDIA**

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**ABSTRACT**

Parenteral nutrition (PN) serves as a critical intervention for patients unable to meet nutritional needs via the gastrointestinal route. This audit evaluates the compliance of PN practices with established clinical guidelines within a tertiary hospital setting, focusing on the adherence to nutritional assessment protocols, formulation standards, and monitoring parameters within the Oncology Department at Park Hospital, India. Data were collected from electronic medical records of patients receiving PN over a six-month period, capturing baseline nutritional status, PN initiation criteria, individualized nutrient formulations, and monitoring of metabolic parameters. Analysis revealed areas of strong compliance in initial nutritional assessments and nutrient formulation standards, while identifying challenges in the consistent monitoring of electrolyte balance and liver function. The audit highlights opportunities for improvement, particularly in standardized monitoring practices, and supports the need for enhanced staff training and protocol adjustments. Improved adherence to PN guidelines can minimize complications, optimize patient outcomes, and ensure efficient resource utilization. Future audits will aim to assess the impact of targeted interventions on compliance rates. This study contributes to the field by providing evidence-based insights into PN practice and identifying actionable areas for clinical improvement.

Keywords: Parenteral nutrition, clinical audit, compliance, nutritional assessment, Oncology Department

Q3

[91]

**DRUG DISCOVERY OF ANTICANCER CANDIDATES FROM NIGELLA SATIVA  
(BLACK CUMIN): AN INTEGRATIVE IN SILICO, IN VITRO, AND  
PHYTOCHEMICAL APPROACH TARGETING MOLECULAR PATHWAYS IN ER-  
POSITIVE MCF-7 BREAST CANCER CELLS**

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**ABSTRACT**

Breast cancer, particularly the estrogen receptor-positive (ER+) subtype, remains a leading cause of mortality among women. Conventional chemotherapy often leads to significant side effects and resistance, highlighting the need for alternative or complementary therapies. Previous research has shown that *Nigella sativa* (black cumin) contains compounds with antioxidant and cytotoxic activities against cancer cells. This study investigates the potential of *Nigella sativa* ethanol extract as an alternative or complement to conventional therapies for ER+ breast cancer using a comprehensive approach that integrates in silico, in vitro, and phytochemical analyses. Molecular docking, performed with AutoDock Tools, involved preparing ligands and proteins, building a grid parameter file, and docking the proteins-ligands. Essential bioactive substances identified in the extract include quercetin, apigenin, kaempferol, and thymoquinone. Quercetin showed the highest binding affinity to KRAS with a score of -8.97 kcal.mol<sup>-1</sup>, suggesting strong potential to disrupt KRAS-mediated pathways, followed by kaempferol at -8.09 kcal.mol<sup>-1</sup>, apigenin at -7.76 kcal.mol<sup>-1</sup>, and thymoquinone at -7.0 kcal.mol<sup>-1</sup>. The extract was obtained through maceration with 96% ethanol, and qualitative phytochemical screening confirmed the presence of alkaloids, tannins, saponins, triterpenoids, and steroids. The MTT assay demonstrated an IC<sub>50</sub> value of 62.859 µg.mL<sup>-1</sup>, indicating a 62% reduction in cell viability and significant inhibition of MCF-7 cell proliferation (p < 0.05). These findings underscore *Nigella sativa* ethanol extract as a promising candidate for ER+ breast cancer treatment, potentially effectively targeting crucial cancer-related pathways and offering a valuable alternative or complement to conventional therapies. Further research is needed to elucidate its therapeutic potential fully.

Keywords: breast cancer, black cumin, anticancer, flavonoid, molecular simulation

Q4

[92]

## IDENTIFICATION OF THE DETERMINANTS OF ADULTS' FOOD PURCHASING HABITS AND DIET QUALITY

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### ABSTRACT

Concerns about diet quality are increasing due to its link with diet-related diseases. Despite the importance of food purchasing habits in diet quality, limited research examined how these habits impact adults' diets. This study aimed to fill this gap by identifying factors influencing food purchasing decisions and their association with the diet quality of adults. Adults who purchase food for Households (HHS) in Kurunegala District were conveniently selected. Socio-demographic data and food purchasing habits were collected using an interviewer-administered questionnaire, while dietary data were recorded using a 3-day diet diary. The Diet Quality Index-International (DQI-I) was then used to assess diet quality. The DQI-I measures dietary diversity, adequacy, moderation, and overall diet balance. Food-Base 2000 software was used to assess dietary data. Descriptive statistics were used to analyze socio-demographic factors and food purchasing patterns, with DQI-I scores nearing 100 are regarded as indicators of high-quality diets. SPSS software was used to analyze the statistical data. A study sample consisted of 113 adults and their ages ranged from 18 to 65 with a mean age of 50.3±8.9 years. Results showed that nutrition information, taste, price, expiry date, the ingredients of food, easiness of food preparation, and location of food outlets were the determinants of the purchasing habits of the sample. The mean DQI-I value of the sample was 63.27±10.03, and 88% of the adults had DQI-I values ≥50, indicating the majority had quality diets. The findings showed an association between socio-demographic parameters of ethnicity, occupation, level of education, and HH's monthly income and diet quality ( $p<0.05$ ). Factors influencing food purchasing habits, including price, brand, nutrition information, overall food quality, preparation ease, and food outlet location, were significantly linked to diet quality ( $p<0.05$ ). Awareness of these factors is crucial for maintaining a healthy diet and preventing diet-related diseases.

Keywords: Determinants, Diet quality, DQI-I, Food purchasing habits, Households

Q5

[93]

**ENHANCING THE FIBER CONTENT OF DUMPLING MEAT FILLING USING  
SABA BANANA PEEL AS MEAT EXTENDER**

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**ABSTRACT**

This research study investigates the potential of utilizing Saba banana peel as a meat extender to enhance the fiber content of dumpling meat filling. The study aims to address the nutritional aspect of dumplings by incorporating a natural and sustainable ingredient to increase dietary fiber while maintaining sensory acceptability. In the food sector, the peel, which makes up around one-third of the fruit's weight, is frequently thrown away as waste (Putra et al., 2022). Related literature put forth the dedication of the researchers to help minimize and utilize banana peels from waste to something that can be used as meat extenders. 35 participants participated in the sensory evaluation, where dumplings with varying proportions of Saba banana peel (SBP) namely Control Recipe (100% meat), Modified Recipe A (50% meat, 50% SBP), and Modified B (100% SBP) were assessed for texture, flavor, aroma, and overall acceptability. Using standard laboratory methods through the F.A.S.T laboratory, results indicated that Modified Recipe B had the highest dietary fiber content (3.38g/100g). On the other hand, Modified Recipe A (1.68g/100g) had the highest acceptability rating in the sensory evaluation and the dietary fiber test, which is ideal as a meat extender in dumplings. Since banana peels are a good source of pectin, minerals, carbohydrates, and dietary fibers, as demonstrated by the Modified Recipe A. This research suggests that Saba banana peel can be effectively used as a meat extender to enhance the fiber content of dumpling meat fillings, contributing to a healthier food option without sacrificing taste and texture.

Keywords: Saba Banana Peel; Meat Extender; Dumpling

# POSTER PRESENTATIONS

P1

[95]

**THE NUTRITION KNOWLEDGE, EATING HABITS, AND FOOD ATTITUDES  
OF THE UNDERGRADUATE NON-HEALTH SCIENCE STUDENTS  
ON HYBRID LEARNING MODALITY**

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**ABSTRACT:**

Lack of nutrition knowledge is linked to poor dietary choices and unhealthy eating practices. The shift to online and hybrid learning due to COVID-19 has influenced students' dietary practices and eating habits. Non-health science students, with limited exposure to nutrition education may be more prone to poor eating behaviors. The study aimed to assess the nutrition knowledge, eating habits, and food attitudes of non-health science undergraduate students during the hybrid learning setup. The study surveyed 172 respondents, achieving a 60% participation rate. Data on demographics, body mass index and adapted questionnaires assessing nutrition knowledge, food attitudes, and eating habits were collected. Respondents had a mean age of 20.97±1.45 years old, with 32% male and 68% female. Over half (58.1%) had a normal BMI, 16.3% were underweight, and 25.6% were above normal weight. Regarding nutrition knowledge, 54.1% scored poorly, 34.9% scored fairly, and 11.1% scored well. Eating habits revealed that 42.4% consumed 3 meals daily, 36.6% ate 1-2 times daily; and 20.9% had 4 or more meals daily. Additionally, 56.4% ate regularly but not every mealtime, and 62% reported snacking between meals a few times weekly. Respondents' food attitudes changed during hybrid learning modality, with 55.2% eating more than planned, 45.9% continuing to eat even when no longer hungry, and 49.4% eating throughout the day. The study indicates that non-health science students have limited nutrition knowledge, leading to suboptimal eating habits and altered food attitudes, increasing the risk for poor dietary choices and potential long-term health issues. The study recommends integrating basic nutrition education into non-health science curricula, offering healthier snacks on campus, and implementing programs that encourage regular meals, and practice mindful eating. Further studies may explore dietary habits and interventions to mitigate the negative changes in attitudes and behaviors.

Keywords: Nutrition Knowledge, Food Attitudes, Eating Habits, Hybrid Learning



P2

[96]

**SENSORY ACCEPTABILITY AND NUTRITIONAL CHARACTERISTICS OF  
CHICKEN NUGGETS SUPPLEMENTED WITH COWPEA (*Vigna unguiculata*  
L.walp.)**

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**ABSTRACT**

Poor dietary habits among college students, such as high consumption of processed meats and low intake of vegetables, have been a growing concern. Recently, meat hybrids, which substitute a portion of meat with plant protein products, have emerged as a potential solution. This study aims to develop a meat hybrid utilizing chicken and cowpea (*Vigna unguiculata* L. Walp.) in formulating chicken nuggets and evaluating its sensory acceptability and nutritional characteristics. Chicken nuggets were developed with varying proportions: a control (100% chicken) and three treatments (75% chicken:25% cowpea, 62.5% chicken:37.5% cowpea, and 50% chicken:50% cowpea). Sensory evaluation was conducted with 104 participants using a 9-point hedonic scale. Results indicated high acceptability across all treatments, with an overall acceptability mean score of 7. Statistical analysis revealed significant differences ( $p < 0.02$ ) in sensory evaluation results between the control, treatment 1, and treatment 2 compared to treatment 3. Among all the treatments, treatment 2 received the highest scores in the sensory evaluation. Proximate analysis of the control and treatment 2 showed that treatment 2 had lower protein content ( $17.56 \pm 0.44$ ) than the control ( $21.18 \pm 0.14$ ). However, treatment exhibited a significant increase in dietary fiber ( $0.74 \pm 0.05$  vs  $0.37 \pm 0.02$ ) and iron ( $56.99 \pm 0.66$  vs  $54.19 \pm 1.13$ ). There was no significant difference in calcium levels between the control ( $779.19 \pm 34.31$ ) and treatment 2 ( $729.58 \pm 5.25$ ). These findings suggest that the inclusion of cowpea in chicken nuggets is highly acceptable to consumers and significantly enhances the nutritional profile of the product.

Keywords: cowpea, meat hybrid, chicken nuggets, proximate, sensory

P3

[97]

**ASSESSMENT OF KNOWLEDGE AND ATTITUDE OF COLLEGE OF HUMAN  
ECOLOGY (CHE) UNDERGRADUATE STUDENTS OF THE UNIVERSITY OF THE  
PHILIPPINES – LOS BANOS TOWARDS VEGETARIANISM**

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**ABSTRACT**

Purposive sampling was utilized to select 286 participants from 1,104 undergraduate College of Human Ecology students enrolled for the 2nd semester of A.Y. 2023-2024, aiming for a  $\pm 5\%$  margin of error, 95% confidence level, and 50% response distribution. Most participants, aged 21 to 23, are predominantly Roman Catholic, female (73.4%), and enrolled in BS Nutrition (51.7%). Many live on-campus with roommates and have a weekly allowance ranging from Php 501 to Php 1,500. High levels of knowledge about vegetarian diets are observed in 66.08% of students, with a weak positive correlation to more favorable attitudes toward vegetarianism. Students with good knowledge are generally non-smokers, seldom drink alcohol, and exercise regularly, often with no medical history, indicating a link between a healthier lifestyle and better knowledge. Attitudes toward vegetarian diets are mostly neutral, with health benefits being the primary motivation for adoption, followed by environmental concerns, economic factors, and animal welfare. Major barriers include perceptions of higher costs, accessibility issues, and inconvenience. Spearman correlation analysis reveals significant patterns: age ( $\rho = 0.123$ ,  $p = 0.037$ ) and enrollment in BS Nutrition ( $\rho = 0.161$ ,  $p = 0.006$ ) are positively correlated with knowledge about vegetarian diets. Attitudes are positively correlated with BS Nutrition ( $\rho = 0.171$ ,  $p = 0.004$ ) and negatively correlated with medical history ( $\rho = -0.145$ ,  $p = 0.014$ ). Other factors show minimal impact on knowledge and attitudes.

Keywords: Vegetarian, Vegetarianism, Diet. Plant-based diet

P4

[98]

**FORMULATION OF SEAWEED (*Gracilaria edulis*) AND RICE FLOUR  
INCORPORATED HEALTHY BISCUIT SUPPLEMENT**

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**ABSTRACT**

Biscuits are one of most convenient category of food of targeted consumers due to main characteristics such as great palatability, high nutrients, quick-release energy, stability as a dried-form and availability in a variety of flavors and colors. This study investigated the proper ratio of the seaweed powder and rice flour in the production of dietetic biscuit rich dietary fiber and nutrition's. Ceylon moss seaweed (*Gracilaria edulis*) was collected from wild stocks in Kalpitiya, Sri Lanka. The formulation of biscuit mix was designed in Completely Randomized Design in triplicates incorporating five different ratios (w/w) of seaweed (SW) with rice flour (RF); 0% SW + 15% RF, 15% SW + 15% RF, 20% SW + 15% RF, 25% SW + 15% RF, and 30% SW+ 15 RF% while keeping other ingredients proportions constant. Sensory quality, proximate composition, energy value, total dietary fiber, minerals, and heavy metal were evaluated. Samples were stored at room temperature for analyzed the microbiological quality. The sensory results revealed that 20% SW + 15% RF treatment had the highest scores for all sensory attributes. It was found high crude protein 63.46 % and fat 3.69 Ash 23.32 %. It was found significant high amount of Na 12703.98 mg kg<sup>-1</sup>, 4810.94 mg kg<sup>-1</sup> K. The heavy metal results were within the acceptable limit. The yeast and mold count weren't detected and total plate count was 530 CFUg<sup>-1</sup>. It can be concluded that seaweed biscuit supplement incorporated 20% seaweed with 15% rice flour (w/w) meet requirement of high-quality nutritional biscuits.

keywords: sea weed, rice flour, biscuit supplement, nutritional, formulation

P5

[99]

## EFFECT OF TEMPERATURE ON DNA EXTRACTION PURITY FOR CORNED PORK

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### ABSTRACT

Verification of halal status is essential for Muslims due to religious dietary laws that prohibit the consumption of non-halal foods, which necessitates thorough analysis to ensure compliance and prevent unintentional violations. In processed pork products, there is a significant risk of contamination or cross-contamination with non-halal substances, making it essential to extract DNA with high quantity and purity to assess the product's halal integrity accurately. This study investigates the effect of incubation temperature on DNA extraction from corned pork, focusing on how temperature influences DNA yield and purity. The phenol-chloroform method was employed to extract DNA at various incubation temperatures (50, 55, 60, 65, 70, and 75°C). The extracted DNA was analyzed quantitatively using a NanoDrop spectrophotometer to determine its concentration and purity, followed by amplification via real-time PCR to assess DNA quality. Results showed that an incubation temperature of 70°C produced the highest DNA concentration (179.9 ng/μL) with optimal purity (A260/A280 ratio of 1.80–2.00) and also yielded the best quantification of cycle (Cq) values of 27.09 in real-time PCR analysis. This study provides a detailed examination of the structural and binding interactions at the molecular level, revealing that 70°C strikes an ideal balance between efficient cell lysis, enzyme activity, and contaminant removal during DNA extraction. Temperatures below or above 70°C led to suboptimal conditions, resulting in reduced DNA yield and purity. These findings suggest that precise temperature control is critical for improving the accuracy of DNA-based methods used to verify meat authenticity, which is particularly relevant in halal food certification.

Keywords: DNA extraction, incubation temperature, phenol-chloroform method, pork corned pork

P6

[100]

## PLANETARY HEALTH DIET INDEX AMONG WOMEN OF REPRODUCTIVE AGE IN INDONESIA: COMPARISON OF TWO ETHNIC GROUPS

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### ABSTRACT

The EAT-Lancet Commission introduced the planetary health diet in 2019 to promote health and environmental sustainability. We identified the Planetary Health Diet Index (PHDI) among reproductive-age women in Indonesia and compared the index profiles between Minang in West Sumatra and Sundanese in West Java. The comparison explored differences in their dietary patterns, with Minang cuisine famous for *rendang* (a spicy meat dish) and Sundanese cuisine known for *lalab* (fresh vegetables). A cross-sectional study was conducted involving 360 women from these ethnic groups. The PHDI scores were calculated from food frequency questionnaires assessing the consumption of various food components. Statistical analyses, including t-test and Mann-Whitney U test, compared the scores between the two groups. The overall mean PHDI score was  $71.3 \pm 9.88$  out of 150. Minang women had a non-significantly slightly higher mean score ( $71.8 \pm 9.20$ ) compared to Sundanese women ( $70.9 \pm 10.3$ ;  $p = 0.400$ ). Analysis of individual components revealed that compared to Minang women, Sundanese women had significantly higher scores for vegetable intake (10 vs. 8.78,  $p < 0.001$ ), legumes (6.44 vs. 4.49,  $p < 0.001$ ), fish and seafood (6.01 vs. 5.69,  $p = 0.045$ ), and chicken and substitutes (7.45 vs. 5.98,  $p = 0.020$ ). Conversely, Minang women scored higher than Sundanese women on dark green vegetables (2.09 vs. 1.20,  $p < 0.001$ ), red vegetables (3.68 vs. 2.98,  $p < 0.001$ ), red meat (6.92 vs. 5.76,  $p = 0.030$ ), and added sugar (9.45 vs. 4.29,  $p < 0.001$ ). This study highlights differences in the planetary health diet index in specific dietary components between Minang and Sundanese women. Dietary intervention should consider ethnic-specific dietary behaviors in promoting the planetary health diet.

Keywords: Planetary Health Diet Index, Minang, Sundanese, dietary patterns, ethnic groups, Indonesia.

P7

[101]

## THE ANTIOXIDANT AND NUTRITIONAL POTENTIAL OF MATCHA TEAS

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### ABSTRACT

Matcha, or powdered green tea, has been gaining in popularity and is no longer consumed only in the form of infusions, finding new uses in gastronomy and the food industry. The range of teas available on the food market has expanded considerably; hence, the aim of this study was to determine for the first time the antioxidant capacity and content of antioxidant compounds in various Matcha teas available on the Polish market. Green tea powders were used in the analyses performed using spectrophotometric methods (Trolox equivalent antioxidant capacity, Ferric Ion Reducing Antioxidant Power, Total Polyphenols Content, Total Flavonoids Content, vitamin C Content) and HPLC methods (polyphenolic acids, flavonoids and caffeine). Antioxidant capacity ranged from 7.26 to 9.54 mM Trolox equivalent /L, while reducing power ranged from 1845.45 to 2266.12 Fe(II)/L. Total phenolic content amounted to 820.73–1017.83 mg gallic acid equivalent /L, and total flavonoid content was 864.71–1034.40 mg rutin equivalent /L. A high vitamin C content was found, ranging from 38.92 to 70.15 mg/100 ml. Additionally, a high content of caffeine ranged between 823.23 – 7313.22 mg/L was noted. Moreover, a high content of polyphenolic compounds, including epicatechin gallate, myricetin, gallic acid and 4 – hydroxybenzoic acid was found. Matcha tea infusions have been shown to be a valuable source of antioxidants which can be used in daily diet.

Keywords: Matcha, tea, antioxidants, polyphenols, vitamin C

P8

[102]

**STUDY OF NUTRITIONAL CHARACTERISTICS OF STUDENTS OF SPECIAL  
MEDICAL GROUPS IN EDUCATIONAL INSTITUTIONS OF KAZAKHSTAN**

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**ABSTRACT**

According to the 2021 National Survey, only 34% of young people engage in regular physical activity, while 76.6% exhibit low adherence to a healthy lifestyle. The lack of physical activity, poor nutrition, and other negative factors, coupled with intense academic workloads, contribute to an increase in youth illnesses and the risk of developing hypokinesia, particularly among students assigned to special medical groups (SMG) due to health conditions. This necessitates the improvement of physical education programs for SMGs in educational institutions. There is a tendency toward a formal approach to physical education classes for SMG students, which negatively impacts their health. To address this issue, the study aimed to examine the nutritional patterns of SMG students to inform the development of comprehensive medical and organizational interventions. These interventions would incorporate dietary adjustments and optimized physical activity regimens tailored to individual needs for recovery and energy expenditure. The study included 162 participants aged 17-19 years (mean age:  $17.8 \pm 0.41$  years), classified as SMG based on preventive health examinations. Dietary data were collected using the WHO-recommended 24-hour recall method. Nutrient intake was assessed against the recommended dietary allowances for Kazakhstan and the FAO/WHO micronutrient standards. The study of the actual nutrition of the students of the SMG showed that the diet of adolescents consisted of products containing mainly proteins and fats of animal origin and easily digestible carbohydrates, where the latter two were characterized by an excess of saturated fatty acids, a lack of polyunsaturated fatty acids, a high level of consumption of simple carbohydrates with refined foods such as sugar, refined cereals, fine flour, and polymicronutrient nutritional deficiencies in vitamins (deficiency of vitamin D, A, B1, E, C, biotin, folic and pantothenic acids) and minerals (deficiency of calcium, magnesium, phosphorus, copper, zinc, selenium, iodine). Correction of the identified nutritional disorders not only contributes to the achievement of short-term pedagogical goals, but also allows laying the foundation for long-term health improvement of students.

Keywords: late adolescence, special medical group, nutritional status

P9

[103]

## SELECTED NUTRITIONAL VALUES OF JAPANESE MATCHA TEA

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### **ABSTRACT**

Matcha is a Japanese powdered tea, a variety of green tea (*Camellia sinensis* L.), one of the most popular drinks in the world. Due to its unique cultivation method, its chemical composition can differ from traditionally grown tea. There are limited reports on the nutritional value of tea powder, an aspect that is becoming valuable knowledge considering the increasing use of this type of tea other than in traditional tea infusions. The purpose of this study was to determine the basic nutritional composition of dry matcha green tea powder. Dietary fiber content was determined using the enzyme-gravimetric method. Crude protein was measured using the Kjeldahl method. The total fiber content of matcha was 56.1 g/100 g, including 52.8 g/100 g of insoluble dietary fiber (94.1% of total fiber) and 3.3 g/100 g of soluble fiber (5.9% of total fiber). The total protein content was 17.3g/100g. Matcha has a notably high content of total dietary fiber, with a predominance of the insoluble fraction. Matcha also provides a significant source of plant protein. The results of the study suggest that matcha tea may be a valuable, in terms of nutritional value, component of the diet.

Keywords: matcha tea, green tea, nutritional value, fibre, protein



P10

[104]

**NUTRITIONAL STATUS AS A RISK FACTOR OF NON-COMMUNICABLE  
DISEASES AMONG ADULTS IN THE CITY OF JAKARTA, INDONESIA**

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**ABSTRACT**

Noncommunicable diseases (NCDs) nowadays become a major health problem in adult developing countries, including Indonesia. Most NCD diseases are highly costly, becoming a burden to the family and government. This study aims to find the risk factors for NCD in adults living in the city so that prevention can be made early. We took data on all 5 city areas of Jakarta, each area is randomly represented by 3 sub-districts and then 7 households were randomly chosen from each community unit. A total of 222 subjects were collected, their mean age was 38.21 $\pm$  38 years with the Median of 31.5 – 44 yo. At this age, 8.1% of the subjects already have hypertension, 2.7% have Diabetes, and cardiovascular disease 2.3%. Age above 40 yo is significantly the factor for hypertension (OR 0.383) and diabetes (OR 0.109). Anthropometric measurements found that 53.2% of subjects were obese and had a visceral fat rating of 9.3  $\pm$  5.7. Subjects with high visceral fat were significantly related to hypertension (p=0.001; OR 0.146). Although not significantly different, subjects with low-middle education levels were prone to high body fat percentage. Results of this study showed that in the productive age, hypertension and diabetes have already threatened this population. The nutritional status of this population needs to be considered, especially in obesity with a high visceral fat rating. Health promotion across the city may be needed, especially for those with low-middle education.

Keywords: Noncommunicable disease, nutritional status, adult

P11

[105]

## NUTRITIONAL STATUS AND BODY COMPOSITION PROFILE OF NEUROVASCULAR PATIENTS

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### **ABSTRACT**

Neurovascular disease is currently a health problem in many countries, mainly stroke, including Indonesia. Hemorrhagic or non-hemorrhagic stroke is usually secondary condition from hypertension, diabetes, or dyslipidemia. Patient's treatment is highly costly and usually requires a long rehabilitation phase. The patient's age is getting younger, lifestyle is thought to be the cause of the incident. This study aims to observe the lifestyle of neurovascular patients in terms of nutritional status and body composition. Subjects were gathered consecutively from 2 hospitals, Cipto Mangunkusumo Hospital, Jakarta, and Universitas Indonesia Hospital, Depok. A total of 129 subjects were measured and interviewed, their mean age was 59.9 12 yo. Men's and women's frequencies were almost the same, 49.6% and 50.4% respectively. Only 0.07% were retired and 0.02% were mothers at home, the rest were workers, meaning subjects in their productive age. More than 25% of the subjects have had a high level of education and more than half have had a middle level of education. The most frequent primary condition is hypertension, especially when combined with diabetes. Only 3.9% were consuming alcohol, but 41.1% were smokers. Most (36.2%) of the subjects were obese and 22.8% were overweight, meaning that more than half of the subject's BMI was above normal. But from 4 frequencies BIA we found that most of the subject's ASMI was low (78.3%) and visceral fat was high (55.8%), fat-free mass index mostly (70.5%) was normal. Workers were prone to hypertension and diabetes, a condition that give a higher risk for neurovascular disease. A sedentary lifestyle among subjects seems common, indicated by body weight above normal and high visceral fat. Promoting a healthy lifestyle in the community is needed, to decrease the incidence of neurovascular disease.

Keywords: Neurovascular disease, nutritional status, body composition

P12

[106]

**THE EVALUATION OF *TARGETES MINUTA* AS ALTERNATIVE ANTIMICROBIAL AGENT AGAINST ANTIBIOTIC RESISTANT FOODBORNE PATHOGEN ASSOCIATED WITH DIARRHOEA IN CHILDREN UNDER THE AGE OF FIVE.**

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**ABSTRACT**

Diarrhea infections is a global health problem and regarded amongst the most prevalent cause of mortality in children under five-years, resulting in over 500 000 deaths annually worldwide. These infections spread through contaminated-food, lack of access to safe-drinking-water, poor-hygiene by mothers handling pediatric, bottle instead of breastfeeding, and low-socio-economic status. *Clostridium difficile* is a foodborne pathogen linked to numerous outbreaks in children, causing diarrhea. Antibiotics have traditionally been used to treat such bacterial infections. However, overreliance and misuse of antibiotics led to bacteria developing resistance. Consequently, researchers begun exploring alternative treatments, such as essential oils (EOs), to mitigate the impact of antibiotic-resistant bacteria. The purpose of the study was to investigate the use of *Tagetes minuta* EOs as an alternative antimicrobial against *C.difficile*. *Tagetes minuta* EOs was characterized using, gas-chromatography-mass-spectrometry (GC-MS). Antimicrobial activities of *T. minuta* against *C. difficile* was done using Bioassay and Minimal Inhibitory Concentration (MIC) methods. To analyse structural damages on the *C. difficile* cells after treatment, Scanning Electron Microscopy (SEM) was used. GC.MS results indicated that  $\alpha$ -Thujene (71.59%) and 1,8-cineole 3.30c%), were identified as major compounds. Furthermore, these components are known to have antibacterial activities. Bioassay results indicated an inhibition zone of 29 mm, while MIC results of *T. minuta* against *C.difficile* was 12.5 ( $\mu\text{g/ml}$ ), indicating high inhibition zone. *Tagetes minuta*, was effectives against *C. difficile*, This indicates that *T. minuta* can be used as potential alternative antibacterial agent against *C. difficile* responsible for diarrhoea in children. Furthermore, *T. minuta* is considered safe for humans and animals and are biodegradable compared to the antibiotics.

Keywords: *Tagetes minuta*; antimicrobial; *Clostridium difficile*; diarrhoea

P13

[107]

**IN VIVO ANTIFUNGAL CONTROL OF CITRUS BLACK SPOT (CBS) USING  
THYME OIL AS AN ALTERNATIVE TO SYNTHETIC FUNGICIDES**

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**ABSTRACT**

The spread of Citrus black spot (CBS) is a major concern in citrus industry as it threatens fruit marketability and citrus tree health. Additionally, there are public concerns about the safety and side effects of synthetic fungicides used to control CBS. Synthetic fungicides are reported to be carcinogenic to humans and toxic to the environment. microorganisms often develop resistance to synthetic fungicides. This has prompted research into the identification of new ways with broad activity in treatment of microbial disease in plants such as the use of essential oils (EOs). Previous study by Magunga (2023) has proven the effectiveness thyme oil *in vitro* in the treatment of CBS using the agar diffusion bioassay, minimum inhibitory concentration (MIC) and scanning electron microscopy (SEM), furthermore the study indicated that the life cycle of CBS revolves around the citrus leaves and the fruits, however no study has been done *in vivo* to treat CBS using Thyme oil. The study aimed to investigate the use of thyme oil *in vivo* as an alternative antifungal treatment for CBS on lemon leaves and fruits. After thyme oil characterization using GC-MS and GC × GC TOFMS, its effectiveness together with that of its hydrosol, was tested *in vivo* on healthy lemon leaves and fruits infected with *Phyllosticta citricarpa* (CBS causative agent) as these are parts of the life cycle of the CBS infection. The results showed that GC × GC–TOFMS had a great advantage over GC-MS in analysing the thyme oil compound and provided comprehensive data analysis. Thyme oil demonstrated the highest severity of reduction because it almost completely inhibited fungal growth on the leaf and on the fruits surface. This indicates that Thyme oil can be used as potential alternative antifungal agents against CBS.

Keywords: citrus black spot, *Phyllosticta citricarpa*, thyme oil, essential oils



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