

Joint Event on

International Conference on

# Nutrition and Functional Foods

&

International Conference on

# Food Microbiology and Beneficial Microbes

March 25-26, 2024

London, UK

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# **Conference Programme**

# Conference Programme

**March 25, 2024 - London, UK**

**Meeting Hall: Richmond Suite**

8.30 - 9.15

**Registrations**

9.15 - 9.30

**Introduction**

## **Keynote Presentations**

9.30 - 10.10

**Suresh Gulati, Sydney University, Australia**

Title : Milk and Dairy Foods Naturally Enriched with Nutritionally Important Omega 3 Fatty Acids - Eicosapentaenoic (EPA) and Docosahexaenoic (DHA)

10.10 - 10.50

**Swati Vyas, IIS (Deemed to be University), India**

Title : Estimation of Poly Herbal Mix with Nutraceutical Components and its Utilization in Herbal Candy Preparation

## **Group Photo (10.50 - 11.10)**

**Networking and Refreshments @ York Lobby (11.10 - 11.30)**

11.30 - 12.10

**Henk-Maarten Laane, ReXil Agro BV, Netherlands**

Title: SILICON: A Neglected Mineral for Human Health

12.10 - 12.50

**Dipak P Ramji, Cardiff University, UK**

Title: Nutraceuticals in the Prevention and Treatment of Atherosclerotic Cardiovascular Disease

## **Oral Presentations**

Session Chair:

**Dipak P Ramji, Cardiff University, UK**

Session Chair:

**Swati Vyas, IIS Deemed To Be A University, India**

Session Chair:

**James G Lenhart, University of Washington, USA**

**Sessions:** Nutritional and Multivitamin Supplements | Nutrition and Dietetics | Natural Medicine | Herbal Medicine | Food Safety, Quality and Policy | Food Science and Technology | Food Safety and Control | Food Microbiology

12.50 - 13.20

James G Lenhart, University of Washington , USA

Title: The Efficacy of a Compounded Micronutrient Supplement on the Incidence, Duration, and Severity of the Common Cold: A Pilot Randomized, Double-Blinded, Placebo-Controlled Trial

### Lunch Break @ Market Garden Restaurant (13:20 - 14:30)

14.30 - 15.00

Kaj Winther, University of Copenhagen, Denmark

Title: The Impact of Japanese White Turmeric on Pain and the Consumption of Rescue Medication in Patients Suffering from Osteoarthritis

15.00 - 15.30

Huanqi Yang, Macau University of Science and Technology, China

Title: Yam (*Dioscorea* spp.) and its Bioactive Compounds: The Beneficial Effects on Gut Microbiota and Gut Health

15.30 - 16.00

Ogunlade Ibiyinka, Ekiti State University, Nigeria

Title: Gas Chromatography-Mass Spectrometric (GC-MS) Analysis of Bioactive Compounds of Some Selected Edible Oils in Nigeria and potential Health Benefits

### Networking and Refreshments @ York Lobby (16.00 - 16.30)

16.30 - 17.00

Nedyalka Naneva Valcheva, Trakia University, Town Stara Zagora, Bulgaria

Title: Physical, chemical, and Microbiological Characteristics of Mineral, Mountain, and Spring Waters from Bulgaria, and Biological Properties of Identified Microorganisms

17.00 - 17.30

Andrew Knight, Griffith University, Australia

Title: Vegan Pet Food: A Diet Change Revolution Begins

### Poster Presentations

POSTER 01

Muhammad Al-u'datt, Kuwait University, Kuwait

Title: Effect of Ultrasound and Microwave Irradiation on De-crystallization and Nutraceutical Properties of different Northern Jordanian Honey

POSTER 02

Fawaz Almansour, Kuwait University, Kuwait

Title: Adolescent Self Reported Weight and its Association with Media Impact on Decision to Lose Weight and Body Thinness Perception

POSTER 03

Jinghui Wang, Jilin Academy of Agricultural Sciences (North-east Agricultural Research Center of China), China

Title : A Comparative Study on the Nutritional Composition, Protein Structure and Effects on Gut Microbiota of 5 Fermented Soybean Products (FSPs)

**Day 1 Concludes followed by Award Ceremony and Vote of Thanks**

## Day 2 - March 26 - 2024, London, UK

Meeting Hall: Richmond Suite

### Video Presentations

10:00 - 10:25

Tabassum Ara Khanum, University of Karachi, Pakistan

Title: Piperidine Compound from Black Pepper (*Piper Nigrum*) for Protection of our Vegetables from Plant Parasitic Nematodes

10:25 - 10:50

Arfeen Siddiqui, University of Karachi, Pakistan

Title: Bio-Preservation of Meat by Bacteriocin

10:50 - 11 :15

Trefa Mohamad, College of Science Salahaddin University, Iraq

Title: Down-regulation of abal, abaR, Bap and OmpA genes in *Acinetobacter Baumannii* by Ethanol Extract of *Glycyrrhiza Glabra* after Toxicity Assessment

11:15 - 11:40

Berra Ceylan, Mugla Sitki Kocman University, Turkey

Title : Production of Probiotic Kefir from Different Vegetables Milk

11:40 - 12:05

Tahra ElObeid, Qatar University, Qatar

Title : Chicken Carcasses in Retail: A Source of Multidrug-Resistant *Salmonella*

**Day 2 Concludes**

# Virtual Programme

**Day 2 - March 26, 2024 Greenwich Mean Time (GMT) - Starts at 10:00 AM**

## Oral presentations

10:00 - 10:25

Jingjing Lu, Heilongjiang Bayi Agricultural University, China

Title: Mechanism of Resveratrol-Induced Sirt1 Deacetylation in Liver Injury Induced by Hexavalent Chromium Exposure

10:25 - 10:50

Federico Modica, University of Palermo, Italy

Title: Marketing Strategies for Functional Foods Based on Consumer Preference: A Cluster Analysis

10:50 - 11 :15

Biqi Han, Northeast Agricultural University, China

Title: Thiacloprid Exposure Alters the Microbiota-Gut-Liver Axis and Promotes Hepatic Toxicity in Japanese Quails

11:15 - 11:40

Ntina Vasileiadi, University of West Attica, Greece

Title: Determination of Listeria Monocytogenes Growth in Greek Soft and Semi-hard Cheeses.

11:40 - 12:05

Jiayi Li, Northeast Agricultural University, China

Title: Resveratrol Protects against Deltamethrin-induced liver Fibrosis in Quails

12:05 - 12:30

Gaetano Chinnici, University Of Catania, Italy

Title: The Evolution of Functional Foods Market: A Revolution

12:30 - 12:55

Krishna Kumar Patel, VBS Purvanchal University, India

Title: Monochrome Image Processing for Detection of Mango's Surface Defects

12:55 - 13:20

Charu Mendiratta, Jaipur National University, India

Title : Systematic Analysis of Garden Cress Supplementation on Iron Status: Insights from Intervention Studies



13:20 - 13:45

Monu Kumari, PGIMER Chandigarh, India

Title : Microalbuminuria Detection: New Horizons

13:45 - 14:10

Farah Hassan Slim, Lebanese Univeristy, Lebanon

Title : Global Perspectives on SDG 2: Strategies for Acheiving Food Security and Nutrition

14:10 - 14:35

Khushi Parnami, IIS (Deemed to be University), India

Title: Functional Foods for the Management of Non Alcoholic Fatty Liver Disease

14:35 - 15:00

Anushka Thapliyal, IIS (Deemed to be University), India

Title: Microgreens as a Functional Component of Diet

15:00 - 15:25

Samer Younes, Tartous University, Syria

Title: The Impact of Micronutrients on The Sense of Taste

15:25 - 15:50

Mohit, IIS (Deemed to be University), India

Title : Title : Functional Foods: Harnessing Nutritional Power to Combat Non-Communicable Disease

15 :50 - 16:15

Priyal Vijay, Jaipur National University, India

Title : Ashwagandha and Athletic Excellence: A Comprehensive Review of Sports Performance Enhancement

16:15 - 16:40

Massoud Attarianshandiz, Independent Researcher, Iran

Title: The Evolution of Media Culture: From Growing Bacteria to Testing Antibacterial Compounds in Food Microbiology

16:40 - 17:05

Isha Shukwal, IIS (Deemed to be University), India

Title : Development and Analysis of Food Based Nutraceutical Blend

17:05 - 17:30

Afroz Samsami Pour, Shiraz University, Iran

Title : Effect of Beetroot Juice Supplementation on Muscle Soreness and Performance Recovery after Exercise-Induced Muscle Damage in Female Volleyball Players

**Day 2 Concludes followed by Awards Ceremony**





Day 1

**Nutrition  
&  
Food  
Microbiology**

Keynote Presentations

## MILK AND DAIRY FOODS NATURALLY ENRICHED WITH NUTRITIONALLY IMPORTANT OMEGA 3 FATTY ACIDS - EICOSAPENTAENOIC (EPA) AND DOCOSAHEXAENOIC (DHA)

**Suresh K Gulati, the Late T W Scott and G Cox**

*Sydney University, Australia*

### **Abstract:**

**Background:** Globally, the levels of important omega 3 fatty acids (DHA) and (EPA) are inadequate in the human diet to meet nutritional requirements. These fatty acids have an important role in neural development, cognitive behavior, the immune system, and cardiovascular disease.

Attempts have been made to incorporate these fatty acids into milk and dairy foods. The procedures of fortification and feeding poorly protected supplements to dairy cows have resulted in milk and dairy foods with a) poor shelf life due to oxidation of the long chain fatty acids b) organoleptic issues such as taste, taints, and smell with unfavorable consumer acceptance.

**Objective:** To develop EPA/DHA enriched feed supplements for cows that are inert to degradation in the rumen. When fed to cows produced milk naturally enhanced with DHA and EPA. The levels of these fatty acids can be varied with no palatability/consumer acceptance.

**Methods:** To protect DHA/EPA from rumen degradation, improved processing techniques used comprised optimal solubilization homogenization, mixing and heat treatment to encapsulate the fatty acids in a matrix of protein.

**Results:** Cows fed small quantities of protected feed supplements at pasture or in feed-lots, enables the encapsulated oils to by-pass the rumen, be digested in the small intestine and absorbed into the blood stream. The constituent EPA and DHA are transported to the mammary gland and re-synthesized into glycerides prior to secretion as fat globule in the milk. Trace levels of DHA/EPA are present in control milk, they can be increased up to 2% depending on amount fed to meet regulatory requirements.

**Conclusion:** DHA and EPA enriched designer milk; high DHA milk may meet the recommendations for infants and children. While equal levels of DHA and EPA may meet requirements of adults. Milk produced naturally by this technology has no palatability issues with positive consumer acceptance .

## ESTIMATION OF POLY HERBAL MIX WITH NUTRACEUTICAL COMPONENTS AND ITS UTILIZATION IN HERBAL CANDY PREPARATION



**Swati Vyas and Shobhana Mishra**

IIS (Deemed to be University), India

### Abstract:

**Background:** Nutraceuticals possess multiple health benefits due to the presence of bioactive components. They are safe for human consumption and support detoxification besides promoting gut health. Ancient literature supports the idea of polyherbal formulations incorporating such nutraceutical-based combinations of herbs. They have better and longer-lasting therapeutic potential than a single herb with less likelihood of side effects.

**Objective:** To develop and estimate a polyherbal mix with nutraceutical components and utilize it for herbal candy preparation.

**Methods:** Polyherbal Mix (PHM) was developed by adding *Foeniculum Vulgare* (0.8 gm), *Prunus domestica* (0.10 gm), and *Asparagus racemosus* (0.10 gm) and estimated for its different parameters using standardized techniques as mentioned in AOAC Manual. All readings were taken in triplicates and a mix was used to develop sugar-based herbal candy subjected to organoleptic evaluation further.

**Results:** Proximate composition: Fibre  $15.94 \pm 0.91$ ; Fat  $18.72 \pm 0.63$ ; carbohydrate  $36.26 \pm 6.39$ ; Protein  $7.52 \pm 0.50$  g/100 g. Digestive activities: amylolytic activity  $0.06 \pm 0.01$ ; proteolytic activity  $0.22 \pm 0.01$  and lipolytic activity  $0.60 \pm 0.01$  mg/ml. Extractive values: water extractive value  $6.30 \pm 0.48$  and Alcohol Extractive value  $6.00 \pm 1.4$  w/w. Total antioxidant activity  $44.9 \pm 8.197$  TE  $\mu$ mole/gm, Vitamin E  $0.52 \pm 0.02$  mg/100 gm; Total phenolic Content  $440 \pm 5.65$  mgGAE/gm; Total flavonoid content  $519 \pm 1.61$  mgRu/gm. PHM was added in different amounts to develop five variations of hard sugar-based candy T1 (0.5), T2 (1.00), T3(1.5), T4 (2.0), T5 (2.5) percent which were organoleptically evaluated against control candy with 0% PHM. T4 variation with 2.0 gms of PHM scored best in terms of all sensory attributes.

**Conclusion:** Nutraceutical-rich polyherbal mixes with a focus on the synergistic effect of indigenous ingredients can be developed and made commercially available by increasing collaborations of manufacturers Research and Development section of institutes.

### Biography

Swati Vyas is presently working with IIS Deemed to be a University, Jaipur, India as an Associate Professor with a specialization in Foods and Nutrition since 2006. She has been actively associated with the field of Academics and Research. She has vast research experience with forty research papers published in journals of repute four PhD awarded and 3 others ongoing, four books and three chapters published. Areas of research are Public Nutrition, Nutrition Education, Food Product Development, and Medical Nutrition Therapy. Research Interest include Food Science Nutrition, Public Health, Nutraceuticals, Functional Foods, Medical Nutrition Therapy.

## SILICON: A NEGLECTED MINERAL FOR HUMAN HEALTH



**Henk-Maarten Laane**

*ReXil Agro BV, Netherlands*

### Abstract:

The importance of silicon's role for Life on earth is ignored. Silicon – as silicic acid - is essential for microalgae like Diatoms. Diatoms absorb 35% of all carbon dioxide from atmosphere and produce over 25% of all oxygen for the earth. And other (water and terrestrial) plants need silicon (as silicic acid) for optimal growth. And next, there is hardly any attention for of the importance of silicon as an important element for humans and animals, because:

#### A. Bone and connective tissues:

Silicon (silicic acid) increases bone strength, and a sufficient intake of Silicon (as silicic acid) partially prevents osteoporosis. Underlying mechanisms:

1. Si facilitates the uptake and deposit of calcium and other minerals in bone tissue.
2. Silicon reduces the osteoclast cells, partially preventing bone resorption and bone loss.
3. Si stimulates the osteoblasts
4. Si stimulates the synthesis of collagen.
5. Si facilitates the formation of glycosaminoglycan and collagen components of the bone matrix through its role as a constituent of the enzyme prolyl hydroxylase.

#### B. Skin, hair and nails:

Supplementation with (extra) bioavailable Si had a positive effect on skin surface and mechanical properties, and on the brittleness of hair and nails. Underlying mechanism:

Si facilitates the formation of glycosaminoglycan and collagen components of connective extracellular matrix through its role as a constituent of the enzyme prolyl hydroxylase.

#### C. Heart and blood vessels:

1. Animal studies indicate that Si can reduce the formation of atheromatous plaques.
2. Using diets with a higher Si content, a lower incidence of atherosclerosis is found. The 'western contains less silicon resulting in a higher atherosclerosis rate. Moreover, Si intakes decrease with age suggesting that higher Si intake is a factor in (partial) preventing atherosclerosis.
3. Sufficient silicon intake is important for healthy blood vessels, because Silicon is important for the strength and integrity of the tunica intima, the inner membrane of arteries.

#### D. Effects of Silicon on heavy metals

1. Si reduces the absorption of aluminum by the body, and researchers hypothesize that dietary Si may there-

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fore reduce the risk of developing aluminum induced Alzheimer's disease, because aluminum can play a role in Alzheimer's disease. Silicon binds aluminum forming aluminosilicates complexes, which are excreted by the kidneys.

## **E. Other effects of Silicon:**

Silicon has effects on the immune system:

- a. Supplementation with soluble silicic acid in humans causes a clear rise in the circulating lymphocytes and the immunoglobulins (especially IgG).
- b. In rats, silicon has a functional role in lymphocyte proliferation while inadequate dietary silicon intake impairs splenic lymphocyte proliferation in response to an immune challenge.
- c. In in-vitro experiments was shown that silicon treatment can induce proliferation of unstimulated macrophages and to maintain their viability.

## **Summary**

Adequate Silicon-intake is a major dietary determinant of bone mineral density in humans. Optimal bone health depends on many factors like silicon, which facilitates bone growth and bone mineralization and calcification. The dietary shift to low silicon intake in the western diet and an even more decreased intake with aging, must be considered as a major risk factor for osteoporosis and bone fractures.

Other health effects, for example on connective tissues, skin, hair, and nails, are also related to a sufficient intake of silicon and especially, the only bioavailable form: silicic acid.

## **Biography**

Henk-Maarten Laane, MD, started his professional career in 1967 at the Anatomy department of the University of Amsterdam. As a senior lecturer, he teaches medicine, dentistry, and physiotherapy Anatomy, Embryology, and Pathology. His field of research was 'the human heart', and he became a Doctor of Philosophy in 1978 on a thesis on the development of the heart. In the same year, he was appointed as a coroner for Amsterdam.

As a Medical doctor, he worked as a general practitioner from 1973-2000. During this period, he consulted patients with HIV/AIDS diseases, and in 1990 he left the University and started research in medicines and treatments of AIDS, including the application of HIV antibodies on severe ill patients. He wrote a book on HIV & AIDS in 1992. Henk-Maarten has given many lectures on this topic worldwide and was appointed as a board member of ISSAG (International Society of Silicon in Agriculture) with over 30 publications in his name.

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## NUTRACEUTICALS IN THE PREVENTION AND TREATMENT OF ATHEROSCLEROTIC CARDIOVASCULAR DISEASE



**Dipak P Ramji**

*Cardiff University, UK*

### Abstract:

Atherosclerotic cardiovascular disease (ACVD) is responsible for a third of all global deaths. Although a reduction in morbidity and mortality from ACVD has been achieved recently by lifestyle changes and pharmaceutical intervention, this is expected to reverse in the future because of global increase in risk factors such as hypercholesterolemia, obesity and diabetes. Current pharmaceutical therapies against ACVD are associated with a substantial residual risk for the disease together with other issues such as side effects. In addition, pharmaceutical agents against many promising targets have proved disappointing in clinical trials. It is therefore essential that the molecular basis of ACVD is fully understood, and new therapeutic/preventative agents or targets are identified and validated.

The major focus of recent research in my laboratory is to understand the molecular mechanisms underlying the protective actions of natural products in ACVD using a combination of in vitro and in vivo model systems together with biochemical, molecular biology, pharmacological and immunological approaches. Our research has provided novel insights into the mechanisms underlying the protective actions of several nutraceuticals, including fatty acids, polyphenols and probiotic bacteria. In addition to the beneficial effects on ACVD, our studies have revealed protective actions against other inflammatory disorders, particularly non-alcoholic fatty liver disease. Our findings on the mechanisms underlying the beneficial actions of key nutraceuticals will be presented.

### Biography

Dipak Ramji is Professor of Cardiovascular Science and Deputy Head of the School of Biosciences at Cardiff University. He is also Fellow of the Learned Society of Wales. He received his BSc (Hons) degree (Biochemistry) and his PhD (Molecular Biology) from the University of Leeds. This was followed by post-doctoral research at EMBL (Heidelberg) and IRBM (Rome) with fellowships from the Royal Society and the EU. His current research is focused on understanding how natural products regulate cellular processes in heart disease and other inflammatory disorders with the goal of attaining deeper mechanistic insight and identifying preventative/therapeutic agents. He has published over 150 research articles (h index 43 and i10 index 79 with over 9,100 citations), including 880-page book in 2022 on Methods in Atherosclerosis. He is an Editorial Board member of many international journals, member of the British Heart Foundation Project Grants Committee, external examiner of taught programmes at three universities and has supervised 27 PhD students to completion. Research Interest includes Cardiovascular disease; Cytokines; Nutraceuticals; Inflammation; Non-alcoholic fatty liver disease





Day 1

**Nutrition  
&  
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Oral Presentations

## THE EFFICACY OF A COMPOUNDED MICRONUTRIENT SUPPLEMENT ON THE INCIDENCE, DURATION, AND SEVERITY OF THE COMMON COLD: A PILOT RANDOMIZED, DOUBLE-BLINDED, PLACEBO-CONTROLLED TRIAL

James G Lenhart, Phuong T Vu, Kale Quackenbush, Anne LaPorte and Jeff Smith

*University of Washington, USA*

### Abstract:

**Purpose:** Viral upper respiratory infections are associated with significant health and economic impact. This study sought to determine the efficacy of routine immune system micronutrient supplementation on the incidence, duration and severity of common cold symptoms.

**Methods:** This pilot study was a randomized, double-blinded, placebo-controlled trial of N = 259 with asymptomatic participants aged 18 to 65 in two cold seasons of 2016 and 2017. The treatment group received an immune system targeted micronutrient caplet, while the placebo group received a micronized cellulose caplet externally identical to the treatment caplet. Weekly surveys were sent electronically to participants to document common cold incidence, duration and severity. Primary statistical results were obtained using mixed-effects logistic regressions to account for longitudinal measurements for participants.

**Results:** The odds of acquiring an upper respiratory infection, adjusted for potential confounders, was estimated to be 0.74 times lower in the treatment group ( $p = 0.14$ ). The odds of reporting specific symptoms were statistically lower in the treatment arm compared to the placebo arm for runny nose (OR = 0.53,  $p = 0.01$ ) and cough (OR = 0.51,  $p = 0.04$ ). Shorter durations of runny nose and cough were also observed in the treatment arm compared to placebo (both  $p < 0.05$ ). There was no significant difference in severity of symptoms in either group. The observed proportion of reported cold symptoms in the treatment group was lower compared to the placebo group between late January and February in two consecutive cold seasons. Given the physical, workplace and economic impact of upper respiratory infections, this low cost and low risk intervention should be further studied with more robust investigation and meticulous experimental design.

### Biography

James Lenhart, MD, FAAFP, MPH graduated from the University of New Mexico School of Medicine in Albuquerque, NM and completed residency in Family Medicine at Brown University affiliated hospitals in Providence & Pawtucket, Rhode Island.

In 2010, he earned a Master of Public Health degree from University of Liverpool, Liverpool, England.

His scholarly pedigree includes academic rank of full professor in the Departments of Family Medicine at the University of North Carolina-Chapel Hill, University of Nevada, and University of Arizona.

He currently cares for patients, teaches, and conducts research as Associate Clinical Professor University of Washington and Associate Program Director for the Community Health Care Family Medicine residency in Tacoma, Washington.

The research presented at the 2024 International Conference on Nutrition and Functional Foods represents a collaboration between the Institute of Translational Health Sciences at the University of Washington and Community Health Care.

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## THE IMPACT OF JAPANESE WHITE TURMERIC ON PAIN AND THE CONSUMPTION OF RESCUE MEDICATION IN PATIENTS SUFFERING FROM OSTEOARTHRITIS.

**Kaj Winther**

*University of Copenhagen, Denmark*

### Abstract:

**Aim:** Osteoarthritis is a common disease among middle aged and elderly people and paracetamol and NSAIDs, which can both cause serious side effects, are often used to cure symptoms like pain. This study aimed to test if Japanese White Turmeric (JWT), a new variant of turmeric, containing labdane terpenoid and hardly any curcumin, would lessen symptoms from osteoarthritis and reduce the consumption of rescue medication, without causing side effects.

**Methods:** Volunteers of both sexes (n=120) with osteoarthritis of the knee and/or hip were randomly allocated to either treatment with JWT (12.8 mg) or placebo for 3 month, with the possibility to continue for an additional 3 months. Primary effect variables, pain, physical function, stiffness of joints and patients global assessment of the disease severity (PGAD) were scored on WOMAC questionnaires initially and after 1, 2, 3 and 6 months of treatment, respectively. Rescue medication taken by participants were self-registered in a diary.

**Results:** JWT treatment resulted in a statistically significant reduction in WOMAC pain after 1, 2, 3 and 6 month ( $p < 0.003$ ). After 6 month this decline was still significant and superior to placebo ( $p < 0.041$ ). An identical pattern was observed when testing physical function, joint stiffness and PGAD. The consumption of paracetamol was significantly lower (60%) after 3 and 6 month of active treatment ( $p < 0.014$  and  $p < 0.050$ ), respectively vs placebo. A similar pattern was observed for NSAIDs. No serious side effects were reported and minor side effects were equally represented in both groups.

**Conclusion:** The present data suggest that the herbal remedy, White Japanese Turmeric significantly alleviates symptoms of osteoarthritis, including pain and lower the consumption of rescue medication.

### Biography

Kaj Winther was earlier deeply involved in cardiovascular research and medicine with special reference to thrombosis and haemostasis and worked for a period at the Harvard Medical School, Boston, on the topic "Circadian Variation in Myocardial Infraction". Later in his career, he more and more focused on development and clinical testing of herbal remedies and different versions of new foods. His interest in food and herbal remedies is also based on the fact that much prescription medicine including the non-steroidal anti-inflammatory drugs (NSAID's) are blamed for serious side effects. As many of our top athletes and more and more of the average population trying to get into a "better shape" is abusing NSAID's, more attention should be drawn to develop new "pain-killers" without serious side effects.

#### Scientific focus areas:

My research is centered on basic research in joints, muscular and cardiovascular diseases, glucose metabolism as well as in conducting proper clinical evaluations of the safety and efficacy of dietary supplements and herbal remedies (natural medicine) in healthy subjects and in different patient groups. In my current position, I use my expertise to promote research and education in herbal remedies, food supplements and vitamins. I also run education in the bioactive components of herbs and diets, as well as clinical nutrition for both the healthy and diseased states.

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## YAM (DIOSCOREA SPP.) AND ITS BIOACTIVE COMPOUNDS: THE BENEFICIAL EFFECTS ON GUT MICROBIOTA AND GUT HEALTH

Huanqi Yang, Haoyu Chang and Xinyang Tong

Macau University of Science and Technology, China

### Abstract:

Yam, a group of vegetables belonging to the genus *Dioscorea* spp., has a long history of use on promoting gut health. Recent studies have highlighted the diverse beneficial components found in yam, including yam polysaccharides, dioscin, and  $\beta$ -carotene, which play a significant role in its gut-protective effects. These components have been shown to alleviate inflammatory bowel disease (IBD), improve colitis, and positively modulate intestinal flora. Yam polysaccharides and  $\beta$ -carotene help restore the balance of intestinal flora by increasing the levels of beneficial lactic acid bacteria such as *Bifidobacterium* and *Lactobacillus*, as well as Parabacteroides spp. from the Bacteroidetes phylum, while inhibiting the growth of harmful bacteria like *Clostridium perfringens* and certain species from the Firmicutes phylum (*Lachnospirillum* and *Marvinbryantia* spp.), thus preventing gut dysbiosis. Additionally, dioscin has been found to reduce histological changes in the colon and significantly improve intestinal permeability. All three components exhibit anti-inflammatory properties, primarily by downregulating pro-inflammatory factors including NO/iNOS, TNF- $\alpha$ , IL-1 $\beta$ , and IL-6. This review summarized the beneficial effects of yam and its bioactive components on protecting gut health, providing new insights for further research into the potential functions of these compounds and yam as whole food, as well as for yam-based food product development.

### Biography

Huanqi Yang, an undergraduate student in Food and Nutritional Science at the Faculty of Medicine, University of Macau. I hold the position of Vice President in the Nutrition Society of the Student Association, where I actively promote healthy eating and nutritional education. I have been awarded the school scholarship for two consecutive years, reflecting my academic excellence. Additionally, I achieved a top-five position in the "NUS Food Science and Technology Challenge" held by the National University of Singapore, showcasing my practical abilities and innovative potential in the field of food science. I look forward to sharing my experiences and insights with peers and engaging in discussions about the future of nutritional science at the international conference. Research Interest Include Food and nutrition.

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## GAS CHROMATOGRAPHY-MASS SPECTROMETRIC (GC-MS) ANALYSIS OF BIOACTIVE COMPOUNDS OF SOME SELECTED EDIBLE OILS IN NIGERIA AND POTENTIAL HEALTH BENEFITS

**Ogunlade Ibiyinka, Ayobami Indra Adegbemisoye, Oluwatoyin Moyo Odewale and Ogunlade Adebayo**

*Ekiti State University, Nigeria*

### Abstract:

There is a direct correlation between oxidative stress and consumption of diet components especially fat and oils. The edible oils often obtained from animal and plant sources form a major class of food, reported to contain over 90% of triglycerides of different fatty acids. Hence, some selected oils of plant origin commonly used for domestic purposes in Nigeria were subjected to GC/MS analysis. The results revealed that Groundnut oil, Coconut oil, King's oil and Sunflower oil commonly used for domestic purposes such as cooking, frying, roasting e.t.c. are significantly high in compounds with antioxidative properties. Abundance of polyunsaturated acid (PUFA), (tetradecanoic acid, dodecanoic acid, linoleic acid), monounsaturated fatty acids (MUFA) (oleic acid), phytosterol, squalene occurred. The presence of these compounds suggest that the edible oils can be utilized to mop-up free radicals produced by essential human metabolism and environmental pollution, thereby preventing incidence of chronic, neurodegenerative and age-related diseases.

### Biography

Ibiyinka Ogunlade is a Professor of Food Chemistry at Ekiti State University, Ado-Ekiti, Nigeria. She attended University of Ibadan where she obtained a Bachelor of Science in Biochemistry and Master of Science in Analytical Chemistry in 1977 and 1983 respectively. She later proceeded to Obafemi Awolowo University, Ile-Ife, Nigeria, where she bagged a Doctorate degree in Applied Chemistry and Post Graduate Diploma in Education 1992 and 1995.

Prof (Mrs) Ibiyinka Ogunlade started her career at Adeyemi College of Education in 1992 in the Department of Chemistry. Her academic prowess and leadership qualities have earned her numerous Awards, Honours and Distinctions.

She is a member of many Professional Bodies such as Fellow of Chemical Society of Nigeria, Fellow of Institute of Chartered Chemist of Nigeria, OWSD, President of Women Initiative for Development and Environmental Protection (WIDEP), Ekiti State Chapter and President of women in Chemistry, Ekiti State Chapter (at various times).

She is the Chairman of University Ceremonies Committee before her appointment as Deputy Vice-Chancellor (Academic) in 2014-2016.

Her passion for building an Egalitarian Society informed her Mentor-Mentee relationships with younger generations.

Prof. Ogunlade is the Initiator of Children-in-Science and Technology; a project designed for African children to catch them young for science and popularize Science & Technology among children for self-reliance. A project she has been coordinating since 1992.

She is currently the Director of Children STEM Centre based in Ado-Ekiti, Ekiti State, Nigeria.

Her focus has been on presenting STEM as fun to children of all categories using Play cycle,

Out- of - school activity-based community- linked and integrated approaches.

She is a recipient of the Commonwealth Association of Science, Technology and Mathematics Educators (CASTME) 2020 Community Award for popularizing STEM in the Community.

Prof. Ogunlade was certified in 2021 by the Global University Network for Innovation (GUNi) and the African Quality Assurance Network (AfriQAN) as a Certified Accreditor for Programmes and Institutional Accreditation.

Prof Ogunlade received the FINDEL CASTME Protect our Planet Award for 2023.

Her current focus of Research in Chemistry as a Visiting Professor at Bamidele Olumilua University, Ikere-Ekiti, Nigeria is Antioxidant Capacity of Indigenous Foods/Food plants Commonly Consumed in Africa.

## PHYSICAL, CHEMICAL, AND MICROBIOLOGICAL CHARACTERISTICS OF MINERAL, MOUNTAIN, AND SPRING WATERS FROM BULGARIA, AND BIOLOGICAL PROPERTIES OF IDENTIFIED MICROORGANISMS

**Nedyalka Naneva Valcheva**

*Trakia University, Town Stara Zagora, Bulgaria*

### Abstract:

There are many mineral, healing, and spring waters in Bulgaria, which are not subject to physicochemical and microbiological control but are used for the drinking needs of the population. Similar water sources are located in almost all regions in the country. Microorganisms with valuable properties and biologically active substances have been found in many minerals, hyperthermal, thermal, and non-thermal spring waters worldwide and in our country. This opens up a new opportunity for researchers to isolate and identify new microorganisms that may apply to people's lives. The aim of the investigation was to study the physical, chemical, and microbiological characterization of mineral, mountain, and spring waters from Bulgaria and the biochemical analysis of the microorganisms identified. Physical, chemical, and microbiological characterization of 90 mineral, mountain, and spring waters from 11 regions in the country – Haskovo, Stara Zagora, Yambol, Sliven, Burgas, Varna, Plovdiv, Pazardzhik, Sofia, Lovech, and Blagoevgrad – was carried out. Molecular genetic identification of 91 isolated microorganisms from 90 mineral, mountain, and spring waters from 11 regions of the country was carried out for the first time. They belong to the following eight genera: *Bacillus*, *Brevibacillus*, *Geobacillus*, *Aeromonas*, *Klebsiella*, *Pseudomonas*, *Staphylococcus*, and *Stenotrophomonas*. The enzyme (amylolytic, proteolytic and lipolytic) and antimicrobial activities against saprophytic and pathogenic microorganisms of the identified microorganisms were determined. The adhesive ability to human epithelial cells was determined for the first time. With the most significant anti-inflammatory, immunomodulatory properties, i.e., with the most substantial inhibition of the production of the cytokine IL-8 (pg/mL) and induction of the synthesis of transforming growth factor beta TGF-beta (pg/mL) are strains *Bacillus subtilis* 0-2 and *B. thuringiensis* B62. These two strains are potentially promising as probiotics alone or in combination with lactic acid bacteria to enhance probiotic activity, anti-inflammatory properties, and to be used in biotechnological production.

### Biography

Nedyalka Naneva Valcheva is a senior expert in the Department of Biochemistry, Microbiology, Physics, Faculty of Agrarian Sciences, University of Thrace. I am working on the Microflora of healing and spring waters in Bulgaria. Determination of the physicochemical and microbiological characteristics of the studied springs. Application of isolated microorganisms from spring water.

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## VEGAN PET FOOD: A DIET CHANGE REVOLUTION BEGINS

**Andrew Knight**

*Griffith University, Australia*

### **Abstract:**

Vegan pet foods use plant, mineral and synthetic sources to supply necessary nutrients, and the vegan food sector is rapidly growing. Very recent, large-scale studies into health outcomes, environmental sustainability and other key consumer concerns are supporting the emergence of a new disruptive vegan pet food industry. At least 20% of US livestock environmental impacts are due to pet food – a figure likely similar to that in other nations such as the UK, with high pet ownership. Global implementation of vegan dog foods alone would spare from slaughter six billion land animals annually, save more greenhouse gases than emitted by the whole of the UK, and would free sufficient food energy to feed the entire EU human population. At least ten studies now exist in dogs, and three in cats, showing equivalent or superior health outcomes when (nutritionally-sound) vegan pet foods are used. The presenter is one of the most active researchers in this field. He will summarise key recent research into health, behaviour and sustainability outcomes associated with vegan pet foods, which are paradigm-shifting for the environmental sustainability and plant-based dietary fields.



Day 1

**Nutrition  
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Poster Presentations



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**EFFECT OF ULTRASOUND AND MICROWAVE IRRADIATION ON DE-CRYSTALLIZATION AND NUTRACEUTICAL PROPERTIES OF DIFFERENT NORTHERN JORDANIAN HONEY**

**Muhammad Al-u'datt**

*Kuwait University, Kuwait*

**Abstract:**

**Background:** Historically, medicinal honeybees have been used widely over the world due to their medical, functional, and nutraceutical properties. One of the nutraceuticals and medicinal properties of honeybees is the presence of phenolic compounds. Little information has been noted about the impact of ultrasound and microwave radiation on nutraceutical and biological properties of extracted phenolic compounds from honeybees from biodiversity environments for wild-type medicinal plants.

**Objective:** This research investigated the effect of ultrasonic and microwave irradiation on honey's crystallization, contents, and antioxidant activity of extracted free and total phenolics from different types of honey.

**Methods:** Contents, antioxidant, antidiabetic, and antihypertensive properties of extracted free and total phenolics from control, sonicated, and microwaved honey samples were determined using the spectrophotometric method. Individual phenolic was determined by using High-performance liquid chromatography (HPLC).

**Results:** The values of phenolic contents in all types of honey samples were reduced in range values of 73.80-86.44% or 9.06-76.36% in free phenolic extracts and 26.83-49.11% or -9.50-42.64 in total phenolic extracts upon treatment with ultrasonic or microwave irradiation, respectively. The reduction in values of antioxidant activities for free phenolic extracts was in the range values of 2.33 to 64.86% or 19.28 to 43.83% in free phenolic extracts and 14.50 to 36.10% or -3.19 to 25.69% in total phenolic extracts upon treatment with ultrasonic or microwave irradiation, respectively. The correlations between antioxidant activity and the contents of phenolics were changed upon sonication and microwaved honey samples. Ultrasonic and microwave irradiation have little increase in the simple sugar contents in some types of honey samples as compared to control samples.

**Conclusion:** We conclude that ultrasonic and microwave irradiation de-crystallized the honey samples with little variations in biological properties.

**Biography**

Muhammad Al-u'datt- is a professor of food chemistry at Kuwait University since September 2023. I served as Department Chair from 2011-2013 and a visiting professor in human nutrition at Umm Al-Qura University/Saudi Arabia and McGill University. I have been a faculty member at Jordan University of Science and Technology since 2007. I did my master's and PhD at McGill University. I served on numerous academic, research, scholarly, and administrative committees. My primary area of fundamental research is with food chemistry, human nutrition, and clinical nutrition (in vitro study including allergic, diabetics, hypertension, and cancer). I'm an associate editor for the Journal of Food Science, Food Chemistry, and Food Chemistry: X. I published work including 120 scientific publications in refereed journals and contributed 9 invited book chapters. I presented numerous invited seminars and presentations and conducted invited training courses and workshops in food science, human nutrition, food safety, and food sciences in universities, government institutions, and international conferences all over the world. I served as a consultant and technical expert in clinical nutrition and food safety for several hospitals and food companies. Several research grants were obtained from national and international agencies. Research Interest includes Food Chemistry and Technology and their application in human nutrition including medicinal chemistry.

## ADOLESCENT'S SELF REPORTED WEIGHT AND ITS ASSOCIATION WITH MEDIA IMPACT ON DECISION TO LOSE WEIGHT AND BODY THINNESS PERCEPTION

**Fawaz D Almansour, Hazzaa M Al Hazzaa, BalqeesA Al Awadhi, YousefA Al Dashti, FahhadA Alajmi and Ahmed R Al Haif**

*Kuwait University, Kuwait*

### **Abstract:**

This study investigated the accuracy of self-reported weight among Kuwaiti adolescents and the associations of self-reported weight and calculated BMI with the impact of media use on adolescent's decision to lose weight and body thinness perception. A total of 706 Kuwaiti adolescents (363 females) 15–18 year-olds were randomly selected from schools. Weight and height were self-reported by the adolescents and measured by the researchers. A specifically designed questionnaire reported the impact of media use on adolescent's decision to lose weight and body thinness perception. There were significant ( $p < 0.001$ ) relationships between measured and reported weight ( $r = 0.947$ ), height ( $r = 0.777$ ), and calculated BMI ( $r = 0.623$ ). Intraclass correlation coefficients (95% CI) between self-reported and measured weight and height were 0.973 (0.968–0.977) and 0.867 (0.839–0.891), respectively. The mean differences between self-reported and measured weight (1.26 kg) and BMI ( $0.478 \text{ kg/m}^2$ ) were relatively small. Females under-reported their weight and the calculated BMI from estimated weight and height was underestimated by adolescents with overweight/obesity. The impact of media use on the adolescent's perception of being thin relative to the accuracy of the calculated BMI was significant ( $p = 0.043$ – $0.001$ ). The age-adjusted odds ratio of the calculated (underestimated) BMI in adolescents without overweight/obesity was 0.437 (95% CI = 0.257–0.741;  $p = 0.002$ ). It was concluded that the validity of self-reported weight was high. Adolescents with overweight/obesity were more likely to underestimate their weight and calculated BMI. Educating adolescents about proper lifestyles and weight loss through media appears warranted.

## A COMPARATIVE STUDY ON THE NUTRITIONAL COMPOSITION, PROTEIN STRUCTURE AND EFFECTS ON GUT MICROBIOTA OF 5 FERMENTED SOYBEAN PRODUCTS (FSPS)

Jinghui Wang<sup>1</sup>, Xinyu Miao<sup>1</sup>, Honghong Niu<sup>1</sup>, Mubai Sun<sup>1</sup>, Xin Dong<sup>2</sup>, Mei Hua<sup>1</sup>, Ying Su<sup>1</sup> and Da Li<sup>1</sup>

<sup>1</sup>Jilin Academy of Agricultural Sciences (Northeast Agricultural Research Center of China), China

<sup>2</sup>Center for Disease Control and Prevention of Hinggan League, China

### Abstract:

Differences in nutrient composition, protein structure, and effects on rat gut microbiota of different soybean fermentation products were analyzed. Nutritional composition was examined using physicochemical analysis, which showed that tempeh had the highest protein content (52.18 g/100g) and the highest amino acid content of 50.86%. The content of antinutritional factors were all significantly reduced after fermentation. Protein structure was determined using Fourier infrared spectroscopy, which showed that the protein amide I bands were red-shifted after fermentation, and the  $\alpha$ -helix content was reduced by 13.87% in soybean paste, and the RC content was increased by 132.39% in soybean yogurt. By differential analysis of 16s RNA and KEGG metabolic pathways, there was a significant improvement in the gut microbiota and associated metabolic pathways. In addition, correlation analysis by Spearman and RDA redundancy analysis showed a strong correlation between nutrient composition, protein structure and gut microbiota abundance. This study provides some data support to prove that FSPs have greater nutritional characteristics. In this study, we conducted an analysis of the differences in nutrient composition and protein structure among various fermented soybean products and their impacts on the gut microbiota of rats. Conventional physicochemical analysis was employed to analyze the fundamental physicochemical composition of the samples. Additionally, we utilized high-performance liquid chromatography and ELISA techniques to quantify the presence of antinutritional compounds. Fourier infrared spectroscopy was applied to delineate the protein structure, while 16s rRNA gene sequencing was conducted to evaluate alterations in gut microbiota abundance. Subsequently, KEGG was utilized for metabolic pathway analysis. Our findings revealed that fermented soybean products improved the nutritional profile of soybeans. Notably, Douchi exhibited the highest protein content at 52.18 g/100g, denoting a 26.58% increase, whereas natto showed a 24.98% increase. Douchi and natto demonstrated the most substantial relative amino acid content, comprising 50.86% and 49.04% of the total samples, respectively. Moreover, the levels of antinutritional factors markedly decreased post-fermentation. Specifically, the  $\alpha$ -helix content in doujiang decreased by 13.87%, while the random coil content in soybean yogurt surged by 132.39%. Rats that were fed FSP showed notable enhancements in gut microbiota and associated metabolic pathways. A strong correlation was observed between nutrient composition, protein structure, and gut microbiota abundance. This study furnishes empirical evidence supporting the heightened nutritional attributes of FSPs.



Day 2

**Nutrition  
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Video Presentations

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**PIPERIDINE COMPOUND FROM BLACK PEPPER (PIPER NIGRUM)  
FOR PROTECTION OF OUR VEGETABLES FROM PLANT PARASITIC  
NEMATODES**

**Tabassum Ara Khanum and Shazia Haider**

*University of Karachi, Pakistan*

**Abstract:**

In the current era world is suffering from poverty and shortage of food which is extremely challenging to sufficiently fulfill the nutritional requirements of whole population. The plant parasites are producing a huge destruction to average yield of crops. Nematodes can live in all type of soil. They are susceptible to cause disease in crops and causes a huge damage to crops and it is estimated that it causes a loss of 13.3 % total yield approx. \$177 billion dollars. The long lasting impact of the chemicals on the non-target organism, development of nematode resistance to chemical nematicides and its hazardous effects on the human and the environment stimulated the interest of the scientists for an alternate control measure through designing synthetic and isolated products for destroying the pest and increase the agricultural productivity. Farmer focuses on measures to control the nematodes, therefore new nematicidal drugs with greater efficacy and least side effects are required. Natural alkaloids commonly comprises of piperidine ring are significant for its pharmacological activities. Such as analgesic, anti-inflammatory, anti-cancer, local anesthetic and antiparasitic activities. Piperidine derivatives known for their antimicrobial activities, herbicidal, pesticidal activities. Black pepper is known for its carminative, diaphoretic, diuretic, anti-infectious properties. The insecticidal properties of black pepper is due to the presence of piperidine alkaloid. Black pepper was found to be biodegradable, environment friendly. Nematicidal activity is checked in black pepper leaf extract to eradicate plant parasitic nematode *Meloidogyne incognita* specie and the results suggest that it has less dangerous effects on crops and in the soil. Piperidine has high appeal due to its medicinal properties and as a bio-availability enhancer in the formulation of several drugs. Secondary metabolites pay significant contribution to resist insect growth as they contain several phytochemicals such as flavonoid, monoterpenes, and organosulphur compounds.

**Biography**

Tabassum Ara Khanum had 21 years research experience in plant, soil and entomopathogenic nematodes taxonomy, identification, control of insect and nematodes by using entomopathogenic nematodes as bio-pesticides and bio-fertilizer. Published one book, 4 chapters, 59 research papers (21 International and 38 national), one International and 10 National patents. Granted the "Productivity allowance" by Pakistan Council of Science and Technology for the year 2012 and 2015. Described 25 new 38 known species, with the application of entomopathogenic nematodes and other bacterial feeding nematodes on different insect pests as biopesticide and use as a biofertilizer for plant and soil health, respectively. Awarded shield from Karachi University Officers welfare Association for 2011-2013. Awarded a shield on the occasion of 3rd International Conference of Pakistan phytopathological society January, 23-25, 2014. Awarded a shield on the occasion of first National Symposium on Plant Responses to Environmental Stresses" Recent Advances in Agriculture and Farming, November 15, 2014. Two projects were obtained from PSF and UoK in 2022.

## BIO-PRESERVATION OF MEAT BY BACTERIOCIN

**Arfeen Siddiqui and Shafaq Aiyaz Hassan**

*University of Karachi, Pakistan*

### **Abstract:**

Food science is the study of physical, microbiological, and chemical makeup of food. Food technology is the application of food science to the selection, preservation, processing, packaging, distribution, and use of safe food. Meat is consumed on a very large scale worldwide. The meat industry concentrates on the production, packing, preservation, and marketing of meat. This sphere of agriculture is fully industrialized now, like many others. Obviously, the meat industry has a big future and will only be developing. There are innovative technologies implemented now that decrease the damage to the environment and increase meat quality. Besides, it will be only profitable for the owners of the industry to meet the needs of the growing population. Due to overgrowing population meat is produced in bulk amount and preserved. Different line of actions has been suggested to preserve meat for longer periods of time and the solution we came up with is called 'Bio preservation.' Biopreservation is the use of natural or controlled macrobiotics or antimicrobials as a way of preserving food and extending product shelf life. Desirable bacteria or the fermentation products produced by these bacteria are used in Biopreservation to control spoilage and to inactivate pathogens in food. With the advancement of biological sciences, Biopreservation of meat has been made possible using lactic acids, bacteriocins, essential oils, vinegar, fermentation, herbs and spices, sugar and salts. Antibacterial metabolites of lactic acid bacteria and *Bacillus* spp have potential as natural preservatives to control the growth of spoilage and pathogenic bacteria in food. Among them, bacteriocin is used as a preservative in food due to its heat stability, wider pH tolerance and its proteolytic activity. Due to thermo stability and pH tolerance it can withstand heat and acidity/alkalinity of food during storage condition. Bacteriocins are ribosomally synthesized peptides originally defined as proteinaceous compound affecting growth or viability of closely related organisms. Their function is to inhibit the growth of similar or closely related bacterial strains. *Nisin* was the only bacteriocin generally recognized as safe by the FDA and was used as a food preservative in several countries. Research is going on extensively to explore the nascent field of biopreservation. Scientists all over the world are showing their keen interest to isolate different types of bacteriocin producing strains and characterize bacteriocin produced by them for food preservation.

## DOWN-REGULATION OF ABAI, ABAR, BAP AND OMPA GENES IN ACINETOBACTER BAUMANNII BY ETHANOL EXTRACT OF GLYCYRRHIZA GLABRA AFTER TOXICITY ASSESSMENT

Trefa Salih Mohamad, Jwan Khidhr Rahman, Akhter Ahmed Ahmed and Aryan R Ganjo

Salahaddin University-Erbil, Iraq

### Abstract:

*Acinetobacter baumannii* is a pathogen that has caused rising concerns within healthcare facilities in recent years. As antibiotic overuse and resistance rise, natural remedies with the potential have received attention as antibiotics that might have fewer side effects and lower resistance. *Glycyrrhiza glabra* was used to investigate its effects on *A. baumannii*'s quorum sensing and biofilm production abilities. In this study, the toxicity assessment of *Glycyrrhiza glabra* L. extract on rats, the phytochemical analysis and the quantitative measurement for the association of the biofilm reduction with the active components in the plant was determined. The results indicated ciprofloxacin and gentamicin were the most effective antibiotics and that various capabilities of biofilm-productions were demonstrated, only four percent of the samples established robust biofilm, while 40% to 56% demonstrated weak to moderate biofilm production, respectively. Phytochemical qualitative testing of ethanol leaf extracts from *Glycyrrhiza glabra* showed the existence of flavonoids, alkaloids, phenolic, tannic acid, and terpenoids, but no saponins. Assessment of toxicity revealed a low hazard, with an LD<sub>50</sub> of 4.95 g/Kg.

Our results showed that the extract's SICs elucidated a substantial quantitative decrease in biofilm production by the bacterial isolates, including the reference ATCC strain, which is known to be a potent biofilm producer. As a conclusion, biofilm creation in *Acinetobacter baumannii* has been shown to be greatly reduced by *G. glabra* extract.

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## **PRODUCTION OF PROBIOTIC KEFIR FROM DIFFERENT VEGETABLE MILK**

**Berra Ceylan**

*Mugla Sitki Kocman University, Turkey*

### **Abstract:**

**Background:** Increasing knowledge and awareness about the relationship between nutrition style and diseases significantly affects people's eating habits and food choices. Consumer demands for a healthy and balanced diet have led the food industry to look for alternatives that can meet these demands. This quest: It has highlighted probiotic, organic, vegan and functional foods.

**Objective:** To produce probiotic vegetable kefir with oat, soy and coconut milk using vegetable kefir culture.

**Methods:** Vegetable kefir samples were produced from oat, soy and coconut milks and stored at 4°C for 7 days. The physico-chemical (pH, titration acidity, dry matter, ash, protein, carbohydrate and serum separation), microbial (*Lactobacillus ssp.*, *Lactococcus ssp.*, acetic acid bacteria, yeast, *L. acidophilus* and *Bifidobacterium spp.*), and antimicrobial (disk diffusion method) analyzes were performed to investigate the probiotic properties of kefir samples in the certain days of storage (1<sup>st</sup>, 3<sup>rd</sup> and 7<sup>th</sup>).

**Results:** During storage, the pH values of the produced kefir samples decreased and the titration acidity values increased accordingly. There was no statistically significant change in ash, dry matter and protein ratios of vegetable kefir samples between storage days ( $p > 0.05$ ). The amount of carbohydrates in vegetable kefir samples decreased during storage as in the control ( $p < 0.05$ ). Microbiological analysis results of all vegetable kefir were found to be over 6 log CFU/ml. Vegetable kefir samples have limited antimicrobial activity against the food pathogens tested.

**Conclusion:** As a result of the analysis, it was concluded that oat, soy and coconut milks are suitable for kefir production. In this study, it is a probiotic drink alternative especially for people with lactose intolerance, casein allergy, celiac disease or a vegan/vegetarian lifestyle that requires certain nutrient restrictions. According to the Turkish Food Codex, the vegetable kefir samples produced in the study have probiotic food properties.

### **Biography**

Berra Ceylan has expertise in nutrition and dietetics. She continues her work with the awareness that nutrition is one of the most important factors that form the basis of diseases. Her areas of interest are functional foods, probiotics, and mother-child nutrition. Her interest in these areas developed during her undergraduate and graduate years and she worked in these areas in seminars and graduation theses. The driving factor in her work is to increase societies' awareness of nutrition and their quality of life. Her next aim is to transfer her knowledge and research to society by working in the field. Research Interest includes Functional Food, Probiotic, Nutrition, Mother-child nutrition.



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## CHICKEN CARCASSES IN RETAIL: A SOURCE OF MULTIDRUG-RESISTANT SALMONELLA

Tahra El-Obeid, Sara H Al-Hadidi, Hassan Al mana, Salam Ziad Almoghrabi,  
Walid Q Al Ali and Nahla O Eltai

*Qatar University, Qatar*

### Abstract:

**Background:** Salmonella frequently cause worldwide outbreak of foodborne illness, primarily through chicken. Globally, the prevalence of multidrug-resistant (MDR) Salmonella infections has increased. Due to delays or unavailability of treatment, the rising medication resistance leads to higher expenditures and worse health outcomes.

**Objective:** The aim of this study is to determine the antibiotic resistance profiles of Salmonella and ascertain the presence of the bacteria in retail raw chicken meat.

**Methods:** Between November 2017 and April 2018, 270 retail raw chicken carcasses, both local and imported, were collected from three retail supermarket chains in Qatar. Salmonella isolation and identification was conducted and then the Salmonella isolates were tested for their susceptibility to a relevant panel of antibiotics. Statistical analysis used were the  $\chi^2$ -test of independence, the Binomial test and the Goodman–Kruskal tau.

**Results:** Results showed that thirty carcasses (11.11%) were contaminated with Salmonella. Locally produced chicken had a higher Salmonella content than imported chicken (OR = 2.56, 95% CI: 1.18–5.53,  $p = 0.016$ ). There was no significant difference between the prevalence, storage temperature or supermarket chain. The highest resistance rates in the isolates were reported to tetracycline (73.7%) followed by nitrofurantoin (53.3%), ampicillin (50%), amoxicillin-clavulanic acid, ceftriaxone (26.7%), and ciprofloxacin (23.3%). Eight isolates were potential extended-spectrum  $\beta$ -lactamase producers, all in imported frozen chicken ( $p < 0.0001$ ). Additionally, 43.3% of the isolates were MDR and associated with frozen chicken (OR = 16.88, 95% CI: 2.55–111.47,  $p = 0.002$ ).


**Conclusion:** The findings indicate that while the prevalence of Salmonella in retail chicken in Qatar is moderate, a large proportion of them are MDR indicating MDR indicates a possible route of the global dissemination of antimicrobial resistance that emphasizes the need for an interdisciplinary and multicountry effort to tackle the issue on a global scale.

### Biography

Tahra El-Obeid is an Associate Professor and the Director of the International Coordinated Program in Dietetics, Human Nutrition Department, College of Health Sciences, Qatar University. She holds a Ph.D. in Food Technology from the University of Natural Resources and Applied Life Sciences, Austria, served as the Head of the Human Nutrition Department and prior to that, as Head of the Department of Health Sciences. Dr. ElObeid works with several organizations e.g. WHO, WFP, UNICEF, UNDP, the Nutrition and Rural Development Center, Beyond her academic endeavors, Dr. ElObeid is a member of several national advisory boards and committee member in several ministries and universities, both nationally and internationally. Dr. ElObeid's has over 50 articles in peer-reviewed journals and book chapters. Additionally, she has supervised numerous undergraduate and post-graduate research projects and actively participated in regional and international conferences.

# **Virtual Presentations**





Virtual  
Day-01

**Nutrition  
&  
Food  
Microbiology**

Oral Presentations

## MECHANISM OF RESVERATROL-INDUCED SIRT1 DEACETYLATION IN LIVER INJURY INDUCED BY HEXAVALENT CHROMIUM EXPOSURE

Jingjing Lu<sup>1</sup> and Zhigang Zhang<sup>2</sup>

<sup>1</sup>Heilongjiang Bayi Agricultural University, China

<sup>2</sup>College of Veterinary Medicine, Northeast Agricultural University, China

### Abstract:

**Background:** With the development of heavy and light industries, chromium (Cr) pollution in the environment has become increasingly serious. Cr(VI) poses a serious threat to human and animal health through continuous bioaccumulation in nature.

**Objective:** To explore the link between the deacetylation of silent information regulator two ortholog 1 (Sirt1) and hepatotoxicity induced by Cr(VI) exposure, and to better clarify the biological mechanism of liver injury induced by Cr(VI).

**Methods:** We established a model of liver injury of  $K_2Cr_2O_7$  by injecting rats intraperitoneally for 35 days continuously and adding Sirt1 activator resveratrol (Res) to further explore whether it is relevant to the deacetylation of Sirt1.

**Results:** The results revealed that Cr(VI) induced apoptosis and inflammatory response in hepatocytes. Apoptosis is considered to be essential for maintaining tissue homeostasis and normal function and actively participates in the pathogenesis of a variety of heavy metals. Oxidative stress not only causes DNA damage in cells but also participates in the regulation of apoptosis. Combined with comet test and oxidative stress indicators, our findings illustrate that hepatocyte apoptosis induced by Cr(VI) may result from oxidative stress, which finally contributes to liver injury. The nuclear factor erythroid 2-related factor 2 (Nrf2) system plays a pivotal role in various toxic reactions induced by Cr(VI), and its antioxidant function is regulated by the acetylation-deacetylation state of Nrf2. In addition, forkhead box O3 (FOXO3) also plays a beneficial role in anti-oxidative stress processes. Pieces of evidence have been accumulating that ac-FOXO3 is more likely to induce apoptosis, while deacetylated FOXO3 has higher transcriptional activity and stronger antioxidant capacity. In our study, Cr(VI) leads to high levels of ac-Nrf2 and lower levels of NQO1 and HO-1, and may also lead to hyperacetylate FOXO3 by inhibiting Sirt1, leading to oxidative stress-mediated apoptosis. Furthermore, we found that Cr(VI) exposure increased the level of acetylated NF- $\kappa$ B-p65 and up-regulated proinflammatory IL-1 $\beta$  and TNF- $\alpha$  by inhibiting the deacetylation of Sirt1 in the liver, consequently resulting in an inflammatory response. Interestingly, after the administration of Res, the deacetylation of Sirt1 was enhanced, and apoptosis and inflammatory response were significantly alleviated, suggesting that Res may have a potential therapeutic effect on Cr(VI)-induced liver injury.

**Conclusion:** In summary, this work firstly demonstrates that Cr(VI) induces liver injury in rat by inhibiting the deacetylation of Sirt1, which is of positive significance for protecting the natural environment and animal health from chronic Cr poisoning.

### Biography

Jingjing Lu has been engaged in research on functional foods for a long time. Based on her theoretical knowledge of veterinary medicine, she focuses on the adverse effects of environmental pollutants on human and animal health, and deeply explores the role of functional foods in alleviating chronic poisoning in animals. She is committed to promoting the health of livestock and poultry, improving animal production levels, improving the quality of animal products and ensuring the safety of animal-derived food. Research interests include animal-derived food safety.

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## MARKETING STRATEGIES FOR FUNCTIONAL FOODS BASED ON CONSUMER PREFERENCES: A CLUSTER ANALYSIS

**Federico Modica, Filippo Sgroi and Caterina Sciortino**

*University of Palermo, Italy*

### Abstract:

**Background:** The needs of consumers have changed significantly in recent years to the point where they are now looking for foods that can directly benefit their health, i.e., foods with functional properties. In response to this pattern, the food industry has developed a growing number of new products with health claims.

**Objective:** To explore consumer behavior towards functional foods in order to segment the customer market.

**Methods:** The identification of discrete customer segments or groups with comparable preferences is made possible by Cluster analysis. This segmentation is useful because it enables companies to customize their offerings, marketing plans, and messaging to suit the requirements and preferences of each group.

**Results:** The study's findings indicate that several sociodemographic factors, including age, gender, and income, influence the intake of functional foods, but there are other significant factors that can either increase or decrease this consumption.

**Conclusion:** With the support of cluster analysis, firms can better understand consumer preferences, enhance their product offers, and develop specialized marketing plans. In the end, this may result in greater customer satisfaction, improved sales, and a competitive advantage in the market.

### Biography

Federico Modica have a bachelor's degree in Agro-engineering and a master's degree in Mediterranean Food science and technology, at the University of Palermo.

He is a PhD student in the course in "Biodiversity in Agriculture and Forestry" at the University of Palermo. Under the supervision of Professor Sgroi, Associate Professor of Agribusiness Economics at the University of Palermo, we have been addressing issues concerning the economics of the agribusiness sector, including the production, processing, marketing, and consumption of agribusiness products. With a focus on eating habits, the importance of street food, quality PGI and PDO products, and issues regarding the information asymmetry that exists in the food market.

He is a co-author in 12 publications and have participated in several international conferences. Research Interest include Consumer Behavior and Food Marketing.

## THIACLOPRID EXPOSURE ALTERS THE MICROBIOTA-GUT-LIVER AXIS AND PROMOTES HEPATIC TOXICITY IN JAPANESE QUAILS

Biqi Han, Jiayi Li and Zhigang Zhang

Northeast Agricultural University, China

### Abstract:

**Background:** Exposure to environmental toxicants, including pesticides, is a potential cause of chronic liver disease. Neonicotinoid insecticides (NNIs) are the most widely used class of pesticides globally. However, NNIs may cause adverse health effects, including lipid metabolism disorders, and perturbation of the gut microbiota. Thiacloprid (THI) is one of the most widely used NNIs in agriculture. Therefore, it is essential to elucidate the effects of THI on the microbiota–gut–liver axis to assess the risk of chronic liver disease following exposure to NNIs.

**Objective:** This study investigated whether THI exposure promoted liver injury by altering the gut microbiota and related metabolites.

**Methods:** Healthy male quails were intragastrically exposed to 2 or 4 mg/kg THI or 0.75% (w/v) saline once daily for 6 weeks. Metabolomics, 16S rRNA sequencing, and transcriptomic methods were performed on quail serum, ileal contents, and liver to analyze the toxic mechanisms of THI in Japanese quails.

**Results:** THI treatment altered the intestinal microbiota composition and structure. THI induced damage and disruption to intestinal barrier function, leading to increased harmful substances such as lipopolysaccharide and phenylacetic acid entering the liver via blood. Quails exposed to THI showed significantly altered hepatic bile acid and cholesterol metabolism, abnormal liver lipid metabolism, and severe liver injury, fibrosis and steatosis compared with the control quails.

**Conclusion:** We identified a new mechanism linking the microbiota–gut–liver axis with THI-induced hepatic toxicity in quails. THI altered ileal microbiota diversity and composition, enriched *Bacteroides* and *Enterobacteriaceae* and depleted *Lactobacillus*, and impaired intestinal integrity to promote bacterial translocation, increased lipopolysaccharide and phenylacetic acid in the liver. These changes facilitated the development of hepatic toxicity in quails.

### Biography

Biqi Han is a Ph.D. candidate at the College of Veterinary Medicine, Northeast Agricultural University. Professor Zhang Zhigang (<https://orcid.org/0000-0002-4974-5850>) is her supervisor. Her major is clinical veterinary medicine, with a primary research focus on animal-derived food safety and environmental toxicology. Always keen to learn and participate innovative practices. She keeps herself updated with every new tool and technique. Currently, she has published two SCI academic papers as the first author in *Biological Trace Element Research* (IF = 3.9) and *Journal of Hazardous Materials* (IF: 13.6). Additionally, she has collaborated with others on nine scientific papers. Research interests include animal-derived food safety.

## DETERMINATION OF LISTERIA MONOCYTOGENES GROWTH IN GREEK SOFT AND SEMI-HARD CHEESES.

**Ntina Vasileiadi**

*University of West Attica, Greece*

### Abstract:

**Background:** *Listeria monocytogenes* (Lm) is an important pathogenic bacterium, responsible for a serious foodborne disease called listeriosis, with high hospitalizations and mortality rate worldwide. The ability of the bacterium to grow at refrigeration temperatures, to spread, multiply and persist for a long time in the environment and in food processing plant equipment due to its ability to form biofilms, makes it a threat for food safety and is the great concern to the food industry. The main cause of listeriosis in humans is consumption of ready-to-eat (RTE) foods. The safety criteria for Lm in RTE-food (cheese) has to comply with Regulation (EC) N°2073/2005.

**Objective:** The aim of our study was to assess the growth potential of Lm in soft Greek cheese - “anthotyros”, packed in vacuum, and in the Greek semi-hard sliced cheese, packaged under modified atmosphere package.

**Methods:** Growth potential of Lm (artificially inoculated) was determined according to the last version of EURL for *Listeria monocytogenes*: “Technical Guidance Document on Challenge Tests and Durability Studies for assessing shelf life of ready-to-eat foods related to Lm”. Physico-chemical measurements were performed. The growth potential ( $\Delta$ ) among the 3 batches of soft cheese and the 3 batches of semi-hard sliced cheese was estimated.

**Results:** A significant increase in Lm was observed in all the tested units of the soft cheese. The natural acidification due to the progressive growth of lactic acid bacteria during the storage did not cause a decline in pH level capable to suppressing of Lm growth. In the semi-hard sliced cheese, a combination of low active water content and modified atmosphere packaging appears to protect against growth of Lm.

**Conclusion:** FBOs need to conduct relevant research to ensure that the RTE products which they produce, during their shelf life, do not support the growth of Lm and do not pose a risk for Public Health.

### Biography

Ntina Vasileiadi is a PhD student at the Faculty of Public Health Policy, School of Public Health, University of West Attica, Athens, Greece. She is a Veterinarian with Degree from the University of Tbilisi and MSc from the National School of Public Health in Athens, works in the Department of Food Hygiene of Athens, Directorate of Athens Veterinary Center, Ministry of Rural Development and Food, and has a 16 years long experience on animal origin food microbiology. Her research is based on challenge tests for assessing and determination of growth potential of pathogen bacteria *Listeria monocytogenes* in various ready-to-eat animal origin foods.



## RESVERATROL PROTECTS AGAINST DELTAMETHRIN-INDUCED LIVER FIBROSIS IN QUAILS

Jiayi Li, Biqi Han and Zhigang Zhang

Northeast Agricultural University, China

### Abstract:

**Background:** Deltamethrin (DLM) is one of the most popular pesticides due to its high insecticidal activity and environmental friendliness. However, the extensive over-use of DLM threatens livestock and poultry, even humans. DLM is mainly metabolized in liver which is easily attacked by toxic substances. Resveratrol (tran-3, 4, 5-thihydroxystibene, Res) is an effective oxidant.

**Objective:** This study investigated the potential molecular mechanism that DLM induced liver fibrosis in quails, and clarified the role of Res in the liver injury.

**Methods:** Forty quails were randomly divided into 4 groups: control group, DLM group (45 mg/kg b.w.), Res group (500 mg/kg feed), and DLM + Res group. We measured biomarkers of oxidative stress and liver function, and performed histopathological analysis, transmission electron microscopy, biochemical indexes, TUNEL, quantitative real-time PCR, and western blot analysis.

**Results:** The results showed that DLM led to changes in the levels of oxidative stress- and apoptosis-related proteins and genes, and caused excessive oxidative stress and apoptosis. Hydroxyproline content and the fibrosis-related mRNA expressions including collagen I, SMAD family member 3 (Smad3),  $\alpha$ -smooth muscle actin, transforming growth factor- $\beta$ 1 (TGF- $\beta$ 1), and fibronectin were significantly increased. The relative proteins and genes levels of nuclear factor- $\kappa$ B (NF- $\kappa$ B) and its downstream protein tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) were also significantly increased. However, Res attenuated these changes, indicating that Res has a therapeutic effect on DLM-induced oxidative stress, apoptosis, and fibrosis in the quail liver.

**Conclusion:** Chronic exposure to DLM induces oxidative stress via the nuclear factor erythroid 2-related factor 2 expression inhibition and apoptosis, and then results in liver fibrosis in quails by the activation of NF- $\kappa$ B/TNF- $\alpha$  and TGF- $\beta$ 1/Smad3 signaling pathway. In future, Res may be used as a feed additive to prevent liver fibrosis in livestock and poultry.

### Biography

Jiayi Li is a doctoral candidate of the College of Veterinary Medicine in Northeast Agricultural University of China. Prof. Zhigang Zhang is her supervisor. Her major is Clinical Veterinary Medicine and the main research interests are Animal-derived Food Safety and Environmental Toxicology. She participated in multiple scientific research topics and got some valuable phased research achievement after several years of in-depth research. At present, she has published three SCI academic papers as the first author, including Environmental Pollution (IF=8.9, ESI Hot and Highly Cited Papers) and Molecular Neurobiology (IF=5.1) journals. Besides, she has published 16 papers as a co-author in SCI journals. Research Interest include animal-derived Food Safety.

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## THE EVOLUTION OF FUNCTIONAL FOODS MARKET: A REVOLUTION

Gaetano Chinnici, Pistorio E, Zarbà C, Bellia C, Amico M, Carbone R and Pappalardo G

*University of Catania, Italy*

### Abstract:

**Background:** Consumers are changing their food preferences in favor of healthier foods that have a beneficial effect on health and that embrace sustainable consumption patterns. To meet the demand of modern consumers, the food sector is undergoing a major revolution as more and more new products are appearing on the market. This trend has encouraged the food industry to develop a new category of food products, which is 'functional foods', characterized by the presence of one or more bioactive compounds having beneficial effects on the body. To distinguish such products and highlight their beneficial effect, claims are made on the product packaging about nutritional indication and about potential disease risk reduction. Such claims increase consumers' awareness about the benefit of these products hence can influence the consumer's purchasing decisions. Functional foods offer an important strategy to combat nutritional deficiency and diet-related diseases. Technological advances in the food industry also have the potential to improve and increase productivity, reduce food waste by facilitating the recovery of bioactive compounds from agri-food wastes and by-products.

**Objective:** This paper aims to analyze the global functional food market in the time frame of 2019 to 2022, referring to the "Health and wellness" category.

**Methods:** An overview of the global functional food market's size is provided in the paper and Euromonitor database is the source of reference .

**Results:** The results show a growing worldwide trend. However, within the European continent, differences among the main European countries emerged and are analyzed.

**Conclusion:** The Health and Wellness food market segment has a market share of about 368 thousand tons, to which functional foods contribute a share of 97 thousand tons, split evenly between Asia (34 %), Europe (33 %) and America (31 %).

### Biography

Gaetano Chinnici is Associate Professor, graduated in Agricultural Sciences (cum laude) in 1997 at Agricultural Faculty of the University of Catania. Is a PhD in "Agricultural Economics". He has a good knowledge of the statistical data processing program with SPSS. From 2003 to 2009, she is lecturer at the Veterinary Faculty of the University of Messina, Degree Course in "Technology, hygiene and health of extensive eco-compatible farms", and Specialist Degree Course in "Veterinary Medicine", the Agricultural Faculty of Catania, Degree Course in "Tropical and Subtropical Agricultural Sciences and Technologies". In July 2016 he participated in the Summer School "Experimental Auctions: Theory and Applications in Food Marketing and Consumer Preferences Analysis" organized by the University of Bologna, Summer School on Experimental Auctions. He is the author of many publications indexed in the main citation databases. He is a member of economic and agricultural scientific societies (EAAE, SIDEA and SIEA). Research Interest includes agricultural economics, consumer, market.

## MONOCHROME IMAGE PROCESSING FOR DETECTION OF MANGO'S SURFACE DEFECTS

Krishna Kumar Patel and Abhijit Kar

VBS Purvanchal University, India

### Abstract:

**Background:** Mango, the king of fruits in India, is most popular and has a high economic value than the other fruits. But, external defects on the surface of mango fruit are very common and a major cause of quality deterioration as well as degradation of market value. The quality characteristics and common external defects which govern the market value of mangoes have traditionally been assessed by visual inspection, performed by trained operators. Various non-destructive techniques have now been emerged for quality examination of agricultural commodities. A computer vision-based image technique among them has been attracting much research and development attention. Colour camera-based CV system is more popular than other image sensors.

**Objective:** To study the potential of monochrome image processing for surface defect detection of mangoes.

**Methods:** A monochrome camera was used in semi-automatic based CV system for image acquisition and an algorithm was developed for processing and analysis of acquired fruit's images. The performance of the developed algorithm was then evaluated considering the accuracy, efficiency, and average inspection time.

**Results:** The accuracy of the algorithm developed for defects detection using monochrome was obtained as 88.75 %. The efficiency of the algorithm was recorded as 97.88 %. Besides, the average time for the inspection of fresh fruits was lower and found to be increased as the severity of defects increased on the surface of mangoes. Since the good quality image provides clear and identifiable features which is a major challenge in on-line inspection is to produce quality images. The monochrome cameras help both the H/W and S/W efficiently for the online implementation of the CV system to process the images speedily.

**Conclusion:** Monochrome computer vision systems are very successful and have great potential to detect various common external defects such as a black lesions, mechanical damage, etc.

### Biography

Krishna Kumar Patel has his expertise in computer vision system based non-destructive quality evaluation of fruits and vegetables. He has developed algorithms for different camera such as colour (RGB), monochrome, UV and NIR, based computer vision system for the defect detection and physical characterization of Indian mangoes. In addition, he has his expertise in the development of processing technologies of fruits and vegetables. He is also involved in the development of nutritious snack foods using multipurpose flour incorporated with flour of carrot like vegetable's flour. But his research mainly focuses on the development of non-destructive quality assessment techniques for agricultural products.

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## SYSTEMATIC ANALYSIS OF GARDEN CRESS SUPPLEMENTATION ON IRON STATUS: INSIGHTS FROM INTERVENTION STUDIES

**Charu Mendiratta and Swati Vyas**

*Jaipur National University, India*

### Abstract:

Garden cress (*Lepidium sativum*) is recognized for its nutritional richness, particularly its high iron content, positioning it as a potential natural supplement to combat iron deficiency. This comprehensive review systematically examines intervention studies sourced from reputable databases such as research gate, i-Scholar, Google Scholar, assessing the impact of garden cress supplementation on iron status across diverse populations. Analysing six significant studies, this review explores methodological approaches, participant demographics, dosage forms, and supplementation duration. Garden cress seeds, known for their high iron content, have been integrated into several food items. A notable study among ten girls revealed that consuming garden cress seed powder incorporated dietary supplement significantly increased haemoglobin levels from a mean of  $9.19 \pm 0.94$  to  $10.93 \pm 1.38$  g/dl after one month. Another investigation highlighted the total iron content in recipes, ranging from 32.92 to 69.71 mg, with corresponding improvements in haemoglobin levels. A focused study on tribal anaemic adolescent girls demonstrated enhancements in haematological parameters, including an average increase in haemoglobin of 2.516 g/dl over three months following supplementation with garden cress seed. Further, an intervention with garden cress seed incorporated dietary supplement among anaemic adolescent girls (13-18 years) resulted in a haemoglobin increase from  $10.17 \pm 0.88$  to  $10.77 \pm 0.90$  g/dl over two months. In another study diets containing cookies prepared with garden cress seeds were fed to rats at various levels caused significantly elevated ( $p < 0.05$ ) haematological parameter values. Additionally, research on chicks administered with varying doses of *Lepidium Sativum* showed statistically significant increases in haemoglobin levels. Lastly, a study on pregnant women highlighted an increase of 1.32 gm/dl in haemoglobin levels among participants receiving garden cress seeds, further endorsing its efficacy. In conclusion, these intervention studies collectively affirm the beneficial impact of garden cress supplementation on enhancing iron status across different populations, from adolescent girls to pregnant women, offering a natural, accessible solution to iron deficiency anaemia.

### Biography

Charu Mendiratta, who earned her M.Sc. in Food and Nutrition from IIS University, Jaipur, India is currently deepening her expertise with Ph.D. research focused on adolescent anaemia. Demonstrating her commitment to academia, she has cleared the NET, a qualifying test for lectureship in India. Charu brings her knowledge and passion to Jaipur National University as an Assistant Professor in the School of Allied Health Sciences. In this capacity, she is instrumental in educating future health professionals, integrating her insights into nutrition and public health into their learning journey

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## MICROALBUMINURIA DETECTION: NEW HORIZONS

**Monu Kumari, Deepak Kumar, Rajasri Bhattacharyya and Dibyajyoti Banerjee**

*PGIMER Chandigarh, India*

### Abstract:

**Background:** Microalbuminuria is getting recognized as a biomarker of several disease states including diabetic nephropathy. Immunochemical-based methods are popular for microalbuminuria detection. However, it cannot detect the immunoreactive albumin fragments in urine. So, it is the need of the hour to develop other user-friendly methods that are most sensitive.

**Objective:** To study the specific coloring agent that binds more to albumin than globulins.

**Methods:** *In-silico*, *In-vitro*, and *In-vivo* methods were adopted.

**Results:** Commonly available azanium dyes that are used in food grain coloring can stain albumin specifically compared to globulins.

**Conclusions:** A specific albumin coloring agent/dye was discovered that binds less to globulins. We believe that this discovery will go a long way for microalbuminuria detection in a more sensitive manner.

### Biography

Monu Kumari is a dynamic and accomplished individual with a passion for biotechnology and an unwavering commitment to academic excellence. She earned her Bachelor's degree in Biotechnology from Himachal Pradesh University (HPU), and a Master's in Biotechnology from Panjab University, Chandigarh, INDIA, solidifying her expertise in the field. Monu is currently dedicated to advancing her knowledge as a Ph.D. student at PGIMER, Chandigarh. She has actively contributed to the academic community, showcasing her research through poster presentations at the prestigious ACBICON conference. Other than academia, she was honored with titles like "Miss Personality", "Exodia Idol", and recently "Miss Zenith 2023" at her institutional fest. Research Interest includes Protein sciences, POCT.

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## GLOBAL PERSPECTIVES ON SDG 2: STRATEGIES FOR ACHIEVING FOOD SECURITY AND NUTRITION

**Farah Hassan Slim, Zeinab Ibrahim, Imad Toufeili and Amira Abdallah Haddarah**

*Lebanese University, Lebanon*

### **Abstract:**

In pursuit of Sustainable Development Goal 2 (SDG 2) aiming to zero hunger, countries worldwide have implemented various strategies related to their income inequalities. Therefore, this paper consistently reviews the strategies implemented by eleven countries comprising various sectors and income levels from low-income to high-income countries, including Malawi, Afghanistan, Nigeria, India, Lebanon, Maldives, Brazil, Canada, Germany, UAE, and China. Each country's approach is thoroughly analyzed considering specific policies, key performance indicators, and policy metrics. The main objective is to identify and evaluate the effectiveness of these strategies by analyzing key indicators. This study also observes important factors influencing Food Security in those countries such as economic status, infrastructure efficiency, agricultural practices, government policies, climate change impacts, social and cultural dynamics, and global trade relationships, which collectively shape the accessibility, affordability, and sustainability of food resources. Ultimately, the conclusion shows the importance of flexibility, potential collaboration, and beneficial visions for progressing united efforts to address hunger.

### **Biography**

Farah Hassan Slim an Agricultural Engineer, completed her undergraduate studies at the Lebanese University earning her master's degree 2019 in food science and technology at the same institution. Driven by her passion for her major, she furthered her education by enrolling in a new professional master's program in microbiology - Quality and Food Safety at the Faculty of Public Health, Lebanese University.

Currently, Farah is a Ph.D. candidate at the Doctoral School of Science and Technology, Lebanese University. Her doctoral research focuses on the impact of the prolonged economic crisis on food insecurity in Lebanon.

The research she presented at the 2024 International Conference on Nutrition and Functional Foods shows a co-direction effort from both the Lebanese University and the American University in Beirut.

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## FUNCTIONAL FOODS FOR THE MANAGEMENT OF NON-ALCOHOLIC FATTY LIVER DISEASE

**Khushi Parnami and Swati Vyas**

*IIS (Deemed to be University), India*

### Abstract:

**Background:** Non-alcoholic fatty liver disease (NAFLD) is a major public health problem worldwide. The disease is characterized by excessive fat content of the liver of more than 5%, with no evidence of heavy alcohol or drug consumption. It is estimated that 20–30% of the adult population has NAFLD, with a higher prevalence in men. Numerous factors, including metabolic comorbidities, gut flora, environmental factors, and genetic factors, influence the onset and progression of non-alcoholic fatty liver disease (NAFLD). Recent studies have revealed a significant role for gut microbiota in the pathogenesis of metabolic diseases, particularly those associated with obesity, such as metabolic syndrome and non-alcoholic fatty liver disease (NAFLD). There is currently no proven treatment for NAFLD, but lifestyle modification, particularly diet, remains the first line of therapy. Studies have shown that the consumption of functional foods (such as sumac powder, garlic powder, *Nigella sativa*, and olive oil) and dietary supplements (like vitamin D, vitamin E, and fatty acid) may ameliorate NAFLD, which may be due to their bioactive compounds.

**Objective:** The aim of this review was to evaluate the published studies on the role of functional foods in the treatment of non-alcoholic fatty liver disease.

**Method:** Articles were searched in Google Scholar, PubMed and Science Direct databases using the appropriate terms, including “non-alcoholic fatty liver disease”, “functional foods”, “NAFLD”, “herbs”, “nutrition” and “n-3 PUFA”.

**Result:** The result shows the significant benefits of functional foods in the treatment of NAFLD. The studies showed that garlic powder (400 mg as tablets), milk thistle (560 mg as pills), caper fruit (40–50 g), cinnamon (750 mg as tablets), green tea extract (500 mg as tablets), turmeric powder (500 mg as capsule) and other functional foods containing bioactive compounds such as catechins, isoflavones, resveratrol, allicin, curcumin, gallic acid, silymarin and flavonoids, can alleviate NAFLD by improving hepatic steatosis, liver enzyme activity (aspartate aminotransferase (AST) and alanine aminotransferase (ALT)), lipid profile, serum cholesterol and oxidative stress. Although further exploration of the efficiency of these functional foods is needed to provide a reliable basis for clinical application.

**Conclusion:** It can be concluded from the reviewed studies that lifestyle modifications in the form of functional foods that are rich in health promoting bioactive compounds are a promising first line approach to prevent the progression of NAFLD in the population.

### Biography

Khushi Parnami is currently PhD scholar in IIS deemed to be University, Jaipur, India in Department of Home Science. Secured second position in under graduation from IIS deemed to be University, Jaipur. Her research experience includes Master Dissertation on Practices of using home remedies as an immunity booster during Covid-19, Udaipur, Rajasthan, India. Research Interest includes public health nutrition.

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## MICROGREENS AS A FUNCTIONAL COMPONENT OF DIET

**Anushka Thapliyal and Isha Sukhwai**

*IIS (Deemed to be University), India*

### Abstract:

**Background:** Most countries in the world suffer from a triple burden of malnutrition, which includes over-nutrition, undernutrition and micronutrient deficiencies. Global rates of diet-related chronic diseases, also known as NCDs (diabetes, obesity, cardiovascular diseases, and cancer) are rising. Micronutrient Malnutrition (MNM) has also become a significant global public health and socioeconomic issue and has a serious impact on third-world nations, especially the most vulnerable segments of the populace that include children, adolescent girls, pregnant and lactating women. Thus identifying and adopting a diet pattern that is low in simple carbohydrates, saturated fat and dense in micronutrients is essential to reduce this burden of malnutrition in the population worldwide. Due to society's expanding need and interest in a comfortable yet healthy lifestyle, the demand for fresh, ready-to-eat functional and nutraceutical food has increased in the recent decades. In this regard, microscale vegetables (microgreens and sprouted seeds) are gaining popularity across the globe as a source of fresh, readily consumable functional foods. Microgreens are young seedlings with single or paired dicotyledonous leaves that are grown from vegetable and herb seeds in soil or in vitro. Numerous studies have proved their dietary value in terms of mineral levels, vitamins, and phytochemicals. They are an appealing product to the consumers as they are rich in flavor and nutrients as well as require little effort in the way of production.

**Objective:** The primary objective of this review is to study the chemical makeup of microgreens and their role in promoting health among the global population.

**Methodology:** articles were searched using relevant search terms, such as "microgreens", "vegetable confetti" "sprouts and microgreens," "microgreen physiology," and "phytochemical content of microgreens," as well as "antioxidant property of microgreens" and "anti-inflammatory potential of microgreens," among the following databases were found: Science Direct, PubMed, and Google Scholar.

**Results:** According to the findings based on the reviewed literature, microgreens' unique nutritional profile and appealing sensory characteristics are making them a novel food source for healthy diets. They are confirmed to be the storehouse of antioxidant vitamins (provitamin A, tocopherol, ascorbic acid), minerals (majorly zinc and copper) in around twice the amounts of their mature counterparts. The abundance of polyphenols and glucosinolates in microgreens such as broccoli, radish, kale and mustard has accounted for anti-inflammatory, anti-hyperglycemic, antibacterial and anti-proliferative properties in them, while red cabbage microgreens have been useful in reducing weight gain accelerated by a high fat diet. Future research should focus on detailed explanations on mechanisms of their physiological benefits. As highlighted in the reviewed studies, microgreens being low-fat foods which are dense in micronutrients, possess a great potential which can help the global population to prevent non-communicable diseases.

**Conclusion:** Based on the reviewed studies it can be concluded that microgreens have a richer overall profile than their mature counterparts in terms of improved bioaccessibility of bioactive chemicals, they can be a fu-



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ture superfood that can lower the risk of chronic diseases and improve human health.

## Biography

Anushka Thapliyal is currently associated with IIS Deemed to be University as a Junior Research Fellow in the department of Home Science. She has a well rounded knowledge in her field of specialization (Foods and Nutrition) as she has prior experience of working as an Assistant professor in the department of Clinical Nutrition and Dietetics in Mahatma Gandhi Medical College and Hospital, Jaipur (Rajasthan, India). Her Research experience includes a master's dissertation on the Intuitive Eating behavior of university students of Udaipur city (Rajasthan, India). Research Interest includes Public Health Nutrition.

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## THE IMPACT OF MICRONUTRIENTS ON THE SENSE OF TASTE

**Samer Younes**

*Tartous University, Syria*

### Abstract:

**Background:** Among the most primal of senses (approximately 25), the sense of taste in humans is able to distill down to the basic 5 taste qualities of sweet, sour, bitter, salty, and umami, or savory. The sensation commonly known as taste is in fact a fusion of both smell and taste. The technical term for this amalgamation of sensory experiences while consuming food and beverages is referred to as taste. The term “taste” is intended to be limited to the perceived result of stimulating taste receptor cells on the surface of the tongue. This sense of taste is similar to the sense of smell in that the stimuli chemically interact with the receptors during the encoding process. Spices must dissolve in saliva to interact with taste receptors. Saliva then holds the dissolved chemicals near clusters of receptor cells called taste buds. Without saliva, the performance of the taste buds declines rapidly. The chemical taste receptors are hidden in “bumps” (called papillae) that cover the surface of the tongue. Vitamins are known to generate bitterness, which may contribute to an off-taste or aftertaste for some nutritional supplements. In humans, bitter taste detection is mediated by 25 G-protein-coupled receptors belonging to the TAS2R family.

**Objective:** The relationship, including possible regulatory activity, of certain nutrients (namely, vitamin E, A, D, C, B3, B6, B9, B12, Zn, and alpha-leipoic acid) to the already discussed pathways involved in the sense of taste.

**Methods:** We conducted a review by searching the Google Scholar, PubMed, and Directory Open access Journal databases for relevant information using keywords such as sense of taste, taste disorders, taste buds, bitter taste, taste loss, tender, red tongue, mouth sores, ulcers, saliva, reduced sense of taste, taste receptors, to identify primary comparative studies on treatment and management options for postviral taste loss. The quality and strength levels of the results were considered and when available meta-analyses and systematic reviews, large epidemiological studies and randomized control trials represented the main source of data.

**Results:** The deficiency of vitamin B12 has a clear effect on taste as it causes disruption in epithelial cells, producing tongue pain, redness of the tongue, and the absence of papilla, thereby increasing the taste. In addition, ALA and Vitamin C have a positive impact on the sense of taste. Vitamins D, B6, B9: have a strong bitter sensation and activate TAS2R7, TAS2R10 and TAS2R14 receptors sour threshold but vitamin E has a bland and tasteless flavor while study s salty taste acuity to be significantly improved by zinc supplementation. Niacin is also known as the "anti - black tongue factor because its deficiency can cause black tongue syndrome, i.e. , hyperkeratosis of the filiform lingual papillae, which appear as hair - like with a variable tinctorial aspect from yellow brown to black.

### Biography

Samer Younes had 2 years of experience in pharmaceutical services. Extensive background in clinical pharmacology. Excellent track record of delivering community health education programs and strong clinical and technical knowledge. Finished bachelor's degree in Pharmacy at 31.01.2024 from faculty of pharmacy, Tartous university, Syria and looking forward to applying for full funded scholarships to continue my master degree studies.

## FUNCTIONAL FOODS: HARNESSING NUTRITIONAL POWER TO COMBAT NON-COMMUNICABLE DISEASE

**Mohit and Sukhwal Isha**

*IIS (Deemed to be University), India*

### Abstract:

**Introduction :** Nutraceuticals, another name for functional foods, are extremely nutrient-dense and linked to several health advantages. They might, for instance, guard against illness, stop nutrient shortages, and encourage healthy growth and development. Since ancient times, there has been a connection between diet, maintaining good health, and preventing disease, new opportunities and perspectives for food ingredients over physiological, metabolic, health, and disease processes in consumers are presented by the growing recognition of the link between diet and health. Functional food deficiencies can result in non-communicable diseases, which are usually brought upon by faulty dietary behaviors rather than any other infections. About 28 million fatalities worldwide are attributed to non-communicable diseases (NCDs), out of which 38 million are in low- and middle-income nations. The three NCDs that cause the greatest number of deaths are diabetes, cancer, and cardiovascular disease (17.5, 8.2, and 1.5 million individuals, respectively). Functional foods that are high in fresh fruits and vegetables, whole grains, legumes, berries, tiny millets, and fish have been linked to lower risks of non-communicable diseases (NCDs). With their bioactive compounds, antioxidant qualities, anti-inflammatory qualities, fiber content, probiotics and prebiotics, low glycemic index, cardioprotective nutrients, and balanced macronutrients, these foods offer health benefits that go beyond basic nutrition. They also play a critical role in preventing non-communicable diseases (NCDs).

**Methodology:** Research was collected from secondary data using databases like PubMed, Google Scholar, DELNET, and Proquest.

**Conclusion:** Including functional foods in dietary patterns appears to be a convincing way to address the many issues that NCDs bring worldwide. The functional foods under evaluation are enhanced by bioactive chemicals, antioxidants, anti-inflammatory qualities, a healthy dose of fiber, a low glycemic index, and probiotic-rich foods that support gut health, improve general health, and aid in the prevention of non-communicable diseases.

### Biography

Mohit is currently a PhD scholar at IIS, deemed to be University Jaipur, Rajasthan, India, in the Department of Home Science. She holds both bachelor's and master's degrees from the same institution. In addition to her academic pursuits, she has ventured into the professional realm, gaining experience through a six-month internship at a diet clinic in Jaipur, Rajasthan, India. After internship period she worked in the same clinic. Research Interest includes Public Health Nutrition.

## ASHWAGANDHA AND ATHLETIC EXCELLENCE: A COMPREHENSIVE REVIEW OF SPORTS PERFORMANCE ENHANCEMENT

Priyal Vijay and Swati Vyas

*Jaipur National University, India*

### Abstract:

Ashwagandha (*Withania somnifera*) is a renowned plant in traditional Eastern medicine, known for promoting health. Its roots, rich in active components like steroid lactones (withanolides) and saponins, confer adaptogenic properties, potentially enhancing the body's resilience to stress and improving mental and physical performance. This review systematically examines intervention studies from PubMed, ScienceDirect, and Google Scholar databases, focusing on Ashwagandha's impact on sports athletes' physical performance. A significant study with elite Indian cyclists demonstrated that 500 mg capsules of aqueous Ashwagandha roots, taken twice daily for eight weeks, resulted in substantial improvements in VO<sub>2</sub> max ( $t = 5.356$ ;  $P < 0.001$ ), METS ( $t = 4.483$ ;  $P < 0.001$ ), and treadmill exhaustion time ( $t = 4.813$ ;  $P < 0.001$ ) compared to the placebo group. Another investigation emphasized Ashwagandha's efficacy in enhancing cardiorespiratory endurance in healthy athletic adults. The KSM-66 Ashwagandha group showed greater increases in mean VO<sub>2</sub> max at 8 weeks (4.91 vs. 1.42) and 12 weeks (5.67 vs. 1.86) compared to the placebo. Quality of life scores significantly improved in the Ashwagandha group at 12 weeks ( $P < 0.05$ ). A focused study on Ashwagandha root extract's impact on cardiorespiratory endurance and recovery revealed significant improvements in VO<sub>2</sub> max, TQR scores, and RESTQ assessments compared to the placebo group. Intervention in healthy adults performing resistance training showed notable improvements in chest press, leg press, and endurance after consuming 300 mg Ashwagandha capsules twice daily for eight weeks. Muscle girth for arm, chest, and thigh also increased significantly. Research on hockey players demonstrated improved agility levels after 4 weeks ( $t = 1.83$ ,  $p < 0.10$ ) and 8 weeks ( $t = 2.45$ ,  $p < 0.02$ ) with Ashwagandha root powder supplementation. In a study on delayed onset muscle soreness (DOMS), Ashwagandha showed a significant difference in peak power output on Day 3 post-exercise, indicating its potential to enhance or maintain peak power.

**Conclusion:** These intervention studies collectively affirm Ashwagandha's beneficial impact on sports performance, suggesting its potential advantage when combined with resistance training and proper nutrition for athletes.

### Biography

Priyal Vijay excels in improving health and well-being, showcasing her expertise in evaluation. Her innovative evaluation model, based on responsive constructivism, is paving the way for positive changes in healthcare. With five years of experience in research, evaluation, teaching, and administration, Priyal has crafted this model. Currently pursuing her Ph.D. in sports nutrition, Priyal is dedicated to enhancing the performance of young athletes. Her research focuses on not only boosting their skills on the field but also providing them with essential knowledge about nutrition to optimize their athletic potential. Research Interest includes : Sports Nutrition, Therapeutic Nutrition.

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## THE EVOLUTION OF MEDIA CULTURE: FROM GROWING BACTERIA TO TESTING ANTIBACTERIAL COMPOUNDS IN FOOD MICROBIOLOGY

**Massoud Attarianshandiz**

*Independent Researcher, Iran*

### **Abstract:**

In the realm of food microbiology, the significance of culture media in shaping research outcomes has often been understated. Originally conceived as a medium for bacterial growth in food matrices, culture media have quietly transitioned to a pivotal role in testing antibacterial compounds. Our literature exploration unravels this evolution, showcasing the intriguing interplay of media culture in food microbiology. One of the notable findings lies in the substantial variation in media choices when culturing the same bacterial species, such as *Listeria monocytogenes*. This variability prompts critical discussions on the comparability and interpretability of results.

A compelling suggestion emerges to address these challenges: utilizing environments with minimal substances to maintain bacterial viability while minimizing interactions with other compounds. This approach can offer a clearer understanding of the impact of antibacterial agents on target bacteria, as it reduces extraneous variables.

The chemistry of media culture, a less-considered facet, exerts a profound influence on research outcomes, further underscoring the need for a nuanced approach. While complete standardisation of culture media may prove elusive due to the unique attributes of bacterial species and test compounds, the integration of transparent reporting, justification for media choice, chemical profiling, collaboration, and data sharing emerges as a promising way forward. These strategies empower researchers to navigate the intricacies of media culture variation and make progress towards precise and reliable food microbiology practices.

As we venture into this dynamic field, the transformation of culture media from passive participants to active contributors in food microbiology remains a compelling narrative, urging researchers to consider not only the choice of media but also their underlying chemistry. This abstract sets the stage for a comprehensive examination of the evolving role of culture media, illuminating the complexities and offering pathways for future research in food microbiology and preservation.

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## DEVELOPMENT AND ANALYSIS OF FOOD BASED NUTRACEUTICAL BLEND

Isha Sukhwal and Swati. Vyas

IIS (Deemed to be University), India

### Abstract:

**Introduction:** Food based mixes also known as nutraceuticals blends, offer significant potential in promoting health and wellbeing due to their diverse nutrient profiles and potential synergistic effects. They are the amalgamation of whole foods such as fruits, vegetables, grains, nuts and seeds to create nutrient dense product. These blends can provide a wide range of essential vitamins, antioxidants and phytonutrients necessary for optimum health. In the present investigation the nutraceutical properties of wheat flour (*Triticum Aestivum*), Bengal Gram (*Cicer Arietnum*), Soybean (*Glycine Max*), curry leaves (*Murraya Koenigii*) and amla (*Phyllanthus Emblica*) were studied.

**Objective:** The objective of the study is to develop food based nutraceutical blend and estimate its nutrient, antioxidant components, total antioxidant activity, qualitative screening of phytochemicals, their functional properties as well as shelf life.

**Materials and methods:** In the present investigation Nutrient profile (Moisture, Ash, Protein, Fat, Fiber and Carbohydrate), Antioxidant components like Vitamin C (AOAC), Vitamin E and  $\beta$ -carotene (HPLC), Total polyphenols (Folin-Ciocalteu method). Total Antioxidant activity were estimated by DPPH. Screening of phytochemicals were estimated by the methods given in Evans and Trease, Functional properties like water absorption capacity, oil absorption capacity, swelling capacity, bulk density sedimentation volume were analyzed by using standard methods. The shelf life of the developed mixes were estimated over the period of 90 days at an interval of 15 days.

**Results:** The results of the nutrient profile revealed that the nutraceutical blend was loaded with fiber and was found to be excellent source of protein. Antioxidant components showed that there is a significant increase in the antioxidant as well as total antioxidant capacity at ( $p \geq 0.05$ ) level. The screening of the phytochemicals confirmed the presence of Alkaloids, Saponins and Flavanoids. The results of the functional properties clearly indicate that the mixes developed are recommended for the formulation of the products. The shelf life of the mixes estimated that there is no significant difference was observed in the developed blend over the period of 90 days.

**Conclusion:** Overall, food based blends present a promising avenue for promoting health and wellness by offering a convenient and effective means of delivering essential nutrients and bioactive components to the consumers.

### Biography

Isha sukhwali is presently working in IIS (deemed to be) university, Jaipur as Sr. Assistant professor in the Department of Home science. She is also an approved IGNOU counselor for the courses DNHE, CFN and MSC DFSM. She has more than 14 years of teaching and research experience. Her

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key areas of interest is teaching , research, Nutrition counseling and public health. She has guided more than 50 P. G dissertation. She is a member of organising committee in various National and International conference. Her own research has been awarded twice as best oral presentation in conference. She has also contributed chapters in books and published papers in journals indexed in SCOPUS, web of science, UGC Care etc. She is a life member of Indian Dietetic Association and also professional member of Universal Society of Food and Nutrition. She was served as an expert of board of studies of Sophia Girls College, Ajmer for the period of two years.

## EFFECT OF BEETROOT JUICE SUPPLEMENTATION ON MUSCLE SORENESS AND PERFORMANCE RECOVERY AFTER EXERCISE-INDUCED MUSCLE DAMAGE IN FEMALE VOLLEYBALL PLAYERS

**Afrooz Samsami pour**

*Shiraz University, Iran*

### Abstract:

**Background:** Beetroot juice (BRJ) contains various bioactive compounds suggested to be effective in improving athlete recovery. However, the number of studies evaluating the effects of BRJ on recovery and muscle soreness (MS) indicators in female athletes is limited. Therefore, the present study aimed to determine the effects of BRJ consumption on the performance recovery indicators and MS after exercise-induced muscle damage (EIMD) in female volleyball players.

**Methods:** Twelve young female volleyball players were evaluated in this study. We utilized a randomized, cross-over, and double-blind design during two phases with a 30-day interval (wash-out). During each phase, EIMD was performed first, followed by BRJ or placebo (PLA) supplementation for two days (eight servings of 50 mL). Recovery monitoring of performance indicators and MS was performed after EIMD. The results of wall-sit, V sit and reach (VSFT), vertical jump height (VJH), pressure pain threshold (PPT), and thigh swelling (Sw-T) tests were recorded 48 h after EIMD. Also, the Perceived Muscle Soreness was recorded using the visual analog scale (VAS) 12 (MS- 12 h), 24 (MS-24 h), and 48 (MS-48 h) hours after EIMD.

**Results:** The data were analyzed using two-way repeated measures of ANOVA at  $p < 0.05$ . Compared to PLA, BRJ supplementation improves wall-sit performance after EIMD ( $p < 0.05$ ), while reducing Sw-T and perceived muscle soreness ( $p < 0.05$ ). However, no significant difference was observed between PLA and BRJ in VJH and VSFT performance after EIMD ( $p > 0.05$ ).

**Conclusions:** Our findings indicate that the consumption of BRJ in female volleyball players can be useful for improving some recovery indicators, such as muscle endurance, perceived muscle soreness, and tissue edema, after EIMD.





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## EVALUATING THE IMPACT OF OMEGA-3 FATTY ACID SUPPLEMENTATION ON LIPID PROFILES IN ADULTS WITH PPARG POLYMORPHISMS: A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED TRIAL

A Ponomarenko, E Pokushalov, S Bayramova, C Garcia, I Pak, E Shrainer, Elena Voronina, Ekaterina Sokolova, M Johnson and R Miller

*Center for New Medical Technologies, Russia*

### Abstract:

**Background:** Emerging evidence suggests that PPARG gene polymorphisms may influence lipid metabolism and cardiovascular risk, with omega-3 fatty acids proposed to modulate these effects. However, the interaction between specific genetic variations and dietary interventions remains underexplored.

**Objective:** To assess the effects of fish oil supplementation on cardiovascular markers among adults with PPARG gene polymorphisms in a randomized, double-blind, placebo-controlled trial.

**Methods:** A cohort of 102 patients, aged 40-75 with LDL-C 70-190 mg/dL, was randomized to receive either 2000 mg of omega-3 fatty acids or a placebo daily for 90 days. Adherence, dietary and lifestyle constancy were monitored, and lipid and metabolic panels were evaluated at baseline and study conclusion.

**Results:** Ninety-nine participants completed the trial. In the omega-3 group with PPARG polymorphisms, LDL-C was reduced by 15.4% (95% CI: -19.8% to -11.0%), compared with a 2.6% decrease in the placebo group (95% CI: -4.1% to -1.1%;  $p < 0.01$ ). In the omega-3 group without PPARG polymorphisms, LDL-C was reduced by 3.7% (95% CI: -6.9% to -0.6%), not significantly different from the placebo group's reduction of 2.9% (95% CI: -5.1% to -0.8%;  $p = 0.28$ ). The reduction in LDL-C was notably 11.7% greater in those with PPARG polymorphisms than in those without (95% CI: -19.3% to -4.0%;  $p < 0.01$ ). Triglycerides decreased by 21.3% in omega-3 recipients with PPARG polymorphisms (95% CI: -26.5% to -16.2%;  $p < 0.01$ ), with no significant changes in HDL-C, total cholesterol, or hsCRP levels in any groups. Minor allele frequencies and baseline characteristics were comparable, ensuring a balanced genetic representation.

**Conclusion:** Omega-3 fatty acids significantly reduce LDL-C and triglycerides in carriers of PPARG polymorphisms, underlining the potential for genetic-driven personalization of cardiovascular interventions.

## LONGITUDINAL STUDY ON FEEDING DIFFICULTY AND ITS ASSOCIATION WITH REGURGITATION IN INFANTS UNDER 6 MONTHS OF AGE

An Yi Rodrigues, Orapa Suteerotrakool, Yuda Chongpison, Duangporn Maitreechit, Eakkarin Mekangkul, Siriporn Khabuan, Siriluck Suppapatiporn, Nathawan Khunsri, Sophie Gallier and Sirinuch Chomtho

*Imperial College London, UK*

### Abstract:

**Background:** Despite the World Health Organization (WHO) recommendations for exclusive breastfeeding during early life, suboptimal breastfeeding rates have become a consistent problem. Therefore, to encourage breastfeeding and develop an understanding of infant responses to varying feeding modes and milk types, a longitudinal study was performed to compare feeding difficulty among Thai infants.

**Aims:** The study aimed to assess how infant feeding difficulty changes with time and to evaluate its association with regurgitation.

**Methods:** A longitudinal survey by 4 interviews with mothers at infants aged 4, 9, 16, and 24 weeks. Neonatal Eating Assessment Tool (NeoEAT) scores based on criteria unique to each feeding mode (breastfeeding, bottle feeding, mixed feeding) were assessed. Milk type used and weekly regurgitation frequencies were recorded. Data was analysed by linear mixed models and plotted using STATA software.

**Results:** Data were collected from 188 mother-infant dyads with an average maternal age  $30.7 \pm 6.0$  years old. Over the course of the study, proportions of infants classified as 'concern' plus 'highly concern' were 4.02%, 6.55%, and 0.38% for breastfeeding, bottle feeding, and mixed feeding, respectively. Separate linear mixed models showed significantly decreased NeoEAT scores by the 9th week postpartum for bottle feeding and by the 16th week postpartum for breast and mixed feeding compared to baseline. After adjusting for age, linear mixed models showed regurgitation frequencies to be positively correlated with NeoEAT scores. Feeding and milk types did not significantly affect this association.

**Conclusion:** Proportion of abnormal feeding behavior scores in this population was low. Mothers' perception of feeding difficulty eased with time in infants under 6 months, regardless of feeding mode and milk type.

## EFFICACY OF THE MEDITERRANEAN DIET IN TREATING NON-ALCOHOLIC FATTY LIVER DISEASE IN CHILDREN AND ADOLESCENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

Asma Jamil, Tawanda Chivese, Usra ElShaikh and Marguerite Claire Sendall

*Qatar University, Qatar*

### Abstract:

**Background:** Nonalcoholic Fatty Liver Disease (NAFLD) is an increasing problem in children and adolescents which can lead to a series of serious complications. The only recommended treatment is lifestyle modification through diet and exercise. In adults, the guidelines suggest following the Mediterranean diet (MedDiet) as it is beneficial in adults for the treatment of nonalcoholic fatty liver disease. However, there is no evidence to suggest the MedDiet is beneficial in children and adolescents.

**Objective:** The objective of this study is to evaluate the effectiveness of the MedDiet to improve liver function in children and adolescents with NAFLD.

**Methods:** In this systematic review and meta-analysis of interventional studies, PubMed, Scopus, Embase, and other databases were thoroughly explored to identify eligible studies. The focus was on assessing changes in liver function through key enzymes—Alanine Transaminase (ALT), Aspartate Transaminase (AST), and Gamma-glutamyl transferase (GGT). Additionally, evaluations were made regarding lipid profile and insulin resistance. The Cochrane risk of bias tool assessed study biases. Bias-adjusted quality effect models calculated pooled weighted mean differences (MD) and their 95% confidence intervals. Heterogeneity and publication bias were analyzed via I<sup>2</sup> statistics and Doi plots.

**Results:** Total five studies were included in this review with 308 participants, two were randomized controlled trials and three quasi-experimental studies. In overall syntheses, the MedDiet was associated with improvement in liver function as shown by reductions in all the liver enzymes [ALT - WMD - 10.04 U/L, 95% CI -26.14 to 6.06, I<sup>2</sup>=86.2, AST - WMD -6.66 U/L, 95% CI -12.97 to -0.36, I<sup>2</sup>=65.8, GGT - WMD -0.49 U/L, 95% CI -3.13 to 4.11, I<sup>2</sup>=48.4], changes in both the lipid profile and insulin resistance were insignificant.

**Conclusion:** This meta-analysis shows that MedDiet improves liver function in children with NAFLD. More randomized controlled trials are needed to develop high-certainty evidence on these findings.

## ASSOCIATION OF DIETARY INTAKE WITH THE NUTRITION KNOWLEDGE, FOOD LABEL USE, AND FOOD PREFERENCES OF ADULTS IN SAN JOSE DEL MONTE CITY, BULACAN, PHILIPPINES

**Barby Jennette A Florano**

*University of the Philippines Los Baños, Philippines*

### **Abstract:**

**Background:** In the context of urban environments such as San Jose Del Monte City, where lifestyle-related diseases are on the rise, understanding the factors influencing dietary choices among adults is of paramount importance. This study explores the relationships between nutrition knowledge, food label usage, food preferences, and dietary intake, aiming to shed light on how these factors interplay in shaping eating habits.

**Objective:** The primary objective of this research is to investigate the associations between dietary quality and three key determinants: nutrition knowledge, food label use, and food preferences. These aspects are crucial in guiding the development of effective nutrition interventions targeting adults in urban settings.

**Methods:** A sample of 148 adults aged 18 to 39 residing in San Jose Del Monte City, Philippines, participated in this non-experimental, descriptive study. A comprehensive questionnaire encompassing personal demographics, dietary intake, nutrition knowledge, food preferences, and food label usage was employed. Dietary quality, a central component of the study, was assessed using the Diet Diversity Score (DDS), a semi-quantitative food frequency questionnaire, and the Food Guide Pyramid.

**Results:** Findings revealed a significant positive correlation between dietary intake and both food label usage and food preferences, highlighting their roles in influencing eating behaviors. However, no significant association was found between nutrition knowledge and dietary quality.

**Conclusion:** This study underscores the importance of comprehensive nutrition education interventions targeting adults, emphasizing not only nutrition knowledge but also the interpretation of food labels and the expansion of food preferences. To address the increasing burden of lifestyle-related diseases in urban populations, it is essential to understand the multifaceted nature of dietary choices and to design interventions that consider these intricate relationships. This research provides a foundation for developing effective health campaigns aimed at encouraging healthier eating habits among adults in urban areas.

## SELF-ASSEMBLED NANOPARTICLES OF FISH SCALE GELATIN INDUCED BY PH-SHIFTED METHOD WITH ENHANCED CURCUMIN SOLUBILITY

**Haoxin Li and Jia Liu**

*Universiti Kebangsaan Malaysia, Malaysia*

### **Abstract:**

**Background:** Typically, fish scales are thrown or regarded as worthless after being killed for use in an aquatic product market or industry. However, degraded collagen from fish scales may be easily subjected to thermal treatment to obtain fish gelatin, which is available in abundance.

**Objective:** To broaden the utilization of fish scale gelatin as a hydrophobic nutrient carrier and tackle the issues of its insufficient effectiveness for curcumin loading.

**Methods:** The hydrophobic characteristics of fish scale gelatin were improved by employing a pH-induced approach, and a self-assembled potential delivery system was developed to boost its interaction with curcumin. DLS, SEM, CLSM, FTIR, and AFM were combined to analyze the structural characteristics of fish scale gelatin.

**Results:** Hydrolysis accelerated the decomposition of gelatin to yield polymers with molecular weights ( $M_w$ ) ranging from 21152 to 426 Da. Analysis of amino acids and CD spectrum revealed a considerably higher fraction of hydrophobic amino acids in hydrolyzed FSG. Superior curcumin loading efficiency was shown by pH-shifting-assisted hydrolyzed FSG, which is probably due to improved hydrophobic interaction with the flexible structure.

**Conclusion:** The aforementioned findings warrant an inquiry into the function of fish scale gelatin hydrolysate in the construction of nanoparticles encapsulated with bioactive molecules.

## EFFECT OF DIETARY HERBS COMBINATION SUPPLEMENTATION ON THE EGG PRODUCTION PERFORMANCE AND EGG QUALITY OF LAYING HENS DURING LATE PHASE

He Jianhua, Lin Wenchao, Mei Huadi, Kong Xiangfeng, Fu Chenxing and He Jianhua

*Hunan Agricultural University, Changsha, China*

### Abstract:

The purpose of this investigation is to study the combination of three kind of traditional Chinese medicine ultrafine powder (Leonuri herba , motherwort ,MW; Ligustri lucidi fructus , privet seed , PS; Taraxaci herba , dandelion , DD)on laying performance and product quality of laying hens in the later stage of laying, A total of 288 Xinyang black laying hens at 43 week old were randomly divided into four groups with 8 replicates in each group and 9 birds in each replicate. The Laying hen of control group was fed with basic diet, and the experimental group was fed basal diet supplemented with 0.5% motherwort + 0.25% privet seed, 0.5% motherwort + 0.25% dandelion, 0.25% privet Seed + 0.25% dandelion . The trial was lasted for 120 days. Collect egg samples every 30 days to determine the egg quality. The results show that the experimental treatment had no significant effect on the egg laying production ( $P > 0.05$ ), but had a significant effect on the feed egg ratio from 1 to 120 days ( $P < 0.05$ ). Compared with the control group, MW-PS group had a significantly lower feed egg ratio ( $P < 0.05$ ). The experimental treatment had significant effects on albumin height, haugh unit, egg yolk colour, eggshell strength and eggshell thickness ( $P < 0.05$ ). Compared with the control group, on the 30th day of the experiment, the relative weight of yolk for herbs supplemented groups was higher than that of control group. On the 60th and 90th day of the experiment, the albumin height of PS-DD and MW-DD group were increased( $P < 0.05$ ), and the haugh unit of herbs supplemented groups were increased ( $P < 0.05$ ). On the 90th and 120th day of the experiment, the Eggs shell strength of herbs supplemented groups were increased ( $P < 0.05$ ). The content of egg yolk cholesterol in MW-PS and MW-DD group decreased significantly on the 60th day of the experiment ( $P < 0.05$ ). In conclusion, the dietary combination supplementation of traditional Chinese medicine can improve the feed conversion rate of laying hens to a certain extent, and improved the laying performance by decreased feed cost, improve the egg quality by the index of the albumin height, haugh unit, eggshell strength , and it also reduced the content of yolk cholesterol.

## AFLATOXINS IN FOOD PRODUCTS CONSUMED IN THE KINGDOM OF SAUDI ARABIA: A PRELIMINARY DIETARY RISK ASSESSMENT

Jumanah Alamir, Lama Almaiman, Yasser Alrujib, Rayan Alhamidi, Bandar Alowais, Saqer Alhussain, Abdullah Aldakheelallah, Majid Alkhalaf and Mohammed Bineid

*Saudi Food and Drug Authority, KSA*

### Abstract:

**Background:** Aflatoxins (AFs) are hepatotoxic, mutagenic, genotoxic, and immunosuppressive toxins. Several food commodities consumed in the Kingdom of Saudi Arabia (KSA) are susceptible to AF contamination because of improper storage practices and the warm and humid climate of the country.

**Objective:** To represent and analyze the occurrence levels of AFs in four food groups (cereals and grains; nuts and seeds; pulses, legumes, beans, and their products; and spices). In addition to estimate the chronic dietary intake of AFs for the Saudi adult population and to calculate the related cancer risk arriving from the exposure.

**Methods:** Therefore, the occurrence of AFs in 2388 food samples was measured and the estimated daily intake (EDI) of AFs in Saudi adults was assessed. The risks of AFB1 exposure were characterized using the margin of exposure (MoE) approach and by estimating the number of possible hepatocellular carcinoma (HCC) cases in the KSA.

**Results:** The results revealed that 12.1% of the analyzed samples were contaminated with AFs and the highest concentration of total AFs was observed in the nut and seed group. The mean EDI of AFB1 was estimated to be 0.21 and 0.55 ng/kg body weight (bw)/day for the lower bound (LB) and upper bound (UB) scenarios, respectively. The MoEs were estimated to be 1902.4 and 722.1, while the estimated liver cancer risk ranged from 0.002 to 0.008 cancer cases/year/100,000 persons.

**Conclusion:** Based on the study's findings, contamination with AFs in the KSA is low; however, AFs are considered potent genotoxic contaminants, and therefore, exposure through food should be kept as low as possible.



## ANTIBACTERIAL POTENTIAL OF LACTIC ACID BACTERIA ISOLATED FROM RAW COW MILK IN SYLHET DISTRICT, BANGLADESH: A MOLECULAR APPROACH

Md. Mahfujur Rahman, Mashuka Nahida Asha and MD Shahidur Rahman Chowdhury

*Sylhet Agricultural University, Bangladesh*

### Abstract:

**Background:** The most prevalent probiotic bacterium employed in the food industry is *Lactobacillus* because it can produce metabolites with antibacterial capabilities and exhibits hostility towards infections and microorganisms that cause spoilage.

**Objectives:** This study set out to identify naturally occurring *Lactobacillus* and plantaricin (pln EF) coding genes in raw cow milk and to assess the antibacterial potency of isolated *Lactobacillus* isolates.

**Methods:** Following enrichment in MRS broth, single colonies were isolated, and pure colonies were obtained by streaking on MRS agar. The 16S rRNA gene was amplified using PCR to confirm the cultural positivity of all isolates. Additionally, the presence of plantaricin was verified by targeting the pln EF gene through PCR.

**Results:** Out of the 166 raw milk specimens acquired from cows, 153 (91.17%; CI: 86.98-95.76) were identified as positive for *Lactobacillus* through both culture and biochemical screening. Subsequently, 121 (72.89%; CI: 65.46-79.49) of the isolates were affirmed to harbor *Lactobacillus* through PCR analysis. Within this subset, 6 isolates (4.96%; CI: 1.84-10.48) were found to possess the plnEF gene. When exposed to *Lactobacillus* isolates, *Salmonella typhimurium* and *Salmonella enterica* displayed an average maximum zone of inhibition with a diameter measuring 24 mm. In contrast, *Escherichia coli* exhibited an average minimum zone of inhibition, featuring a diameter of 11 mm. Additionally, the *Lactobacillus* isolates demonstrated inhibitory zones against *Staphylococcus aureus*, *Klebsiella pneumoniae*, and *Klebsiella oxytoca*, measuring 14 mm, 22 mm, and 19 mm, respectively.

**Conclusion:** Lactic acid bacteria, particularly *Lactobacilli*, are plentiful in cow milk and possess broad-spectrum antibacterial properties.

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## EMERGING PROCESSING TECHNOLOGIES: PROMISING TOOLS FOR IMPROVED PRODUCTION OF POSTBIOTICS AND PARAPROBIOTICS

**Monir-sadat Shakeri and Fahimeh Ramazanidoroh**

*Research Institute of Food Science and Technology, Iran*

### **Abstract:**

Probiotic cells have intense biological activities for application in different fields such as producing functional food, animal feeding as well as preventing and treating chronic diseases. However, the viability of probiotics is a crucial parameter for providing such benefits. Interestingly, postbiotics and paraprotiotics, as new biotic terms, could exert the same beneficial impacts without any requirement for survivability in the food or the gastrointestinal tract. Despite this new biotics could offer benefits like ease to use and storage, broad-spectrum antimicrobial activity, and stability in a wide range of pH and temperature.

A variety of methods could be implemented to produce postbiotics and paraprotiotics, from simple fermentation processes to innovative technologies like pulsed electric fields, ohmic heating, ultrasound, and high pressure. Considering each technology has its mechanism and may influence the biological activity of the final products, this review aims to assess the potential of different methods in producing postbiotics and paraprotiotics.

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## DEVELOPMENT AND OPTIMIZATION OF A NOVEL FUNCTIONAL BEETROOT-BASED BEVERAGE: PHYSICO-CHEMICAL ANALYSIS AND SENSORY EVALUATION

**Pratik Nayi, Tabbu Theba and Ameer Ravani**

*National Pingtung University of Science and Technology, Taiwan*

### **Abstract:**

Functional beverages are made up of fruits and vegetables and provide numerous health benefits while reducing the risk of health issues. To prepare a functional drink, beetroot, grapes, turmeric, and lemon were chosen due to their nutritional and medicinal properties. Mixture design, specifically the Response Surface Methodology, was used to optimize the blend formulations. The variables tested were beetroot juice, grapes juice, turmeric juice, and lemon, with a range of 50-60 ml, 30-40 ml, 1-5 ml, and 1-5 ml, respectively. The aim was to find the best solution for a blended juice with optimal values for acidity, ascorbic acid, antioxidant activity, and overall acceptability. The highest desirability value of 0.921 was obtained, with an acidity of 0.60%, ascorbic acid of 14.17 mg/100 ml, antioxidant activity of 93.94%, and OAA of 8.07. This was achieved with a blend containing 53.12 ml of beetroot juice, 40 ml of grapes juice, 1.88 ml of turmeric juice, and 5 ml of lemon juice.

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