# Recent Studies and Publications on Functional Foods

## *STUDIES*

### 1. Elucidation Of The Role Of In Silico Methodologies In Approaches To Studying Bioactive Peptides Derived From Foods

**This systematic review** presents the role of in silico methodologies used in studying peptides derived from foods. The attention is paid to databases as sources of information on peptides and the contribution of in silico procedures used for peptide analyses, including their advantages and disadvantages.

Although the hybrid strategy of research seems to mutually complement in silico and experimental approaches, there are some problems requiring to be resolved for better understanding the biopeptides' nature. These problems include: the stability of peptides, safety, bioavailability, bitterness, toxicity, water solubility, and food matrix interactions.

***Source: Anna Iwaniak, University Of Warmia And Mazury In Olsztyn, Faculty Of Food Science, Chair Of Food Biochemistry, Poland. Elucidation Of The Role Of In Silico Methodologies In Approaches To Studying Bioactive Peptides Derived From Foods. Journal Of Functional Foods, Volume 61, October 2019, 103486. https://doi.org/10.1016/j.jff.2019.103486***

### 2. Antiproliferative Effects And Main Molecular Mechanisms Of Brazilian Native Fruits And Their By-Products On Lung Cancer

**This systematic review** aimed to present the potential anticancer effect of Brazilian native fruits, their fractions, and by-products on Lung Cancer (LC) through the elucidation of the molecular mechanisms involved. The Brazilian plant matrices (açaí, achiote, araticum, camu camu, cocoa, jaboticaba, genipap, guarana, and pequi) showed promising evidence by inducing cellular apoptosis, reducing cancer cell viability and tumor growth, and regulating cell cycle.

***Source: Ana Paula Da Fonseca Machado, University Of Campinas, School Of Food Engineering, Monteiro Lobato, Campinas, São Paulo State, Brazil. Antiproliferative Effects And Main Molecular Mechanisms Of Brazilian Native Fruits And Their By-Products On Lung Cancer. Food Research International, Volume 162, Part A, December 2022, 111953. https://doi.org/10.1016/j.foodres.2022.111953***

### 3. Nutraceuticals: A Source Of Benefaction For Neuropathic Pain And Fibromyalgia

**The current review** concentrates on the role of a variety of nutraceuticals in the treatment of neuropathic pain and fibromyalgia, as well as their potential mechanisms and clinical trials.

***Source: Garima Mishra, Pharmaceutical Chemistry Unit, Department Of Pharmacy, College Of Health Sciences, Debre Tabor University, Debre Tabor, Ethiopia. Nutraceuticals: A Source Of Benefaction For Neuropathic Pain And Fibromyalgia. Journal Of Functional Foods, Volume 97, October 2022, 105260. https://doi.org/10.1016/j.jff.2022.105260***

### 4. Mushrooms As Functional And Nutritious Food Ingredients For Multiple Applications

**In this systematic review**, the current scientific data regarding the attributes of mushrooms that elicit their unique functional and nutritional properties, their relevance to the food industry, and potential opportunities for developing innovative, good-tasting, protein-rich foods from mushrooms are presented and discussed.

***Source: Marvin Moncada, Department Of Food Bioprocessing And Nutrition Sciences, Plants For Human Health Institute, North Carolina State University, Kannapolis, North Carolina, United States. Mushrooms As Functional And Nutritious Food Ingredients For Multiple Applications. ACS Food Sci. Technol. 2022, 2, 8, 1184–1195. https://doi.org/10.1021/acsfoodscitech.2c00107***

### 5. Impact Of Soybean Bioactive Compounds As Response To Diet-Induced Chronic Inflammation: A Systematic Review

**This systematic review** looked specifically at high-fat diet-induced and alcohol-induced inflammation and how it is modulated by specific bioactive compounds in soybean.

***Source: Elvira Gonzalez De Mejia, Department Of Food Science And Human Nutrition, University Of Illinois At Urbana-Champaign, 228 ERML Bldg, 1201 W Gregory Drive, Urbana, USA. Impact Of Soybean Bioactive Compounds As Response To Diet-Induced Chronic Inflammation: A Systematic Review. Food Research International, Volume 162, Part A, December 2022, 111928. https://doi.org/10.1016/j.foodres.2022.111928***

## 6. Consumption Of Fermented Foods Is Associated With Systematic Differences In The Gut Microbiome And Metabolome

Public interest in the effects of fermented food on the human gut microbiome is high, but limited studies have explored the association between fermented food consumption and the gut microbiome in large cohorts. In this study researchers used a combination of omics-based analyses to study the relationship between the microbiome and fermented food consumption in thousands of people using both cross-sectional and longitudinal data.

**This systematic review** revealed that fermented food consumers have subtle differences in their gut microbiota structure, which is enriched in conjugated linoleic acid, thought to be beneficial. Further studies of specific kinds of fermented food and their impacts on the microbiome and health are required.

***Source: Muriel Derrien, Danone Nutricia Research, Palaiseau, France. Consumption Of Fermented Foods Is Associated With Systematic Differences In The Gut Microbiome And Metabolome. mSystems. 2020 Mar 17;5(2):e00901-19. https://doi.org/10.1128/mSystems.00901-19***

## 7. A Review Of The Health Benefits Of Tea: Implications Of The Biochemical Properties Of The Bioactive Constituents

**This systematic review** examinined tea's variety, drinking habits, biochemistry, and therapeutic qualities.

Current review highlighted that drinking a cup or more green tea is recommended for improving antioxidant status and to manage diabetes and obesity related problem. However after detailed review work on tea it become clear that not only green tea but also other varies of tea like black, white tea are also harbour lots of bioactive molecules since they are processed from same plant.

Tea improves antioxidant status and manages diabetes and obesity. It also helps prevent and cure, heart disease, malignancy, digestive dysfunction, and metabolic disorders including obesity and diabetes. Epigallocatechin Gallate (EGCG), found in tea, has been shown to reduce complications from Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV 2) infection. When taken in its traditional form to manage ailments, tea is sometimes controversial due to a lack of confirming evidence of its benefits. The paper covers the numerous health advantages of tea, focusing on the specific components contributing to such benefits, and stresses the value of diverse brewing processes.

***Source: Sirshendu Chatterjee, Department Of Biotechnology, Techno India University, West Bengal, Salt Lake, Sector- V, Kolkata, West Bengal, India. A Review Of The Health Benefits Of Tea: Implications Of The Biochemical Properties Of The Bioactive Constituents. Curr Res Nutr Food Sci 2022; 10(2). http://dx.doi.org/10.12944/CRNFSJ.10.2.5***

## 8. A Polyphenol-Rich Diet Increases the Gut Microbiota Metabolite Indole 3-Propionic Acid in Older Adults with Preserved Kidney Function

Dietary polyphenols can alter the gut microbiota (GM) and promote the production of bioactive metabolites. The aim of this study is to explore the changes in GM-derived indoles during a polyphenol-rich (PR) diet intervention in older adults. The study was carried on fifty-one volunteers aged over sixty-five who kept following a diet rich in polyphenols (green tea, bitter chocolate, fruits including apples, pomegranate and blueberries) for eight weeks.

Researchers have concluded that a PR diet increases the serum concentration of indole 3-propionic acid (IPA) in older adults with normal RF. Further, these findings may be important when defining appropriate dietary interventions for older adults.

***Source: Gregorio Peron, Biomarkers And Nutrimetabolomics Laboratory, Department Of Nutrition, Food Sciences And Gastronomy, Food Innovation Network (XIA), Nutrition And Food Safety Research Institute (INSA), Faculty Of Pharmacy And Food Sciences, University Of Barcelona. A Polyphenol-Rich Diet Increases the Gut Microbiota Metabolite Indole 3-Propionic Acid in Older Adults with Preserved Kidney Function. Molecular Nutrition and Food Research, March 2022. DOI: 10.1002/mnfr.202100349***

## 9. Effects Of Garlic Supplementation On Non-Alcoholic Fatty Liver Disease: A Systematic Review And Meta-Analysis Of Randomized Controlled Trials

**This systematic review** shows that garlic supplement is conductive to the prevention and treatment of Non-Alcoholic Fatty Liver Disease (NAFLD).

***Source: Fengwei Tian, State Key Laboratory Of Food Science And Technology; School Of Food Science And Technology; And National Engineering Research Center For Functional Food, Jiangnan University, Wuxi, China. Effects Of Garlic Supplementation On Non-Alcoholic Fatty Liver Disease: A Systematic Review And Meta-Analysis Of Randomized Controlled Trials. Journal Of Functional Foods, Volume 99, December 2022, 105294. https://doi.org/10.1016/j.jff.2022.105294***

## 10. Pharmacological And Nutritional Benefits Of Flaxseed's (Linum Usitatissimum Linn.) Biocomponents

**This systematic review** provides a systematic summary of the research completed over the past decade and provides an up-to-date summary of the various bioactive and outlines the relationship between the nutritional and pharmacological use of flaxseed and its chemical ingredients.

***Source: Farogh Ahsan, Department Of Pharmacology, Faculty Of Pharmacy, Integral University, Lucknow, U.P. India. Pharmacological And Nutritional Benefits Of Flaxseed's (Linum Usitatissimum Linn.) Biocomponents. Current Functional Foods 2023; 1(1). https://dx.doi.org/10.2174/2666862901666220106140913***

## 11. Potential Of Polyphenolic Nutraceuticals In The Management Of Glioblastoma Multiforme

Glioblastoma Multiforme (GBM) is a malignant central nervous system tumor. GBM is produced by aggressive proliferation of cells and invasion of normal brain tissue.

**This systematic review** throws light on the anti-cancer efficacy of major polyphenol classes (Phenolic acid, Flavonoids, Stilbenes, Lignans) and discusses their prospective mechanisms of action in GBM.

***Source: Swati Devendra Raysing, Department Of Quality Assurance, R.C. Patel Institute Of Pharmaceutical Education And Research, Near Karwand Naka, Shirpur, M.S., India. Potential Of Polyphenolic Nutraceuticals In The Management Of Glioblastoma Multiforme. Current Nutraceuticals 2022; 3(2). https://dx.doi.org/10.2174/2665978603666220525161010***

## 12. Critical Review On The Immunomodulatory Activities Of Carrot's B-Carotene And Other Bioactive Compounds

**This systematic review** summarizes the proposed immunomodulatory mechanisms of the antioxidant properties of carrot's β-carotene and other bioactive compounds such as ***phenolic acid, flavonoid, polyacetylene*** and ***ascorbic acid*** via the anti-inflammatory, antioxidant and overall (innate and adaptive) immune response modulation.

Overall, carrot's bioactive compounds regulated pro-inflammatory and anti-inflammatory cytokines, reduced oxidative stress by decreasing the reactive oxygen species accumulation and improving antioxidant capacity and the expression of genes in order to prevent more damaging oxidative destruction. Carrots also modulated the immune components by regulating leukocytes, antigens, immunoglobulins, and histamine levels.

Thus, the immunomodulatory activity makes carrots as a functional food source that has the potential to prevent and treat various diseases.

***Source: Gemala Anjani, Nutrition Department, Faculty Of Medicine, Diponegoro University, Semarang, Indonesia. Critical Review On The Immunomodulatory Activities Of Carrot's B-Carotene And Other Bioactive Compounds. Journal Of Functional Foods, Volume 99, December 2022, 105303. https://doi.org/10.1016/j.jff.2022.105303***

## 13. Health Benefits Of Edible Mushroom Polysaccharides And Associated Gut Microbiota Regulation

**This systematic review** compiles and summarizes the latest studies that focus on the health benefits and underlying functional mechanisms of gut microbiota regulation via edible mushroom polysaccharides (EMPs).

Researchers have concluded that EMPs can be considered a dietary source for the improvement and prevention of several health risks, and this review provides the theoretical basis and technical guidance for the development of novel functional foods with the utilization of edible mushrooms.

***Source: Hang Xiao, Department Of Food Science, University Of Massachusetts, Amherst, Massachusetts, USA. Critical Reviews in Food Science And Nutrition Volume 62, 2022 - Issue 24 (62:24), 6646-6663. https://doi.org/10.1080/10408398.2021.1903385***

## 14. The Impact Of Almonds And Almond Processing On Gastrointestinal Physiology, Luminal Microbiology, And Gastrointestinal Symptoms: A Randomized Controlled Trial And Mastication Study

In this study researchers investigated the impact of whole almonds and ground almonds (almond flour) on fecal ***bifidobacteria*** (primary outcome), gut microbiota composition, and gut transit time.

The study shows that almond consumption has limited impact on microbiota composition but increases butyrate in adults, suggesting positive alterations to microbiota functionality. Almonds can be incorporated into the diet to increase fiber consumption without gut symptoms.

***Source: Kevin Whelan, Department Of Nutritional Sciences, King's College London, London, United Kingdom. The Impact Of Almonds And Almond Processing On Gastrointestinal Physiology, Luminal Microbiology, And Gastrointestinal Symptoms: A Randomized Controlled Trial And Mastication Study. The American Journal Of Clinical Nutrition, Volume 116, Issue 6, December 2022, Pages 1790-1804. https://doi.org/10.1093/ajcn/nqac265***

## 15. Young Cereal Grains As A New Source Of Healthy And Hypoallergenic Foods: A Review

**This systematic review** focused on major young cereals (wheat, rice and corn) compositions, bioactive compounds and applications that will benefit future research in plant-based food and functional ingredients.

***Source: P. Suwannaporn, Food Science And Technology, Kasetsart University, Bangkok, Thailand. Young Cereal Grains As A New Source Of Healthy And Hypoallergenic Foods: A Review. J Food Sci Technol 59, 3336–3348 (2022). https://doi.org/10.1007/s13197-021-05228-9***

## 16. A Red Wine Intervention Does Not Modify Plasma Trimethylamine N-Oxide But Is Associated With Broad Shifts In The Plasma Metabolome And Gut Microbiota Composition

This study investigated the effects of ***red wine (RW)*** consumption on the gut microbiota, plasma ***Trimethylamine N-Oxide (TMAO),*** and the plasma metabolome in men with documented coronary artery disease (CAD) using a multiomics assessment in a crossover trial.

Researchers have concluded that modulation of the gut microbiota may contribute to the putative cardiovascular benefits of moderate RW consumption. The low intraindividual concordance of TMAO presents challenges regarding its role as a cardiovascular risk biomarker at the individual level.

***Source: Protasio L Da Luz, Instituto Do Coracao (Incor), Hospital Das Clinicas HCFMUSP, Faculdade De Medicina, Universidade De São Paulo, São Paulo, SP, Brazil. A Red Wine Intervention Does Not Modify Plasma Trimethylamine N-Oxide But Is Associated With Broad Shifts In The Plasma Metabolome And Gut Microbiota Composition. The American Journal Of Clinical Nutrition, Volume 116, Issue 6, December 2022, Pages 1515-1529. https://doi.org/10.1093/ajcn/nqac286***

## 17. The Effect Of Curcumin Supplementation On Renal Function: A Systematic And Meta-Analysis Of Randomized Controlled Trials

**This systematic and meta-analysis of randomized controlled trials** shows that oral curcumin with high bioavailability has a positive impact on serum levels of creatinine and Blood Urea Nitrogen (BUN) when supplemented for > 8 weeks in patients with inflammatory diseases.

***Source: Amirhossein Sahebkar, Applied Biomedical Research Center, Mashhad University Of Medical Sciences, Mashhad, Iran. The Effect Of Curcumin Supplementation On Renal Function: A Systematic And Meta-Analysis Of Randomized Controlled Trials. Journal Of Functional Foods, Volume 100, January 2023, 105396. https://doi.org/10.1016/j.jff.2022.105396***

## 18. Interplay Of Dietary Antioxidants And Gut Microbiome In Human Health: What Has Been Learnt Thus Far

**This systematic review** discusses the health benefits of major dietary antioxidant groups, and the interaction of gut microbiota with these dietary antioxidants in-depth with various pre-clinical and human dietary interventions.

***Source: Ajaikumar Kunnumakara, Cancer Biology Laboratory, Department Of Biosciences And Bioengineering, Indian Institute Of Technology (IIT) Guwahati, Guwahati, Assam, India. Interplay Of Dietary Antioxidants And Gut Microbiome In Human Health: What Has Been Learnt Thus Far. Journal Of Functional Foods, Volume 100, January 2023, 105365. https://doi.org/10.1016/j.jff.2022.105365***

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