

Recent Studies & Publications on Functional Foods and Health Effects

(September 2020)

STUDIES

1. A Review On Anti-Cancer Effect Of Green Tea Catechins

This article reviewed inhibitory activities of green tea catechins (GTCs) against various tumorigenesis and their suppressive effects on cancer cell progression, metastasis, and angiogenesis. It also summarized the mechanisms of tea catechins-mediated cancer prevention in various cancer types. Special emphasis was placed on summarizing recent research highlighting the related techniques in improving GTCs' effectiveness in the prevention of tumor progression and/or treatment of cancers. Synergistic effects of catechins when combined with other phytochemicals and drugs, nanostructure-based delivery system, and molecular modifications of EGCG and catechins as means were discussed, and thus provide the basis to better utilize GTCs as the main ingredient of functional foods to reduce the risk of human cancer.

Source: Xiaoqiang Chen, National "111" Center For Cellular Regulation And Molecular Pharmaceutics, Key Laboratory Of Fermentation Engineering (Ministry Of Education), Hubei University Of Technology, Wuhan, China. A Review On Anti-Cancer Effect Of Green Tea Catechins. *Journal of Functional Foods*, Volume 74, November 2020, 104172. <https://doi.org/10.1016/j.jff.2020.104172>

2. Bioavailability And Health Benefits Of Major Isoflavone Aglycones And Their Metabolites

Isoflavones are stored in various plants and widely present in different kinds of food in variable amounts. However, isoflavone aglycones are found less frequently in natural products, a greater amount of isoflavone aglycones are found in fermented food. Isoflavone aglycones are more lipid soluble and thus easily able to go through the intestinal villi, resulting in increased bioavailability and greater bioactivity than glucosides. Recently, isoflavone aglycone and its metabolites were applied in different diseases in numerous studies. Thus, *this review organizes and collects newly-found reports of aglycones and their metabolites' bioavailability toward metabolism in human body, and its application in the prevention and treatment of various disorders such as cancers, obesity, diabetes, hypertension, hyperlipidemia, cardiovascular diseases, neurological disorders and osteoporosis.*

Source: Min-Hsiung Pan, Institute of Food Science and Technology, National Taiwan University, Taiwan. Bioavailability And Health Benefits Of Major Isoflavone Aglycones And Their Metabolites. *Journal of Functional Foods*, Volume 74, November 2020, 104164. <https://doi.org/10.1016/j.jff.2020.104164>

3. Effect Of Quercetin Supplementation On Plasma Lipid Profiles, Blood Pressure, And Glucose Levels: A Systematic Review And Meta-Analysis

This systematic review summarize evidence about the effects of quercetin supplementation on plasma lipid profiles, blood pressure (BP), and glucose levels in humans by performing a meta-analysis of randomized controlled trials.

Seventeen trials were included in the overall analysis. *Pooled results showed that quercetin significantly lowered both systolic BP and diastolic BP. Neither lipid profiles nor glucose concentrations changed significantly.* In subgroup analyses, significant changes in high-density lipoprotein cholesterol and triglycerides were observed in trials with a parallel design and in which participants consumed quercetin for 8 weeks or more.

Source: Haohai Huang, Department Of Clinical Pharmacy, Dongguan Third People's Hospital, Affiliated Dongguan Shilong People's Hospital Of Southern Medical University, Dongguan, Guangdong, China. *Nutrition Reviews*, Volume 78, Issue 8, August 2020, Pages 615-626. <https://doi.org/10.1093/nutrit/nuz071>

4. The Conundrum Of Dietary Antioxidants In Cancer Chemotherapy

Although chemotherapy succeeds in reducing tumor burden, the efficacy is limited due to acquired drug resistance and often irreparable side effects. Studies show that antioxidants may influence the response to chemotherapy and its side effects, although their use remains controversial. The evidence shows that some chemo-drugs induce oxidative stress and lead to normal tissue apoptosis and the entry of cancer cells to a dormant G0 state. Through the suppression of oxidative stress, antioxidants could protect normal cells and bring the tumor out of dormancy so as to expose it to chemotherapies. *This review is focused on the redox biology of cancer/normal cells and association of reactive oxygen species with drug resistance, cancer dormancy, and side effects. Further, evidence from cellular, animal, and clinical studies provides better understanding about the conundrum of dietary antioxidants in cancer chemotherapy.*

Source: G. Pavon-Djavid, INSERM U1148, Laboratory For Vascular Translational Science, Cardiovascular Bioengineering Université Paris 13, PRES Sorbonne Paris Cité 99, Av Jean-Baptiste Clément, France. *The Conundrum Of Dietary Antioxidants In Cancer Chemotherapy.* *Nutrition Reviews*, Volume 78, Issue 1, January 2020, Pages 65-76. <https://doi.org/10.1093/nutrit/nuz027>

5. Effects Of Soy Isoflavones On Cognitive Function: A Systematic Review And Meta-Analysis Of Randomized Controlled Trials

This review evaluates the effects of soy isoflavones on cognition in adults. Study result shows that soy isoflavones may improve overall cognitive function and memory in adults.

Source: Akira Sekikawa, Department Of Epidemiology, Graduate School Of Public Health, Pittsburgh, USA. *Effects Of Soy Isoflavones On Cognitive Function: A Systematic Review And Meta-Analysis Of Randomized Controlled Trials*. *Nutrition Reviews*, Volume 78, Issue 2, February 2020, Pages 134-144, <https://doi.org/10.1093/nutrit/nuz050>

6. Potential Health Benefits Of (Poly)Phenols Derived From Fruit And 100% Fruit Juice

(Poly)phenol-rich diets have been associated with reduced risk of various diseases. Coffee and tea are typically identified as dietary sources of chlorogenic acid and flavan-3-ols; however, 100% fruit juice greatly contributes to anthocyanin, flavonol, flavan-3-ols, and flavanone intake, making them complementary sources of dietary (poly)phenols.

This review provides an overview of fruit (poly)phenols and their potential health benefits. Fruit (poly)phenols have been associated with several health benefits (e.g., reduced risk of cardiovascular disease and neurocognitive benefits). Although perspectives on 100% fruit juice consumption are controversial due to the perception of sugar content, growing evidence supports the role of fruit in whole and 100% juice forms to provide consumer benefits in alignment with dietary guidance. However, differences in (poly)phenol profiles and bioavailability likely exist between whole fruit and 100% fruit juice due to processing and the presence/absence of fiber. Further, studies are required for better defining similarities and differences between whole fruit and 100% fruit juice to elucidate protective mechanisms and align with processing and consumer products.

Source: Kacie K H Y Ho, Department Of Human Nutrition, Food And Animal Sciences, University Of Hawai'i At Mānoa, Honolulu, Hawaii, USA. *Potential Health Benefits Of (Poly)Phenols Derived From Fruit And 100% Fruit Juice*. *Nutrition Reviews*, Volume 78, Issue 2, February 2020, Pages 145-174, <https://doi.org/10.1093/nutrit/nuz041>

7. Role Of Berries In Vascular Function: A Systematic Review Of Human Intervention Studies

This systematic review provides evidence about short- and long-term benefits of berries on outcomes of vascular function.

The overall results suggest a protective role of berries in vascular function, likely dependent on the time of exposure, the type and dose of berry, and the biomarkers analyzed. Flow-mediated dilation and reactive hyperemia index (markers of vascular reactivity) improve following short-term interventions, while pulse wave velocity and augmentation index (markers of arterial stiffness) improve only after medium- to long-term intervention. Further studies are required to elucidate the mechanisms involved in such modulation.

Source: Cristian Del Bo, Department Of Food, Environmental And Nutritional Sciences (DeFENS), Division Of Human Nutrition, University Of Milan, Milan, Italy. *Role Of Berries In Vascular Function: A Systematic Review Of Human Intervention Studies*. *Nutrition Reviews*, Volume 78, Issue 3, March 2020, Pages 189-206, <https://doi.org/10.1093/nutrit/nuz053>

8. An Overview Of Neem (Azadirachta Indica) And Its Potential Impact On Health

Azadirachta indica (Neem), is a tree originally from India and Myanmar, called by many "The village pharmacy" or "Divine tree" because of its many health properties. In recent times, Neem-derived extracts have been shown to work from anywhere from insect repellent, to supplements to lower inflammation, diabetic control, and even to combat cancer. *This review provides an overview about the health benefits found in diverse compounds and extracts derived from Neem, highlighting the mechanisms and pathways in which Neem compounds produce their effects, while warning that the improper and unstandardized conditions to produce extracts can lead to health issues, particularly certain compounds which might have damaging effects on the liver and kidneys.*

Source: Jorge E. Moreno-Cuevas, Universidad De Monterrey, Ciencias De La Salud, Ave. Ignacio Morones Prieto 4500 Pte., San Pedro Garza García, Mexico. 9. *An Overview Of Neem (Azadirachta Indica) And Its Potential Impact On Health*. *Journal of Functional Foods*, Volume 74, November 2020, 104171. <https://doi.org/10.1016/j.jff.2020.104171>

9. Sulforaphane From Broccoli Attenuates Inflammatory Hepcidin By Reducing IL-6 Secretion In Human Hepg2 Cells

Cancer is a worldwide health problem, notably liver cancer. Under inflammatory conditions, pro-inflammatory cytokine can stimulate the production of hepcidin, the principal hormone for controlling iron status, leading to iron deficiency and subsequent anaemia. Sulforaphane (SF), a broccoli-derived isothiocyanate (ITC), has been indicated to inhibit the secretion of pro-inflammatory cytokines including interleukin (IL-6). This study investigates the impact of SF on IL-6 and hepcidin production in response to bacterial lipopolysaccharide (LPS) in human cancer HepG2 cells.

Study result shows that SF suppressed LPS-induced transcription and secretion of interleukin-6 (IL-6) after 24hrs of treatment at physiologically relevant concentration (2 μ M). This was associated with a decrease in hepcidin secretion. SF was not associated with any cellular toxicity, indicating the protective effect of SF against inflammatory responses including inflammatory hepcidin. This study reveals the potential usage of broccoli-derived SF as a functional food ingredient in attenuating the inflammation-induced hepatic hepcidin and reducing liver cancer risk development.

Source: Ala'a Al-Bakheit, Department Of Nutrition And Food Processing, Faculty Of Agricultural Technology, Al-Balqa Applied University, Al-Salt, Jordan. Sulforaphane From Broccoli Attenuates Inflammatory Hepcidin By Reducing IL-6 Secretion In Human Hepg2 Cells. *Journal of Functional Foods*, Volume 75, December 2020, 104210. <https://doi.org/10.1016/j.jff.2020.104210>

10. Phytochemicals Containing Biologically Active Polyphenols As An Effective Agent Against Covid-19-Inducing Coronavirus

The outbreak of Covid-19 disease caused by SARS-CoV-19, along with the lack of targeted medicaments and vaccines, forced the scientific world to search for new antiviral formulations. *This review describes the current knowledge about plant extracts containing polyphenols that inhibit Covid-19. Many plant-derived natural compounds (polyphenols) might provide a starting point for the research on the use of plant extracts in coronavirus treatment and prevention.* Antivirus polyphenolic drugs can inhibit coronavirus enzymes, which are essential for virus replication and infection. *This group of natural substances (betulinic acid, indigo, aloemodine, luteolin, and quinomethyl triterpenoids, quercetin or gallates) is a potential key to designing antiviral therapies for inhibiting viral proteases.* The known pharmacophore structures of bioactive substances can be useful in the elaboration of new anti-Covid-19 formulations. The benefit of using preparations containing phytochemicals is their high safety for patients and no side effects.

Source: D. Skrzypczak, Department of Advanced Material Technologies, Faculty of Chemistry, Wrocław University of Science and Technology, Poland. Phytochemicals Containing Biologically Active Polyphenols As An Effective Agent Against Covid-19-Inducing Coronavirus. *Journal of Functional Foods*, Volume 73, October 2020, 104146. <https://doi.org/10.1016/j.jff.2020.104146>

11. The Bioactive Compounds And Biological Functions Of Asparagus Officinalis L. – A Review

Asparagus (Asparagus officinalis L.) is a perennial herb with various bioactivities and has been widely used as medicine and food since ancient times. With the reputation of “the king of vegetables” in the international market, its health benefits and biological functions have attracted increasing interests from both public and academia. *This review summarizes the nutritional values, bioactive compounds, biological functions and the food and non-food applications of asparagus.* It also discusses the relationships between health benefits and its bioactive components. Asparagus contains various phytochemical compounds such as *polysaccharides, polyphenols, anthocyanins and saponins, which exhibit anti-cancer, anti-tumor, antioxidant, immunomodulatory, hypoglycemic, anti-hypertensive and anti-epileptic effects* through *in vitro* and *in vivo* experiments. Further, it also facilitates the food and medicinal application of Asparagus in the future.

Source: Qingbin Guo, State Key Laboratory Of Food Nutrition And Safety, School Of Food Science And Engineering, Tianjin University Of Science And Technology, China. The Bioactive Compounds And Biological Functions Of Asparagus Officinalis L. – A Review. *Journal of Functional Foods*, Volume 65, February 2020, 103727. <https://doi.org/10.1016/j.jff.2019.103727>

12. Targeting Flavonoids On Modulation Of Metabolic Syndrome

Metabolic Syndrome (MetS) is a complex condition associated with cardiovascular risk factors and diabetes. The weight gain, especially the accumulation of central adipose tissue, may be the first leading cause of the MetS. It is important to highlight that the lifestyle choices considered as modifiable risk factors contribute to the increase in the incidence of the MetS in the population, such as sedentarism and food intake. There is evidence in the literature concerning the benefits associated with the Mediterranean diet, which is rich in polyphenols. Therefore, the flavonoids are a class of non-nutrient that can be extensively studied mainly to elucidate the mechanisms related to the action of these compounds in the modulation of the microbiota, DNA methylation and health improvement. Thus, *this review summarizes evidence linking flavonoid intake to obesity, insulin resistance, T2DM and cardiovascular diseases.*

Source: Iramia Angélica Neri-Numa, Laboratory Of Bioflavours And Bioactive Compounds, Department Of Food Science, Faculty Of Food Engineering, University Of Campinas, UNICAMP, SP, Brazil. Targeting Flavonoids On Modulation Of Metabolic Syndrome. *Journal of Functional Foods*, Volume 73, October 2020, 104132. <https://doi.org/10.1016/j.jff.2020.104132>

13. Proanthocyanidins In Grape Seeds: An Updated Review Of Their Health Benefits And Potential Uses In The Food Industry

Grape seeds are rich sources of *proanthocyanidins*, which comprise *polyhydroxyflavan oligomers or polymers*. The beneficial health properties of grape seed proanthocyanidins are attributed to their conjugated and colonic metabolites. There is potential for a two-way relationship between the gut microbiota and grape seed proanthocyanidin. In particular, numerous *in vitro* and *in vivo* studies have demonstrated that *grape seed proanthocyanidins appear to exert pharmacological effects*. These include *anti-oxidant, anti-microbial, anti-obesity, anti-diabetic, anti-neurodegenerative, anti-osteoarthritis, anti-cancer, and cardio- and eye-protective properties*. *This review summarizes the current literature regarding grape seed proanthocyanidins, focusing on the recently proposed mechanisms of action from clinical trials considered to underlie pharmacological and disease-preventing properties, along with their bioavailability, toxicology, and safety with regard to potential utilization in the food industry.*

Source: Nurhan Unusan, Nutrition And Dietetics Department, KTO Karatay University, Konya, Turkey. Proanthocyanidins In Grape Seeds: An Updated Review Of Their Health Benefits And Potential Uses In The Food Industry. Journal of Functional Foods, Volume 67, April 2020, 103861. <https://doi.org/10.1016/j.jff.2020.103861>

14. Impact Of Functional Flours From Pineapple By-Products On Human Intestinal Microbiota

Solid fractions from pineapple stems and peels are constituted by structural carbohydrates coupled with dietary fiber, simple sugars, vitamins and polyphenols, which together can have potential effects on human health. This study shows the bioavailability and bio accessibility of pineapple by-products fractions throughout simulate gastrointestinal tract, evaluates prebiotic potential and *in vitro* human microbiota fermentation. The pineapple flours promote the human faeces fermentation through growth of beneficial strains, being corroborated by the decrease of simple sugars and the production of healthy organic acids (acetic, propionic and butyric acids) - well known short chain fatty acids. On the other hand, a high phenolic compounds content is release through flours digestion, developing an antioxidant environment within human gut. This study conclude that *pineapple flour promotes a positive modulation in the overall system, proving a synergetic interaction of dietary fibre and polyphenols upon human microbiota.*

Source: Maria Manuela Pintado, Universidade Católica Portuguesa, CBQF - Centro de Biotecnologia e Química Fina - Laboratório Associado, Escola Superior de Biotecnologia, Portugal. Impact Of Functional Flours From Pineapple By-Products On Human Intestinal Microbiota. Journal of Functional Foods, Volume 67, April 2020, 103830. <https://doi.org/10.1016/j.jff.2020.103830>

15. Effect Of Dietary Anthocyanins On Biomarkers Of Oxidative Stress And Antioxidative Capacity: A Systematic Review And Meta-Analysis Of Randomized Controlled Trials

In this study, the efficacy of dietary anthocyanins (ACs) on indices of oxidative stress and antioxidative capacity was evaluated through a meta-analytical approach. Meta-analysis of 23 trials indicated that ACs significantly reduced the levels of, oxidized low-density lipoprotein, and isoprostane while significantly increased the level of total antioxidative capacity and activity of superoxide dismutase and glutathione peroxidase. Compared to healthy subjects, *ACs were more useful for unhealthy subjects because of the significant decrease in MDA, Ox-LDL, and isoprostane levels; and significant increase in TAC level and SOD activity. The overall results indicate that dietary ACs alleviate oxidative stress and enhance antioxidative capacity in the subjects.*

Source: Tina Jafari, Medical Plants Research Center And Department Of Biochemistry And Nutrition, Faculty Of Medicine, Shahrekord University Of Medical Sciences, Shahrekord, Iran. Effect Of Dietary Anthocyanins On Biomarkers Of Oxidative Stress And Antioxidative Capacity: A Systematic Review And Meta-Analysis Of Randomized Controlled Trials. Journal of Functional Foods, Volume 68, May 2020, 103912. <https://doi.org/10.1016/j.jff.2020.103912>

16. Novel Insights In Health-Promoting Properties Of Sweet Cherries

Sweet cherry (*Prunus avium* L.) is one of the most popular and appreciated temperate fruit not only for its sensory and nutritional properties, but also for its content in bioactive compounds. *Consumption of sweet cherries brings beneficial effects on to health, which include prevention and modulatory effects in several chronic diseases such as (diabetes mellitus, cancer, cardiovascular and other inflammatory diseases).* According to the researchers the presence of natural polyphenolic compounds with high antioxidant potential might drive and partly explain such beneficial effects, but more translational and clinical studies should address this topic. *This review highlights the health-promoting properties of cherries and their bioactive compounds against human diseases.*

Source: Piero Portincasa, Clinica Medica "A. Murri", Department of Biomedical Sciences and Human Oncology, Paediatric Section, University of Bari "A. Moro", Bari, Italy. Novel Insights In Health-Promoting Properties Of Sweet Cherries. Journal of Functional Foods, Volume 69, June 2020, 103945. <https://doi.org/10.1016/j.jff.2020.103945>

17. Antioxidant And Antimicrobial Activity Of Fruit Juice

In this study researchers explore the effect of fresh juices on humans to study how it prevents cell damage and promotes antioxidant activity. It also investigates the capacity to kill microorganisms in human beings by the intake of fresh fruit juices. The samples of three fruits were taken including apple, grapes and pomegranate. This study concluded that apple has high anti-microbial activity as compared to grapes and pomegranates.

Source: Hassan Raza, The Islamia University of Bahawalpur, Pakistan. Antioxidant And Antimicrobial Activity Of Fruit Juice. Journal of Nutrition & Food Sciences, Vol10, No. 5, ISSN 2155-9600. <https://www.longdom.org/open-access/antioxidant-and-antimicrobial-activity-of-fruit-juice.pdf>

18. Effects Of Grape Seed Extract On Dyslipidaemia: A Systematic Review And Dose-Response Meta-Analysis Of Randomized Controlled Trials

A systematic review and meta-analysis of randomized controlled clinical trials on the effect of grape seed extract (GSE) on serum lipid profiles. Study result shows that **GSE supplementation significantly decreased serum levels of LDL-cholesterol and triglycerides (TAG) but has no significant effect on circulating total- and HDL-cholesterol levels.** Further, there were significant reductions in these lipids in studies with <10 weeks of intervention and those that had administered the dosages of <300 mg/d of GSE.

Source: Javad Anjom-Shoae, Students' Scientific Research Center And Department Of Community Nutrition, School Of Nutritional Sciences And Dietetics, Tehran University Of Medical Sciences, Tehran, Iran. Effects Of Grape Seed Extract On Dyslipidaemia: A Systematic Review And Dose-Response Meta-Analysis Of Randomized Controlled Trials. British Journal Of Nutrition, Volume 124, Issue 228 July 2020, pp. 121-134. fahan, <https://doi.org/10.1017/S0007114520000902>

19. Effect Of 4 Weeks Daily Wild Blueberry Supplementation On Symptoms Of Depression In Adolescents

Adolescence is an important period for cognitive maturation and emotional regulation, and this age group is particularly vulnerable to developing depression. **Diets rich in fruits and vegetables have been associated with decreased risk of developing depressive disorders across the lifespan, maybe due to the high flavonoid content of these foods.** The present study is a randomized double-blind, placebo-controlled trial which investigated the effects of 4 weeks, daily wild blueberry (WBB) supplementation (containing about 253 mg anthocyanins) on transient and chronic mood in adolescents. Healthy 12-17-year old participants were randomly assigned to receive either a WBB or matched placebo supplementation. Depression and anxiety symptoms were assessed before and after the intervention period using the Mood and Feeling Questionnaire and Revised Child Anxiety and Depression Scale. Transient affect was assessed before, 2 weeks and at 4 weeks using PA and negative affect.

Study result shows that during the intervention period, there were significantly fewer self-reported depression symptoms in participants who were supplemented with WBB compared with placebo. There was no between-group effect on anxiety symptoms or on transient affect. **The observed effects of WBB supplementation may be a potential prevention strategy for adolescent depression and may have benefits for public mental health.** Further investigation is required to identify specific mechanisms that link flavonoids consumption and mood.

Source: Claire M. Williams, School Of Psychology And Clinical Language Sciences, University Of Reading, Reading, UK. Effect Of 4 Weeks Daily Wild Blueberry Supplementation On Symptoms Of Depression In Adolescents. British Journal Of Nutrition, Get access Volume 124, Issue 228 July 2020, pp. 181-188. <https://doi.org/10.1017/S0007114520000926>

20. Effects Of Strawberry Intervention On Cardiovascular Risk Factors: A Meta-Analysis Of Randomized Controlled Trials

Meta-analysis of randomized controlled trials (RCT) has been conducted to examine the effects of strawberry interventions on cardiovascular risk factors. **Study result shows that strawberry interventions significantly reduced C-reactive protein (CRP) levels and may improve total cholesterol (TC) and LDL-cholesterol in individuals with high baseline levels.**

Source: Ehab S. Eshak, Public Health, Department Of Social Medicine, Osaka University Graduate School Of Medicine, Osaka, Japan. Effects Of Strawberry Intervention On Cardiovascular Risk Factors: A Meta-Analysis Of Randomized Controlled Trials. British Journal Of Nutrition, Get access Volume 124, Issue 314 August 2020, pp. 241-246. <https://doi.org/10.1017/S000711452000121X>

21. Effect Of Daily Consumption Of Cranberry Beverage On Insulin Sensitivity And Modification Of Cardiovascular Risk Factors In Adults With Obesity: A Pilot, Randomized, Placebo-Controlled Study

Cranberries are high in polyphenols, and epidemiological studies have shown that a high-polyphenol diet may reduce risk factors for diabetes and CVD. The present study investigates whether short-term cranberry beverage consumption would improve insulin sensitivity and other cardiovascular risk factors.

Thirty-five individuals with obesity and with elevated fasting glucose or impaired glucose tolerance participated in a randomized, double-blind, placebo-controlled, parallel-designed pilot trial. Participants consumed 450 ml of low-energy cranberry beverage or placebo daily for 8 weeks. Changes in insulin sensitivity and cardiovascular risk factors including vascular reactivity, blood pressure, RMR, glucose tolerance, lipid profiles and oxidative stress biomarkers were evaluated.

Study results indicated that 8 weeks of daily cranberry beverage consumption may not impact insulin sensitivity but may be helpful in lowering TAG and changing certain oxidative stress biomarkers in individuals with obesity and a proinflammatory state.

Source: Daniel S. Hsia, Pennington Biomedical Research Center, Baton Rouge, USA. Effect Of Daily Consumption Of Cranberry Beverage On Insulin Sensitivity And Modification Of Cardiovascular Risk Factors In Adults With Obesity: A Pilot, Randomized, Placebo-Controlled Study. British Journal Of Nutrition, Volume 124, Issue 628 September 2020, pp. 577-585. <https://doi.org/10.1017/S0007114520001336>

22. Antioxidant And Anti-Obesity Properties Of Local Chilies Varieties In Malaysia

This study investigated the antioxidant (content and activity) and anti-obesity properties of five different varieties of local chili peppers.

Study results indicated that *Kulai 568* pulp extract had the highest level of **total phenolic content (TPC)**, whereas *Centil* pulp extract had the highest level of **total flavonoid content (TFC)**. The **antioxidant activities of Bara pulp extract had the highest value** in ferric-reducing antioxidant power (FRAP) and 2,2'-azino-bis-(3-ethyl-benzothiazoline-6-sulphonic acid (ABTS) assays. High performance liquid chromatography (HPLC) analysis shows that **Bara pulp extract has the highest level of capsaicin**. In terms of **inhibition of oil accumulation Centil seed extract presented the best result while Bara pulp extract inhibited the most pancreatic lipase activity**. Thus, it is suggested that **Centil seed and Bara pulp extracts can be a potent antioxidant and anti-obesity agents**.

Source: Azrina Azlan, Department of Nutrition and Dietetics, Faculty Of Medicine And Health Sciences; Research Centre Of Excellence For Nutrition And Non-Communicable Diseases, Faculty Of Medicine And Health Sciences And Halal Products Research Institute, Universiti Putra Malaysia, UPM Serdang, Selangor, Malaysia. Antioxidant And Anti-Obesity Properties Of Local Chilies Varieties In Malaysia. Antioxidant And Anti-Obesity Properties Of Local Chilies Varieties In Malaysia. Journal of Food Science and Technology, volume 57, pages 3677-3687(2020). <https://doi.org/10.1007/s13197-020-04400-x>

23. Randomized Placebo-Controlled Study Of The Memory Effects Of Pomegranate Juice In Middle-Aged And Older Adults

Antioxidant nutrients such as the polyphenols in pomegranate juice may prevent neuronal damage from the free radicals produced during normal metabolism. Previous research in animals and a short-term clinical trial in middle-aged and older adults support the potential memory benefits of pomegranate juice. This study investigated the long-term effect of pomegranate juice on memory in nondemented middle-aged and older adults. **Study result shows that daily consumption of pomegranate juice may stabilize the ability to learn visual information over a 12-month period.**

Source: Prabha Siddarth, Department Of Psychiatry And Biobehavioral Sciences, Semel Institute For Neuroscience And Human Behavior, David Geffen School Of Medicine At The University Of California, Los Angeles, CA, USA. Randomized Placebo-Controlled Study Of The Memory Effects Of Pomegranate Juice In Middle-Aged And Older Adults. The American Journal of Clinical Nutrition, Volume 111, Issue 1, January 2020, Pages 170-177, <https://doi.org/10.1093/ajcn/nqz241>

24. Two Apples A Day Lower Serum Cholesterol And Improve Cardiometabolic Biomarkers In Mildly Hypercholesterolemic Adults: A Randomized, Controlled, Crossover Trial

Apples are rich in bioactive *polyphenols (PA)* and fiber. Evidence suggests that consumption of apples or their bioactive components is associated with beneficial effects on lipid metabolism and other markers of *cardiovascular disease (CVD)*. This study determines the effects of apple consumption on circulating lipids, vascular function, and other CVD risk markers.

Study results shows that *whole apple (WA)* consumption decreased *serum total* and *LDL cholesterol, triacylglycerol*, and *intercellular cell adhesion molecule-1* and *increased serum uric* compared with the *energy-matched apple control beverage (CB)*. The response to endothelium-dependent microvascular vasodilation was greater after the apples than after the CB. Apples had no effect on blood pressure or other CVD markers. Study data support *beneficial hypocholesterolemic and vascular effects of the daily consumption of PA-rich apples by mildly hypercholesterolemic individuals*.

Source: Julie A Lovegrove, Hugh Sinclair Unit Of Human Nutrition And The Institute For Cardiovascular And Metabolic Research, Department Of Food And Nutritional Sciences, University Of Reading, Reading, United Kingdom. Two Apples A Day Lower Serum Cholesterol And Improve Cardiometabolic Biomarkers In Mildly Hypercholesterolemic Adults: A Randomized, Controlled, Crossover Trial. The American Journal of Clinical Nutrition, Volume 111, Issue 2, February 2020, Pages 307-318, <https://doi.org/10.1093/ajcn/nqz282>

25. Long-Term Dietary Flavonoid Intake And Risk Of Alzheimer Disease And Related Dementias In The Framingham Offspring Cohort

This study examines the prospective relation between total and 6 classes of dietary flavonoid intake and risk of Alzheimer disease and related dementias (ADRD) and Alzheimer disease (AD).

Study result shows that, *individuals with the highest intakes of flavonols, anthocyanins, and flavonoid polymers had a lower risk of ADRD relative to individuals with the lowest intakes*. Researchers found that cox proportional hazards regression (HRs) for flavonols was 0.54, 0.24 for anthocyanins, and 0.58 for flavonoid polymers. The same pattern of associations was seen with AD for flavonols and anthocyanins but not for flavonoid polymers. The findings of the study indicated that *higher long-term dietary intakes of flavonoids are associated with lower risks of ADRD and AD in US adults*.

Source: Paul F Jacques, Nutritional Epidemiology Program, Jean Mayer USDA Human Nutrition Research Center On Aging And The Friedman School Of Nutrition Science And Policy, Tufts University, Boston, MA, USA. Long-Term Dietary Flavonoid Intake And Risk Of Alzheimer Disease And Related Dementias In The Framingham Offspring Cohort. The American Journal of Clinical Nutrition, Volume 112, Issue 2, August 2020, Pages 343-353, <https://doi.org/10.1093/ajcn/nqaa079>

26. Chia Seed (Salvia Hispanica L.) Effects And Their Molecular Mechanisms On Unbalanced Diet Experimental Studies: A Systematic Review

A systematic review was conducted to investigate the chia seed effects on unbalanced diet, animal studies and the molecular mechanisms on metabolic biomarker modulation. *According to the review the main effects of chia's seed are associated with AMPK modulation: improvement of glucose and insulin tolerance, lipogenesis, antioxidant activity, and inflammation*. The experimental study data shows that *chia seed has bioactive potential, and its daily consumption may reduce the risk of chronic disease development, mainly due to the antioxidant, anti-inflammatory, hypoglycemic, and hypolipidemic effects of the seed*.

Source: Hércia S. D. Martino, Dept. Of Nutrition And Health, Federal Univ. Of Viçosa, MG, Brazil. Chia Seed (Salvia Hispanica L.) Effects And Their Molecular Mechanisms On Unbalanced Diet Experimental Studies: A Systematic Review. Journal Of Food Science, Volume 85, Issue 2, 2020. <https://doi.org/10.1111/1750-3841.15003>

27. Polyphenols From Stevia Rebaudiana (Bertoni) Leaves And Their Functional Properties

The major polyphenol components from *Stevia rebaudiana* (Bertoni) leaves (PPS) are *chlorogenic acids*, a polyphenol family of esters, including *hydroxycinnamic acids with quinic acid*, which possesses excellent *hydrophilic antioxidant activity* and other *therapeutic properties*. As an abundant byproduct during production of steviol glycosides, the PPS would be a new antioxidative food resource or additives applied in foods and drugs with *antidiabetic function*. This review summarizes the analysis, extraction, and some functional properties of PPS, such as *antioxidant, antidiabetic, antimicrobial, anti-inflammatory, and anticancer*.

Source: Yongmei Xia, State Key Laboratory Of Food Science And Technology And Key Laboratory Of Synthetic And Biological Colloids Of Ministry Of Education, School Of Chemical And Materials Engineering, Jiangnan Univ., Wuxi, Jiangsu, China. Polyphenols From Stevia Rebaudiana (Bertoni) Leaves And Their Functional Properties. Journal Of Food Science, Volume85, Issue 2, 2020. <https://doi.org/10.1111/1750-3841.15017>

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