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HEALTH BENEFITS OF NUTS CONSUMPTION – A LITERATURE REVIEW

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Abstract:
Nuts are healthy snack alternatives. A frequent consume of nuts as part of a healthy diet is not linked with weight increase and may even contribute to lose weight. However, it's essential to keep under control the consumed quantity. Nuts have a high fat content. Because that they have a high amount of energy. The contained fat is mainly unsaturated; walnuts and pine nuts having a relatively higher quantity of polyunsaturated fats. Monounsaturated fats level is higher in almonds, pistachios, pecans and hazelnuts. Macadamia nuts, Brazil nuts and cashews and are higher in saturated fat. The carbohydrates contained amount is usually low; chestnuts are an exception – they're lower in all types of fats and higher in starchy carbohydrate than other nuts. The high protein and fibers content propose them a valuable source of them. They also contain other nutrients such as vitamin E, potassium and magnesium. They can replace foods high in saturated fat and sugar (such as biscuits, chocolates or cakes).

Keywords: nuts consumption, health benefits

1. Introduction

Nuts are a dense source of micronutrients and macronutrients with complex matrices rich in unsaturated fatty and other bioactive compounds: high-quality vegetable protein, fiber, minerals, tocopherols, phytosterols, and phenolic compounds.

Numerous studies have examined the health benefits of a normal or increased nut intake. Nuts consumption is associated with ameliorations in obesity, hyperlipidemia, hypertension, and hyperglycemia. Also, nuts reduce cardiovascular disease risk via cholesterol reduction, anti-inflammation, glucoregulation, and antioxidation. A regular nut intake was also reported to be associated with a reduced risk of hypertension and diabetes mellitus. Epidemiologic studies have associated nut consumption with a reduced incidence of gallstones in both genders, blood pressure, visceral adiposity and the

metabolic syndrome. High intake of nuts has been are associated to a diminished risk of mortality.

2. Related literature

A study of Flores-Mateo G., Rojas-Rueda D, Basora J, Ros E, Salas-Salvadó J. (2013) on the relationship between the frequency of nut consumption and BMI/risk of obesity has shown an inverse association between the frequency of nut consumption and body mass index (BMI) and risk of obesity. They concluded that "*diets enriched with nuts did not increase body weight, body mass index, or waist circumference in controlled clinical trials."*

A study of P. Casas-Agustencha, et al. (2011) investigating the nut consumption and adiposity associations determined that "*nut consumption was inversely associated with adiposity independently of other lifestyle variables*".

The study of Jieyi Long et al (2020) regarding the nut consumption and cancer risk highlighted the protective effect of nuts against cancer and demonstrated an inverse association of dietary nut consumption with cancer risk, especially for cancers from the digestive system.

G. Grosso et al. (2015) investigated the effected of nut consumption on all-cause, cardiovascular, and cancer mortality risk. They concluded conclude that "*nut consumption is associated with lower risk of all-cause, CVD, and cancer mortality, but the presence of confounding factors should be taken into account when considering such findings"*.

Tindall et al. (2019) studied the effect of nuts on markers of glycemic control. The result of the study confirmed that "*consumption of peanuts or tree nuts significantly decreased HOMA-IR and fasting insulin."* Also, it was determined an improvement of insulin sensitivity.

Mayhew, A. et al. (2016) investigated the relationship between nut consumption and incident risk of CVD and all-cause mortality. They determined that "*a higher nut consumption is associated with a lower risk of all-cause mortality, total CVD, CVD mortality, total CHD, CHD mortality and sudden cardiac death."* Piet A van den Brandt, et al., (2015) on a study investigating the relationship of tree nut, peanut and peanut butter intake with total and cause-specific mortality found out that "*nut intake was related to lower overall and cause-specific mortality, with evidence for nonlinear dose-response relationships.*"

Luu H. N. et al., (2015) realized a prospective evaluation of the association of nut/peanut consumption with total and cause-specific mortality. The result showed that "*nut consumption was associated with decreased overall and cardiovascular disease mortality across different ethnic groups*"

Piet A van den Brandt, et al. (2018) evaluate the relationship between tree nut, peanut, and peanut butter intake and risk of postmenopausal breast cancer; its result "*showed a statistically significant inverse association between total nut intake and risk of ER− breast cancer."*

Kim, Y. et al. (2019) on their study regarding the nut consumption relationship and reduced mortality and/or risk of cardiometabolic disease concluded that "*nut consumption*

appears to exert a protective effect on cardiometabolic disease, possibly through improved concentrations of fasting glucose, total cholesterol, and LDL-C."

On a study regarding the health benefits of nut consumption in middle-aged and elderly population, Rusu M. E. et al. (2019) concluded that "*an increased consumption of bioactive antioxidant compounds from nuts clearly impacts many risk factors related to aging and can extend health span and lifespan*.

A study of Djoussé, L. (2009) investigated the impact nut consumption and risk of hypertension in US male physicians. They concluded that "*frequent consumption of nuts is associated with a lower risk of incident hypertension in US male physicians, and such relation appears to be limited to lean individuals*".

A study of Jiang R. (2002) investigated the nut and peanut butter consumption and risk of type 2 diabetes in women considering their high amount of unsaturated (polyunsaturated and monounsaturated) fat and other nutrients that may improve glucose and insulin homeostasis. Their findings suggest "*potential benefits of higher nut and peanut butter consumption in lowering risk of type 2 diabetes in women. To avoid increasing caloric intake, regular nut consumption can be recommended as a replacement for consumption of refined grain products or red or processed meats."*

Maryam Hashemian et al. (2017)'s study evaluated the relationship between nut and peanut butter consumption and the risk of esophageal and gastric cancer subtypes. The result showed that "*both nut and peanut butter consumption were inversely associated with the risk of gastric noncardia adenocarcinoma*".

"*A long-term consumption of pistachios could potentially improve glucose homeostasis*" was the conclusion of the Feng, X. et al. (2019)'s study on the acute effect of pistachio intake on postprandial glycemic and gut hormone responses in women with gestational diabetes or gestational impaired glucose tolerance.

A study dedicated to investigating the effect of long-term effects of increased dietary polyunsaturated fat from walnuts on metabolic parameters in type II diabetes concluded that "*dietary fat can be manipulated with whole foods such as walnuts, producing reductions in fasting insulin levels. Long-term effects are also apparent but subject to fluctuations in dietary intake if not of the disease process*" (Tapsell, L., et al., 2010).

The investigation on the relationship between nut consumption and age-related disease showed that:

- *"Nut consumption is associated with a better metabolic profile.*
- *Nut consumption is associated with decreased risk of cardiovascular disease and mortality.*
- *Nut consumption has been associated also with decreased risk of colorectal, endometrial, and pancreatic cancer.*
- *Nut consumption is characteristic of certain healthy dietary patterns, such as the Mediterranean diet, which have been associated with better mental health."*(Grosso, G. et al., 2016)

3. Conclusions

Nuts are highly nutritious. One ounce (28 grams) of mixed nuts contains: calories 173; protein: 5 grams; fat: 16 grams; carbs: 6 grams; fiber: 3 grams; vitamin E: 12% of the RDI; magnesium: 16% of the RDI; phosphorus: 13% of the RDI; copper: 23% of the RDI; manganese: 26% of the RDI; selenium: 56% of the RDI. (source: healthline.com). Though they're considered a high-calorie dense food, numerous researches suggest that nuts may help you lose weight on low calories, vegan and ketogenic diets.

Their high content of antioxidants of walnuts has a greater capacity to fight free radicals than fish; including walnuts in the daily diet may be beneficial to maintain an antioxidant status in the body.

Nuts are high in beneficial fiber: almonds: 3.5 grams; pistachios: 2.9 grams; hazelnuts: 2.9 grams; pecans: 2.9 grams; peanuts: 2.6 grams; macadamias: 2.4 grams; brazil nuts: 2.1 grams. (source: healthline.com).

Nuts consumption has notable impacts on helping to regulate cholesterol and triglyceride levels. Almonds and hazelnuts appear to increase the level of HDL cholesterol while decreasing total and LDL cholesterol. Nuts consumption may significantly decrease the risk of heart attack and stroke. Several studies show that macadamia nuts lower cholesterol levels at comparable levels as low-fat diets.

Studies indicate that consuming nuts may also decrease oxidative stress, blood pressure, and other health indicators in patients with diabetes and metabolic syndrome.

Nuts have strong anti-inflammatory properties, especially in people with diabetes, kidney disease, and other serious health conditions.

Eating nuts on a regular basis may improve your health in many ways, such as by reducing diabetes and heart disease risk, as well as cholesterol and triglyceride levels.

References

Alyssa M Tindall, Emily A Johnston, Penny M Kris-Etherton, Kristina S Petersen, The effect of nuts on markers of glycemic control: a systematic review and meta-analysis of randomized controlled trials, *The American Journal of Clinical Nutrition*, Volume 109, Issue 2, February 2019, Pages 297–314, https://doi.org/10.1093/ajcn/nqy236.

Amy E. Griel, Yumei Cao, Deborah D. Bagshaw, Amy M. Cifelli, Bruce Holub, Penny M. Kris-Etherton, A Macadamia Nut-Rich Diet Reduces Total and LDL-Cholesterol in Mildly Hypercholesterolemic Men and Women, *The Journal of Nutrition*, Volume 138, Issue 4, April 2008, Pages 761–767, https://doi.org/10.1093/jn/138.4.761.

Chen, C.O., Holbrook, M., Duess, M. et al. Effect of almond consumption on vascular function in patients with coronary artery disease: a randomized, controlled, cross-over trial. Nutr J 14, 61 (2015). https://doi.org/10.1186/s12937-015-0049-5.

Damasceno, N.R.T. et al. (2010). Crossover study of diets enriched with virgin olive oil, walnuts or almonds. Effects on lipids and other cardiovascular risk markers. *Nutrition, Metabolism and Cardiovascular Diseases*, Volume 21, S14 - S20.

Djoussé, L., Rudich, T., & Gaziano, J. M. (2009). Nut consumption and risk of hypertension in US male physicians. *Clinical nutrition* (Edinburgh, Scotland), 28(1), 10–14. https://doi.org/10.1016/j.clnu.2008.08.005.

Feng, X., Liu, H., Li, Z., Carughi, A., & Ge, S. (2019). Acute Effect of Pistachio Intake on Postprandial Glycemic and Gut Hormone Responses in Women with Gestational Diabetes or Gestational Impaired Glucose Tolerance: A Randomized, Controlled, Crossover Study. *Frontiers in nutrition*, 6, 186. https://doi.org/10.3389/fnut.2019.00186.

Gemma Flores-Mateo, David Rojas-Rueda, Josep Basora, Emilio Ros, Jordi Salas-Salvadó, Nut intake and adiposity: meta-analysis of clinical trials, *The American Journal of Clinical Nutrition*, Volume 97, Issue 6, June 2013, Pages 1346–1355, https://doi.org/10.3945/ajcn.111.031484.

Giuseppe Grosso, Justin Yang, Stefano Marventano, Agnieszka Micek, Fabio Galvano, Stefanos N Kales, Nut consumption on all-cause, cardiovascular, and cancer mortality risk: a systematic review and meta-analysis of epidemiologic studies, The American Journal of Clinical Nutrition, Volume 101, Issue 4, April 2015, Pages 783–793, https://doi.org/10.3945/ajcn.114.099515.

Grosso, G. et al. (2016). Nut consumption and age-related disease., *Maturitas*, Volume 84, 11 – 16.

Heart Matters, I'm confused – are nuts a healthy snack?, https://www.bhf.org.uk/informationsupport/heart-matters-magazine/nutrition/ask-the-expert/nuts-as-a-healthy-snack, Accessed on 17-01-2020.

Hiraoka-Yamamoto, J., Ikeda, K., Negishi, H., Mori, M., Hirose, A., Sawada, S., Onobayashi, Y., Kitamori, K., Kitano, S., Tashiro, M., Miki, T. and Yamori, Y. (2004), Serum Lipid Effects of a Monounsaturated (Palmitoleic) Fatty Acid-Rich Diet Based on Macadamia Nuts in Healthy, Young Japanese Women. *Clinical and Experimental Pharmacology and Physiology*, 31: S37-S38. doi:10.1111/j.1440-1681.2004.04121.x.

Hudthagosol C., Haddad E., Jongsuwat R., Antioxidant activity comparison of walnuts and fatty fish, https://walnuts.org/area-of-study/antioxidant-activity-comparison-of-walnuts-and-fatty-fish/ Accessed on January 2020.

Jiang R, Manson JE, Stampfer MJ, Liu S, Willett WC, Hu FB. Nut and Peanut Butter Consumption and Risk of Type 2 Diabetes in Women. JAMA. 2002;288(20):2554–2560. doi:10.1001/jama.288.20.2554.

Kim, Y.; Keogh, J.B.; Clifton, P.M. Does Nut Consumption Reduce Mortality and/or Risk of Cardiometabolic Disease? An Updated Review Based on Meta-Analyses. *Int. J. Environ. Res. Public Health* 2019, *16*, 4957.

Liu, J., Liu, Y., Chen, C. et al. The effect of almonds on inflammation and oxidative stress in Chinese patients with type 2 diabetes mellitus: a randomized crossover

controlled feeding trial. Eur J Nutr 52, 927–935 (2013). https://doi.org/10.1007/s00394-012-0400-y.

Luu HN, Blot WJ, Xiang Y, et al. Prospective Evaluation of the Association of Nut/Peanut Consumption with Total and Cause-Specific Mortality. JAMA Intern Med. 2015;175(5):755–766. doi:10.1001/jamainternmed.2014.8347.

Maryam Hashemian, Gwen Murphy, Arash Etemadi, Sanford M Dawsey, Linda M Liao, Christian C Abnet, Nut and peanut butter consumption and the risk of esophageal and gastric cancer subtypes, The American Journal of Clinical Nutrition, Volume 106, Issue 3, September 2017, Pages 858–864, https://doi.org/10.3945/ajcn.117.159467.

Mayhew, A., De Souza, R., Meyre, D., Anand, S., & Mente, A. (2016). A systematic review and meta-analysis of nut consumption and incident risk of CVD and all-cause mortality. British Journal of Nutrition, 115(2), 212-225. doi:10.1017/S0007114515004316.

Nishi, S.K. et al. (2014). Nut consumption, serum fatty acid profile and estimated coronary heart disease risk in type 2 diabetes, *Nutrition, Metabolism and Cardiovascular Diseases*, Volume 24, Issue 8, 845 – 852.

Nut Consumption and Risk of Cancer: A Meta-analysis of Prospective Studies. Jieyi Long, Zhi Ji, Peihong Yuan, Tingting Long, Ke Liu, Jiaoyuan Li and Liming Cheng Cancer Epidemiol Biomarkers Prev March 1 2020 (29) (3) 565-573; DOI: 10.1158/1055-9965.EPI-19-1167.

P. Casas-Agustencha, M. Bullóa, E. Ros J. Basora J. Salas-Salvadó (2011). Cross-sectional association of nut intake with adiposity in a Mediterranean population, *Nutrition, Metabolism & Cardiovascular Diseases*, Volume 21, Issue 7, Pages 518–525.

Piet A van den Brandt, Leo J Schouten, Relationship of tree nut, peanut and peanut butter intake with total and cause-specific mortality: a cohort study and meta-analysis, International Journal of Epidemiology, Volume 44, Issue 3, June 2015, Pages 1038–1049, https://doi.org/10.1093/ije/dyv039.

Rusu M. E., Mocan A., Ferreira I., & Popa D.-S. (2019). Health Benefits of Nut Consumption in Middle-Aged and Elderly Population. *Antioxidants*, *8*(8), 302. doi:10.3390/antiox8080302.

Tapsell, L., Batterham, M., Teuss, G. et al. Long-term effects of increased dietary polyunsaturated fat from walnuts on metabolic parameters in type II diabetes. Eur J Clin Nutr 63, 1008–1015 (2009). https://doi.org/10.1038/ejcn.2009.19

The Top 9 Nuts to Eat for Better Health, https://www.healthline.com/nutrition/9-healthy-nuts, Accessed on 17-01-2020.

van den Brandt, P.A., Nieuwenhuis, L. Tree nut, peanut, and peanut butter intake and risk of postmenopausal breast cancer: The Netherlands Cohort Study. Cancer Causes Control 29, 63–75 (2018). https://doi.org/10.1007/s10552-017-0979-7.