

Nuts consumption and cardiovascular risks

In this issue of Journal, Darvish-Damavandi *et al.*^[1] evaluated the effect of hazelnut intake on fasting blood sugar (FBS) and lipid profile on diabetic subjects. The results of mentioned study showed that hazelnut consumption can prevent from reducing the high density lipoprotein (HDL). The effect of nut consumption on health risk-factors has been discussed from about 20 years ago and a favorable association between this food group and cardiovascular events has been reported previously.^[2] The results of recent observational studies confirm previous findings and show that nut consumption has a favorable effect on nutrient intake and health risk-factors such as lipid profile and metabolic syndrome components in children and adults.^[3,4]

However, Clinical trials reported controversial results. One randomized clinical trial could not show any different in changes of lipid profile between mixed nut (15 g walnuts, 7.5 g almonds and 7.5 g hazelnuts) consumer group and control group.^[5] In contrast to foresaid study, some intervention studies have been focused on one type of nuts. The findings of one study demonstrated that almond consumption may improve insulin sensitivity and reduce low density lipoprotein (LDL) concentration.^[6] Furthermore, nut consumption may increase HDL concentration among obese women in Brazil.^[7] The effect of hazelnut intake on cardiovascular disease has been evaluated in different subjects. According to previous study, consumption of different form of hazelnut can improve lipid profile and apolipoprotein concentration in hypercholesterolemic subjects.^[8] Furthermore, findings of another study showed that hazelnut intake have a role in reduction of oxidized LDL and improvement in LDL particle size.^[9] These findings are confirmed by a pooled analysis which reported that nut consumption has a dose-response effect on lipid profile.^[10]

Nut consumption is considered as a component of anti-cardiovascular disease recommendations.^[8] Health protective effects of nuts were referred to protein, fiber, unsaturated fatty acids, and phytosterol component of these foods.^[11] Previous studies showed that non-hydrogenated oils and Omega-3 fatty acids, such as found in nuts, have a favorable effect on different parameters among diabetes.^[12-14] So, it may be suggested that future studies, especially, randomized clinical trials, should assess the effect of long-term fatty nuts consumption on reducing different risk-factors of cardiovascular diseases. Furthermore, the effects of food

industrial process should be considered because the effect of raw nut on health may be different to roasted one.^[15] Allergenic aspect of nuts intake should be kept in mind for future studies because food allergies such as peanut, tree nuts such as walnuts, hazelnuts, and almonds allergies, may induce potentially fatal hypersensitivity reactions among children.^[16] A great diversity in nuts food group is observed. Although, this diversity is a heterogeneity source for comparing previous studies, it provides an excellent opportunity in which investigators can administer different mixed nut for future researches.

Nuts are the rich source of vitamin E.^[17] So, they are considered as an antioxidant food. An improvement in total antioxidant capacity was also seen among soy consumers in comparison to control subjects.^[18] The impact of soy intake on healthy markers in diabetic patients is a hot topic which has been evaluated in previous studies.^[19] Consumption of soy and nuts (two antioxidant foods) in same time and its effect on insulin resistance and other healthy markers should be assessed in future studies.

Another unclear point that is still open to discuss relates to the effect of nut consumption in diabetic patients. Nuts, such as walnuts, are a good source of omega-3 fatty acid.^[17] The findings of previous studies regarding effects of omega-3 fatty acids on insulin resistance and FBS are controversial.^[20] On the other hand, nuts are high fat content foods and recommending nut consumption may accompany with increasing in fat intake. The impact of this increased fat intake on weight gain and lipid profile should be assessed in future studies, especially, among diabetic subjects.

In conclusion, although, the cardiac protective effect of nut consumption was evaluated in several studies, more comprehensive studies regarding the amounts and type of nuts and duration of consumption per day are required.

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REFERENCES

- Darvish Damavandi R, Eghtesadi SH, Shidfar F, Heydari I, Foroushani AR. Effects of hazelnuts consumption on fasting blood sugar and lipoproteins in patients with type 2 diabetes. *J Res Med Sci* 2013;18:53-9.
- Fraser GE, Sabaté J, Beeson WL, Strahan TM. A possible protective effect of nut consumption on risk of coronary heart disease. The adventist health study. *Arch Intern Med* 1992;152:1416-24.
- O'Neil CE, Keast DR, Nicklas TA, Fulgoni VL 3rd. Out-of-hand nut consumption is associated with improved nutrient intake and health risk markers in US children and adults: National health and nutrition examination survey 1999-2004. *Nutr Res* 2012;32:185-94.
- O'Neil CE, Keast DR, Nicklas TA, Fulgoni VL 3rd. Nut consumption is associated with decreased health risk factors for cardiovascular disease and metabolic syndrome in U.S. adults: NHANES 1999-2004. *J Am Coll Nutr* 2011;30:502-10.
- Casas-Agustench P, López-Uriarte P, Bulló M, Ros E, Cabré-Vila JJ, Salas-Salvadó J. Effects of one serving of mixed nuts on serum lipids, insulin resistance and inflammatory markers in patients with the metabolic syndrome. *Nutr Metab Cardiovasc Dis* 2011;21:126-35.
- Wien M, Bleich D, Raghuvanshi M, Gould-Forgerite S, Gomes J, Monahan-Couch L, *et al.* Almond consumption and cardiovascular risk factors in adults with prediabetes. *J Am Coll Nutr* 2010;29:189-97.
- Cominetti C, de Bortoli MC, Garrido AB Jr, Cozzolino SM. Brazilian nut consumption improves selenium status and glutathione peroxidase activity and reduces atherogenic risk in obese women. *Nutr Res* 2012;32:403-7.
- Tey SL, Brown RC, Chisholm AW, Delahunty CM, Gray AR, Williams SM. Effects of different forms of hazelnuts on blood lipids and α -tocopherol concentrations in mildly hypercholesterolemic individuals. *Eur J Clin Nutr* 2011;65:117-24.
- Yücesan FB, Orem A, Kural BV, Orem C, Turan I. Hazelnut consumption decreases the susceptibility of LDL to oxidation, plasma oxidized LDL level and increases the ratio of large/small LDL in normolipidemic healthy subjects. *Anadolu Kardiyol Derg* 2010;10:28-35.
- Sabaté J, Oda K, Ros E. Nut consumption and blood lipid levels: A pooled analysis of 25 intervention trials. *Arch Intern Med* 2010;170:821-7.
- Segura R, Javierre C, Lizarraga MA, Ros E. Other relevant components of nuts: Phytosterols, folate and minerals. *Br J Nutr* 2006;96:S36-44.
- Esmailzadeh A, Azadbakht L. Consumption of hydrogenated versus nonhydrogenated vegetable oils and risk of insulin resistance and the metabolic syndrome among Iranian adult women. *Diabetes Care* 2008;31:223-6.
- Kouchak A, Djalali M, Eshraghian M, Saedisomeolia A, Djazayeri A, Hajianfar H. The effect of Omega-3 fatty acids on serum paraoxonase activity, vitamins A, E, and C in type 2 diabetic patients. *J Res Med Sci* 2011;16:878-84.
- Mahmoudabadi MM, Djalali M, Djazayeri SA, Keshavarz SA, Eshraghian MR, Yaraghi AA, *et al.* Effects of eicosapentaenoic acid and vitamin C on glycemic indices, blood pressure, and serum lipids in type 2 diabetic Iranian males. *J Res Med Sci* 2011;16:S361-7.
- Pelvan E, Alasalvar C, Uzman S. Effects of roasting on the antioxidant status and phenolic profiles of commercial Turkish hazelnut varieties (*Corylus avellana* L.). *J Agric Food Chem* 2012;60:1218-23.
- Husain Z, Schwartz RA. Food allergy update: More than a peanut of a problem. *Int J Dermatol* 2013;52:286-94.
- King JC, Blumberg J, Ingwersen L, Jenab M, Tucker KL. Tree nuts and peanuts as components of a healthy diet. *J Nutr* 2008;138:1736S-1740S.
- Azadbakht L, Kimiagar M, Mehrabi Y, Esmailzadeh A, Hu FB, Willett WC. Dietary soya intake alters plasma antioxidant status and lipid peroxidation in postmenopausal women with the metabolic syndrome. *Br J Nutr* 2007;98:807-13.
- Miraghajani MS, Esmailzadeh A, Najafabadi MM, Mirlohi M, Azadbakht L. Soy milk consumption, inflammation, coagulation, and oxidative stress among type 2 diabetic patients with nephropathy. *Diabetes Care* 2012;35:1981-5.
- Azadbakht L, Rouhani MH, Surkan PJ. Omega-3 fatty acids, insulin resistance and type 2 diabetes. *J Res Med Sci* 2011;16:1259-60.

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