

THE CRACKER

November 2010
Edition 51, No.3



The Official Voice of the International Nut and Dried Fruit Council Foundation for the World Nut and Dried Fruit Trade

Australia Sets 5-Year Plan

Treenuts at
World Symposium

Nuts For
Heart Health



www.nutfruit.org/cracker



A Mediterranean Diet Supplemented with Nuts in the Prevention of Type 2 Diabetes

By Prof. Jordi Salas-Salvadó, Chair of Nutrition and Bromatology, Rovira i Virgili University, Spain. Member of the INC Scientific Committee



Diabetes mellitus is an important predictable and preventable public health problem. Several epidemiologic and interventional studies suggest that weight loss is a driving force in order to reduce the risk of diabetes. However the reduction in diabetes risk induced by changes in life-style by diet and exercise observed in some clinical trials make difficult to establish whether the dietary pattern alone plays a significant role in preventing diabetes.

After analyzing the literature, we can conclude that there are two possible and similarly effective strategies in order to prevent diabetes, a high-carbohydrate, low-GI diet, and a high-fat diet based on vegetable sources of fat, that is, rich in MUFA and PUFA. There is no evidence to suggest that one

nutritional strategy is clearly the best one for prevention or management of diabetes. In addition, a diet that might serve the purpose of both preventing diabetes in healthy subjects and contribute to glycemic control in patients with established disease should contain abundant fiber from fruits and vegetables, including pulses and nuts, and avoid simple sugars, especially those found in sodas and fruit juices, as well as animal sources of SFA (meat and meat products) and commercial sources of TFA (hydrogenated oils and margarines). Low-fat dairy products, moderate consumption of alcoholic beverages, and reasonable amounts of coffee or tea may be included in the daily diet with some benefit.

Several evidences suggest that nuts are important foods in order to prevent diabetes because they are rich in unsaturated fatty acids, fiber, magnesium, and antioxidants, all nutrients implicated in the development of insulin resistance and diabetes.

Data from two large prospective studies, the Nurses' Health Study (1) and the Shanghai Women's Health Study (2), indicate that frequent nut and peanut consumption

is associated with a reduced risk of developing diabetes, whereas results from the Iowa Women's Health Study reports either no association or a weak association (3).

Some clinical trials also suggest that the intake of nuts is associated to an increase in insulin sensitivity, reducing the risk of

diabetes. For example, using a 24-week randomized dietary interventional trial, subjects with metabolic syndrome following an almond-based hypocaloric diet showed a 54% decrease in fasting insulin levels from baseline compared to the 32% reduction observed in the high complex carbohydrate diet group (4). In the same study, insulin resistance as measured by the HOMA-IR was significantly decreased in both diet groups, but improved beta cell function was only observed in the almond diet group. Recently, our group has also demonstrated that the supplementation of a healthy diet with one daily serving of nuts (almonds, walnuts and hazelnuts) for 12 weeks has little effect on the lipid

profile of MetS patients, but is associated with improved insulin sensitivity and a marginal anti-inflammatory effect in relation to moderate weight loss (5).

Recently our group has conducted the first randomized controlled trial in order to compare the effect on diabetes incidence of three non-calorie-restricted nutritional interventions: a low-fat diet (control diet), a MedDiet enriched with virgin olive oil, and a MedDiet enriched with mixed nuts. The results of this study have been published in one of the most reputed endocrinology journals: *Diabetes Care* (6). After a median follow-up of 4.0 years, diabetes incidence was 10.1%, 11.0%, and 17.9% in the Mediterranean-diet with olive oil group, the Mediterranean-diet with nuts group, and the control group, respectively. In this nutrition-intervention study we found that a non-calorie-restricted traditional MedDiet enriched with high-fat foods of vegetable origin decreased the incidence of diabetes in persons at high cardiovascular risk. Diabetes rates were reduced by 51% and 52% by the consumption of MedDiets supplemented with virgin olive oil or mixed nuts, respectively, compared with a control diet consisting of advice on a low-fat diet. Of note, in our study diabetes risk reduction occurred in the absence of significant changes in body weight or physical activity, suggesting that MedDiets without calorie restriction appear to be effective in the prevention of diabetes. Further research is needed to elucidate the mechanisms leading to diabetes risk reduction independently of weight loss.

REFERENCES

- 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):2554-60.
- Villegas R, Gao Y-T, Yang G, Li HL, Elasy TA, Zheng W, Shu XO. Legume and soy food intake and the incidence of type 2 diabetes in the Shanghai Women Health Study. *Am J Clin Nutr* 2008;87:162-7.
- Parker, ED, Harnack, LJ & Folsom, AR. Nut consumption and risk of type 2 diabetes. *JAMA* 2003;290:38-9.
- Wien MA, Sabate JM, Ikle DN, Cole SE, Kandeel FR. Almonds vs complex carbohydrates in a weight reduction program. *Int J Obes Relat Metab Disord* 2003; 27: 1365-1372.
- 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*. 2009 Dec 21.
- Salas-Salvadó J, Bulló M, Babio N, Martínez-González MA, Ibarrola N, Basora J, Estruch R, Covas MI, Corella D, Aros E, Ruiz Gutiérrez V, Ros E for the PREDIMED Study Investigators. Reduction in the Incidence of Type 2-Diabetes with the Mediterranean Diet: Results of the PREDIMED-Reus Nutrition Intervention Randomized Trial. *Diabetes Care*. 2010 Oct 7.

“Evidence suggests that nuts are important foods in order to prevent diabetes”