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FROM: Maureen Ternus, MS, RDN
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The International Tree Nut Council Nutrition Research & Education Foundation (INC NREF) is a non-profit organization located in Davis, California, representing nine tree nut industries (almond, Brazil, cashew, hazelnut, macadamia, pecan, pine nut, pistachio and walnut) and supporting nutrition research and educational outreach.

INC NREF appreciates the opportunity to provide written comments and data pertinent to the Dietary Guidelines for Americans. Specifically, we will be citing evidence that supports the role that tree nuts, a plant-based protein and nutrient-dense food included in dietary recommendations and cultures worldwide, can play in the diet quality of USDA dietary patterns, as a healthy snack and as a useful tool in weight management.

What is the impact on the nutrient adequacy of the USDA Dietary Patterns if the recommended quantity of the nuts, seeds and soy subgroup is modified?

Currently, all three recommended dietary patterns in the 2020-2025 Dietary Guidelines for Americans include nuts, which provide a number of nutrients of concern, including vitamin E, calcium, magnesium, iron and fiber¹. The Healthy U.S. Style and Healthy Mediterranean Style patterns both recommend a maximum of 2.5 ounces of nuts per week. The Healthy Vegetarian Style Eating pattern recommends a maximum of 3.5 ounces of nuts per week. Compare this to the 10.5 ounces per week recommended in the FDA qualified health claim for nuts and heart disease². Having consistent recommended serving sizes between government agencies would reduce consumer confusion.

According to USDA/ERS data (2015), consumers eat about 1.3 ounces of tree nuts per week—well below the recommended intake for those consuming 1,400 calories and above per day. Increasing the recommended amount of nuts in healthy food patterns may help consumers lower their risk of chronic disease and potentially improve overall health. In a study³ of 14,386 adults, participating in the 2005-2010 NHANES, researchers found tree nut consumption was associated with better nutrient adequacy for most nutrients that are lacking in the diets of many Americans, and with better diet quality. Moreover, the Healthy Eating Index (HEI)-2005, was significantly higher ($p < 0.0001$) in tree nut consumers than non-consumers.

As a plant-based protein, tree nuts can play an important role in a number of healthy eating patterns and in both vegan and low carbohydrate diets. Nuts are included in evidence-based dietary recommendations around the world, across health equity domains and various cultures^{4,5}. In addition, they provide unsaturated fats, which when replacing saturated fats (versus refined carbohydrates), have been associated with lower rates of cardiovascular disease⁶. In a recent study looking at tree nut consumption and cardiometabolic health outcomes, researchers found even a modest consumption of tree nuts was associated with decreased prevalence of cardiovascular disease and cardiometabolic risk factors⁷.

What is the relationship between snacks and consuming a dietary pattern that is aligned with the Dietary Guidelines?

According to a recent Harris Poll, snacking has become an important part of dietary patterns, with 71 percent of consumers worldwide stating they snack at least twice a day⁸. Research shows snacks provide about 25% of daily calories in the U.S. According to a study by Dunford, et al., a large proportion come from desserts, sugar-sweetened beverages, sweets and salty snacks. These are foods that are recommended in limited amounts in U.S. dietary guidelines⁹.

Approximately 60% of the nuts consumed in the U.S. are as snacks¹⁰. Rehm, et al.,¹¹ looked at data from the 2009-2012 NHANES and found that replacing between-meal snacks with tree nuts, on a per calorie basis, led to more nutrient-rich diets that were lower in empty calories and sodium and had more favorable fatty acid profiles. The researchers concluded that even a partial replacement, not counting already nutrient-rich snacks, had a significant positive effect on the quality of the diet.

What is the relationship between snacks and growth, body composition and risk of obesity?

Recent research has shown that more than 40 percent of Americans are overweight or obese¹². Dietary patterns that can help with weight loss and weight maintenance are essential. In addition, specific foods within the current recommended dietary patterns may have a beneficial impact on overweight and obesity.

In two recent papers^{13,14}, researchers concluded that the evidence from randomized control trials and observational cohorts indicates higher nut consumption does not appear to cause greater weight gain and that concern that nut consumption contributes to increased adiposity

appears unwarranted. Instead, nuts may be beneficial for weight control and prevention of long-term weight gain.

In a randomized, controlled study¹⁵, researchers found that including mixed tree nuts as a snack in a weight management program resulted in significant weight loss and improved satiety. The study compared 95 overweight/obese men and women (BMI 27.0-35.0 kg/m²) ages 30-68 years who consumed either 1.5 ounces of mixed tree nuts or a pretzel snack. Both snacks provided the same number of calories, as part of a hypocaloric weight loss diet (500 calories less than resting metabolic rate) over 12 weeks. This was followed by an isocaloric weight maintenance program for an additional 12 weeks.

Participants experienced significant weight loss (12 weeks: -1.6 kg and -1.9 kg and 24 weeks: -1.5 kg and -1.4 kg) in the tree nut and pretzel snack groups, respectively. Both groups also showed a significant decrease in BMI at 12 weeks, compared to baseline. However, satiety was significantly higher at the end of week 24 in the mixed tree nut group, and there was a trend toward greater weight maintenance compared to the pretzel group. Moreover, the dropout rate was significantly lower in the mixed tree nut group (16.4%) compared to the pretzel (35.9%) group. And, heart rate was decreased significantly, compared to baseline, in those consuming tree nuts, but not pretzels.

Another recent study¹⁶ suggests daily tree nut consumption reduces the risk of metabolic syndrome (MetSx) by improving waist circumference, lipid biomarkers, and/or insulin levels, without requiring calorie restriction, in young adults. In a randomized, parallel arm, dietary intervention study, researchers enrolled 84 men and women, ages 22-36, most of whom were either overweight or obese (BMI 24.5 to 34.9 kg/m²) and had at least one MetSx risk factor at baseline (abdominal obesity, elevated triglycerides, low HDL cholesterol, high blood pressure, or elevated levels of blood glucose). Participants consumed either one ounce of mixed unsalted tree nuts or one ounce of a carbohydrate-rich snack twice daily. Both snacks provided the same number of calories, protein, fiber, and sodium and were part of a 7-day eucaloric weight maintenance menu.

The results showed females who consumed tree nut snacks had a reduced waist circumference (mean difference: -2.20 ± 0.73 cm, $P = 0.004$) and a trend toward reduced visceral fat (-5.27 ± 13.05 cm², $P = 0.06$) compared to those consuming carbohydrate snacks. Males who consumed tree nuts snacks had decreased blood insulin levels (-1.14 ± 1.41 mIU/L, $P = 0.05$). Both males and females consuming tree nuts snacks saw an effect on triglycerides and TG/HDL ratios ($P = 0.04$ for both) with TG/HDL ratios reduced ~11% compared to those consuming carbohydrate snacks.

Researchers at Harvard looked at 27,521 men in the Health Professionals Follow-up Study and 117,364 women from the Nurses' Health Study I and II and found changes in nut consumption can influence long-term weight change in both men and women¹⁷. The researchers concluded that increasing daily consumption of nuts is associated with less long-term weight gain, a lower risk of moderate weight gain, and a lower risk of obesity in adults. Incorporating nuts as part of a healthy dietary pattern by replacing 0.5 servings/day of less healthful foods with nuts, may be a simple strategy for the primary prevention of obesity.

Lastly, recent research has shown that nuts may actually be lower in calories than what is currently stated on food labels. Four studies have shown Atwater factors overestimate the metabolizable energy value of almonds, cashews, pistachios and walnuts. According to the researchers, these results could help explain the observations that nut consumers do not gain excessive weight^{18,19,20,21}.

A growing body of evidence suggests that tree nuts can and should be an important part of any healthy dietary pattern. Moreover, the use of nuts as a snack may have important health implications in helping to reduce the risk of chronic disease including cardiovascular disease and obesity.

Sincerely,



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cc: Polly Owen
Chair, International Tree Nut Council Nutrition Research & Education Foundation

¹ U.S. Department of Health and Human Services and U.S. Department of Agriculture. *2015 – 2020 Dietary Guidelines for Americans*. 8th Edition. December 2015. Available at <https://health.gov/dietaryguidelines/2015/guidelines/>.

² Food and Drug Administration (FDA), **Qualified Health Claims: Letter of Enforcement Discretion – Nuts and Coronary Heart Disease**, Docket No 02P-0505, Food & Drug Administration, Washington, DC, 2003.

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