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Snacking on almonds instead of a high-carb snack reduced belly fat, other heart disease risk factors

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A new study published in the *Journal of the American Heart Association* found that a daily snack of 1.5 ounces of almonds instead of a high-carbohydrate muffin, eaten as part of an overall healthy diet, improved a number of heart disease risk factors in study participants.

In addition to significantly improving LDL and total cholesterol, snacking on almonds instead of muffins also reduced central adiposity (belly fat), a well-established heart disease risk factor.

Although heart disease remains the number one cause of death in the United States and worldwide, it is estimated that at least 80% of premature deaths from cardiovascular disease can be avoided if diet and lifestyle risk factors are controlled.

While a significant body of evidence has shown that eating almonds is associated with improved heart health , this is the first and largest controlled feeding study using identical diets with the exception of almonds vs. a calorie-matched snack to investigate and isolate the cardio-protective properties of almonds beyond their contributions to an overall heart-healthy diet. The findings are also the first of their kind to show benefits of eating almonds in reducing abdominal and leg fat. Reducing abdominal fat is particularly beneficial given its connection to metabolic syndrome and increased risk for heart disease.

The twelve-week, randomized, controlled clinical study, led by researchers at Penn State University, was conducted in 52 overweight, middle-aged adults who had high total and LDL cholesterol but were otherwise healthy. Participants ate cholesterol-lowering diets that were identical except that one group was given a daily snack of 1.5 ounces (42g) of whole natural almonds, while the other group was given a banana muffin that provided the same number of calories. Participants were provided all meals and snacks in amounts based on their calorie needs to maintain body weight, and followed each diet for six weeks.

The diet containing the almond snack, compared to the muffin snack, decreased total cholesterol, LDL-cholesterol non-HDL-cholesterol and remnant lipoproteins. In addition, the diet with the muffin snack reduced HDL (good) cholesterol more than the almond diet.

Despite no differences in body weight or total fat mass, the almond diet significantly reduced abdominal fat mass, waist circumference and leg fat mass compared to the diet with the muffin snack.

"Our research found that substituting almonds for a high-carbohydrate snack improved numerous heart health risk factors, including the new finding that eating almonds reduced belly fat," says Claire Berryman, PhD and lead researcher of the study. "Choosing almonds as a snack may be a simple way to help fight the onset of metabolic and cardiovascular diseases."

This study joins nearly two decades of research showing that almonds can help maintain a healthy heart and healthy cholesterol levels3, and provides new evidence showing that regularly eating almonds instead of a high-carbohydrate snack may have benefits on body composition. Previous studies showed that regular almond consumption did not lead to significant changes in body weight, indicating that nutrient-rich almonds can be incorporated in weight-maintenance and weight-loss diets.

A one ounce serving of almonds provides 160 calories and a powerful nutrient package including hunger-fighting protein (6g), filling dietary fiber (4g), "good" unsaturated fats (13g)3 and vitamins and minerals including vitamin E (35% DV), magnesium (20% DV) and potassium (6% DV), which makes them an ideal fit for heart-healthy, weight-wise diets and an easy way to snack smarter this year.

Study Details

Design: In this randomized controlled clinical feeding study, 52 otherwise healthy adults (mean age = 49.9 years) with elevated total cholesterol (mean 227 mg/dL), LDL-cholesterol (mean 148 mg/dL) and an average body mass index of 26.3 kg/m2 were provided each of two balanced diets based on their calorie needs to maintain weight. Diets were identical except for a daily snack, which was either 1.5 oz of whole natural almonds or a banana muffin which provided an equivalent number of calories. Differences in the nutrient profiles of the control (58% CHO, 15% PRO, 26% total fat) and almond (51% CHO, 16% PRO, 32% total fat) diets were due to nutrients inherent to each snack.

Participants followed each diet for 6 weeks in a crossover design with a two week washout period in between diets. All meals and snacks were prepared and provided to participants by a metabolic kitchen, and compliance was assessed by daily weigh-ins and daily food logs. Blood work and body composition measurements (as measured by Dual-Energy X-Ray Absorptiometry scans) were taken at the start of the study and at the end of each diet period. Participant adherence to the study diets was 85% based on daily self-reporting forms, which indicated good compliance, and participant weight was maintained within 1.3 kg during the study.

Results: Both diets reduced total and LDL cholesterol from baseline, but the reduction was greater with the almond snack vs. the muffin snack.

The diet containing almonds decreased total cholesterol (-5.1 ± 2.4 mg/dL; P = 0.05) and LDL (bad) cholesterol (-5.3 ± 1.9 mg/dL; P = 0.01) and non-HDL cholesterol (-6.9 + 2.4 mg/dL, p=0.01) compared to the muffin diet. In addition, the muffin diet reduced HDL (good) cholesterol versus the almond diet (-1.7 ± 0.6 mg/dL; P < 0.01). In addition, eating 1.5 oz almonds daily for 6 weeks improved LDL/HDL ratios from baseline (-0.23 ± 0.07; P =