

Interestingly, studies undertaken by our group at King's College London have found that a large proportion of the fat in almonds may be unabsorbed and excreted (up to 40 percent). A one-ounce serving, or 23 almonds, has 13 grams of unsaturated fat and only 1 gram of saturated fat. The U.S. Dietary Guidelines recommend that the most of our fat intake be unsaturated.

Almonds offer other nutritional attributes besides fat. One ounce of almonds is an excellent source of vitamin E (7.4 milligrams [mg.] of alpha-tocopherol), magnesium (76 mg.), and manganese (0.6 mg.). It is also a good source of copper (0.3 mg.), phosphorus (137 mg.), and riboflavin (0.3 mg.).

**Q: Is fat in almonds dangerous?**

**A:** The fat in almonds is unsaturated and is therefore considered a healthy fat. The main fatty acid is oleic acid, which is monounsaturated, also found in large amounts in olive oil. Large clinical studies have shown that replacement of saturated fat or carbohydrate with monounsaturated fat results in lower total and LDL-C levels. Many research and clinical studies have investigated the effects of almonds on health and have demonstrated the almond's role in helping to maintain a healthy heart and healthy cholesterol levels. One such study is from Linda Loma University, where researchers studied the effect of almonds on cholesterol levels. In this study, 25 healthy subjects (14 men, 11 women) with a mean age 41 consumed three diets for four weeks with a two-week run-in diet: The diets were similar in the number of calories: a Step 1 diet (as a control); a low-almond diet (10 percent of the energy from almonds); and high-almond diet (20 percent of the energy from almonds). The low-almond diets lowered LDL-C levels ('bad' cholesterol) by 3 percent, whereas the high almond diet lowered LDL-C levels by 9 percent.

Unlike other nuts, almonds have been involved in two dose-response studies, which show that twice the effect with twice the dose; the Loma Linda study is one of these. Our research on TGs builds upon the body of evidence we already have on the benefits of including one ounce or 23 almonds, as part of a diet low in saturated fat and cholesterol.

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*Sarah Berry, M.D., is Lecturer at King's College and divides her time between research and teaching in the Department of Nutrition and Dietetics. Her studies is focus on the broad theme of diet and cardiovascular risk, particularly dietary lipids (triglycerides, or triacylglycerols) and the effects and mechanisms by which they affect vascular function and cardiovascular health. She is also investigating the health effects of inter-esterified fats, which are used by the food industry as alternatives to trans fats).*

## Triglycerides and Heart Disease

Triglycerides are the primary form of fat in foods, regardless of the type of fat which can be unsaturated or saturated. Serum triglycerides normally increase after we eat a meal containing dietary fat. Elevated blood triglyceride levels are a risk factor for cardiovascular disease.

In both laboratory (*in vitro*) and human studies, researchers explored how the fiber plant cell wall of almonds affects the accessibility of nutrients. In both types of studies, the almond's cell wall appears to hinder the ability to absorb all of the fat. For example, in one study using a model gut, there were indications that the cell walls of almonds swell during digestion, becoming permeable and allowing the fat in almonds to be slowly released throughout the digestive tract.

Twenty healthy male subjects (average age, 25) were recruited from King's College London to participate in the study. The men received three experimental meals, consisting of custard and muffins; muffins were made with whole almond seeds, almond oil plus defatted almond flour or sunflower oil, made to provide 50 grams of fat. Fasting and postprandial (after meal) samples were obtained from subjects to measure changes in plasma triglyceride levels.

Researchers found that the postprandial increase in triglycerides was significantly lower after the subjects ate whole almond meals than after they ate almond oil or sunflower oil or sunflower oil muffin meals. It appears that the fat found in whole almonds is not as quickly absorbed by the body as that found in almond oil or sunflower oil, which researchers attributed to the plant cell walls found in the whole almond nut. Researchers believe that the plant cell walls found in almonds act as a physical barrier and hinder the rate and release of the lipid during digestion.

This study complements the nine clinical studies on almonds already in existence, demonstrating how almonds, as part of a diet low in saturated fat, can help maintain healthy cholesterol levels. One ounce of almonds, (about a handful), provides fiber (3 grams), calcium (75 milligrams [mg.]), protein (6 grams), iron (1 mg.), potassium (200 mg.), saturated fat (1 gram), and unsaturated fat (13 grams).

(Source: *American Journal of Clinical Nutrition*, December 2008.)

## Many Healthy Young People Might Be At Risk for Heart Disease

Even younger adults who have few short-term factors for heart disease may have a higher risk of developing heart disease over their lifetimes, according to new findings from the University of Texas. The results suggest that traditional methods of identifying heart disease risk might not adequately identify patients who actually have a higher lifetime risk.

"We found that about half of individuals who are 50 years of age or younger and at low short-term risk for heart disease may not remain at low risk throughout their lives," said Dr. Jarett Berry, Assistant Professor of Internal Medicine at the university and lead author of the study.

Using current 10-year risk assessment data, the authors found that more than 90 percent of patients 50 years of age and younger are considered at low risk for heart disease. However, when they added a lifetime risk model to the 10-year risk model, they found that about half of those with a low 10-year risk, but a high lifetime risk, had a greater progression of heart disease, as measured by buildup of coronary artery calcium and thickening of the carotid artery.

The short-term (10-year) risk factors were represented by the Framingham Risk Score, a tool typically used by physicians to assess

risk for heart disease in patients. Risk factors listed on the assessment include cholesterol levels, blood pressure, smoking, age, and gender.

"There is a discrepancy between short-term and long-term risk," Dr. Berry said. "People deemed low-risk, using the 10-year, may not remain low-risk throughout their lives."

About 4,000 adults younger than 50 years of age were divided according to their short-term risk for heart disease. For those with low short-term risk and without diabetes, the researchers also estimated the lifetime risk using factors such as cholesterol levels, smoking, and blood pressure.

Dr. Berry said, "When we compared the people with low short-term but high lifetime predicted risk with those individuals who had low short-term and low predicted risk, we found that the former group had a greater prevalence and progression of atherosclerosis. Thus, long-term risk estimates in younger patients may provide new information regarding risk prediction that is not usually available using only a 10-year risk model."

(Source: *Circulation: Journal of the American Heart Association*, January 19, 2009.)

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