



Uncover the health benefits of macadamia nuts

A diet rich in macadamia nuts lowers LDL-cholesterol

Executive Summary:

- ❑ **Macadamia nuts are a rich source of mono-unsaturated fatty acids and contain vitamins, minerals and polyphenol compounds that may impart heart healthy benefits.**
- ❑ **When incorporated into a heart healthy diet, the consumption of 1.5 oz per day of macadamia nuts can beneficially reduce levels of LDL-cholesterol.**
- ❑ **The consumption of macadamia nuts has also been shown to decrease markers of oxidative stress and inflammation.**



Macadamia nuts are a rich source of heart-healthy mono-unsaturated fatty acids.

Often reserved for decadent or high end recipes, macadamia nuts may be worth considering on a more regular basis as part of a heart-healthy diet. While it is true that macadamia nuts are ~75% fat, its fat content is predominately monounsaturated fatty acids (MUFA). Macadamia nuts have a higher MUFA content (~80%) than any other tree nut. Oleic and palmitoleic fatty acids are the primary MUFAs in macadamias. Research indicates that macadamia nuts, like other tree nuts, may have beneficial blood lipid-lowering effects; they also contain vitamins, minerals and polyphenol compounds that may impart additional health benefits.

In a recent study from The Pennsylvania State University, participants experienced significant reductions in total cholesterol (TC), LDL cholesterol and triglycerides (TG) when consuming a diet rich in macadamia nuts (MAC) (33% total fat: 7% SFA,

18% MUFA, 5% PUFA) as compared to an average American diet (AAD) (33% total fat: 13% SFA, 11% MUFA, 5% PUFA). Each diet contained 2100 calories per day, with the MAC diet including 1.5 ounces of macadamia nuts each day. Average serum lipid levels for the MAC diet vs the AAD were: TC 192 vs. 212 mg/dL, LDL 122 vs. 134 mg/dL and TG 134 vs. 166 mg/dL. The

“These findings provide information that can help identify those individuals who may benefit the most from a cholesterol-lowering diet on the basis of their baseline inflammatory (CRP) status.”

reduction observed in LDL cholesterol following the consumption of macadamia nuts is similar to that observed following the consumption of other tree nuts; therefore, macadamia nuts can be included in a heart-healthy dietary

pattern that beneficially impacts risk for cardiovascular disease via a reduction in lipids and lipoproteins.¹

In an additional subgroup analysis in the study above, researchers looked at the relationship between C-reactive protein levels (CRP), a marker of underlying inflammation, and the lipid-lowering response to the two diets. Participants with low levels of CRP at baseline (<1 mg/L) had much greater reductions in total cholesterol (-11.4%), LDL cholesterol (-11.2%) and TC:HDL (-4.0%) on the MAC diet compared to the AAD (+3.3%, +6.4% and +10.3%, respectively). Interestingly, those with high levels of CRP at baseline (>1 mg/L) did not experience any reductions in TC or LDL and experienced a significant increase in TC:HDL. These data support previous research that shows that CRP and inflammatory status affects the lipid/lipoprotein response to a cholesterol-lowering diet.²

¹Griell A, Bagshaw D, Cifelli A, Cao Y, Kris-Etherton P. Abstract presented at Experimental Biology April 2007; ²Cao Y, Bagshaw D, Cifelli A, Griell A, Kris-Etherton P. Abstract presented at Experimental Biology April 2007.

The Hershey Center for Health and Nutrition sponsors cutting-edge research on the health benefits of cocoa, chocolate and nuts. The Center focuses on studying the chemistry and dietary components of various foods and food components that are key sources of nutrients. The Center directs scientific research to develop products and technologies providing consumers with health benefits in the areas of heart health, weight management, and mental and physical energy. The Hershey Center for Health and Nutrition is designed to be a significant source of new-product innovation as it draws upon clinical studies and scientific analyses of the health benefits of cocoa, nuts and other natural ingredients.



Macadamia nuts contain vitamins, minerals and polyphenol compounds that may impart heart healthy benefits.

“The reduction observed in LDL cholesterol following the consumption of macadamia nuts is similar to that observed following the consumption of other tree nuts.”



Macadamia nuts are typically used as a snack, and in various confectionary items including those that contain chocolate.

Macadamia nuts reduce levels of inflammation

A study from the University of Newcastle showed that consumption of 40-90g macadamia nuts, as part of a healthy diet, is associated with a reduction in oxidative stress, thrombosis and inflammation in hypercholesterolemic men.

Researchers found beneficial effects on biomarkers of coronary artery disease, including a reduction of plasma levels of 8-isoprostanes (an indicator of oxidative stress) as well as LTB₄ (an inflammatory substance derived from arachidonic acid by the action of lipo-oxygenase).

Subjects consumed macadamia nuts equivalent to 15% of energy intake for a total of 4 weeks. The constituents in macadamia nuts responsible for the protective effects are hypothesized to be either monounsaturated fatty acids or the phenolic compounds

that are inherently present. Macadamia nuts are a uniquely rich source of palmitoleic acid, a fatty acid that is not commonly present in other tree nuts.

This research indicates that macadamia nuts may have cardioprotective effects beyond that of a reduction in lipids and lipoproteins alone.

(Garg ML et al. Lipids. 2007 Jun; 42(6):583-7.)

Ginger Macadamia Nut Crusted Salmon

Ingredients:

- 2 tablespoons honey
- 1 tablespoons low sodium soy sauce
- 1 tablespoons fresh lime juice
- 2 tablespoons finely chopped fresh ginger
- 1 tablespoons finely chopped green onion
- 1 small clove garlic, finely chopped
- 1/4 cup chopped dry roasted Mauna Loa macadamia nuts
- 1 pound skinless salmon fillet



Directions:

In small bowl, combine honey, low sodium soy sauce, lime juice, ginger, green onion and garlic. Place salmon on lightly greased baking sheet. Brush mixture evenly over fillets; sprinkle evenly with chopped macadamia nuts. Bake at 400-degrees F for 10 to 15 minutes or until fish is cooked through and just flakes when tested with a fork.

Makes 4 servings.

Nutrition Facts		Nutrition Facts		*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs: Calories: 2,000 2,500
Amount/Serving	% Daily Value*	Amount/Serving	% Daily Value*	
Total Fat 15g	22%	Sodium 190mg	8%	Total Fat Less than 65g 80g
Saturated Fat 2.5g	11%	Total Carbohydrate 12g	4%	Saturated Fat Less than 20g 25g
Polyunsaturated Fat 3.5g		Dietary Fiber less than 1 gram	4%	Cholesterol Less than 300mg 300mg
Monounsaturated Fat 8g		Sugars 9g		Sodium Less than 2,400mg 2,400mg
Cholesterol 70mg	24%	Protein 27g		Total Carbohydrate 300g 375g
Vitamin A 2%		Calcium 2%		Dietary Fiber 25g 30g
Vitamin C 2%		Iron 8%		Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4

For further information contact **The Hershey Center for Health and Nutrition:**

Debra Miller, PhD (debramiller@hersheys.com) or Amy Griel, PhD, RD (agriel@hersheys.com)

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