



# HerbClip™

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**FILE: ■Olive Oil (*Olea europaea*)**  
**■Polyphenols**  
**■Heart Disease**

**HC 100262-323**

**Date: February 28, 2007**

**RE: Positive Effect of Polyphenols in Olive Oil on Heart Disease Risk Factors**

Covas MI, Nyyssonen K, Poulsen HE, et al. The effect of polyphenols in olive oil on heart disease risk factors: a randomized trial. *Ann Intern Med.* September 5, 2006;145(5):333-341.

Recently, the Mediterranean diet has been gaining popularity as a heart-healthy diet thought to account for the lower incidence of heart disease in Mediterranean countries. One of the main explanations is the large amount of olive oil (*Olea europaea*) used in the diet. Olive oil is rich in oleic acid (a monounsaturated fatty acid) and most of the protective effect of olive oil has been attributed to its high monounsaturated fatty acid content. However, whether the beneficial effects of olive oil on the cardiovascular system are exclusively due to oleic acid remains to be elucidated. Minor components in olive oil (particularly the phenolic compounds) may contribute to these health benefits.

This randomized, crossover, controlled trial was designed to evaluate whether the phenolic content of olive oil benefits plasma lipid levels and lipid oxidative damage compared with monounsaturated acid content. Healthy male volunteers (n=200; from 6 research centers in 5 European countries) were randomly assigned to 3 sequences of daily administration of 25 mL of 3 olive oils varying in phenolic content: low (2.7 mg/kg of olive oil), medium (164 mg/kg), or high (366 mg/kg). Olive oils were similar in every other way, including fatty acid content. Sequences were high, medium, and low (sequence 1); medium, low, and high (sequence 2); and low, high, and medium (sequence 3). Intervention periods were 3 weeks preceded by 2-week washout periods. Outcome measures included 1) glucose and lipid profiles, 2) oxidative damage to lipids, and 3) antioxidant status from endogenous and exogenous origins. Levels were determined at baseline and before/after each olive oil intervention period.

Results of the study indicate a linear increase in high-density lipoprotein (HDL) cholesterol levels for low-, medium-, and high-polyphenol olive oil (P=0.018). Total cholesterol:HDL cholesterol ratio decreased linearly (P=0.013) with the phenolic content of the olive oil.

Oxidative stress markers also decreased linearly (conjugated dienes [P=0.011]; hydroxyl fatty acids [P=0.038]; oxidized LDL [P=0.014]).

The authors conclude that the findings illustrate an independent effect of the phenolic compounds in olive oil. Furthermore, the phenolic content, in addition to monounsaturated fat, can provide benefits for plasma lipid levels and oxidative damage. The study limitations include 1) possible interactions of the olive oil with other dietary components, 2) self-reporting of subjects' dietary intake, and 3) short intervention periods. Nevertheless, the results of this study may provide evidence for a recommendation of using polyphenol-rich olive oil (i.e., virgin olive oil) as a source of fat to achieve additional benefits against cardiovascular risk factors. Future studies will delineate any benefits and specific mechanisms.

—*Jennifer Minigh, PhD*

The American Botanical Council has chosen not to reprint the original article.

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