

Citation:

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Title: Benefits of corn oil compared to extra-virgin olive oil consumption on the plasma lipid profile in men and women with elevated cholesterol: results from a controlled feeding trial

Objective/Statement of Problem/Aim/Hypothesis: Corn oil (CO) contains high levels of phytosterols (132 mg/T vs. olive oil 30 mg/T), which reduce cholesterol absorption, and is rich in polyunsaturated fatty acids (PUFA). This trial compared the effects of CO vs. extra-virgin olive oil (EVOO) on lipoprotein lipids in 54 healthy men and women [65% female; 76% non-Hispanic white; mean (standard error) age 53.8 (1.3) y and body mass index 28.2 (0.5) kg/m²] with fasting low-density lipoprotein cholesterol (LDL-C) \geq 130 mg/dL and <200 mg/dL.

Methods/Design or Approach: In this randomized, double-blind, crossover trial, 4 T/d (~54 g) of CO (528 mg phytosterols, 29.7 g PUFA) or EVOO (120 mg phytosterols, 5.6 g PUFA) were provided in 3 servings of study product/d (muffin, dinner roll, yogurt), as part of a weight-

maintenance diet (~35% of energy from fat, <10% from saturated fat, <300 mg cholesterol) consumed for 21 d, with a 21 d washout between treatments. Breakfast was administered at the clinic on weekdays, and subjects were provided lunch, dinner and a snack for consumption away from the clinic. Weekend meals were dispensed on Friday. Fasting lipid profiles were measured twice on separate days at baseline and the end of each 21 d treatment period.

Results and/or Implications: Baseline mean (standard error) lipid values in mg/dL were: LDL-C 153.3 (3.5), total-C 225.7 (3.9), non-high-density lipoprotein (HDL)-C 178.3 (3.7), HDL-C 47.4 (1.7), total-C/HDL-C 5.0 (0.2), and triglycerides 124.8 (7.2). CO resulted in significantly larger least squares mean % changes (all $p < 0.001$ vs. EVOO) from baseline, respectively, in LDL-C -10.9 vs. -3.5, total-C -8.2 vs. -1.8, non-HDL-C -9.3 vs. -1.6, and total-C/HDL-C -4.4 vs. 0.5. Triglycerides rose to a smaller extent with CO feeding, 3.5 vs. 13.0% with EVOO ($p < 0.007$) and the HDL-C responses were not significantly different between conditions (-3.4 vs. -1.7%).

Conclusion(s): Consumption of CO, as part of a weight-maintenance, low saturated fat and cholesterol diet, by men and women with hypercholesterolemia, resulted in more favorable changes in LDL-C and other atherogenic lipids compared with EVOO. Potential factors contributing to these effects include the phytosterol and fatty acid profiles of CO vs. EVOO.

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