

The Effect of a Plant-Based Diet on Plasma Lipids in Hypercholesterolemic Adults A Randomized Trial

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Background: A variety of food combinations can be used to meet national U.S. guidelines for obtaining 30% of energy or less from total fat and 10% of energy or less from saturated fat.

Objective: To contrast plasma lipid responses to 2 low-fat diet patterns.

Design: Randomized clinical trial.

Setting: 4-week outpatient feeding study with weight held constant.

Participants: 120 adults 30 to 65 years of age with prestudy low-density lipoprotein (LDL) cholesterol concentrations of 3.3 to 4.8 mmol/L (130 to 190 mg/dL), body mass index less than 31 kg/m², estimated dietary saturated fat at least 10% of calories, and otherwise general good health.

Measurements: Plasma lipid levels.

Intervention: Two diets, the Low-Fat diet and the Low-Fat Plus diet, designed to be identical in total fat, saturated fat, protein, carbohydrate, and cholesterol content, consistent with former American Heart Association Step I guidelines. The Low-Fat diet was relatively typical of a low-fat U.S. diet. The Low-Fat Plus diet incorporated considerably more vegetables, legumes, and whole grains, consistent with the 2000 American Heart Association revised guidelines.

Results: Four-week changes in the Low-Fat and Low-Fat Plus groups were - 0.24 mmol/L (- 9.2 mg/dL) versus - 0.46 mmol/L (- 17.6 mg/dL) for total cholesterol (P=0.01) and - 0.18 mmol/L (- 7.0 mg/dL) versus - 0.36 mmol/L (- 13.8 mg/dL) for LDL cholesterol (P = 0.02); between-group differences were - 0.22 mmol/L (- 9 mg/dL) (95% CI, - 0.05 to - 0.39 mmol/L [- 2 to - 15 mg/dL]) and - 0.18 mmol/L (- 7 mg/dL) (CI, - 0.04 to - 0.32 mmol/L [- 2 to - 12 mg/dL]) for total and LDL cholesterol, respectively. The 2 diet groups did not differ significantly in high-density lipoprotein cholesterol and triglyceride levels.

Limitations: 4-week duration.

Conclusions: Previous national dietary guidelines primarily emphasized avoiding saturated fat and cholesterol; as a result, the guidelines probably underestimated the potential LDL cholesterol-lowering effect of diet. In this study, emphasis on including nutrient-dense plant-based foods, consistent with recently revised national guidelines, increased the total and LDL cholesterol-lowering effect of a low-fat diet.

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