

Effects Of Walnut Consumption As Part Of Heart Healthy Diet On Atherogenic Lipoprotein Subclasses

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Nutritional therapy is fundamental in the treatment of cardiovascular disease. Studies that utilized a low-fat diet supplemented with 64 grams/day of walnuts have shown a significant reduction in serum levels of total and LDL cholesterol, and triglycerides. This study was designed to see if lipoprotein subclasses varied in patients eating a low-fat walnut supplemented diet.

Methods/Design

Frozen aliquots of serum samples from a single center, randomized, open-label, crossover study were tested to evaluate the effects of walnut intake on lipoprotein subclass distribution. Sixty-seven outpatients with high total cholesterol followed a standardized low-fat, low-cholesterol diet for six weeks before random assignment to continue the same diet or to ingest 64grams/day of walnuts as part of the diet. A registered dietitian instructed the patients on various ways to substitute walnuts in their diet to maintain the same amount of total energy, carbohydrates, protein and total fat content as the control diet. After 6 weeks, the patients were crossed over to the opposite treatment arm.

Results/Conclusions

Serum samples obtained pre- and post-treatment from the walnut diet arm of the study from 42 patients were available for analysis by Lipoprint for VLDL and LDL particle size distribution. VLDL particles were distributed among large (C), medium (B), and small (C) subclasses, while LDL particles were distributed among 3 major subclasses sizes (L1-L3) ranging from the largest (L1) to the smallest (L3). The walnut diet demonstrated significant reduction in both the total cholesterol (5%) and LDL-C (9%). Although the observed changes among VLDL and LDL particle size did not significantly change from baseline, a clear trend of -14% was observed for the small (L3) subclass of LDL. An additional trend in reduction of the large VLDL particle subclass (C) of 20% was also observed. Therefore, patients whose total and LDL cholesterol levels decreased by adherence to a low cholesterol, low fat diet enriched by 64grams/day of walnuts also demonstrated a potentially beneficial trend in subclass size distribution of the major atherogenic lipoproteins classes in this study group.