Variable effects of soy protein on plasma lipids in hyperlipidemic and normolipidemic hemodialysis patients

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Abstract

BACKGROUND: Hyperlipidemic factors contribute to the high cardiovascular risk in hemodialysis patients. Soy protein has decreased some atherogenic lipid concentrations in subjects with normal renal function. This study evaluates the effect of soy protein on serum lipid profiles in hyperlipidemic and normolipidemic hemodialysis patients. METHODS: Nineteen hyperlipidemic and 18 normolipidemic hemodialysis patients were enrolled in a randomized, double-blind, placebo-controlled, clinical trial. After a 4-week run-in phase, subjects in each category were randomly assigned to 2 groups. Thirty grams of isolated soy protein or milk protein was consumed daily as a beverage at breakfast or postdialysis for 12 weeks. RESULTS: In hyperlipidemic subjects, soy protein intake significantly decreased total cholesterol levels by 18.6% (95% confidence interval [CI], -11.4 to -25.8; P = 0.04), triglyceride levels by 43.1% (95% CI, -34.0 to -52.2; P = 0.02), non-high-density lipoprotein cholesterol levels by 23.6% (95% CI, -14.7 to -32.5; P < 0.01), apolipoprotein B levels by 15.4% (95% CI, -5.4 to -25.4; P = 0.01), and insulin levels by 49.8% (95% CI, -23.3 to -66.1; P < 0.01). Low-density lipoprotein cholesterol concentration was decreased significantly (-25.8%; 95% CI, -8.3 to -42.7; P = 0.01), and high-density lipoprotein cholesterol level was increased significantly (17%; 95% CI, 2 to 32.0; P = 0.03), but there was no significant difference compared with the milk protein group (-5.5% +/- 16.9% and 7.0% +/- 11.8%, respectively). There were no significant changes in serum lipid and lipoprotein concentrations in normolipidemic subjects. CONCLUSION: These results indicate soy protein substitution has lipid-lowering effects in hyperlipidemic hemodialysis patients. However, soy protein intake had little effect on plasma lipid levels in normolipidemic hemodialysis patients.