Effect of soy components on blood and liver lipids in rats fed high-cholesterol diets

Ching-Yi Lin Cheng-Yu Tsai Shyh-Hsiang Lin

Lin CI;Tsai CY;Lin SH

Abstract

AIM: To assess the effects of soy protein, isoflavone, and saponin on liver and blood lipid in rats that consumed high-cholesterol diets. METHODS: High-cholesterol diets (1%) with or without soy material were fed to 6-wk-old male Sprague-Dawley rats for 8 wk. Blood lipids, liver lipids, glutamic oxaloacetic transaminase (GOT), and glutamic pyruvic transaminase (GPT) levels were measured. The in vitro bile acid-binding ability of soy materials was analyzed. RESULTS: The results of in vitro studies showed that soy protein isolate had a significantly higher bile acid-binding ability (8.4+/-0.8%) than soy saponin (3.1+/-0.7%) and isoflavone (1.3+/-0.4%, $P<0.05$). On the other hand, at the end of the experimental period, rats that consumed soy protein diets had lower GOT and GPT levels than rats that consumed casein under high-cholesterol diets. Rats that consumed soy protein also had lower total cholesterol (TC) levels in the liver than those that consumed casein under high-cholesterol diets. Rats that consumed the soy protein diet containing both saponin and isoflavone had lower hepatic TC level than those that consumed the soy protein diet without isoflavone alone. The effect of different types of proteins on triglyceride was not significant. CONCLUSION: Consumption of soy provided benefits to control lipid levels under high-cholesterol dieting conditions in this rat model of hypercholesterolemia. The major component that reduced hepatic TC was not saponin, but possibly isoflavone.