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Use of soy proteins in cholelithiasis prevention

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of total particle ($P < 0.05$). In contrast, we observed a decreasing FC content of HDL₃: 2.6 ± 0.2 vs $4.4 \pm 0.5\%$ of total particle ($P < 0.05$). Thus, in healthy men fed a cholesterol-poor diet, soy proteins did not act directly on cholesterolemia via LDL as shown in animals and hypercholesterolemic subjects (1-4). However, soy proteins seemed to induce modifications in LDL and HDL₃ composition.

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Use of soy proteins in cholelithiasis prevention. I Catala^{1,2}, C Juste¹, K Benfiguig³, A Ruskone-Fourmestraux³, B Guy-Grand⁴, F Bornet², T Corring¹ (¹ *LEPSD, Inra, 78352 Jouy-en-Josas cedex, France*; ² *Nutrition and Health Service, Eridania Béghin-Say, Vilvoorde Research Center, Vilvoorde, Belgium*; ³ *Service d'hépatogastroentérologie, Hôtel-Dieu*; ⁴ *Service de nutrition, Hôtel-Dieu, 75004 Paris, France*).

The pathogenesis of cholesterol gallstones (or cholelithiasis) is related to the crystallization of biliary cholesterol. Diet is thought to be one of the factors involved in gallstone formation. Our study represents the first attempt in demonstrating a close relation-

ship between the origin of dietary proteins and cholesterol crystallization from bile in healthy volunteers.

For this purpose, 12 healthy young men aged 29.1 ± 1.6 years, BMI = 22.7 ± 0.9 kg/m², who had no gallstones as shown by ultrasonography participated to a cross-over design protocol. The subjects were fed an isocaloric diet where proteins were either mainly from animal origin or mainly from soya origin for two 2-week periods separated by a 2-week interval on their usual diets. At the end of each dietary period, body weight was measured. After an overnight fast, samples of duodenal bile and blood were taken in order to evaluate whether the origin of dietary proteins could have influenced the propensity of bile to crystallize biliary cholesterol and biliary factors implicated in this process. No significant changes in the subjects' body weight and caloric intakes were observed during the 6 weeks of experimental protocol. Total biliary lipids and biliary cholesterol saturation were not influenced by the protein origin, but cholesterol crystallization was retarded ($\approx + 4$ days) and decreased ($\approx - 100$ μ g crystallized cholesterol/mL bile at equilibrium) with soy proteins compared to animal proteins. Among the intrinsic factors of bile which are possibly responsible for preventing cholesterol precipitation (biliary proteins, molecular species of biliary lecithins and bile acids), the proportion of ursodeoxycholic acid (a bile acid currently used for gallstone dissolution) was shown to be doubled with the soy protein diet. This could partly explain the delay in biliary cholesterol crystallization observed with the soy protein diet.

Hypocholesterolemic effect of a *Vicia faba* protein concentrate in hypercholesterolaemic rats. MA De Diego, MP Portillo, R Cantoral, MT Macarulla (*Department of Nutrition, Faculty of Pharmacy, University*