

**Cholesterol lowering by soya lecithins in the rat *in vivo*: stimulation of the hepatic uptake of HDL-cholesterol and increase of bile lipid secretion.** E Polichetti<sup>1</sup>, N Diaconescu<sup>1</sup>, L Malli<sup>2</sup>, I Yousef<sup>3</sup>, B Tuchweber<sup>2</sup>, F Chanussot<sup>1</sup> (<sup>1</sup> *U 130 INSERM, 13009 Marseille, France*; <sup>2</sup> *Nutrition Institute*; <sup>3</sup> *Pharmacology department, University of Montreal, Canada*)

The hypocholesterolemic effect of soya lecithin has not been clearly elucidated. Most of the works has been done with semi-purified lecithin (Lucas Meyer Ltd) containing only 25% pure phosphatidylcholine (PC). Lecithin stimulates bile secretion [Rioux *et al* (1988) *Gastroenterology* 94, A621]. The implication of HDL-PC in the bile lipid secretion was also previously shown [Chanussot *et al* (1990) *Biochem J* 270, 691-695]. Thus, this study was carried out to determine the effect of dietary lecithin on the changes in HDL metabolism and bile secretion.

Diets were administered for 2 weeks to male Wistar rats: 2 control diets: C (4% lipids) and C-TG (triglyceride-rich diet: 20% sunflower oil, providing the same amount of fatty acids as 2 lecithin diets), and 2 lecithin diets: NPLe (25% pure soya PC) and PLe (92% pure soya PC). After this 2-week period, overnight-fasting rats were anesthetized and injected iv with 1.1  $\mu$ Ci HDL-[<sup>3</sup>H] PC; bile was collected for 120 min.

The PLe and NPLe diets resulted in a significant increase of secretion of bile phospholipids\* (x 1.5) and bile salts\* (x 1.5), compared to C or C-TG diets. The largest increase concerns bile cholesterol: 1.55  $\pm$  0.08\*, 0.95  $\pm$  0.07\*, 0.21  $\pm$  0.01 and 0.34  $\pm$  0.05 nmol/min/g liver respectively in the PLe, NPLe, C and C-TG groups. The amount of biliary [<sup>3</sup>H]PC in the PLe and NPLe rats was significantly higher\* (x 2.5) than that of the control rats (\* *P* < 0.05 by anova for PLe or NPLe vs C or C-TG). This stimulation is related to a significant 25% decrease\* in plasma cholesterol, particularly HDL-cholesterol.

These results can be explained by an increase in hepatic uptake of HDL-cholesterol and its associated HDL-PC, on PLe or NPLe diets, and by an increase in bile secretion of the resulting cholesterol, bile salts and PC.

**High clearance of plasma triglycerides in hamsters fed a fruit-enriched diet.** R Sablé-Amplis, R Sicart (CNRS and Université P-Sabatier, rue F-Magendie, 31400 Toulouse, France)

The high level of triglycerides (TG) that may occur after a meal and may be associated with cholesterol, is a risk factor for atherogenesis [Heyden S (1980) *J Chronic Dis* 33, 275-282]. Cholesterolemia is lowered and triglyceridemia is unchanged in fasted animals [Sablé-Amplis and Sicart (1983) *Nutr Rep Int* 27, 881-889] including humans [Girault *et al* (1988) *Entretien Bichat Cardiologie* 76-79] consuming a high-fruit (apples) diet. Here we examined the influence of this diet on plasma TG clearance after *per os* administration of intralipid containing 20% TG or after injection into the jugular vein (IV).

Experiments were carried out on 2 groups of hamsters, one was fed a standard diet (group S) and the other was fed apples in addition to the same standard diet (group F), *ad libitum* for 2 months. Blood was collected from 15-h-fasted animals on EDTA. Plasma concentrations of TG and TG contents of the intestine were determined enzymatically. Plasma insulin (IRI) levels were measured by radioimmunoassay.

Initial plasma concentrations of TG were 0.844  $\pm$  0.015 in S and 0.887  $\pm$  0.053 in F. After oral administration of 0.5 mL intralipid (100 mg TG), the basal level of TG was multiplied by 2.5 in the 2 groups of hamsters. The peak was maximum 3 h after loading in S but only after 6 h in F. Moreover, in the animals fed the fruit-enriched diet, triglyceridemia returned to normal 10 h after TG loading but remained high (50% above the initial level) in the S animals. Basal plasma insulin levels were 11.5  $\pm$  2.4  $\mu$ U/mL in S and 13.0  $\pm$  3.8 in F and rose after TG administration, they peaked at 1 h after the intralipid load, reaching 24.5  $\pm$  6.6 and 35.9  $\pm$  8.3, respectively, and were then normalized. Similar responses were obtained in non-fasted animals although they exhibited higher initial levels of TG and IRI, and had individual variability in triglyceride response after intralipid administration.

Measurements of the intestine TG content at various times after an oral load of intralipid as well as the determination of plasma TG levels at various times after iv administration of intralipid (50 or 100  $\mu$ L) confirmed that an apple-enriched diet may increase the clearance of plasma TG in hamsters.