ICCN Poster Presentations

Nutrition and cardiovascular disease

Long-term effects of policosanol on obese patients with Type II Hypercholesterolemia.

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Both hypercholesterolemia (HC) and obesity are coronary risk factors. Clinical studies have shown the benefits of lowering elevated plasma levels of low-density lipoprotein-cholesterol (LDL-C) on clinical end-points. Policosanol is a cholesterol-lowering drug purified from sugar cane wax with a therapeutic range from 5 to 20 mg/day. This randomised, double-blinded, placebo-controlled study was undertaken to investigate the long-term efficacy and safety of policosanol in obese patients (BMI ≥ 30) with Type II hypercholesterolemia. After 5 weeks on step one cholesterol-lowering diet, 129 patients were randomised to policosanol 5 mg or placebo tablets taken once daily with the evening meal for 3 years. Lipid profile variables, safety indicators, adverse events (AE) and compliance with diet counselling and study medications were assessed. Study patiens showed a high frequency of other coronary risk factors, hypertension being the most common. Both groups were well matched at randomisation. After one year on treatment, policosanol significantly ($p < 0.01$ vs placebo) lowered serum LDL-C, the primary efficacy variable (24.3 %) and total cholesterol (TC) (15.8 %), whereas increased high-density lipoprotein-cholesterol (HDL-C) (21.9 %). Changes of lipid variables in placebo were not significant. Treatment effects were persistent, even slightly enhanced, during the trial. At study completion, policosanol had lowered ($p < 0.00001$) LDL-C (31.8 %) and TC (20.1 %), while markedly raised ($p < 0.00001$) HDL-C (24.6 %). Thirty patients (18 placebo, 12 policosanol) discontinued the study: 15 (11 placebo, 4 policosanol) due to AE and 12 (9 placebo, 3 policosanol) due to serious adverse events (SAE), most vascular. Policosanol was safe and well tolerated, not impairing significantly any safety indicator. Average body weight was slightly reduced over the study, indicating a general acceptable compliance with dietary recommendations, but policosanol did not show any drug effect on body weight. Overall, 28 placebo and 26 policosanol patients reported some mild or moderate AE during the study. It is concluded that policosanol was effective for lowering cholesterol in obese patients with type II hypercholesterolemia, being also safe and well tolerated.

Effect of a soy supplement on spontaneous atherosclerosis in low density lipoprotein receptor knock out (LDLR $^{-/--}$) mice

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Dietary isoflavones with estrogenic activity (phytoestrogens) may be an alternative to hormone replacement therapy in prevention of cardiovascular disease for postmenopausal women. In order to investigate the effect of an isoflavone rich soy supplement on blood lipids and atherosclerosis, twenty 6-week old female LDLR$^{-/--}$ mice, with plasma cholesterol 6.72mM, and triglycerides 1.81 mM, received a standard diet (control, N=10) or 1% soy supplement added to the standard diet (N-10) for 5 weeks followed by addition of 0.02% cholesterol to the respective diets for 18 weeks. Blood lipids were measured at the start, prior to cholesterol addition to the diets, every third week thereafter, and at termination. Malondialdehyde (MDA), a biomaker for redox status in LDL, was measured at termination. The aortic atherosclerosis, expressed as lipid accumulation of the initial part of the ascendent thoracic aorta was quantified by point counting on histological cross sections and expressed as the ratio: $R_{lipid/wall}$. Cholesterol addition to the diets increased plasma cholesterol in both groups but the increase was lower in the soy group (after 6 weeks of cholesterol addition: 9.38 mM vs. 7.29 mM. $P<0.05$, at termination: 6.96 mM vs. 6.02 mM, $p<0.05$). Plasma triglycerides were slightly but statistically significantly lower in the soy group than in controls during cholesterol feeding. Blood lipid levels in lipoproteins were comparable between the groups except for a lower very low density lipoprotein (VLDL)-cholesterol in the soy group (2.70 vs. 2.04, $p<0.05$). Concentration of MDA in LDL was similar in both groups. $R_{lipid/wall}$ was lower in the soy group (0.129 vs. 0.063, $p<0.05$). In conclusion, the present study in LDLR$^{-/--}$ mice demonstrated that the tested soy supplement reduced aortic atherosclerosis in LDLR$^{-/--}$ mice, possibly due to reduction of plasma cholesterol and its concentration in VDVL. This finding is in line with an association between the dietary intake of soy products and the reduced risk of cardiovascular disease observed in epidemiological studies. Furthermore, it indicates that LDL receptor deficeiency does not abolish the atheroprotective action of soy isoflavones. The latter may be of importance for humans with either genetically conditioned or acquired deficiency in functional LDL receptors.