

Abstract

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Effects of gender, apolipoprotein E phenotype and cholesterol-lowering by plant stanol esters in children: the STRIP study. Special Turku Coronary Risk Factor Intervention Project.

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AIM: To evaluate the effects of gender, apolipoprotein E phenotype and cholesterol absorption and synthesis (estimated as serum plant sterol and cholesterol precursor sterol concentrations) on the cholesterol-lowering effect of plant stanol esters in children.

METHODS: Eighty-one healthy, normocholesterolaemic 6-y-old children (45 boys) were recruited from the Special Turku Coronary Risk Factor Intervention Project (STRIP), a randomized prospective trial aiming at atherosclerosis prevention in childhood. This placebo-controlled, double-blind, cross-over study comprised two 3-mo study periods and a 6-wk wash-out period. During the study periods, 20 g of the children's daily dietary fat intake was replaced with plant stanol ester margarine or control margarine.

RESULTS: In boys, plant stanol esters reduced serum total and low-density lipoprotein cholesterol concentrations by 6% (0.09 to 0.42 mmol/L) and 9% (0.09 to 0.36 mmol/L), respectively ($p < 0.01$ for both). In girls, the decreases in concentrations were 4% (0.03 to 0.38 mmol/L) and 6% (0.02 to 0.32 mmol/L) ($p < 0.05$ for both). The response rate did not differ between the genders. Serum total and low-density lipoprotein cholesterol concentrations decreased by 6% and 8% ($p < 0.01$ for both), respectively, in both children with the apolipoprotein E 3/4 or 4/4 (apoE4+) phenotype and the apolipoprotein E 2/3 or 3/3 (apoE4-) phenotype. Cholesterol absorption decreased both in the apoE4+ children and in the apoE4- children, but cholesterol synthesis consistently increased in the apoE4+ children only.

CONCLUSION: Plant stanol esters reduce serum cholesterol concentration in healthy children irrespective of their gender or apoE4 phenotype.

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