

Combined effects of a dietary portfolio of plant sterols, vegetable protein, viscous fibre and almonds on LDL particle size.

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Abstract:

Studies conducted in the last 20 years have led to the identification of small dense LDL as an important risk factor for CVD. Consumption of plant sterols, soyabean proteins, viscous fibre and nuts are known to modulate the risk of CVD favourably through their cholesterol (Chol)-lowering properties, both independently and more recently in combination. Nevertheless, their combined impact on the LDL particle size phenotype has never been tested. In the present study, we assessed the effect of incorporating concurrently plant sterols (1 g/4·2 MJ), soyabean protein (23 g/4·2 MJ), viscous fibre (9 g/4·2 MJ) and almonds (15 g/4·2 MJ) into a diet very low in saturated fat in twelve patients with mildly elevated plasma LDL-Chol levels. Fasting blood lipids were obtained at the start of the study and at 2-week intervals during the 4-week study. The diet-induced reduction in plasma LDL-Chol of 30·0 (SE 3·0)% ($P < 0·0001$) was attributed to concurrent reductions in the serum Chol concentrations of large ($>26·0$ nm - 30 (SE 8) %, $P < 0·001$), medium ($<25·5$ - $26·0$ nm - 29 (SE 3) %, $P < 0·001$) and small ($<25·5$ nm - 21 (SD 6) %, $P < 0·01$) LDL particles, with near maximal reductions seen by week 2. These results indicate that foods and dietary components advocated for their potential to reduce the risk of CVD are effective in reducing serum concentrations of all LDL fractions including small dense LDL, thus potentially further contributing to an overall lower risk of CVD.