Comparison of a dietary portfolio diet of cholesterol-lowering foods and a statin on LDL particle size phenotype in hypercholesterolaemic participants.

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Abstract:
The effect of diet versus statins on LDL particle size as a risk factor for CVD has not been examined. In this study they compared, in the same subjects, the impact of a dietary portfolio of cholesterol-lowering foods and a statin on LDL size electrophoretic characteristics. Thirty-four hyperlipidaemic subjects completed three 1-month treatments as outpatients in random order: a very-low saturated fat diet (control); the same diet with 20 mg lovastatin; a dietary portfolio high in plant sterols (1 g/4200 kJ), soya proteins (21·4 g/4200 kJ), soluble fibres (9·8 g/4200 kJ) and almonds (14 g/4200 kJ). LDL electrophoretic characteristics were measured by non-denaturing polyacrylamide gradient gel electrophoresis of fasting plasma at 0, 2 and 4 weeks of each treatment. The reductions in plasma LDL-cholesterol levels with the dietary portfolio and with statins were comparable and were largely attributable to reductions in the estimated concentration of cholesterol within the smallest subclass of LDL (portfolio 20·69 (SE 0·10) mmol/l, statin 20·99 (SE 0·10) mmol/l). These were significantly greater (P,0·01) than changes observed after the control diet (20·17 (SE 0·08) mmol/l). Finally, baseline C-reactive protein levels were a significant predictor of the LDL size responsiveness to the dietary portfolio but not to the other treatments. The dietary portfolio, like the statin treatment, had only minor effect on several features of the LDL size phenotype, but the pronounced reduction in cholesterol levels within the small LDL fraction may provide additional cardiovascular benefit over the traditional low-fat diet of National Cholesterol Education Program Step II.