

# Abstract

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## Alterations of high-density lipoprotein subclasses in hypercholesterolemia and combined hyperlipidemia.

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**BACKGROUND:** Alterations in plasma lipid levels can influence the composition, content, and distribution of plasma lipoprotein subclasses that effect atherosclerosis risk. Hypercholesterolemia and combined hyperlipidemia are common forms of atherogenic dyslipoproteinemia. This study evaluates the alterations of high-density lipoprotein (HDL) subclasses in hypercholesterolemic and combined hyperlipidemic subjects.

**METHODS:** Apolipoprotein A-I contents of plasma HDL subclasses were quantitated by 2-dimensional gel electrophoresis in 242 normolipidemic subjects, 66 hypercholesterolemic subjects and 59 combined hyperlipidemic subjects.

**RESULTS:** Compared with the normolipidemic subjects, apolipoprotein A-I contents of small-sized pre-beta1-HDL, HDL3c, HDL3b and HDL3a were significantly higher in both hypercholesterolemic subjects ( $p < .01$ ,  $p < .05$ ,  $p < .01$  and  $p < .05$ , respectively) and combined hyperlipidemic subjects ( $p < .01$ ,  $p < .05$ ,  $p < .01$  and  $p < .01$ , respectively). In contrast, apolipoprotein A-I contents of large-sized HDL2a and HDL2b were significantly lower in hypercholesterolemic subjects ( $p < .05$  and  $p < .01$ , respectively) as well as combined hyperlipidemic subjects ( $p < .01$  and  $p < .01$ , respectively). In addition, pre-beta1-HDL increased significantly ( $p < .05$ ) while HDL2a and HDL2b decreased significantly ( $p < .05$  and  $p < .01$ , respectively) in combined hyperlipidemic group versus hypercholesterolemic subjects. With the elevation of triglyceride levels, pre-beta1-HDL, and HDL3a increased successively, however, HDL2a and HDL2b decreased successively in subjects with total cholesterol levels greater than 240 mg/dl.

**CONCLUSIONS:** The particle size of HDL shifted towards smaller size in hypercholesterolemic subjects, and that the shift was more prominent in combined hyperlipidemic subjects. The alternations mentioned above indicate that HDL maturation might be abnormal, and reverse cholesterol transport (RCT) might be weakened.

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