Intercorrelations of lipoprotein subfractions and their covariation with lifestyle factors in healthy men

So far, little is known about the effect of nutrition and lifestyle on the composition of circulating lipoprotein subfractions. In the current study, we measured the correlations among physical activity, nutrient intake, smoking, body-mass index (BMI), and age with the concentration of triglycerides, cholesterol, phospholipids, and apolipoproteins (ApoA1, ApoA2 and ApoB) in subfractions of LDL and HDL in 265 healthy working men. Concentrations of cholesterol, phospholipids, and ApoB in small, dense atherogenic LDL particles (sdLDL) correlated negatively (p<0.001) with those of cholesterol, phospholipids, and ApoA1 in HDL2, respectively. Age correlated positively with sdLDL while increasing BMI correlated with an atherogenic shift of cholesterol, phospholipids, and ApoB from large, buoyant LDL (lbLDL) to sdLDL and decreasing concentrations of HDL2 constituents. Physical activity and alcohol intake correlated negatively with sdLDL constituents and positively with HDL2 components. Consumption of monounsaturated fatty acids (MUFA) correlated with a lower ratio of sdLDL to HDL2 cholesterol. A favorable lipoprotein subfraction profile linked to a reduced risk of cardiovascular disease in men was associated with physical activity, moderate alcohol consumption, and dietary intake of MUFA, which might be exploited in future interventions for prevention of age- and BMI-associated atherogenic shifts of lipoprotein subfractions.