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Apolipoprotein E polymorphism Influences on the Distribution of the Human Plasma Lipid Profiles in Normolipidemic Korean Women.

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Apo E polymorphism (e2, e3, e4) was among the first reported genetic polymorphism that explained part of the normal variation in plasma cholesterol concentrations. Both alleles E_2 and E_4 are significantly more frequent in patients with mixed forms of hyperlipidemia and contribute on the observed differences in CHD risk among different populations. Effects of apo E polymorphism on the distribution of plasma lipid profiles were studied in 105 normolipidemic healthy women. The relative frequencies of common alleles for gene locus of apo E in this study were that E_3 allele was 0.848, E_4 allele was 0.087, and E_2 allele was 0.067. SBP and DBP were slightly more elevated in E_2 allele than those in E_3 and E_4. The pulsation was also significantly ($p<0.016$) increased by E_2 allele with excess body fat % in E_2 allele. There were no differences in total-, total HDL-, VLDL+LDL-, VLDL- and LDL cholesterol among the apo E alleles. However, apo E_2 allele subjects had lower levels of total HDL and HDL_2 cholesterol ($P<0.047$) and significantly higher levels of HDL_3 cholesterol ($P<0.05$) than those in apo E_3 and E_4 allele subject. The plasma TG levels were significantly higher in the apo E_2 allele than in the apo E_3 allele, otherwise, the plasma TG level in E_4 allele was significantly lower than that in E_3 allele ($P<0.049$ among apo E alleles). Atherogenic indices (AI) such as (TC-HDL)/HDL ($p<0.04$) and HDL_3/HDL_2 ($p<0.06$) were significantly increased in E_2 allele than those in E_3 and E_4 allele. The conclusion is that first, It seems that apo E_4-mediated alteration through LDL B/E receptors or E receptors in cholesterol metabolism results in lower plasma TG or remnant particles and in higher levels of VLDL+LDL or LDL. Second, apo E_2 allele shows reciprocal effects of E_4 on the plasma lipid metabolism, respectively. Third, apo E_2 allele was more atherogenic than apo E_4 because the higher levels of HDL_3/HDL_2 ratio and atherogenic index [(TC-HDL)/HDL] were criticized.