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Apo E Polymorphism Influence on Plasma Lipid Profiles and LCAT & CETP activities in Normolipidemic 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 lipid profiles. Both alleles E_2 and E_4 are significantly more frequent in the hyperlipidemia and contribute on the observed differences in CHD risk among different populations. Among 89 healthy females, aged 19 up to 22 years, 70 were $E_{3/3}$ (r.f=0.787), 9 were $E_{3/2}$ (r.f=0.101), 10 were $E_{3/4}$ (r.f=0.112) and no $E_{2/2}$ & $E_{2/4}$ were found. Weight, BMI and %LBM were elevated in E_2 than those in E_3 & E_4. No differences in the blood pressure among E_3 isomers, otherwise the pulsation was higher in E_4 than that in the others. There were no differences in plasma total-, total HDL-, HDL_3-, HDL_2 cholesterol and apo B-100 & apo A-I. However, phenotype means rank $E_{3/2} > E_{3/3} > E_{3/4}$ in average TG levels ($p<0.0001$) significantly, and rank $E_{3/4} > E_{3/3} > E_{3/2}$ in LDL cholessterol levels. These results were related to the correlation between atherogenic indeces (AI) such as LDL/HDL, (TG-HDL)/HDL & HDL_3/HDL_2. The ratio of HDL_3 & HDL_2 were significantly increased in E_2 and E_4 than that in E_3 ($P=0.043$). LCAT activity did not different between E_2 and E_3 but were highly increased in E_4 ($p<0.0001$ among apo E isomers). CETP activity did not different between apo E isomers. However, E_2 allele impacts on the clearance of apo E mediated lipoproteins because the negative correlation between LCAT and CETP in apo E_2 ($r=-0.491$) was stronger than that in apo E_3. In conclusion is that firstly, E_4 allele mediated alteration through LDL or E receptors results in lower TG or higher β-lipoprotein levels and E_2 shows reciprocal effects of E_4, respectively. Second, E_4 allele was more atherogenic than E_2 allele because the higher levels of AI were criticized. [Acknowledgements: Special thanks are given to the Korean Research Foundation for the financial support.]