



## Significant interaction of *APOE* rs4420638 polymorphism with HDL-C and APOA-I levels in coronary heart disease in Han Chinese men

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**ABSTRACT.** Apolipoprotein E (*APOE*) is recognized for its importance in lipoprotein metabolism and cardiovascular disease. We evaluated the association between *APOE* rs4420638 genotypes and circulating lipid concentrations along with the risk of coronary heart disease (CHD). We conducted a case-control study involving 1508 individuals to investigate the contribution of rs4420638 to the risk of CHD in Han Chinese. In addition, we performed a meta-analysis to evaluate the association between rs4420638 and CHD in Europeans and Asians. The results show that rs4420638 is significantly correlated with increased CHD risk in male Han Chinese [ $P = 0.040$ , odds ratio (OR) = 1.34, 95% confidential interval (95%CI) = 1.01-1.78] and is likely to increase the risk of CHD under the dominant model in males ( $P =$

0.036, OR = 1.38, 95%CI = 1.02-1.88). A further subgroup analysis by rs4420638 genotype found a significant association of rs4420638 AA with high-density lipoprotein cholesterol (HDL-C) ( $P = 0.012$ ) and APOA-I levels ( $P = 0.0001$ ) in males. The meta-analysis suggests that rs4420638 significantly increases the risk of CHD (OR = 1.18, 95%CI = 1.14-1.22,  $P < 0.0001$ , fixed-effect method). Our case-control study shows that rs4420638 genotype AA has a significant association with the concentrations of circulating HDL-C and APOA-I in CHD in Han Chinese males. The meta-analysis suggests that rs4420638 is associated with CHD risk in Europeans and Asians.

**Key words:** Coronary heart disease; High-density lipoprotein cholesterol; HDL-C; *APOE*; APOA-I; Polymorphism