



Association between rs155971 in the *PCSK1* gene and the lipid profile of obese Thai children: a family-based study

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ABSTRACT. Genetic variants of the *POMC* and *PCSK1* genes cause severe obesity among patients in the early stages of childhood. This family-based study analyzed the links between single nucleotide polymorphisms (SNPs) in either the *POMC* or *PCSK1* genes and obesity, as well as obesity-related traits among obese Thai children and their families. The variants rs1042571 and rs6713532 in the *POMC* gene in a sample of 83 obese children and their family members were investigated using polymerase chain reaction (PCR)-restriction

fragment length polymorphism. In addition, the SNPs rs6232, rs155971, rs3762986, rs3811942, and rs371897784 of *PCSK1* were analyzed in all samples using PCR and gene sequencing methods. Participants with the homozygous variant genotype in rs155971 had significantly elevated cholesterol and low-density lipoprotein cholesterol (LDL-C) levels ($P = 0.011$, OR = 1.025, 95%CI = 1.006-1.045; and $P = 0.006$, OR = 1.030, 95%CI = 1.009-1.053, respectively) after adjustment for age, gender, and body mass index (BMI). In addition, patients with the heterozygous variant genotype in rs371897784 of *PCSK1* had a 1.249-fold higher risk (95%CI = 1.081-1.444, $P = 0.027$) of increased waist circumference than patients with the normal genotype, after adjustment for age, gender, and BMI. However, this analysis did not find any correlation between obesity and SNPs in *PCSK1* and *POMC*. Therefore, these common variants in *PCSK1* and *POMC* were not the major cause of obesity in the Thai subjects sampled. However, variants in *PCSK1* did affect cholesterol level, LDL-C level, and waist circumference.

Key words: *POMC* gene; *PCSK1* gene; Genetic variant; Obesity; Body mass index; Single nucleotide polymorphism