EFFECTS OF PCSK1 GENETIC VARIANTS ON OBESITY AMONG THAI CHILDREN AND THEIR FAMILY MEMBERS: IN RELATION TO HEALTH RISK, AND BIOCHEMICAL AND ANTHROPOMETRIC PARAMETERS

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Abstract. Single nucleotide polymorphisms (SNPs) in PCSK1, namely, rs6234, rs6235, and rs271939 have been linked to obesity in European population; and rs3811951 has also been connected to type 2 diabetes and obesity parameters in Chinese population. In this family-based case-control study, we analyzed links between PCSK1 genetic variants and obesity in Thai children and their families. Eleven obese children with a percent weight for height ≥140 who had family history of obesity and 69 family members were recruited. SNPs rs6234, rs6235, rs3811951, and rs271939 of PCSK1 were analyzed using PCR and gene sequencing methods. DNA of 200 normal weight subjects was used as control. Participants with variant genotypes in the rs6234-6235 pair are at significantly more risk of being obese [OR = 2.44 (1.35-4.43), p = 0.003], and also at increased risk of being severely obese (obese class III) [OR = 3.03 (1.20-7.66), p = 0.015]. Variant rs3811951 showed no association with being obese, but is significantly linked to an increased risk of being severely obese [OR = 3.59 (1.42-9.08) p = 0.005]. Moreover, high density lipoprotein (HDL)-C levels between normal and variant rs3811951 group differed considerably, with patients with variant genotype having a lower HDL-C level (p = 0.037). Thus, Thais carrying SNPs rs6234-5 are at increased risk of being obese, and the risk of severe obesity increases when carrying both rs6234-5 and
rs3811951, but not with rs271939. Furthermore, patients with genetic variations at rs3811951 are at risk of having low HDL-C levels.

**Keywords:** PCSK1 gene, genetic variant, obesity, BMI