Association of Genetic Polymorphisms of Dipeptidyl Peptidase-4 with Metabolic Syndrome Parameters in Malaysian Subjects


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Objective: Dipeptidyl peptidase-4 (DPP-4) is a novel target in the management of metabolic syndrome (MetS) and Type 2 diabetes mellitus (T2DM). DPP-4 polymorphism may be genetic determinations of plasma DPP-4 activity. The aim of this study was to investigate the association of single nucleotide polymorphisms (SNPs) in the DPP4 gene with metabolic syndrome parameters in normal Malaysian subjects and to evaluate the impact of these polymorphisms on their plasma levels.

Material and Methods: Two DPP-4 loci were selected and genotyped in 164 normal subjects. In addition, the plasma DPP-4 level as well as levels of glucose, insulin, and the lipid profile at the fasting state was investigated.

Results: The general univariate analyses showed that the rs7608798 A–G genotype associated with the BMI (\( P = 0.01 \)), LDL-c (0.03). Moreover, the pairwise comparison showed that the subjects carrying the heterozygous genotype A–G had higher BMI (\( P = 0.006 \)), LDL-c (0.014) than those with homozygous G–G genotype. General univariate analyses showed that rs1861978 G–T genotype was associated with the plasma DPP-4 levels (\( P = 0.034 \)), total cholesterol (\( P = 0.006 \)), triglyceride (\( P = 0.041 \)). Additionally, the pairwise comparisons showed that the subjects with G-T had higher DPP-4 (\( P = 0.011 \)) than those with T–T genotype, whereas the subjects with T-T had higher total cholesterol (\( P = 0.002 \)) and triglyceride (\( P = 0.012 \)) than those with G–T genotype.

Conclusion: Genetic variations in DPP-4 loci rs7608798 and rs1861978 were associated with variations in plasma DPP-4 levels and metabolic syndrome parameters (BMI, T-cholesterol, LDL-cholesterol, and triglyceride) in Malaysian subjects.

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