Identification of a Regulatory Single Nucleotide Polymorphism in the Adiponectin (APM1) Gene Associated with Type 2 Diabetes in Han Nationality[1]

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Objective To identify the genetic defects of the the adiponectin (APM1) gene that contribute to the development of type 2 diabetes (T2DM) and determine the functional single nucleotide polymorphisms (SNPs) in the APM1 gene associated with T2DM in Han nationality. **Methods** The APM1 gene 5'-UTR was screened by direct sequencing to identify common polymorphisms. Identified SNPs were genotyped in 585 nondiabetic controls, 278 subjects with impaired glucose intolerance (IGT) and 212 patients with T2DM. The functions of SNPs in the regulatory region were assessed by reporter gene assay. Possible association between SNPs and plasma APM1 levels or metabolic parameters was statistically assessed. **Results** Three SNPs were identified in the APM1 gene 5'-UTR. A case-control study revealed that SNP -11377 G/C had significant differences in allele frequencies between T2DM patients and nondiabetic controls (G 0.314/C 0.686 *vs*. G 0.265/C 0.735, *P*=0.03). Haplotype analysis of three SNPs in the APM1 gene showed that no significant association of haplotypes with T2DM. IGT was detected in the present study. Reporter gene assay showed that SNP did not influence the transcription efficiency in the 3T3-L1 cell line. **Conclusion** SNP -11377 G/C in the proximal promoter region of the APM1 gene contributes to the development of T2DM in Han nationality but may not be a functional SNP in the APM1 gene.

Key words: Diabetes; Adiponectin; Single nucleotide polymorphism; Reporter gene; Promoter

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