Genetic polymorphisms of the TLR4 gene and their association with susceptibility to type 2 diabetes mellitus in the Chinese population

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ABSTRACT. Toll-like receptor 4 (TLR4) is potentially an important gene affecting the susceptibility to type 2 diabetes mellitus (T2DM). The objective of this study was to evaluate whether genetic polymorphisms of the TLR4 gene are associated with T2DM susceptibility. This potential association was analyzed in 668 T2DM patients and 672 healthy controls by polymerase chain reaction-restriction fragment length polymorphism and DNA sequencing methods. Two novel genetic polymorphisms (g.12375A>G and g.14367G>A) were investigated, and our data support the idea that the g.14367G>A variant significantly increased susceptibility to T2DM in homozygote comparison (AA vs GG: OR = 2.396, 95%CI = 1.682-3.413, P < 0.0001), heterozygote comparison (GA vs AA: OR = 1.322, 95%CI = 1.050-1.664, P = 0.0175), dominant model (AA/GA vs GG: OR = 1.511, 95%CI = 1.217-1.876, P = 0.0002), recessive model (AA vs GA/GG: OR = 2.093, 95%CI = 1.496-2.927, P < 0.0001), and allele contrast (A vs G: OR = 1.503, 95%CI = 1.279-1.766, P < 0.0001). The allele A of g.14367G>A
variants may contribute to the susceptibility to T2DM. However, we failed to detect a similar significantly increased susceptibility to T2DM in the g.12375A>G variant. Our findings suggest that the g.14367G>A genetic polymorphism of the TLR4 gene is associated with the susceptibility to T2DM in the population studied.

**Key words:** Association analysis; Genetic polymorphisms; Susceptibility; Toll-like receptor 4; Type 2 diabetes mellitus