

## **Prevalence of the rs7903146C>T polymorphism in TCF7L2 gene for prediction of type 2 diabetes risk among Iranians of different ethnicities**

### **ABSTRACT**

Background: Pharmacogenetics is the study of genetic polymorphisms affecting responses to drug therapy. The common rs7903146 (C.T) polymorphism of the TCF7L2 gene has recently been associated with type 2 diabetes (T2D). In this study, prevalence of the rs7903146 (C.T) polymorphism in the TCF7L2 gene for prediction of T2D risk was examined in an Iranian population of different ethnicities. Methods: The prevalence of rs7903146 (C.T) and the predicted phenotypes, including extensive metabolizers, intermediate metabolizers, and poor metabolizers were investigated in blood samples of 300 unrelated healthy individuals in an Iranian population, including Fars, Turk, Lure, and Kurd, using polymerase chain reaction restriction fragment length polymorphism and direct genomic DNA sequencing. Results: The homozygous wild-type (C/C), heterozygous (C/T), and homozygous (T/T) allelic frequencies of rs7903146 (C.T) in the TCF7L2 gene were 29% (extensive metabolizers), 66.34% (intermediate metabolizers), and 4.66% (poor metabolizers), respectively. The C/C, C/T, and T/T genotypic frequencies of the rs7903146 (C.T) allele were significantly different (P,0.01) among Iranians of different ethnicities. The frequency of the homozygous T/T variant of the rs7903146 (C.T) allele was significantly low in the Lure (P,0.01) and high in the Fars (P,0.001) ethnicities. Additionally, the frequency of the T/T variant of the rs7903146 (C.T) allele in the South of Iran was the highest (P,0.04), while the East of Iran had the lowest frequency (P,0.01). Conclusion: The prediction of rs7903146 (C.T) is required in drug research and routine treatment, where the information would be helpful for clinicians to optimize therapy and adverse drug reactions and predict drug response in individuals at risk of T2D.

**Keyword:** Pharmacogenetics of type 2 diabetes (T2D); Transcription factor 7-like 2 gene; TCF7L2; rs7903146 (C.T) SNP; Fars Turk Lure and Kurd; Iranian populations of different ethnicities