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Genetic polymorphism in Peroxisome Proliferator-Activated Receptor Gamma Co-activator-1 Alpha (*PPARGC1A*) gene and its relation to risk of type 2 diabetes

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Genetic factors play a vital role in the etiology and progression of Type 2 Diabetes (T2DM). In this study, we presented the data on Single Nucleotide Polymorphism (SNP) within the intronic region of the peroxisome proliferator-activated receptor gamma co-activator-1 α (*PPARGC1A*) gene. Moreover, SNPs in its coding region have been associated with the risk of T2DM in some populations. *PPARGC1A* is a co-activator which has been associated with the transcriptional control of various genes involved in gluconeogenesis, thermogenesis, and glucose homeostasis. Restriction fragment length polymorphism was carried out using primers which are designed to span the polymorphic region followed by restriction with *Tsp451*. A total of 183 DNA samples from individuals with T2DM (Warren 2 Repository), and 167 humans who were randomly selected as control samples were genotyped. And it was found that the minor allele frequencies of the single nucleotide polymorphism in the type 2 diabetes group and the control group were 0.061 and 0.051 respectively; however, no significant association was found between the minor allele (G) and risk of type 2 diabetes ([Chi-squared] $\chi^2 = 0.331$, $p = 0.84$). The genotype frequencies of common homozygotes (CC), heterozygotes (CG) in T2DM and control samples were 0.882, 0.115 and 0.901, 0.097 respectively and the rare homozygote (GG) was not found in any of the subjects studied. In conclusion, the minor allele (G) of rs57829442 single nucleotide polymorphism is not associated with the risk of T2DM.

Biography

Prabhakar Bhatta is currently a PhD student in the School of Pharmacy and Life Sciences at Robert Gordon University. He has completed an MSc in Medical Molecular Genetics from University of Aberdeen, an MSc in Bio-business and Medical Sciences from University of Aberdeen, an MSc with specialization in Genetics from Tribhuvan University, Nepal and Post-graduate certificate in Research Methods from Robert Gordon University.

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