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BIOCHEMICAL ASSOCIATION OF GENETIC MUTATION OF KLF14 rs4731702 WITH RISK FACTORS OF DIABETES MELLITUS

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Abstract

The single nucleotide polymorphism (SNP) of the KLF14 transcription factor gene rs4731702 has been associated with type 2 diabetes mellitus (T2DM) and dyslipidemia. The aim of the present study was to determine the distribution of KLF14 rs4731702 SNP and evaluate the association between this SNP and serum lipid profile in T2DM patients in a Pakistani population at Punjab province, Pakistan. A total of 300 volunteers (100 healthy and 200 T2DM patients) were recruited, T2DM group subdivided into diabetic (n = 100) and cardiometabolic (n = 100) patients. Biochemical analysis was performed on 300 blood samples, and significant association was found in glycemic parameters and lipid profile for the determination and assessment of the diabetic patients when compared with the healthy participant. Genotyping analysis was carried out by Tetra ARMS-PCR for KLF14 rs4731702 polymorphism study. The KLF14 genotypes distribution among study groups was significantly different. The allelic and genotypic frequencies between the control and T2DM subjects were found to be significantly different (P = 0.049). Moreover, statistically significant difference [OR (95 % CI) 0.56 (0.34 – 0.96)] was found in the dominant inheritance model of the KLF14 rs4731702 SNP. In the T2DM patients, decreased HDL-C and ApoA1 levels, and increased serum glucose, TG, LDL-C values, and insulin resistance in C allele carriers, while increased levels of HDL-C and ApoA1 and lower insulin, serum glucose, LDL-C and TG levels in TT genotype carriers were found. The findings of our study showed that dyslipidemia found in T2DM patients which may be linked with the reduced KLF14 functionality due to the CC and CT genotypes and insulin resistance which ultimately increase the risk of cardiovascular diseases in diabetic patients.

Keywords: KLF14 transcription factor, genetic mutation, genetic polymorphism, Pakistani population, Tetra ARMS-PCR.

Ethical Approval: This study was approved by the Ethical Review Committee, Government College University, Faisalabad, Pakistan (Ref. No. GCUF/ERE/33).

Conflict of Interest: This abstract is from the MPhil thesis of Miss Sumbal Rasheed and from her thesis, one research article entitled: Biochemical association of regulatory variant of KLF14 genotype in the pathogenesis of cardiometabolic patients. *Front. Endocrinol.* 2023; 14. <https://doi.org/10.3389/fendo.2023.1176166>.

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