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Diabetes Global 2016: Association of KCNJ11 E23K (rs5219) polymorphism to Type 2 diabetes mellitus: A case-control study in Indian population of Eastern Uttar Pradesh- Sunita Singh- Banaras Hindu University

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Abstract:

Aim: Potassium inwardly rectifying channel, subfamily J, member 11 (KCNJ11) genes has a key role in insulin secretion and is of substantial interest as a candidate gene for Type 2 Diabetes (T2D). The current work was performed to delineate the genetic influence of the most associated SNP of KCNJ11 gene E23K (rs5219) polymorphism on risk of T2D in Indian population of eastern Uttar Pradesh through case-control association study.

Method: A case-control study of 240 T2D cases and 229 controls was performed using the Polymerase Chain Reaction-Restriction Fragment Length Polymorphism (PCR-RFLP) approach to analyze the association of KCNJ11 E23K (rs5219) polymorphism on the risk of T2D. Odds ratio with 95% Confidence Interval (CI) was used to assess the association strength.

Result: Type 2 diabetes patients studied for the gene had significantly higher levels of Fasting Plasma Glucose (FPG) and 2 hours PPPG (P than healthy controls. The genetic variants of loci show Hardy-Weinberg distributions in our study. The genotype and allele distributions of polymorphism are significantly different between the T2D patients and healthy control groups. Our data show weak association to T2D with odds ratio 1.086 (95% CI 0.832-1.416; P=0.544).

Conclusion: Our data provides valuable information for comparison with other ethnic groups as well as in determining disease susceptibility in Indian population of eastern Uttar Pradesh. However, in view of the genetic diversity of Indians, the result needs to be replicated in other groups. Interestingly, our data for the SNP show small effect size than those reported in European and East Asian populations; and North-Western Indian populations.

Keywords: Association, Body Mass Index, KCNJ11, Ethnicity, SNP, Type 2 Diabetes, KATP Channel, E23K Polymorphism, Caucasian Population.

Introduction: Type 2 Diabetes mellitus (T2D) is a public health problem, which affects a millions worldwide. T2D is considered a multifactorial disorder, with both environmental and genetic factors contributing to its development. Impaired insulin secretion and insulin resistance both contribute to the pathogenesis of type 2 diabetes. The