

POSTER PRESENTATION

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# Effect of *PPAR-γ2* gene Pro12Ala and *ADR-β3* gene Trp64Arg polymorphism on glucose homeostasis in Type 2 diabetes subjects from Western India

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## Background

Several studies have shown the effect of Pro12Ala polymorphism of *PPAR-γ2* on insulin sensitivity and Trp64Arg polymorphism in *ADR-β3* gene on obesity and insulin resistance in Type 2 Diabetic (T2D) subjects. The present study was carried out to find the interaction of these two gene polymorphisms and their combined effect on glucose homeostasis (HbA1C) in T2D subjects.

## Materials and methods

The present study comprises of 535 subjects (including 235 T2D & 300 controls). Genotyping was carried out for the above mentioned polymorphisms and glycosylated hemoglobin [HbA1C] levels were analyzed for each subject. All T2D subjects were divided into four groups according to their genotype. Group-I: 31 patients with Pro/Pro and Trp/Arg genotype; Group-II: 159 patients with Pro/Pro and Trp/Trp genotype; Group-III: 6 patients with Pro/Ala and Trp/Arg genotype; and Group-IV: 39 patients with Pro/Ala and Trp/Trp phenotype.

## Results

It was observed that 12Ala allele frequency was nearly equal in T2D patients and controls (9.0% vs. 9.1%,  $p > 0.05$ ). 64Arg allele frequency was 8.3% in T2D patients and 6.7% in controls ( $p > 0.05$ ). The mean HbA1C level was lower in T2D patients with 12Ala allele compared to

patients homozygous for 12Pro allele ( $7.73 \pm 1.42\%$  vs.  $8.47 \pm 1.92\%$ ,  $p < 0.02$ ). However, no significant difference in mean HbA1C levels was observed in T2D patients with 64Arg allele compared to patients homozygous for 64Trp allele ( $8.50 \pm 1.81\%$  vs.  $8.31 \pm 1.88\%$ ,  $p > 0.05$ ). The mean HbA1C levels were higher in Group-I ( $8.62 \pm 1.84\%$ ,  $p < 0.0092$ ), Group-II ( $8.47 \pm 1.94\%$ ,  $p < 0.001$ ) and Group-III ( $8.26 \pm 1.71\%$ ,  $p > 0.05$ ) compared to group-IV having a mean HbA1C of  $7.65 \pm 1.37\%$ .

## Conclusions

The protective effect of 12Ala allele is likely to be diminished in Group-III T2D patients in the presence of 64Arg allele. Polymorphisms of 64Arg and 12Pro alleles that is likely to play a role in controlling glucose homeostasis by gene-gene interactions.

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