

## **Impact of the hypoxia inducible factor-1 $\alpha$ (HIF-1 $\alpha$ ) pro582ser polymorphism and its gene expression on diabetic foot ulcers.**

[Pichu S](#)<sup>1</sup>, [Sathiyamoorthy J](#)<sup>2</sup>, [Krishnamoorthy E](#)<sup>2</sup>, [Umapathy D](#)<sup>2</sup>, [Viswanathan V](#)<sup>3</sup>.

### **Author information**

#### **Abstract**

##### **AIM:**

Adaptation to low oxygen tension (hypoxia) in cells and tissues leads to the transcriptional induction of series of genes and the primary factor mediating this response is the hypoxia-inducible factor-1 $\alpha$ . This study was designed in order to examine the HIF-1 $\alpha$  gene polymorphism, p582s (rs11549465) in Exon-12 of HIF-1 $\alpha$  gene in diabetic subjects with and without foot ulcers (DFU) and to find its expression under these pathological conditions.

##### **METHODS:**

A total of 224 subjects from our tertiary care centre were included, which consists of healthy controls (N=66), type 2 diabetes mellitus (T2DM) (N=79) and T2DM with foot ulcers (DFU) (N=79). Allelic and genotypic comparisons between the different groups were evaluated by PCR-RFLP. The gene expression studies on selected samples (N=15 of each group) were done by Semi-quantitative real time PCR.

##### **RESULTS AND DISCUSSIONS:**

Genotype analysis showed a significant increase in presence of 'T' allele in T2DM & DFU when compared to that of control subjects. Allele wise analysis showed a higher frequency of 'T' allele in the T2DM (62.03%) when compared to that of control subjects (53.79%). Interestingly, semi-quantitative RT-PCR results showed decreased expression of HIF-1 $\alpha$  gene on DFU when compared to that of T2DM and control subjects.

##### **CONCLUSION:**

Our findings predict that there is an association of HIF-1 $\alpha$  gene polymorphism on foot ulcer patients when compare to that of healthy controls. Semi-quantitative real time studies showed decreased HIF-1 $\alpha$  gene expression on foot ulcer patients suggesting its possible role on the pathogenesis.

Copyright © 2015 Elsevier Ireland Ltd. All rights reserved.

##### **KEYWORDS:**

DFU; HIF-1 $\alpha$ ; Hypoxia; SNP; T2DM

PMID: 26113285