

## Expression of cytokines in diabetic and non-diabetic wounds: Implications in wound healing

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### Abstract

Diabetic foot ulcer (DFU), one of the most common complications of diabetes, can lead to high health care costs and affect significantly the quality of life. The underlying mechanism responsible for the chronicity of DFU is currently unclear, but it is likely to be multifactorial. Current knowledge suggests an involvement of a number of inflammatory signal molecules including interleukins and chemokines that are key regulators in the tissue repair process. In the present study, we monitored pro and anti-inflammatory cytokines in diabetic and non-diabetic individuals with foot ulcer to corroborate whether bacterial stimulus can alter the release of cytokines by neutrophils. We collected blood samples from individuals with Type 2 diabetes as well as non-diabetic individuals with foot ulcer visiting Kasturba Hospital, Manipal. Neutrophils were isolated by Ficoll-Pacque technique and cytokine profiling was performed from both plasma and neutrophils activated with LPS. Plasma levels of IL-1 $\beta$  and IL-4 was found to be significantly higher (\*\* $p < 0.01$ ) in non-diabetic subjects whereas levels of IL-10 were found to be high (\*\* $p < 0.01$ ) in diabetic subjects suggesting an imbalance in cytokine expression. However plasma levels of IL-6 and IL-8 were unaltered. Significantly higher levels of cytokine (IL-1 $\beta$ , IL-6, IL-8) was observed in neutrophils of diabetic subjects when compared to non-diabetic subjects in basal and stimulated conditions. Based on our preliminary results, we hypothesize that disruption of cytokine network might lead to persistent inflammation and tissue damage. Also, the increased cytokines levels may contribute towards increased susceptibility to invasive microorganisms resulting in the chronicity of the wound.

### Biography

Bharath Prasad A.S is currently working as Lecturer and is pursuing his PhD in Manipal Life Sciences Centre, Manipal University under the guidance of Dr. Murali and Prof. Satyamoorthy. He received his Master's Degree in Microbiology and Immunology from Manipal College of Allied Health Sciences, Manipal University. His current research activities include Microbiological and immunological aspects of wound healing in diabetes, metal toxicity and chelation.