

Wound Care & Regenerative Medicine 2019: Cellular basis of wound healing activity of *Parkia javanica* (Lamk) Merr: in vitro and in vivo studies - Samir Kumar Sil - Tripura University

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Statement of the Problem:

Parkia javanica, of leguminece family, has age an old ethnomedicinal history. It is widely available in North-eastern part of India. This plant is traditionally used by tribal people of this region to cure various ailments including cutaneous wound. But there is no scientific documentation regarding its wound healing activity. Therefore, the wound healing potentiality of said plant was investigated along with probable mode of action.

Methodology & Theoretical Orientation:

Methanolic extract of stem bark (MEPJ) was used in the experimental studies. In in vitro studies cell viability and wound closure were determined by MTT assay and scratch assay respectively. Real time PCR and Western blot analysis were performed to evaluate the expression of cytokines and proteins related to wound healing process. Finally in vivo wound closure was performed in mouse model in presence of extract material.

Findings:

MEPJ stimulated proliferation and migration of both fibroblasts and keratinocytes significantly and 20 µg/ml was found to be the optimal dose in both the cell lines. The response was maximum at 48h. Significant increase in phosphorylation of FAK (Tyr 397) and Akt (Ser 473) were detected. The increased expression of p65 NF-κB, collagen I and pro-inflammatory cytokines viz. IL-1β, IL-6, IL-8 was also observed. In case of in vivo study, MEPJ was topically applied on excisional wounds of Swiss albino mice and the treated group of mice showed faster wound healing compared to placebo control group. HPLC-QTOF-MS data revealed the presence of seven major compounds, with known wound healing, anticancer and anti-oxidative properties.

Conclusion & Significance:

The results convincingly showed the wound healing property of *Parkia javanica* and the study substantiated scientifically the age old ethnomedicinal use of this plant for the same. The mechanistic study indicated that the healing activity was, at least partly, be mediated via FAK/PI3K/Akt/NF-κB pathway.