

Wound healing activity of *Ipomoea batatas* tubers (sweet potato)

*Vandana Panda¹, Madhav Sonkamble¹, and Swati Patil²

¹Department of Pharmacology and Toxicology, Prin. K. M. Kundnani College of Pharmacy, Jote Joy Building, Rambhau Salgaonkar Marg, Cuffe Parade, Colaba, Mumbai 400005. India.

²Department of Pharmacognosy, Prin. K. M. Kundnani College of Pharmacy, Jote Joy Building, Rambhau Salgaonkar Marg, Cuffe Parade, Colaba, Mumbai 400005, India.

***Corresponding author:** Vandana Sanjeev Panda, PhD, Prin. K. M. Kundnani College of Pharmacy, Jote Joy Building, Rambhau Salgaonkar Marg, Cuffe Parade, Colaba, Mumbai 400005, India.

Submission date: August 23, 2011; Acceptance date: October 7, 2011; Publication date: October 9, 2011

Abstract

Background: *Ipomoea batatas* (L.) Lam. from the family Convolvulaceae is the world's sixth largest food crop. The tubers of *Ipomoea batatas* commonly known as sweet potato are consumed as a vegetable globally. The tubers contain high levels of polyphenols such as anthocyanins and phenolic acids and vitamins A, B and C, which impart a potent antioxidant activity that can translate well to show wound healing effects. To check their effects on wound healing, the peels and peel bandage were tested on various injury models in rats in the present study.

Methods: The methanolic extracts of the peels and peel bandage of *Ipomoea batatas* tubers (sweet potato) were screened for wound healing by excision and incision wound models on Wistar rats. Three types of gel formulations were prepared, viz., gel containing 3.0% (w/w) peel extract, gel containing 6.0% (w/w) peel extract and gel containing 10% (w/w) peel extract. Betadine (5% w/w povidone iodine cream) was used as a reference standard. In the incision wound model, Tensile strength of the skin was measured. Epithelization time, wound contraction, hydroxyproline content of the scab, and ascorbic acid and malondialdehyde content of the plasma were determined in the excision wound model.

Results: In the incision wound model, high tensile strength of the wounded skin was observed in animals treated with the peel extract gels and the peel bandage when compared with wounded control animals. The increase in tensile strength indicates the promotion of collagen fibers and that the disrupted wound surfaces are being firmly knit by collagen. In the excision wound model, significant wound closure was observed on the 4th day in rats treated with all three gel formulations when compared with the wounded control rats. A significant increase in

hydroxyproline and ascorbic acid content in the gel-treated animals and a significant decrease in malondialdehyde content in the animals treated with gel as well as peel bandage was observed when compared with the wounded control animals.

Conclusion: It may be concluded that the peels of *Ipomoea batatas* tubers possess a potent wound healing activity, which may be due to an underlying antioxidant mechanism.

Key Words: Sweet potato peels, excision wound, incision wound, wound healing