

Acceleration of Skin Wound Healing: Evaluation of Expression Transforming Growth Factor- β (TGF- β) Exposed to Inducing Compounds

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ABSTRACT

The development of new methods to improve skin wound healing may affect the outcomes of medical conditions. we evaluate the molecular,cellular and clinical effects of Plant compounds on wound healing. Application of natural ingredients and herbs for treating ulcers has been in the history of human life. Nowadays, due to the lack of side effects of medicinal plants and a variety of effective compounds in plants, as well as numerous disadvantages of synthetic drugs there has been tendency to use medicinal plants in clinic. Aloe Vera is a medicinal plant used to treat skin disease. Effects of using Plant compounds e.g. aloe vera gel on the healing process were investigated by microscopic method, cell counting and TGF- β gene expression in the wound bed. 60 Wistar rats weighing 200 -250 gr were placed under general anesthesia and sterile conditions. Square shape wound with 1.5* 1.5 mm dimension was made on the back of the neck. Rats divided to control and experimental groups and to three subgroups with 4, 7, and 14 days of study. In 1st experimental group Aloevera was used twice on the wound, once in 2nd experimental group and for positive control group phenytoein cream 1% was applied daily from the surgery days; the control group did not receive any treatment. For histological studies, samples were taken from the wound and adjacent skin. This tissue examined for histological staining with H&E and masson's trichrome then wound surface and wound healing were evaluated separately, Also TGF- β gene expression by estimated by RT-PCR. Results showed that fibroblasts in both groups were significantly increased, caused to acceleration of wound healing. It concluded that twice application of Aloe vera gel will increase TGF- β gene expression, ultimately accelerate wound healing process.

The macroscopic and microscopic evaluation showed that wound healing increased because the

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fibroblast numbers in two experimental groups improved compared with control group. The percentage of wound healing on different days in the experimental and control groups were significant. Data were analyzed by using one-way ANOVA test and $P < 0.05$ was significant.

Present study showed that the twice application of topical Plant compounds e.g. aloe vera mucilage can result in rapid wound healing in rats.

Keywords: Wound Healing, Plant Compound ,Open skin wound, Rat, TGF- β