Wound healing activity of Plantago major extract and its chemical compound on hyperglycemic rats

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ABSTRACT
Background: Impaired wound healing in diabetic patients is a serious complication leading to amputation and even death. Proper diabetic wound management is required to improve the quality of life of diabetic patients. Plantago major (plantain) has been used empirically for wound healing. One of its chemical compounds, oleanolic acid (OA), has been studied on non hyperglycemic wound. 

Objective: This study was conducted to determine the wound healing activity of plantain and OA on hyperglycemic rats, as a model for diabetic wound.

Methods: A total of 40 hyperglycemic male rats (Wistar) were divided into 8 groups, and subsequently treated with gel of ethanol extract of P. major leaves and roots, OA, gel base, and bioplacenton⁹. Drugs were applied topically on animals’ wounds induced on the dorsal part, once a day during 21 days. Wound healing activity was evaluated based on the percentage of wound closure and wound healing time.

Results: The results showed that the gel of plantain leaves and roots extracts as well as OA were able to increase the percentage of wound closure (100%) compare to the negative control (83%). Moreover, gel of Plantain and OA accelerated wound healing time (15.8 and 10 days, respectively) compared to the negative control (24.4 days).

Conclusion: Plantain extracts and OA can be used as drug candidates for diabetic wound healing.

Keywords: Plantago major, oleanolic acid, diabetic wound, wound closure, healing time