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 bioplacenton®. 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