

In vivo Wound Healing Activity and Phytochemical Screening of the Crude Extract and Various Fractions of *Kalanchoe petitiiana* A. Rich (Crassulaceae) Leaves in Mice

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Abstract : Ethnopharmacological Relevance: The leaves of *Kalanchoe petitiiana* A. Rich (Crassulaceae) are used in Ethiopian folk medicine for treatment of evil eye, fractured surface for bone setting and several skin disorders including for the treatment of sores, boils, and malignant wounds. Aim of the Study: In order to scientifically prove the claimed utilization of the plant, the effects of the extracts and the fractions were investigated using in vivo excision, incision and dead space wound models. Materials and Method: Mice were used for wound healing study, while rats and rabbit were used for skin irritation test. For studying healing activity, 80% methanolic extract and the fractions were formulated in strength of 5% and 10%, either as ointment (hydroalcoholic extract, aqueous and methanol fractions) or gel (chloroform fraction). Oral administration of the crude extract was used for dead space model. Negative controls were treated either with simple ointment or sodium carboxyl methyl cellulose xerogel, while positive controls were treated with nitrofurazone (0.2 w/v) skin ointment. Negative controls for dead space model were treated with 1% carboxy methyl cellulose. Parameters, including rate of wound contraction, period of complete epithelialization, hydroxyproline contents and skin breaking strength were evaluated. Results: Significant wound healing activity was observed with ointment formulated from the crude extract at both 5% and 10% concentration ($p < 0.01$) compared to controls in both excision and incision models. In dead space model, 600 mg/kg ($p < 0.01$), but not 300 mg/kg, significantly increased hydroxyproline content. Fractions showed variable effect, with the chloroform fraction lacking any significant effect. Both 5% and 10% formulations of the aqueous and methanolic fractions significantly increased wound contraction, decreased epithelialization time and increased hydroxyproline content in excision wound model ($p < 0.05$) as compared to controls. These fractions were also endowed with higher skin breaking strength in incision wound model ($p < 0.01$). Conclusions: The present study provided evidence that the leaves of *Kalanchoe petitiiana* A. Rich possess remarkable wound healing activities supporting the folkloric assertion of the plant. Fractionation revealed that polar or semi-polar compound may play vital role, as both aqueous and methanolic fractions were endowed with wound healing activity.

Keywords : wound healing, *Kalanchoe petitiiana*, excision wound, incision wound, dead space model

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