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ACCEPTED MANUSCRIPT

Treatment for diabetic ulcer wounds using a fern tannin optimized hydrogel formulation with antibacterial and antioxidative properties

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ABSTRACT

Ethnopharmacological relevance: *Blechnum orientale* Linn. (*B. orientale*) is a fern traditionally used by the natives as a poultice to treat wounds, boils, ulcers, blisters, abscesses, and sores on the skin.

Aim of the study: To investigate the wound healing ability of a concentrated extract of *B. orientale* in a hydrogel formulation in healing diabetic ulcer wounds.

Materials and methods: The water extract from the leaves of *B. orientale* was separated from the crude methanolic extract and subjected to flash column chromatography techniques to produce concentrated fractions. These fractions were tested for phytochemical composition, tannin content, antioxidative and antibacterial activity. The bioactive fraction was formulated into a sodium carboxymethylcellulose hydrogel. The extract-loaded hydrogels were then characterized and tested on excision ulcer wounds of streptozotocin-induced diabetic rats. Wound size was measured for 14

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