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# Persimmon (*Diospyros kaki L.*) leaves accelerates skin tissue regeneration in excisional wound model: possible molecular mechanisms

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## Abstract

Persimmon (*Diospyros kaki L.*) leaves are a traditional medicinal herb used for treating many infectious and inflammatory-related conditions, including wound healing. To validate its traditional use, our study evaluates the acute toxicity and wound-healing effects of methanolic extracts of Persimmon (*Diospyros kaki L.*) leaves (MEPL) on excisional neck injury in rats. A uniform dorsal neck injury was created for twenty-four Sprague Dawley rats, which were randomly aligned into 4 groups and treated topically twice daily with 0.2 ml of the following: group A, rats treated with 1% CMC; group B, rats received intrasite gel; groups C and D, rats treated with MEPL (0.2 ml of 250 and 500 mg/kg, respectively). The toxicity results showed a lack of physiologic alteration or mortality in rats ingested with an oral dosage of up to 5 g/kg of MEPL. Histological screening of regenerated skin tissues revealed higher deposition of collagen, fibroblast cells, and reduced inflammatory cells in MEPL-treated rats. The topical application of MEPL led to positive modulation of Transforming Growth Factor Beta 1 (angiogenetic factor) in wound tissues, indicating increased tissue regeneration and faster wound contraction. MEPL treatment caused a significant elevation of tissue antioxidants (superoxide dismutase and catalase) and hydroxyproline (collagen) contents while reducing malondialdehyde contents. The inflammatory mediators (TNF- $\alpha$  and IL-6) were lower, and anti-inflammatory cytokines (interleukin 10) were higher in MEPL-treated rats than in the vehicle group. The study outcomes back up the traditional use of MEPL for wound healing, which could be linked with its phytochemicals (flavonoids and terpenoids) that require further isolation and molecular identification.