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# The Effects of the Topical Application of Eurycoma Longifolia Jack (TA) Root Extract Hydrogel on Vascular Endothelial Growth Factor (VEGF) Expression during Wound Healing in vivo Excisional Wound Model

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## Abstract

INTRODUCTION: Medicinal plants are known for their positive impacts on wound healing by stimulating angiogenesis in the skin. Eurycoma longifolia Jack locally known as Tongkat Ali (TA), is a medicinal plant characterised by anti-inflammatory and antioxidant effects. MATERIALS AND METHODS: Excisional wound (15mm × 15mm) in diameter and (2mm) depth was created at the back of 20 male Sprague Dawley rats by incising the marked skin with sterilized surgical scalpel blade then excised the skin by surgical scissors and toothed forceps. The wounded rats were divided into 4 groups, each group contained 5 rats (n=5). Experimental groups were formed as follows: untreated (-ve) control, Hydrocyn® aqua gel (+ve) control, vehicle hydrogel, and TA hydrogel. All the treatments were applied twice daily for 5 days starting on the first day (wounding day). On Day 5 post-wounding, the granulation tissue was harvested from all groups and evaluated by immunohistochemistry assay for vascular endothelial growth factor (VEGF) expression. RESULTS: VEGF expression in granulation tissue of rat's skin treated with TA hydrogel and vehicle hydrogel increased significantly compared to that in the untreated (-ve) control group with p-values of 0.040 and 0.029, respectively. Although there was no significant difference in VEGF expression in granulation tissue of rat's skin treated with the TA group, Hydrocyn® aqua gel (+ve) control, and vehicle hydrogel groups, our study group showed higher expression of VEGF. CONCLUSION: Our study showed that the topical application of TA hydrogel increased the VEGF expression in granulation tissue of rat's skin, which is an essential growth factor for wound healing. Thus, there is great potential for TA hydrogel to be an effective wound-healing agent for managing cutaneous wounds © 2023, IIUM Medical Journal Malaysia.All Rights Reserved.

## Author keywords

eurycoma longifolia jack; immunohistochemistry; vascular endothelial growth factor; wound healing



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