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International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Evaluation of the Wound-Healing Properties of Verbesina alba in Diabetic Ulcers

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ABSTRACT :

This study evaluates the wound-healing properties of Verbesina alba in diabetic ulcers. Diabetic wounds are a major clinical challenge due to delayed healing, persistent inflammation, and risk of infection. Ethanolic extracts of Verbesina alba leaves were subjected to phytochemical screening and evaluated for wound-healing potential using excision and incision models in diabetic rats. The results demonstrated accelerated wound contraction, reduced epithelialization period, and increased tensile strength, indicating significant wound-healing activity. The findings support the traditional use of Verbesina alba in wound management.

Introduction

Diabetes mellitus is a chronic metabolic disorder characterized by hyperglycemia, which often leads to complications such as diabetic ulcers. Delayed wound healing in diabetic patients results from impaired angiogenesis, neuropathy, and reduced collagen deposition. Herbal remedies are being explored as alternative therapies due to their safety and bioactivity. Verbesina alba, a medicinal plant, has been traditionally used for wound healing but lacks comprehensive scientific evaluation. This study investigates its wound-healing efficacy in diabetic ulcer models.

Materials and Methods

Fresh leaves of Verbesina alba were collected, authenticated, dried, and extracted using ethanol. Phytochemical analysis was performed to detect alkaloids, flavonoids, tannins, and saponins. Diabetes was induced in rats using streptozotocin (STZ), and animals were divided into control and treatment groups. Excision and incision wound models were employed to evaluate wound contraction, epithelialization time, and tensile strength. Histopathological analysis was conducted to confirm tissue regeneration.

Results

The phytochemical screening revealed the presence of flavonoids, tannins, saponins, and phenolic compounds. In the excision model, Verbesina alba-treated groups showed significant wound contraction compared to the diabetic control group. The epithelialization period was reduced, and in the incision model, the extract-treated animals exhibited higher tensile strength. Histopathology confirmed increased collagen deposition and fibroblast proliferation in treated groups.

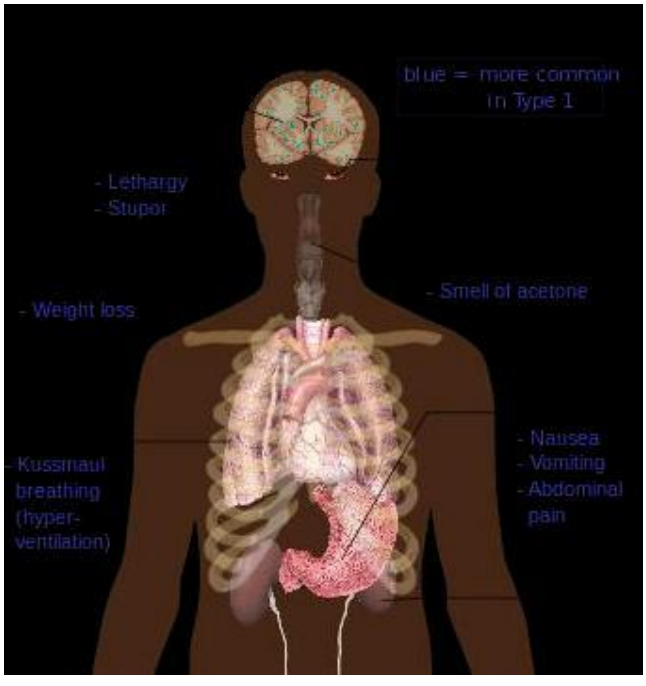

Figure 2.

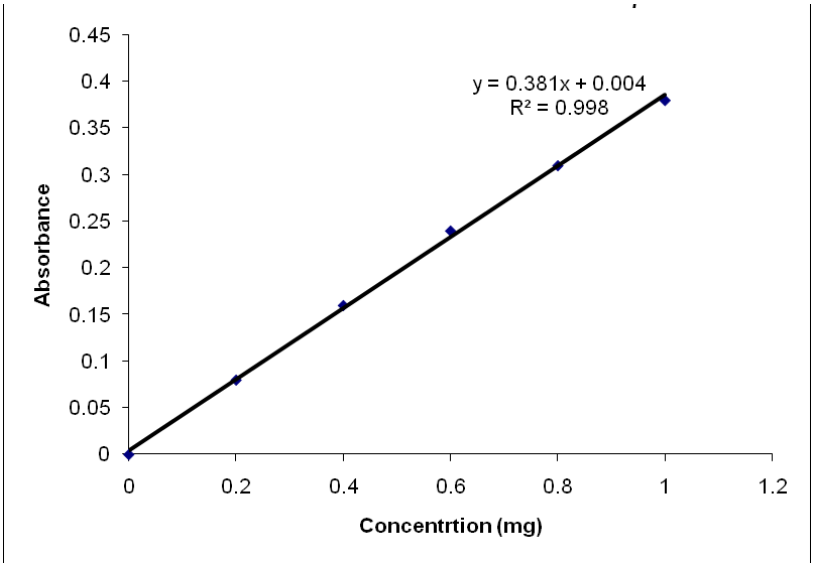

Figure 3.

Discussion

The results suggest that Verbesina alba enhances wound healing in diabetic ulcers by accelerating tissue repair processes. The presence of flavonoids and tannins may contribute to antioxidant and antimicrobial effects, reducing oxidative stress and infection risk. Improved tensile strength indicates enhanced collagen synthesis and cross-linking. These findings are consistent with earlier reports on medicinal plants promoting wound healing through bioactive compounds.

Conclusion

Verbesina alba exhibited significant wound-healing activity in diabetic ulcer models, likely due to its phytoconstituents. The study validates its traditional use and suggests potential development as a herbal therapeutic for chronic wound management.

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