

Formulation Development and *In Vitro* - *In Vivo* Characterization of Topical Carbopol Based Aqua Gel Containing *Calotropis gigantea* as Wound Dressing

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SUMMARY. Burn wound healing is a complex and multistep process. Proper and complete healing requires adequate moisture, microbial prevention, exudates absorption, and scab formation prevention at the wound bed. Aqua-gel is a suitable carrier system that possess all above mention characteristics for burn wound healing. In this study, Carbopol 934 and polyethylene glycol based aqua-gel was designed by incorporating 2% *Calotropis gigantea* extract. Various formulations were developed and F2 was considered optimized while it was subjected to FTIR analysis, scanning electron microscope, HPLC content determination, rheological behaviors, *in vitro* release and release kinetics, pH and swelling behaviours. The results demonstrated that *C. gigantea* loaded aqua-gel has great potential to increase the burn wound healing rate as compared to control group

RESUMEN. La curación de heridas por quemaduras es un proceso complejo y de varios pasos. La cicatrización adecuada y completa requiere humedad adecuada, prevención microbiana, absorción de exudados y prevención de la formación de costras en el lecho de la herida. Aqua-gel es un sistema portador adecuado que posee todas las características mencionadas anteriormente para la cicatrización de heridas por quemaduras. En este estudio, se diseñó Carbopol 934 y aqua-gel a base de polietilenglicol incorporando un 2 % de extracto de *Calotropis gigantea*. Se desarrollaron varias formulaciones y se consideró que F2 estaba optimizada mientras se sometía a análisis FTIR, microscopía electrónica de barrido, determinación del contenido de HPLC, comportamientos reológicos, liberación *in vitro* y cinética de liberación, pH y comportamientos de hinchamiento. Los resultados demostraron que el aqua-gel cargado con *C. gigantea* tiene un gran potencial para aumentar la tasa de cicatrización de heridas por quemaduras en comparación con el grupo de control.

KEY WORDS: Pharmaceutical gel, Wound healing, *Calotropis gigantea*

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