

Research Paper

EVALUATION OF WOUND HEALING EFFICACY OF NEOMYCIN NANOSPONGES GEL IN WISTAR RATS

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Wound healing is a critical process that involves tissue repair, inflammation, and regeneration, which can be impacted by various factors including infections. The use of topical agents for enhancing wound healing has been explored extensively, with a focus on delivering drugs effectively. This study evaluates the wound healing efficacy of neomycin-loaded nanosponge gel in Wistar rats. Neomycin, an antibiotic, is commonly used in preventing infections, but its clinical applications are limited due to systemic toxicity when administered orally or intravenously. The incorporation of neomycin into a nanosponge system aims to improve its localized delivery, enhance its therapeutic effect, and reduce systemic side effects. Neomycin nanosponge gel was formulated and applied topically to full-thickness wounds in Wistar rats. A total of 24 Wistar rats were divided into four groups, including a control group, an inducer group, a standard treatment group (Soframycin), and a treatment group (Neomycin nanosponges gel). Wounds were created on the dorsal surface of the rats, and treatments were applied topically once daily for 21 days. Wound contraction and body weight changes were measured as key indicators of healing. The results demonstrated that the Neomycin nanosponges gel significantly improved wound closure, with a wound contraction of 90.76% by day 21, which was comparable to the Soframycin group's 96.99%. Body weight analysis showed minimal systemic effects, with slight reductions observed in the treatment groups. The study concluded that Neomycin nanosponges gel is a promising alternative for wound healing, showing efficacy similar to the standard treatment.

Keywords: Wound healing, Neomycin nanosponges, Soframycin, Wistar rats, Wound contraction.