

IN VIVO STUDY: EFFECT OF BLACK CUMIN SEEDS EXTRACT (*NIGELLA SATIVA* LINN.) ON WOUND HEALING

Azafanisa Agilta Velovexia¹, Nasrudin Andi Mappaware^{2*}, Andi Dhedie Prasatia Sam³,
Ida Royani⁴, Nur Fadhillah Khalid⁵

¹*Medical Education Study Program, Faculty of Medicine, Universitas Muslim Indonesia, Makassar, South Sulawesi, Indonesia*

²*Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Muslim Indonesia, Makassar, South Sulawesi, Indonesia*

³*Department of Orthopedics, Faculty of Medicine, Universitas Muslim Indonesia, Makassar, South Sulawesi, Indonesia*

⁴*Department of Nutrition Science, Faculty of Medicine, Universitas Muslim Indonesia, Makassar, South Sulawesi, Indonesia*

⁵*Department of Pharmacology, Faculty of Medicine, Universitas Muslim Indonesia, Makassar, South Sulawesi, Indonesia*

*Correspondence author: nasrudin.nasrudin@umi.ac.id

Background: Wound healing is a complex biological process involving inflammatory, proliferative, and remodelling phases. The increasing interest in natural therapies has led to the exploration of black cumin (*Nigella sativa*) for its immunomodulatory, anti-inflammatory, and antioxidant properties. While previous studies have examined *Nigella sativa* effects on acute wounds, limited research has assessed its impact on leukocyte levels and its efficacy compared to conventional treatments.

Purpose: This study evaluates the effects of *Nigella sativa* seed extract on incisional wound healing and leukocyte levels in *Rattus norvegicus*, determining its potential role in accelerating tissue regeneration and modulating inflammation.

Methods: A true experimental study with a posttest-only control group design was conducted using 24 male Wistar rats, divided into four groups: negative control (distilled water), positive control (povidone-iodine), and two treatment groups receiving *Nigella sativa* extract once or twice daily. Wound area reduction was measured on days 7 and 14, and leukocyte levels on day 7. Statistical analysis included Kruskal-Wallis, One-way ANOVA, and post hoc tests ($p < 0.05$).

Results: *Nigella sativa*-treated groups exhibited significantly faster wound closure than controls. By day 14, complete closure was observed in both treatment groups, while residual wounds remained in controls. Leukocyte levels were significantly higher in the treatment groups than in the negative control ($p = 0.001$), indicating an enhanced immune response. No significant difference was found between once- and twice-daily treatments ($p = 0.166$ for wound area, $p = 0.996$ for leukocytes).

Conclusion: *Nigella sativa* extract accelerates wound healing by promoting wound contraction and modulating immune responses. The findings support its potential as a natural alternative for wound management, with effects comparable to povidone-iodine.

Keywords: black cumin, *nigella sativa*, wound healing