# ABSTRACT

**Background:** Recent research has been carried out widely to advance the process of wound healing due to burn trauma. The innovative formula of nanosilver collagen and levertran was developed as an antibacterial and anti-inflammatory agent that maximizes the therapeutic effect, thus accelerating the healing time of burns. This study aims to prove the superior outcome of nanosilver collagen in increasing neuthrophil and angiogenesis on deep dermal burn wound healing.

**Method:** This study was randomized postal test only with control group design, 10 male Sprague dawley rats induced deep dermal burn injury and randomly divided into 2 groups of treatment day. Each rat get 4 injuries and given 4 treatments. Treatment group includes: I (negative control using NaCl 0.9%) a, II (positive control using SSD), III (NSC1%), and IV (Levertran). Neuthrophil and angiogenesis assessed using Haematoxilin – eosin staining and angiogenesis assessed using Van Gliesson staining

**Results:** The Mann-Whitney Post Hoc Test showed that there were differences between groups in the number of neutrophils on day 3 between the positive control (Silver Sulfadiazine ointment) and treatment II (Levertran ointment). On the 12th day of angiogenesis, differences were only found in the negative control (0.9% NaCl solution) and treatment II (Levertran ointment). The Mann-Whitney Post Hoc Test showed that there were significant differences (p<0.05) in neutrophils on day 3 between groups I-II (p=0.008065), groups I-IV (p=0.00197), and groups III-IV (p=0.000062). Meanwhile, on day 12 of angiogenesis, significant differences were found between almost all groups (p<0.05) except groups I-IV (p=0.10078)

**Discussion:** Collagen nanosilver and levertran act as an antimicrobial and anti-inflammatory agent by increasing the mechanism of activation and migration of neuthrophil to the site of injury. Moreover, this formula modulated the neovascularitation to promote wound healing.

**Conclusion:** Nanosilver collagen has a superior outcome in increasing neutrophil cell count and angiogenesis on deep dermal burn wound healing on Sprague dawley.

**Keywords:** deep dermal, burn, collagen nanosilver, levertran, neuthrophil, angiogenesis