Abstract

Wound healing is a process that naturally takes place when the body is injured, comprising four phases: hemostasis, inflammation, proliferation, and remodeling. Proper wound care is crucial to prevent infection and complications that can impact the patient's quality of life, and to accelerate the healing process. Biocellulose (BC), a bacterial-derived biopolymer, was used as a wound dressing due to its beneficial properties and moisture. Hair-derived keratin promotes tissue remodeling and epithelialization, accelerating the process. Combining keratin biocellulose (kBc) with black tamanu (BT) oil, known for its antibacterial and anti-inflammatory properties, enhances healing. Rabbits were utilized to evaluate the wound healing and antibacterial properties of black tamanu keratin biocellulose (BT kBc). This study aimed to assess the wound healing and antibacterial activity of BT kBc through an *in vivo* study on rabbit model, using excisional wound model; and total viable count and gram staining, respectively. The healing activity study showed that BT kBc and kBc treated wounds was closed faster compared to gauze. On day 6 after wound creation, BT kBc and kBc wounds had % wound closure of 42.5% and 44.9%, respectively, while the control was 16.2%. Histology study using hematoxylin and eosin stain revealed that kBc and BT kBc wounds were in the proliferation phase, while the control wound was in the inflammatory phase. The antibacterial study showed that BT and kBc exerted antibacterial activity towards gram-positive bacteria, but the bacterial count could not be determined.

Keywords: *Wound Healing, Biocellulose, Keratin, Black Tamanu, Rabbit*