EFEKTIVITAS DAN KEAMANAN EMULGEL MINYAK PREPUPA *BLACK SOLDIER FLY* (*Hermetia illucens* L.) TERHADAP PENYEMBUHAN LUKA BAKAR DERAJAT II PADA MENCIT PUTIH (*Mus musculus* L.) JANTAN

TESIS

SALBELLA DWI UTARI

2220421010

PEMBIMBING:

Dr. RESTI RAHAYU

Dr. PUTRA SANTOSO

PROGRAM STUDI MAGISTER

DEPARTEMEN BIOLOGI

FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM

UNIVERSITAS ANDALAS

PADANG, 2023

ABSTRAK

Luka bakar merupakan kerusakan jaringan yang disebabkan oleh sumber panas seperti air, api, listrik dan bahan kimia. Penggunaan antibiotik topikal dalam jangka waktu yang panjang dapat memberikan efek samping. Sehingga diperlukan pemanfaatan bahan alami yang efektif. Salah satunya yaitu minyak prepupa black soldier fly (*Hermetia illucens*). Penelitian ini bertujuan untuk mengungkapkan potensi emulgel minyak prepupa BSF dalam mempercepat penyembuhan luka bakar melalui uji karakter fisik emulgel, analisis kandungan senyawa minyak prepupa BSF, pengamatan morfologi dan struktur jaringan kulit, kuantitas konponen leukosit, serta indikator toksisitas. Pengkondisian luka bakar dilakukan dengan pemberian fenol 25% selama 30 detik, luka dibiarkan selama satu hari. Metode penelitian ini yaitu eksperimenn dengan rancangan acak lengkap yang terdiri dari 6 perlakuan dan 4 ulangan (tanpa perlakuan, kontrol negatif, kontrol positif, emulgel 5%, 10% dan 15%) selama 14 hari. Hasil penelitian menunjukkan bahwa karakter fisik emulgel minyak prepupa BSF memenuhi standar sediaan topical berdasarkan farmakope. Berdasarkan analisis *Gas Chromatography-Mass Spectrometry* (GC-MS) terdapat 24 kandungan senyawa minyak prepupa, 14 diantaranya memiliki bioaktivitas sebagai antimikroba, antiinflamasi dan inhibitor prostaglandin. Emulgel minyak prepupa BSF berdasarkan pengamatan morfologi tidak berpengaruh signifikan namun emulgel 15% berpengaruh signifikan dalam menurunkan ketebalan epidermis, dermis dan jumlah sel radang. Emulgel minyak prepupa tidak berpengaruh signifikan terhadap komponen leukosit pada mencit. Selain itu emulgel minyak prepupa tidak bersifat toksik terhadap struktur dan fungsi hati serta ginjal mencit. Dari data hasil penelitian ini dapat disimpulkan bahwa emulgel minyak prepupa efektif dalam mempercepat penyembuhan luka bakar serta konsentrasi minyak yang digunakan aman.

Kata Kunci: Asam lemak, emulgel, luas luka, leukosit, toksik

ABSTRACT

Burns are tissue damage caused by heat sources such as water, fire, electricity and chemicals. Long-term use of topical antibiotics can have side effects. So it is necessary to use effective natural ingredients. One of them is black soldier fly (*Hermetia illucens*) prepupa oil. This study aims to reveal the potential of BSF prepupa oil emulgel in accelerating burn healing through physical character tests of emulgel, analysis of BSF prepupa oil compound content, observation of skin tissue structure and morphology, quantity of leukocyte components, and toxicity indicators. Conditioning of burns is done by administering 25% phenol for 30 seconds, the wound is left for one day. The research method was an experiment with a completely randomized design consisting of 6 treatments and 4 replications (no treatment, negative control, positive control, emulgel 5%, 10% and 15%) for 14 days. The results showed that the physical characteristics of the BSF prepupa oil emulgel met the pharmacopoeial standards for topical preparations. Based on *Gas Chromatography-Mass Spectrometry* (GC-MS) analysis, there are 24 compounds contained in prepupa oil, 14 of which have bioactivity as antimicrobial, anti-inflammatory and prostaglandin inhibitors. BSF prepupa oil emulsion based on morphological observations did not have a significant effect but 15% emulgel had a significant effect in reducing the thickness of the epidermis, dermis and the number of inflammatory cells. The prepupae oil emulsion had no significant effect on leukocyte components in mice. In addition, the prepupae oil emulgel was not toxic to the structure and function of the liver and kidney of mice. From the data from this study it can be concluded that the prepupa oil emulgel is effective in accelerating the healing of burns and the oil concentration used is safe.

Keywords: Emulgel, fatty acids, leukocytes, toxic, wound area