

SKRIPSI SARJANA FARMASI

**OPTIMASI FORMULASI SEDIAAN KRIM EKSTRAK
ETANOL TERSTANDAR UMBI BAWANG DAYAK
(*Eleutherine bulbosa* (Mill.) Urb) DAN UJI AKTIFITAS
ANTIINFLAMASI TERHADAP MENCIT JANTAN**



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ABSTRAK

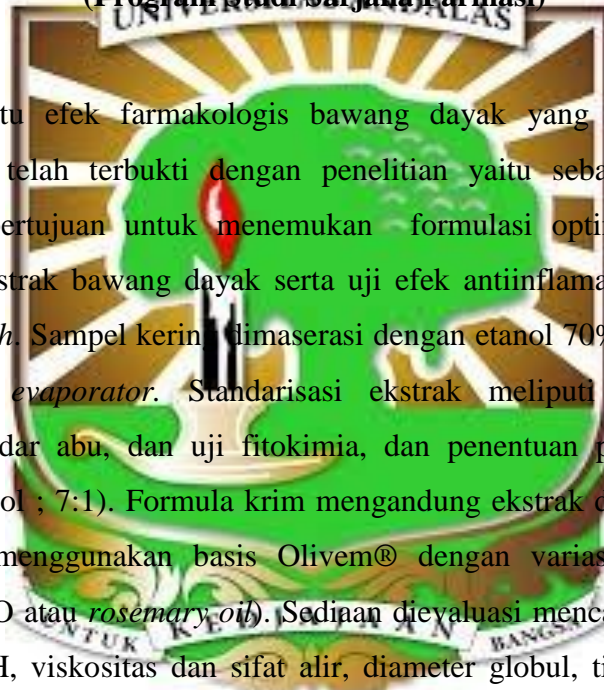
OPTIMASI FORMULASI SEDIAAN KRIM EKSTRAK ETANOL TERSTANDAR UMBI BAWANG DAYAK (*Eleutherine bulbosa* (Mill.) Urb) DAN UJI AKTIFITAS ANTIINFLAMASI TERHADAP MENCIT JANTAN

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Salah satu efek farmakologis bawang dayak yang digunakan secara tradisional dan telah terbukti dengan penelitian yaitu sebagai antiinflamasi. Penelitian ini bertujuan untuk menemukan formulasi optimal sediaan krim antiinflamasi ekstrak bawang dayak serta uji efek antiinflamasi dengan metoda *granuloma pouch*. Sampel kering dimaserasi dengan etanol 70%, dan dikentalkan dengan *rotary evaporator*. Standarisasi ekstrak meliputi penetapan susut pengeringan, kadar abu, dan uji fitokimia, dan penentuan profil KLT (eluen cloroform:metanol ; 7:1). Formula krim mengandung ekstrak dengan konsentrasi 5% dan 10% menggunakan basis Olivem® dengan variasi jenis peningkat penetrasi (DMSO atau *rosemary oil*). Sediaan dievaluasi mencakup organoleptik, homogenitas, pH, viskositas dan sifat alir, diameter globul, tipe krim, serta uji stabilitas dengan metoda *freeze thaw* sebanyak 4 siklus. Uji antiinflamasi dilakukan pada mencit sebanyak 32 ekor yang dibagi menjadi delapan kelompok (kontrol negatif, kontrol positif, dan enam kelompok uji). Data dianalisis dengan uji ANOVA satu arah dan uji lanjut Duncan. Didapatkan ekstrak kental berwarna merah kehitaman, kental, berbau khas, rendeman 3,71%; kadar abu 1,25%; dan susut pengeringan 15,57%. Ekstrak mengandung senyawa golongan alkaloid, terpenoid, saponin, dan flavonoid,. Hasil uji KLT menunjukkan lima noda dimana salah satu diantaranya menunjukkan RF 5,5 menandakan adanya kandungan senyawa turunan naftokuinon. Sediaan yang didapat bersifat homogen berwarna

putih dan kuning kecoklatan, dengan rentang pH 5,7-6,5. Viskositas berkisar antara 3.600-9.400 cP, diameter globul rata-rata 12,22-41,65 μm , dengan tipe sediaan M/A, serta stabil dalam uji stabilitas *freeze thaw*. Hasil menunjukkan terjadi peningkatan persentase sel neutrofil segmen pada kelompok perlakuan secara signifikan ($p < 0,05$). Kesimpulan dari penelitian ini formula dengan peningkat penetrasi *rosemary oil* menunjukkan hasil sediaan krim yang lebih bagus dengan aktifitas antiinflamasi yang lebih bagus juga.

Kata kunci: krim, antiinflamasi, *Eleutherine bulbosa* (Mill.) Urb., peningkat penetrasi.



ABSTRACT

OPTIMIZATION OF CREAM FORMULATION CONTAINING THE STANDARIZED EXTRACT OF BAWANG DAYAK (*ELEUTHERINE BULBOSA* (MILL.) URB.) AND THE ASSAY OF ITS ANTIINFLAMMATORY EFFECT

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The use of bawang dayak empirically to treat inflammation has been supported by evidence from preclinical studies. The objectives of this study were to found an optimum formula of bawang dayak standardized extract in a cream dosage form and to evaluate its antiinflamatory effect by granuloma pouch method. Dried sample of bawang dayak was extracted with 70% ethanol and standardized by measuring the drying shrinkage, ash content, phytochemical profile and TLC (thin layer chromatography) by using chloroform:methanol : 7:1 as eluen. The optimization technique was designed by variation of the type of penetration enhancers (DMSO or rosemary oil) and extract concentrations (5 or 10% w/w). Olivem[®] was used as a cream base. Cream containing bawang dayak extract were subjected to evaluation procedures including determination of the pH value, homogeneity, viscosity and rheology, diameter of globuls, type of cream and physical stability. The antiinflamatory effect was assayed on 32 male mice which were divided into eight groups (negative control, positive control, and six treatment groups). The data were analized by ANOVA test and followed by Duncan test. The extract obtained was thick, dark-red colored, with specific smell, the yield value was found to be 3.71%; ash content was found to be 1.25%; and drying shrikage was found to be 15.57%. The extract contained naphtoquinone, terpenoid, saponin, and flavonoid. TLC profile showed several spots, including the marker (naphtoquinone) spot with retention factor 5.5. The cream obtained

was homogenous, brownish yellow colored, with the pH range was found to be 5.7 to 6.5; viscosity range was found to be 3.600 to 9.400 cP, the average globul diameters range was found to be 12.22 to 41.65 μm , the cream type was found to be O/W, and physically stable. Results showed an increase in the percentage of segment-neutrophyl cells on treatment group significantly ($p < 0.05$). the optimum formula were B1 (5% w/w extract; rosemary oil) and B2 (10% w/w extract; rosemary oil) based on the physical evaluation and the antiinflammatory effect.

Keywords: cream, antiinflammatory, *Eleutherine bulbosa* (Mill.) Urb., penetration enhancer.

