

INTISARI

Bunga kecombrang diketahui mengandung minyak atsiri dengan senyawa utama penyusunnya yaitu golongan aldehid, alkohol, dan asam lemak yang memiliki aktivitas antibakteri terhadap beberapa bakteri Gram positif dan bakteri Gram negatif. Belum ada publikasi penelitian uji aktivitas antibakteri minyak atsiri bunga kecombrang terhadap *Cutibacterium acnes* padahal memiliki potensi aktivitas penghambatan. Tujuan dari penelitian ini adalah untuk mengetahui karakteristik, kandungan kimia, dan konsentrasi hambat minyak atsiri bunga kecombrang terhadap *C. acnes*, serta formula optimum sediaan emulgel minyak atsiri bunga kecombrang, stabilitas formula optimum emulgel, efek iritasinya, serta aktivitas antijerawat secara *in vivo*.

Minyak atsiri diperoleh melalui destilasi uap-air dari bunga kecombrang segar berwarna merah dan merah muda. Minyak atsiri dikarakterisasi meliputi penentuan warna, aroma, dan indeks bias. Kandungan kimia minyak atsiri dianalisis menggunakan GC-MS. Penentuan konsentrasi hambat minimum minyak atsiri menggunakan metode mikrodilusi. Minyak atsiri bunga kecombrang merah muda dipilih kemudian diformulasikan menjadi sediaan emulgel. Formula optimum ditentukan menggunakan metode *Simplex Lattice Design*. Faktor yang diuji adalah konsentrasi Carbopol® 940 (*gelling agent*), cremophor RH 40 dan Transcutol® p (surfaktan dan kosurfaktan), serta parafin cair (fase minyak). Respon yang amati yaitu viskositas, daya sebar, dan daya lekat. Formula optimum diuji stabilitasnya menggunakan metode *cycling test* dan uji sentrifugasi. Uji aktivitas antijerawat dan uji iritasi penggunaan emulgel dilakukan secara *in vivo*.

Hasil uji karakteristik minyak atsiri bunga kecombrang menunjukkan berwarna kuning, beraroma khas minyak atsiri bunga kecombrang, indeks bias 1,447 (minyak atsiri kecombrang merah) dan 1,460 (minyak atsiri kecombrang merah muda). Minyak atsiri bunga kecombrang memiliki kandungan kimia dominan dodekanal dan 1-dodekanol. Konsentrasi hambat minimum sebesar 12,5 mg/mL. Formula optimum emulgel terdiri atas Carbopol® 940 0,7%, cremophor RH 40 dan Transcutol® p 9,5%, dan parafin cair 7,49%. Emulgel minyak atsiri bunga kecombrang memiliki karakteristik yang memenuhi syarat, stabil selama penyimpanan, dan tidak menimbulkan efek iritasi, serta memiliki aktivitas antijerawat secara *in vivo*.

Kata kunci : kecombrang, emulgel, antibakteri, *Cutibacterium acnes*, minyak atsiri

ABSTRACT

Kecombrang flowers are known to contain essential oils with the main compounds constituting them, namely aldehydes, alcohols, and fatty acids which have antibacterial activity against several Gram-positive bacteria and Gram-negative bacteria. The antibacterial activity test of kecombrang flower essential oil against *Cutibacterium acnes* has not been carried out even though it has the potential for inhibitory activity. The purpose of this study is to find out the characteristic, chemical content, and minimum inhibitory concentration, optimal formula of emulgel preparations for kecombrang flower essential oil, the stability of the optimal formula of emulgel, its irritating effect, and anti-acne activity *in vivo*.

Essential oils are obtained through steam distillation of fresh red and pink kecombrang flowers. Essential oils are characterized to include the determination of color, odor, and refractive index. The chemical content of essential oils was analyzed using GC-MS. Determination of the minimum inhibitory concentration of essential oils using the microdilution method. The essential oil of pink kecombrang flower is selected and then formulated into an emulgel preparation. The optimal formula was determined using the Simplex Lattice Design method. The factors tested were the concentration of Carbopol 940 (gelling agent), Cremophor RH 40 and Transcutol p (surfactant and cosurfactant), as well as liquid paraffin (oil phase). The observed responses were viscosity, dispersion, and adhesion. The optimum formula is tested for stability using the cycling test method and the incentive test. Antibacterial activity tests and irritation tests for the use of emulgels were carried out *in vivo*.

The results of the characteristic test of kecombrang essential oil showed that it was yellow, with a distinctive aroma of kecombrang essential oil, and a refractive index of 1,447 (red kecombrang essential oil) and 1,460 (pink kecombrang essential oil). Kecombrang flower essential oil has dominant chemical content, namely dodecanal and 1-dodecanol. The minimum inhibitory concentration was 12.5 mg/mL. The optimal formula of the emulgel of kecombrang flower essential oil consists of 0.7% Carbopol® 940, cremophor RH 40 and transcutol® p 9.5%, and liquid paraffin 7.49. The emulgel of kecombrang flower essential oil has qualified characteristics, stable during storage, and does not cause irritating effects, and has anti-acne activity *in vivo*.

Keyword : kecombrang, emulgel, antibacterial, *Cutibacterium acnes*, essential oil