

## ABSTRAK

Salah satu patogenesis *acne vulgaris* adalah bakteri *Propionibacterium acnes* dan *Staphylococcus aureus*. Daun tanaman suji (*Dracaena angustifolia* (Medik.) Roxb.) mempunyai kandungan antibakteri. Salah satu upaya untuk mempermudah penggunaan daun suji adalah dengan formulasi sediaan topikal nanoemulsi. Penelitian bertujuan untuk mengetahui kandungan metabolit sekunder dan kadar flavonoid ekstrak etanol daun suji, mengembangkan, mengevaluasi dan melakukan uji aktivitas antibakteri dan sitotoksik nanoemulsi sebagai anti *acne*.

Daun suji diekstraksi dengan teknik maserasi basah dalam pelarut etanol, skirining metabolit sekunder, dan penetapan kadar flavonoid total. Selanjutnya dilakukan formulasi nanoemulsi dengan konsentrasi 250 ppm (F1), 500 ppm (F2) dan 750 ppm (F3). Evaluasi formula meliputi uji organoleptis, pH, *freeze and thaw*, persen transmitan, viskositas, bobot jenis, iritasi, dan zeta potensial. Uji antibakteri dengan metode *disc diffusion test*. Aktivitas sitotoksik diuji dengan metode MTT pada kultur sel preputium sebagai model jerawat.

Ekstrak etanol daun suji mengandung alkaloid, flavonoid, fenol, saponin, dan steroid/ triterpenoid. Kadar flavonoid total F1, F2, dan F3 adalah 84,7 %, 125 %, dan 140,83 % pada panjang gelombang maksimum 371,5 nm. Ketiga sediaan nanoemulsi yang dihasilkan berupa larutan kuning bening, kental, beraroma khas lesitin, homogen, dan stabil. Nilai rata-rata pH adalah 6,7, viskositas adalah 284 Cp, persen transmitan adalah 91,519 %, bobot jenis adalah 1,134 g/ml, zeta potensial adalah -29,7 mV, dan tidak menunjukkan reaksi iritasi. Uji antibakteri menunjukkan sediaan mempunyai aktivitas anti bakteri yang kuat pada terhadap *P. acnes* dan *S. Aureus*. Tidak terdapat perbedaan signifikan antara daya hambat antar formula dan antar jenis bakteri. Hasil uji MTT didapatkan nilai IC<sub>50</sub> 61,92 µg/ ml (toksik sedang). Dapat disimpulkan bahwa ekstrak etanol daun suji dapat diformulasikan menjadi sediaan nanoemulsi dan mempunyai aktivitas anti *acne* yang baik.

Kata kunci : *acne vulgaris*, tanaman suji, *Dracaena angustifolia* (Medik.) Roxb, nanoemulsi, *Propionibacterium acnes*,

## ABSTRACT

One of the pathogenesis of acne vulgaris is the bacteria *Propionibacterium acnes* and *Staphylococcus aureus*. The leaves of the suji plant (*Dracaena angustifolia* (Medik.) Roxb.) have antibacterial content. One of strategy to facilitate the use of suji leaves is the formulation of nanoemulsion topical preparations. The study aims to determine the secondary metabolite content and flavonoid content of ethanol extract of suji leaves, develop, evaluate and test the antibacterial and cytotoxic activity of nanoemulsion as anti-acne.

Suji leaves were extracted by wet maceration technique in ethanol solvent, secondary metabolite screening, and determination of total flavonoid content. Furthermore, nanoemulsion formulations with concentrations of 250 ppm (F1), 500 ppm (F2) and 750 ppm (F3) were carried out. Formula evaluation included organoleptic, pH, freeze and thaw, percent transmittance, viscosity, specific gravity, irritation, and zeta potential tests. Antibacterial test with disc diffusion test method. Cytotoxic activity was tested by MTT method on foreskin tissue cell culture as an acne model.

Suji leaf ethanol extract contains alkaloids, flavonoids, phenols, saponins, steroids and triterpenoids. The total flavonoid levels of F1, F2, and F3 were 84.7%, 125%, and 140.83% at a maximum wavelength of 371.5 nm. The three nanoemulsion preparations produced were clear yellow, thick, lecithin-scented, homogeneous, and stable. The average pH value was 6.7, viscosity was 284 Cp, percent transmittance was 91.519%, specific gravity was 1.134 g/ml, zeta potential was -29.7 mV, and showed no irritation reaction. Antibacterial test shows that the preparation has strong antibacterial activity against *P. acnes* and *S. Aureus*. There was no significant difference in inhibition between formulas and between types of bacteria. The results of the MTT test obtained an IC<sub>50</sub> value of 61.92 µg/ ml (moderately toxic). It can be concluded that the ethanol extract of suji leaves can be formulated into a nanoemulsion preparation and has good anti-acne activity.

Keywords: acne vulgaris, suji plant, *Dracaena angustifolia* (Medik.) Roxb, nanoemulsion, *Propionibacterium acnes*