

ABSTRAK

Jerawat (*acne vulgaris*) sering dipengaruhi oleh *Propionibacterium acnes* dan meningkatnya resistensi terhadap antibiotik topikal mendorong pencarian alternatif alami. Penelitian ini bertujuan memformulasi hidrogel ekstrak etanol daun kelor (*Moringa oleifera*) dan menentukan konsentrasi yang paling efektif sebagai antibakteri serta menilai karakteristik fisik dan stabilitas sediaan. Metode penelitian eksperimental meliputi pembuatan ekstrak maserasi etanol 70%, formula hidrogel (10%, 15%, 20% ekstrak; Na CMC sebagai *gelling agent*), evaluasi sifat fisik (organoleptis, homogenitas, viskositas, pH, *spreadability*) dan uji antibakteri *in vitro* terhadap *P. acnes* dengan metode difusi sumuran. Data dianalisis *One-Way* ANOVA ($\alpha = 0,05$) dan *post-hoc* LSD. Hasil menunjukkan rata-rata zona hambat: F2 (10%) = $1,36 \pm 0,06$ mm, F3 (15%) = $2,67 \pm 0,48$ mm, F4 (20%) = $4,99 \pm 0,50$ mm; ANOVA menunjukkan perbedaan signifikan antar konsentrasi ($p = 0,000$), dan uji LSD menegaskan perbedaan pasangan (10% vs 15% $p = 0,017$; 10% vs 20% & 15% vs 20% $p = 0,000$). Sediaan homogen dengan viskositas awal memenuhi kriteria hidrogel, pH berada pada rentang 6,5–7,0 namun *spreadability* melebihi rentang ideal sehingga perlu optimasi formula. Hidrogel dengan konsentrasi ekstrak 20% disimpulkan memberikan aktivitas antibakteri terbaik namun masih tergolong lemah, maka perlu penyempurnaan formula untuk mengatasi stabilitas dan aktivitas antibakteri sediaan hidrogel.

Kata kunci: kelor; flavonoid; hidrogel; *Propionibacterium acnes*

ABSTRACT

Acne vulgaris is often associated with *Propionibacterium acnes*, and rising resistance to topical antibiotics motivates exploration of natural alternatives. This study aimed to formulate a hydrogel containing 70% ethanol extract of *Moringa oleifera* leaves, determine the most effective antibacterial concentration, and evaluate the formulation's physical properties and stability. Hydrogels were prepared with Na CMC as gelling agent at extract concentrations of 10%, 15%, and 20%. Physical evaluations included organoleptics, homogeneity, viscosity, pH, and spreadability. Antibacterial activity against *P. acnes* was assessed in vitro by the well-diffusion method. Data were analyzed by One-Way ANOVA ($\alpha = 0.05$) with LSD post-hoc tests. Mean inhibition zones were: 10% = 1.36 ± 0.06 mm, 15% = 2.67 ± 0.48 mm, and 20% = 4.99 ± 0.50 mm; ANOVA indicated significant differences among concentrations ($p = 0.000$), and LSD tests confirmed pairwise differences (10% vs 15% $p = 0.017$; 10% vs 20% and 15% vs 20% $p = 0.000$). Formulations were homogeneous with initial viscosities meeting hydrogel criteria and pH 6.5–7.0, but spreadability exceeded the ideal range. The 20% extract hydrogel showed the highest antibacterial effect, albeit weak, indicating the need for further formula optimization to improve stability and potency.

Keywords: moringa; flavonoid; hydrogel; *Propionibacterium acnes*