ABSTRAK

Delvy Jauharotun Nafisah. 2026. *Pengaruh Variasi Konsentrasi Ekstrak Etanol Daun Sirih Merah (Piper crocatum) Terhadap Stabilitas Sifat Fisik Sediaan Gel.* Program Studi Farmasi, FIKS, Universitas PGRI Madiun. Pembimbing (I) Dr. apt. Vevi Maritha, S.Farm., M.Farm. Pembimbing (II) apt. Weka Sidha Baghawan, S.Farm., M.Farm.

Jerawat (*acne vulgaris*) merupakan peradangan pada unit pilosebasea yang umum terjadi pada remaja dan dewasa muda. Daun sirih merah (*Piper crocatum*) terbukti mengandung flavonoid, alkaloid, saponin, tanin, dan fenolik yang berpotensi sebagai bahan aktif anti-acne topikal. Sediaan gel dipilih karena ringan, tidak lengket, dan nyaman digunakan pada kulit sensitif. Penelitian ini dilakukan secara eksperimental laboratorium dengan membuat empat formula gel berbasis Carbopol 940: F1 (1,00 g ekstrak), F2 (1,25 g ekstrak), F3 (1,50 g ekstrak), dan F4 (kontrol). Ekstraksi menggunakan metode remaserasi etanol 96% selama 3×24 jam menghasilkan rendemen 10,01%. Data dikumpulkan melalui evaluasi sifat fisik—organoleptik, homogenitas, pH, daya sebar, dan daya lekat—pada setiap siklus cycling test (H0, S1, S2, S3) dengan penyimpanan bergantian pada suhu 4°C dan 40°C, kemudian dianalisis menggunakan Two-Way ANOVA dan uji Post Hoc Tukey HSD. Hasil menunjukkan seluruh formula stabil secara organoleptik dan homogen. Variasi konsentrasi ekstrak tidak berpengaruh signifikan terhadap pH ($p = 0,137$), namun berpengaruh signifikan terhadap daya sebar ($p = 0,007$) dan daya lekat ($p = 0,000$). Seluruh formula gel (F1, F2, F3, dan F4) memenuhi syarat stabilitas sifat fisik sediaan topikal. Disimpulkan bahwa variasi konsentrasi ekstrak etanol daun sirih merah berpengaruh signifikan terhadap daya sebar dan daya lekat, namun tidak terhadap pH, sehingga seluruh formulasi gel anti-acne ekstrak etanol daun sirih merah dinyatakan stabil secara fisik.

Kata kunci: *Piper crocatum, gel anti-acne, stabilitas fisik, cycling test, Carbopol 940*

ABSTRACT

Delvy Jauharotun Nafisah. 2026. *Effect of Ethanol Extract Concentration Variation of Red Betel Leaf (Piper crocatum) on the Physical Stability of Gel Preparations.* Department of Pharmacy, FIKS, Universitas PGRI Madiun. Supervisor (I) Dr. apt. Vevi Maritha, S.Farm., M.Farm. Supervisor (II) apt. Weka Sidha Baghawan, S.Farm., M.Farm.

Acne vulgaris is an inflammatory condition of the pilosebaceous unit commonly affecting adolescents and young adults. Red betel leaf (*Piper crocatum*) has been proven to contain flavonoids, alkaloids, saponins, tannins, and phenolics with potential anti-acne activity for topical use. Gel preparations were selected due to their lightweight texture, non-greasy nature, and suitability for sensitive skin. This experimental laboratory study formulated four Carbopol 940-based gel formulas: F1 (1.00 g extract), F2 (1.25 g extract), F3 (1.50 g extract), and F4 (control). Extraction was performed via remaseration using 96% ethanol for 3×24 hours, yielding a rendement of 10.01%. Data were collected through physical evaluation—organoleptic, homogeneity, pH, spreadability, and adhesiveness—at each cycling test cycle (H0, S1, S2, S3) with alternating storage at 4°C and 40°C, then analyzed using Two-Way ANOVA and Post Hoc Tukey HSD test. Results demonstrated that all formulas maintained organoleptic stability and homogeneity. Extract concentration variation did not significantly affect pH ($p = 0.137$), but significantly influenced spreadability ($p = 0.007$) and adhesiveness ($p = 0.000$). All gel formulas (F1, F2, F3, and F4) met the physical stability requirements for topical preparations. It is concluded that extract concentration variation significantly influenced spreadability and adhesiveness, but not pH, and that all anti-acne gel formulations of red betel leaf ethanol extract were physically stable.

Keywords: *Piper crocatum, anti-acne gel, physical stability, cycling test, Carbopol 940*