

## ABSTRAK

Andaliman (*Zanthoxylum acanthopodium* DC.) merupakan komoditas rempah endemik Sumatera Utara yang memiliki potensi terapeutik tinggi melalui kandungan minyak atsirinya. Senyawa terpenoid seperti geranil asetat, *limonene*, dan sitronelol dalam andaliman diketahui memiliki aktivitas farmakologis yang efektif sebagai aromaterapi untuk mereduksi gejala mual dan muntah. Penelitian ini bertujuan untuk mengonstruksi formulasi sediaan *roll-on* aromaterapi berbasis minyak atsiri buah andaliman serta mengevaluasi karakteristik mutu fisik dan keamanannya.

Metode penelitian yang digunakan adalah eksperimental laboratorium dengan pendekatan kuantitatif deskriptif. Isolasi minyak atsiri dilakukan terhadap simplisia buah andaliman menggunakan teknik distilasi uap metode Stahl. Sediaan aromaterapi kemudian diformulasikan ke dalam bentuk cairan topikal berbasis minyak (*carrier oil* Virgin Coconut Oil) dengan tiga variasi konsentrasi bahan aktif, yaitu F0 (0%), F1 (5%), dan F2 (10%). Parameter evaluasi mutu fisik sediaan mencakup uji organoleptis, homogenitas, viskositas, dan nilai derajat keasaman (pH). Pengujian keamanan dilakukan melalui uji iritasi dermal pada 5 orang responden, sedangkan tingkat penerimaan konsumen dinilai melalui uji hedonik (kesukaan) terhadap 15 orang panelis.

Hasil penelitian menunjukkan bahwa seluruh formula sediaan *roll-on* aromaterapi memiliki stabilitas fisik yang baik dan bersifat homogen selama periode pengamatan. Nilai pH sediaan berada pada rentang 5,52–6,06, yang dikategorikan aman karena memenuhi persyaratan pH fisiologis kulit manusia (4,5–6,5) sehingga tidak berisiko merusak *skin barrier*. Uji iritasi dermal mengonfirmasi bahwa formulasi sediaan, termasuk konsentrasi tertinggi (F2), tidak menimbulkan reaksi adversif seperti eritema, edema, maupun rasa gatal pada kulit seluruh responden. Berdasarkan uji hedonik, panelis memberikan preferensi tinggi terhadap parameter aroma, tekstur, dan kenyamanan penggunaan, meskipun aspek daya tahan aroma memerlukan optimasi lebih lanjut akibat sifat volatilitas alami dari minyak atsiri. Secara keseluruhan, sediaan *roll-on* aromaterapi minyak atsiri buah andaliman telah memenuhi standar mutu fisik dan keamanan untuk sediaan topikal serta berpotensi dikembangkan sebagai produk komersial berbasis bahan alam lokal.

**Kata Kunci:** Buah Andaliman, Minyak Atsiri, *Zanthoxylum acanthopodium* DC., Sediaan *roll-on*, Formulasi, Evaluasi Sediaan.

Andaliman (*Zanthoxylum acanthopodium* DC.) is an endemic spice commodity from North Sumatra with high therapeutic potential derived from its essential oils. Terpenoid compounds such as geranyl acetate, limonene, and citronellol in andaliman are recognized for their pharmacological activity as effective aromatherapy to alleviate symptoms of nausea and vomiting. This study aims to construct an aromatherapy roll-on formulation utilizing andaliman fruit essential oil and to evaluate its physical quality characteristics and safety profile.

The research employed a laboratory experimental method with a descriptive quantitative approach. Essential oil isolation was conducted on dried andaliman fruit utilizing the Stahl steam distillation technique. The aromatherapy preparations were then formulated into an oil-based topical liquid (utilizing Virgin Coconut Oil as a carrier) with three variations of active ingredient concentrations: F0 (0%), F1 (5%), and F2 (10%). Physical quality evaluation parameters included organoleptic properties, homogeneity, viscosity, and acidity value (pH). Safety testing was conducted via dermal irritation tests on 5 healthy respondents, while consumer acceptance was assessed through hedonic (preference) tests involving 15 panelists.

The results demonstrated that all formulas of the aromatherapy roll-on maintained excellent physical stability and remained completely homogeneous throughout the observation period. The pH values ranged from 5.52 to 6.06, which is classified as safe since it aligns with the physiological pH of human skin (4.5–6.5), thus posing no risk of damaging the skin barrier. The dermal irritation test confirmed that the formulations, including the highest concentration (F2), did not trigger adverse skin reactions such as erythema, edema, or pruritus across all respondents. According to the hedonic test, the panelists expressed a high preference for the aroma, texture, and comfort during application, although the scent longevity requires further optimization due to the naturally volatile nature of the essential oil. Overall, the andaliman fruit essential oil aromatherapy roll-on meets the physical quality and safety standards for topical preparations and shows promising potential to be developed into a commercial product based on local natural resources.

**Keywords:** Andaliman Fruit, Essential Oil, *Zanthoxylum acanthopodium* DC., Roll-on Preparation, Formulation, Evaluation Of Preparation.