

## ABSTRAK

Meningkatnya kesadaran masyarakat terhadap pentingnya kebersihan tangan mendorong penggunaan *hand sanitizer* sebagai alternatif praktis ketika sabun dan air tidak tersedia. Namun, penggunaan antiseptik sintetis secara berulang dan jangka panjang berpotensi menyebabkan iritasi kulit serta meningkatkan risiko resistensi mikroba, sehingga diperlukan pengembangan pembersih tangan berbahan alami yang lebih aman. Daun kumis kucing (*Orthosiphon stamineus*) diketahui mengandung berbagai metabolit sekunder yang memiliki aktivitas antibakteri. Penelitian ini bertujuan untuk memformulasikan sediaan gel *hand sanitizer* berbasis ekstrak etanol daun kumis kucing serta mengevaluasi aktivitas antibakterinya terhadap *Staphylococcus aureus*. Penelitian ini merupakan studi eksperimental laboratorium secara *in vitro*. Sampel penelitian berupa ekstrak etanol daun kumis kucing yang berasal dari Kabupaten Mandailing Natal dan diformulasikan ke dalam sediaan gel dengan konsentrasi 7,5% dan 12,5%. Variabel independen adalah konsentrasi ekstrak dalam formulasi gel, sedangkan variabel dependen meliputi karakteristik fisik sediaan dan aktivitas antibakteri. Evaluasi dilakukan melalui uji organoleptik, homogenitas, pH, daya sebar, serta uji aktivitas antibakteri menggunakan metode difusi cakram. Hasil penelitian menunjukkan bahwa ekstrak etanol daun kumis kucing mengandung senyawa fenolik, alkaloid, flavonoid, steroid, tanin, dan saponin. Formulasi gel dengan konsentrasi 7,5% menghasilkan zona hambat sebesar 7,41–10,27 mm terhadap *Staphylococcus aureus*, sedangkan konsentrasi 12,5% tidak menunjukkan zona hambat. Seluruh formulasi memenuhi persyaratan mutu fisik sediaan gel, kecuali pada parameter daya sebar. Kesimpulan penelitian ini menunjukkan bahwa gel *hand sanitizer* dengan ekstrak etanol daun kumis kucing konsentrasi 7,5% memiliki aktivitas antibakteri lemah terhadap *Staphylococcus aureus* dan berpotensi dikembangkan sebagai pembersih tangan berbahan alami.

**Kata kunci:** Antibakteri, Gel *hand sanitizer*, Kumis kucing, *Orthosiphon stamineus*, *Staphylococcus aureus*

## ABSTRACT

*The increasing public awareness of hand hygiene has encouraged the widespread use of hand sanitizers as a practical alternative when soap and water are not readily available. However, long-term and repeated use of synthetic antiseptics may cause skin irritation and contribute to microbial resistance, highlighting the need for safer, plant-based hand sanitizer formulations. Cat's whiskers leaves (*Orthosiphon stamineus*) are known to contain various secondary metabolites with antibacterial properties. This study aimed to formulate a gel-based hand sanitizer containing ethanol extract of cat's whiskers leaves and to evaluate its antibacterial activity against *Staphylococcus aureus*. This research employed an in vitro experimental laboratory design. The sample consisted of ethanol extracts of cat's whiskers leaves collected from Mandailing Natal Regency, which were formulated into gel preparations at concentrations of 7.5% and 12.5%. The independent variable was the extract concentration in the gel formulation, while the dependent variables included the physical characteristics of the gel and its antibacterial activity. Evaluation parameters comprised organoleptic properties, homogeneity, pH, spreadability, and antibacterial activity using the disc diffusion method. The results showed that the ethanol extract of cat's whiskers leaves contained phenolic compounds, alkaloids, flavonoids, steroids, tannins, and saponins. The gel formulation containing 7.5% extract produced inhibition zones ranging from 7.41 to 10.27 mm against *Staphylococcus aureus*, whereas the 12.5% extract concentration did not exhibit any inhibition zone. All gel formulations met the acceptable physical quality requirements, except for the spreadability parameter. In conclusion, the hand sanitizer gel formulated with 7.5% ethanol extract of cat's whiskers leaves demonstrated weak antibacterial activity against *Staphylococcus aureus* and shows potential for development as a natural hand sanitizer.*

**Keywords:** *Antibacterial, Gel hand sanitizer, *Orthosiphon stamineus*, *Staphylococcus aureus*, Herbal extract*