# ABSTRAK

## FORMULASI SEDIAAN GEL *HANDSANITIZER* EKSTRAK ETANOL DAUN JERUK PURUT *(Citrus hystrix* D.C*)* MENGGUNAKAN HPMC SEBAGAI ANTISEPTIK

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**Latar Belakang :** Salah satu penyebab penyakit infeksi yaitu bakteri *Staphylococcus aureus*. Penggunaan alkohol dalam sediaan antiseptik kurang aman terhadap kesehatan. Daun jeruk purut *(Citrus hystrix DC)* memiliki potensi sebagai sediaan antiseptik. Senyawa dalam daun jeruk purut yang berfungsi sebagai antibakteri adalah alkaloid, flavonoid, dan tanin. Sediaan gel dapat meningkatkan efektivitas dan kenyamanan dalam penggunaannya secara topikal. Sifat fisik gel yang baik tergantung dari penggunaan *gelling agent*. HPMC merupakan salah satu *gelling agent*. Tujuan penelitian ini untuk mengetahui pengaruh variasi kadar *gelling agent* HPMC terhadap sifat fisik dan aktivitas antibakteri sediaan gel ekstrak etanol daun jeruk purut.

**Metodologi :** Gel diformulasikan menjadi tiga formula dengan variasi kadar HPMC 2 %, 2,5%, dan 3%. Selanjutnya diuji sifat fisik dan stabilitas yaitu organoleptis, homogenitas, pH, viskositas, daya lekat, daya sebar, dan uji *freeze-thaw*. Uji organoleptis, homogenitas, dan Freeze-thaw dianalisis secara deskriptif. Uji viskositas, pH, daya lekat dan daya sebar dianalisis menggunakan Oneway ANOVA. Semua formula diuji aktivitas antibakteri dengan metode difusi sumuran.

**Hasil Penelitian :** Hasil penelitian menunjukkan bahwa peningkatan kadar HPMC meningkatkan viskositas dan daya lekat, serta menurunkan daya sebar. Pengujian antibakteri menunjukkan peningkatan kadar HPMC menghasilkan perbedaan kemampuan pelepasan zat aktif yang ditunjukkan melalui daya hambat bakteri formula I sebasar 6,1 mm, formula II 6,0 mm dan formula III 5,5 mm.

**Kesimpulan :** Variasi konsentrasi HPMC mempengaruhi nilai viskositas, daya lekat dan daya sebar. Semakin tinggi konsentrasi HPMC yang diberikan maka menyebabkan peningkatan viskositas, daya lekat. Formula terpilih adalah formula I dengan konsentrasi HPMC 2 gram. Formula terpilih memiliki aktivitas antibakteri terhadap *Staphylococcus aureus.*

**Kata Kunci :** Gel, Ekstrak kulit daun jeruk purut, HPMC, *Staphylococcus aureus.*

# ABSTRACT

## FORMULATION HAND SANITIZER GEL PREPARATIONS OF ETHANOL EXTRACT OF KAFFIR LIME LEAVES USING HYDROXYPROPYL METHYLCELLULOSE HPMC AS AN ANTISEPTIC

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**Background**: One of the causes of infectious diseases is *Staphylococcus aureus*. The use of alcohol in antiseptic preparations is less safe for health. Kaffir lime leaves *(Citrus hystrix DC)* have potential as antiseptic preparations. The compounds in kaffir lime leaves that function as antibacterial are alkaloids, flavonoids, and tannins. Gel preparations can increase effectiveness and comfort in topical use. The good physical properties of the gel depends on the use of gelling agent. HPMC is one of the gelling agents. The purpose of this study was to determine the effect of variations in levels of HPMC gelling agent on the physical properties and antibacterial activity of ethanol extracts of kaffir lime leaf gel preparations.

**Methodology**: The gel was formulated into three formulas with variations in HPMC levels of 2%, 2.5%, and 3%. Furthermore, physical properties and stability were tested, namely organoleptic, homogeneity, pH, viscosity, adhesion, dispersion, and freeze-thaw test. Organoleptic, homogeneity, and Freeze-thaw tests were analyzed descriptively. Test of viscosity, pH, adhesion and dispersion were analyzed using Oneway ANOVA. All formulas were tested for antibacterial activity by the well diffusion method.

**Research Results**: The results showed that the increasing levels of HPMC increased viscosity and adhesion, as well as reduced spreadability. Antibacterial testing showed that an increase in HPMC levels resulted in differences in the ability to release active substances as indicated by the inhibitory properties of the formula I of 6.1 mm, formula II 6.0 mm and formula III 5.5 mm.

**Conclusion**: Variations in HPMC concentration affect the value of viscosity, adhesion and dispersion. The higher the concentration of HPMC given, there will be an increase in viscosity, adhesion. The chosen formula was formula I with a 2 gram HPMC concentration. The selected formula has antibacterial activity against Staphylococcus aureus.



**Keywords**: *Gel, Kaffir lime leaf extract, HPMC, Staphylococcus aureus.*