

## ABSTRAK

### FORMULASI DAN UJI AKTIVITAS ANTIBAKTERI SEDIAAN GEL *HAND SANITIZER* EKSTRAK ETANOL BIJI ALPUKAT (*Persea americana* Mill.) BERBASIS HIDROKSIPROPIL METILSELULOSA TERHADAP *Staphylococcus aureus*

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**Latar Belakang:** Biji alpukat mengandung senyawa flavonoid, saponin, tanin, dan alkaloid yang memiliki aktivitas antibakteri terhadap *Staphylococcus aureus*. Tujuan penelitian ini untuk memformulasikan ekstrak etanol biji alpukat menjadi sediaan gel *hand sanitizer* dengan basis HPMC yang memenuhi persyaratan sifat dan stabilitas fisik serta memiliki aktivitas antibakteri terhadap *S. aureus*.

**Metodologi:** Ekstraksi biji alpukat dilakukan dengan metode maserasi menggunakan etanol 96% selama 3x24 jam. Sediaan gel dibuat dengan variasi konsentrasi HPMC 1%, 1,25%, 1,5% dan 1,75%. Sediaan gel diuji sifat fisik dan stabilitas fisik meliputi organoleptis, homogenitas, viskositas, pH, daya lekat, daya sebar dan pemisahan fase uji *freeze-thaw*. Hasil uji organoleptis, homogenitas dan pemisahan fase selama uji *freeze-thaw* dianalisis secara deskriptif. Uji pH, viskositas, daya lekat dan daya sebar dianalisis menggunakan *Oneway* ANOVA dan dilanjutkan dengan uji LSD. Formula terpilih diuji aktivitas antibakteri dengan metode difusi sumuran dan diameter zona hambat dianalisis secara deskriptif.

**Hasil Penelitian:** Hasil penelitian menunjukkan bahwa peningkatan konsentrasi HPMC dapat meningkatkan viskositas gel dan daya lekat, serta menurunkan daya sebar. Formula III dengan konsentrasi HPMC 1,5% memiliki nilai viskositas sebesar 2256,67-3883,33 cPs, daya lekat 3,07-4,83 detik, daya sebar 5,28-6,82 cm, stabil pada uji *freeze-thaw*, serta diameter zona hambat terhadap *S. aureus* sebesar 7,08 mm.

**Kesimpulan:** Formula yang memenuhi persyaratan sifat fisik dan stabilitas fisik yang paling baik adalah Formula III dengan konsentrasi HPMC 1,5% dan memiliki diameter zona hambat terhadap *S. aureus* sebesar 7,08 mm.

**Kata Kunci:** Ekstrak etanol biji alpukat, gel *hand sanitizer*, HPMC, *S. aureus*

## ABSTRACT

### FORMULATION AND ANTIBACTERIAL ACTIVITY TEST OF HANDSANITIZER GEL WITH ETHANOL EXTRACT OF AVOCADO SEEDS (*Persea americana* Mill.) BASED ON HYDROXYPROPYL METHYLCELLULOSE TOWARDS *Staphylococcus aureus*

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**Background :** Avocado seeds extracts contain flavonoid, saponins, tannins, and alkaloids compounds which have antibacterial activity towards *Staphylococcus aureus*. The purposes of this research are to formulate ethanol extract of avocado seeds into hand sanitizer gel using HPMC as a base that fulfill the requirements of physical properties, stable, and have antibacterial activity towards *S. aureus*.

**Methodology:** Avocado seeds were extracted using 96% ethanol by maceration method for 3x24 hours. Hand sanitizer gels were prepared with HPMC concentration variation 1%, 1,25%, 1,5% and 1,75%. Hand sanitizer gels were tested for physical properties and physical stability involving organoleptic, homogeneity, viscosity, pH, adhesiveness, spreadability and phase separation during freeze-thaw test. Organoleptic, homogeneity and phase separation were analyzed descriptively. Viscosity, pH, adhesiveness and spreadability were analyzed using Oneway ANOVA and continued with the LSD test. The selected formula was tested for antibacterial activity using diffusion method and analyzed descriptively.

**Result:** The results showed that increasing concentration of HPMC could increase gel viscosity and adhesiveness, but decrease spreadability. Formula III as the selected formula with 1,5% HPMC concentration has a viscosity value of 2256,67-3883,33 cPs, adhesiveness 3,07-4,83 seconds, spreadability 5,28-6,82 cm, stable in the freeze-thaw test, and has an inhibition zone diameter of 7,08 mm towards *S. aureus*.

**Conclusion:** The formula that fulfills the requirements of the best physical properties and physical stability is Formula III with a 1,5% HPMC concentration and has an inhibition zone diameter of 7,08 mm towards *S. aureus*.

**Keywords:** Avocado seeds ethanol extract, Hand sanitizer gel, HPMC, *S. aureus*