

**FORMULASI SEDIAAN *SPRAY GEL* SMEDDS EKSTRAK
ETANOL 96% DAUN JAMBU BIJI (*Psidium guajava* L.)
SEBAGAI ANTIBAKTERI TERHADAP *Staphylococcus aureus***

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ABSTRAK

Latar Belakang: *Staphylococcus aureus* merupakan bakteri penyebab infeksi kulit dan pada ulkus diabetikum. Pencegahan infeksi dapat dilakukan menggunakan obat yang mengandung zat antimikroba, seperti tanin dan flavonoid dalam ekstrak etanol 96% daun jambu biji (*Psidium guajava* L.) yang diformulasikan ke dalam *spray gel* yang mengandung SMEDDS dengan kombinasi *gelling agent* Na CMC dan kopovidon.

Tujuan: Mengetahui pengaruh kombinasi konsentrasi Na CMC dan kopovidon terhadap karakteristik fisik *spray gel* SMEDDS ekstrak etanol 96% daun jambu biji dan aktivitas antibakterinya terhadap *Staphylococcus aureus*.

Metode: Simplisia daun jambu biji dimaserasi dengan etanol 96%, kemudian dibuat SMEDDS, dan diformulasikan dalam *spray gel* dengan memvariasikan Na CMC dan kopovidon 1:1 (F1=0,1%, F2=0,2%, F3=0,3%). Uji KHM terhadap *Staphylococcus aureus* dilakukan terhadap ekstrak. Aktivitas antibakteri *spray gel* dilakukan dengan metode Kirby Bauer. Data organoleptis, kondisi semprotan, dan homogenitas diuji secara deskriptif. Data pH, viskositas, dan aktivitas antibakteri diuji dengan statistik.

Hasil: KHM ekstrak etanol 96% daun jambu biji terhadap *Staphylococcus aureus* adalah 0,5%. Konsentrasi Na CMC dan kopovidon tidak berpengaruh terhadap karakteristik organoleptis, homogenitas, pH, viskositas, dan kondisi semprotan. F2 dengan kombinasi Na CMC dan kopovidon 1:1 (0,2%) dan F3 (0,3%) memenuhi semua persyaratan karakteristik fisik, sedangkan F1 (0,1%) memenuhi semua persyaratan kecuali viskositas. *Spray gel* F1, F2, dan F3 memiliki aktivitas antibakteri terhadap *Staphylococcus aureus* berturut turut sebesar 28,10; 22,35; dan 22,09 mm, tetapi berbeda tidak bermakna dengan kontrol negatif. Kontrol negatif F1, F2, dan F3 berturut turut sebesar 18,08; 20,10; dan 21,83 mm.

Kesimpulan: Variasi kombinasi konsentrasi Na CMC dan kopovidon tidak berpengaruh terhadap karakteristik fisik *spray gel* serta F1, F2, maupun F3 memiliki aktivitas antibakteri terhadap *Staphylococcus aureus*, tetapi berbeda tidak bermakna dengan kontrol negatif.

Kata kunci: karakteristik fisik, tanin, flavonoid, KHM

FORMULATION OF SPRAY GEL SMEDDS 96% ETHANOL EXTRACT OF GUAVA LEAVES (*Psidium guajava* L.) AS AN ANTIBACTERIAL AGAINST *Staphylococcus aureus*

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ABSTRACT

Background: *Staphylococcus aureus* is a bacteria causes skin infections and diabetic ulcers. Prevention of infection can be done using drugs that contain antimicrobial substances, such as tannins and flavonoids in 96% ethanol extract of guava leaves (*Psidium guajava* L.) which are formulated into a spray gel containing SMEDDS with a combination of the gelling agent Na CMC and copovidone.

Objective: To determine the effect of the combined concentration of Na CMC and copovidone on the physical characteristics of SMEDDS spray gel with 96% ethanol extract of guava leaves and its antibacterial activity against *Staphylococcus aureus*.

Method: Simplisia guava leaves were macerated with 96% ethanol, then SMEDDS was made, and formulated in a spray gel by varying Na CMC and copovidone 1:1 (F1=0,1%, F2=0,2%, F3=0,3 %). MIC against *Staphylococcus aureus* were tested on the extract. The antibacterial activity of spray gel were tested using the Kirby Bauer method. Organoleptic data, spray conditions and homogeneity were tested descriptively. Data on pH, viscosity and antibacterial activity were tested statistically.

Results: MIC of 96% ethanol extract of guava leaves against *Staphylococcus aureus* was 0,5%. The concentration of Na CMC and copovidone had no effect on organoleptic characteristics, homogeneity, pH, viscosity and spray conditions. F2 with a combination of Na CMC and copovidone 1:1 (0,2%) and F3 (0,3%) fullfill all physical characteristics requirements, while F1 (0,1%) fullfill all requirements except viscosity. Spray gel F1, F2, and F3 have antibacterial activity against *Staphylococcus aureus* of 28,10 respectively; 22,35; and 22,09 mm, but not significantly different from the negative control. Negative controls F1, F2, and F3 respectively were 18,08; 20,10; and 21,83 mm.

Conclusion: Varying combinations of Na CMC and copovidone concentrations had no effect on the physical characteristics of the spray gel and F1, F2 and F3 had antibacterial activity against *Staphylococcus aureus*, but were not significantly different from the negative control.

Keywords: physical characteristics, tannins, flavonoids, MIC