

ABSTRACT

ANTIBACTERIAL ACTIVITY TEST OF PAPER SOAP FORMULATION WITH A COMBINATION OF LEMONGRASS ESSENTIAL OIL (*Cymbopogon citratus*) AND 70% ETHANOL EXTRACT OF BUTTERFLY PEA (*Clitoria ternatea*) AGAINST *Staphylococcus aureus*

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Background: *Staphylococcus aureus* is a bacteria that can contaminate food. Contamination can be prevented with the latest innovation, namely natural paper soap as antibacterial such as butterfly pea flowers and lemongrass. This study aims to develop a paper soap formulation combining antibacterial substances from butterfly pea flowers and lemongrass and test its antibacterial activity against *Staphylococcus aureus*.

Methods: Identification of secondary metabolite compounds was seen through phytochemical screening and GCMS then continued with the formulation of paper soap preparations with F1 (3.45% lemongrass essential oil and 70% ethanol extract of 15% butterfly pea flowers), F2 (5.75% lemongrass essential oil and 70% ethanol extract of 17% butterfly pea flowers) and F3 (8.05% lemongrass essential oil and 70% ethanol extract of 19% butterfly pea flowers). The resulting formula was evaluated for the preparation which included organoleptic tests, pH, foam height, water content and washing time as well as antibacterial tests using the disc diffusion method against *Staphylococcus aureus*.

Results: The paper soap preparation has fulfilled the organoleptic evaluation test, washing time, pH, foam height and water content and produced an inhibition zone at F1 of 5.3833 mm, F2 of 6.0667 mm and F3 of 8.9833 mm.

Conclusion: Secondary metabolite compounds were detected through tests conducted with phytochemical screening and GC-MS. The paper soap preparation that produced the largest inhibition zone against *Staphylococcus aureus* was produced by F3.

Keywords: Butterfly Pea, Lemongrass, Paper Soap, Antibacterial, *Staphylococcus aureus*.

ABSTRAK

UJI AKTIVITAS ANTIBAKTERI FORMULASI SABUN KERTAS DENGAN KOMBINASI MINYAK ATSIRI SERAI DAPUR (*Cymbopogon citrat*) DAN EKSTRAK ETANOL 70% BUNGA TELANG (*Clitoria ternatea*) TERHADAP *Staphylococcus aureus*

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Latar Belakang: *Staphylococcus aureus* merupakan bakteri yang dapat mencemari makanan. Pencemaran dapat dicegah dengan inovasi terbaru yaitu sabun kertas bahan alami sebagai antibakteri seperti bunga telang dan serai dapur. Penelitian ini bertujuan untuk mengembangkan formulasi sabun kertas kombinasi zat antibakteri bunga telang dan serai dapur dan menguji aktivitas antibakterinya terhadap *Staphylococcus aureus*.

Metode: Identifikasi senyawa metabolit sekunder dilihat melalui skrinning fitokimia dan GCMS lalu dilanjutkan formulasi sediaan sabun kertas dengan F1 (minyak atsiri serai dapur 3,45% dan ekstrak etanol 70% bunga telang 15%), F2 (minyak atsiri serai dapur 5,75% dan ekstrak etanol 70% bunga telang 17%) dan F3 (minyak atsiri serai dapur 8,05% dan ekstrak etanol 70% bunga telang 19%). Formula yang dihasilkan dilakukan evaluasi sediaan yang mencakup uji organoleptik, pH, tinggi busa, kadar air dan waktu cuci serta uji antibakteri metode difusi cakram terhadap *Staphylococcus aureus*.

Hasil: Sediaan sabun kertas telah memenuhi uji evaluasi organoleptik, waktu cuci, pH, tinggi busa dan kadar air serta menghasilkan zona hambat pada F1 sebesar 5,3833 mm, F2 sebesar 6,0667 mm dan F3 sebesar 8,9833 mm.

Kesimpulan: Senyawa metabolit sekunder terdeteksi melalui pengujian yang dilakukan dengan skrinning fitokimia dan GC-MS. Sediaan sabun kertas yang menghasilkan zona hambat terbesar terhadap *Staphylococcus aureus* dihasilkan oleh F3.

Kata Kunci: Bunga Telang, Serai Dapur, Sabun Kertas, Antibakteri, *Staphylococcus aureus*.