ABSTRACT

THE INHIBITORY EFFECT OF PAPAYA LEAF (*Carica papaya L.)* EXTRACT ON THE GROWTH OF *Staphylococcus aureus* AND *Escherichia coli*

By

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Background: Bacterial infections such as *Staphylococcus aureus* (*S. aureus*) and *Escherichia coli* (*E. coli*) are the main causes of infectious diseases that lead to increased morbidity and mortality. The utilization of natural materials such as papaya leaves (*Carica papaya L.*) which contain active compounds with the potential to be developed into antibiotics.
Objective: To determine the inhibitory effect of papaya leaf extract (*Carica papaya L.*) and to understand the inhibitory effect of each concentration on the growth of *S. aureus* and *E. coli* bacteria.
Methods: This study uses a true experimental post-test only control group design. The samples consisted of ethanol extracts of papaya leaves with concentrations of 20%, 40%, 60%, 80%, 100%, as well as a positive control (ciprofloxacin) and a negative control (aquadest). Antibacterial test was conducted using the well diffusion method against *S. aureus* and *E. coli*. Statistical analysis was performed using One Way ANOVA test and the Post Hoc LSD test.
Results: The highest average at a 100% concentration against *S. aureus* was 16.68 mm and *E. coli* was 15.7 mm. Positive control (ciprofloxacin) measured 38.1 mm for *S. aureus* and 40.17 mm for *E. coli*, while the negative control (aqua dest) showed no inhibitory effect. The results of the One Way ANOVA test on *S. aureus* p = <0,001 and *E. coli* p = <0,001. The Post hoc LSD test for both bacteria showed significant differences between several treatment groups.
Conclusion: There is an inhibitory effect of papaya leaf extract (*Carica papaya L.*) at concentrations of 20%, 40%, 60%, 80%, and 100% against the positive control in inhibiting the growth of *S. aureus* and *E. coli.*

Keyword: *Carica papaya L., Staphylococcus aureus, Escherichia coli,* Antibacterial, Well Diffusion

ABSTRAK

UJI DAYA HAMBAT EKSTRAK DAUN PEPAYA (*Carica papaya L.*) TERHADAP PERTUMBUHAN *Staphylococcus aureus DAN Escherichia coli*

Oleh

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Latar Belakang: Infeksi bakteri seperti *Staphylococcus aureus* (*S. aureus*) dan *Escherichia coli* (*E. coli*) merupakan penyebab utama penyakit infeksi yang berdampak pada peningkatan morbiditas dan mortalitas. Pemanfaatan bahan alami seperti daun pepaya (*Carica papaya L.*) yang mengandung senyawa aktif dapat dikembangkan menjadi antibiotik.
Tujuan Penelitian: Untuk mengetahui daya hambat ekstrak daun pepaya (*Carica papaya L.*) dan mengetahui daya hambat setiap konsentrasi terhadap pertumbuhan bakteri *S. aureus* dan *E. coli.*
Metode Penelitian: Penelitian ini menggunakan rancangan *true experimental post-test only control group*. Sampel berupa ekstrak etanol daun pepaya (*Carica papaya L.*) dengan konsentrasi 20%, 40%, 60%, 80%, 100%, serta kontrol positif (ciprofloxacin) dan kontrol negatif (akuades). Uji antibakteri dilakukan dengan metode difusi sumuran terhadap *S. aureus* dan *E. coli*. Uji analisis statistik menggunakan uji *One Way ANOVA* serta uji *Post Hoc LSD*.
Hasil Penelitian: Rerata tertinggi pada konsentrasi 100% terhadap *S. aureus* 16,68 mm dan *E. coli* 15,7 mm. Kontrol positif (ciprofloxacin) senilai 38,1 mm terhadap *S. aureus, E. coli* 40,17 mm, dan kontrol negatif (akuades) tidak menunjukkan daya hambat. Hasil uji *One Way ANOVA* pada *S. aureus* p = <0,001 dan *E. coli* p = <0,001. Uji *Post hoc LSD* kedua bakteri menunjukkan perbedaan signifikan antar beberapa kelompok perlakuan.
Kesimpulan: Terdapat daya hambat ekstrak daun pepaya (*Carica papaya L.*) pada konsentrasi 20%, 40%, 60%, 80% dan 100% terhadap kontrol positif dalam menghambat pertumbuhan *S. aureus* dan *E. coli.*

Kata Kunci: *Carica papaya L., Staphylococcus aureus, Escherichia coli,* Antibakteri, Difusi Sumuran