

ABSTRACT

Antibacterial Activity of Ethanol Extract of Young and Old Leaves of Papaya Plants (*Carica papaya* L.) Against *Escherichia coli* Bacteria

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Escherichia coli was a bacterium that caused diarrhea. One of the plants that could be used for the treatment of diarrhea was papaya leaves. Papaya leaves contained active compounds such as tannins, alkaloids, flavonoids, and saponins that were suspected to have antimicrobial effects. This study aimed to analyze the effectiveness of administering ethanol extracts of young and old papaya leaves (*Carica papaya* L.) at various concentrations against *Escherichia coli* bacteria. The study employed a true experimental design with the disc diffusion method (Kirby-Bauer). The extraction of young and old leaves with 70% ethanol was evaporated, followed by phytochemical tests and antibacterial tests. The inhibition zones formed were measured using a ruler and analyzed using One Way ANOVA and the LSD post hoc test. The results showed that the extract of old papaya leaves was more effective in inhibiting the growth of *Escherichia coli*, with the highest concentration being 25% and an average inhibition zone of 21 mm. The One Way ANOVA test indicated significant differences ($p < 0.05$). Subsequently, the post hoc LSD test showed significant differences between the concentrations of extracts from young and old leaves.

Keywords: Antibacterial, *Escherichia coli*, ethanol extract, inhibitory power, Papaya leaves.

ABSTRAK

Aktivitas Antibakteri Ekstrak Etanol Daun Muda dan Daun Tua Tanaman Pepaya (*Carica papaya* L.) Terhadap Bakteri *Escherichia coli*

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Escherichia coli merupakan bakteri penyebab diare. Salah satu tumbuhan yang dapat digunakan sebagai pengobatan untuk diare adalah daun pepaya. Daun pepaya memiliki kandungan senyawa aktif seperti tanin, alkaloid, flavonoid, dan saponin yang diduga memiliki efek antimikroba. Penelitian ini bertujuan untuk menganalisis efektivitas pemberian ekstrak etanol daun muda dan daun tua tanaman pepaya (*Carica papaya* L.) dengan berbagai konsentrasi terhadap bakteri *Escherichia coli*. Penelitian ini menggunakan rancangan *true eksperimental design* dengan metode difusi kertas cakram (Kirby-Bauer). Hasil ekstraksi daun muda dan tua dengan etanol 70% dievaporasi, kemudian dilakukan uji fitokimia dan uji antibakteri. Zona hambat yang terbentuk diukur menggunakan penggaris dianalisis menggunakan uji *One Way Anova* dan uji lanjutan *LSD*. Hasil penelitian menunjukkan bahwa ekstrak daun pepaya tua lebih efektif menghambat pertumbuhan bakteri *Escherichia coli* dengan konsentrasi tertingginya yaitu 25% dengan rata-rata 21 mm. Kemudian uji *One Way Anova* menunjukkan hasil berbeda makna ($p < 0,05$). Kemudian dilanjutkan uji *Post hoc LSD* menunjukkan perbedaan bermakna antara konsentrasi ekstrak daun muda dan daun tua.

Kata Kunci: Antibakteri, daun pepaya, daya hambat, ekstrak, etanol *Escherichia coli*,