

ABSTRACT

Background: Infection disease become one of the health problems. They use antibiotic to resolve that problem. The more often the use of inappropriate antibiotics can increase the incidence of resistance. *Pseudomonas aeruginosa* is one of the bacteria that cause infection disease. *Piper betle* L. is a plant known to have antibacterial activity against *Pseudomonas aeruginosa*. Besides, *Pseudomonas aeruginosa* has been reported to have resistance to ciprofloxacin antibiotics. Therefore, a researcher does research related with the effect of combination ciprofloxacin antibiotic with ethanol extract of *Piper betle* L. against *Pseudomonas aeruginosa*.

Method: Determination of antibacterial activity using well diffusion method and checkboard methods. The inhibitory zone and optical density data were tested statistically using Kruskal- Wallis and Post-Hoc Dunn tests.

Results: The diameter of zone inhibition showed a difference in antibacterial activity between single and combination treatments. Statistical analysis showed that there were significant differences in each treatment. The FIC index result showed indifferent effects.

Conclusions: There was a difference in activity between antibacterial treatments and the combination of extract and antibiotic showed indifferent effects.

Keywords: ciprofloxacin, combination, diameter of zone inhibition, FIC index, *Pseudomonas aeruginosa*.

INTISARI

Latar belakang : Penyakit infeksi masih menjadi masalah kesehatan. Untuk mengatasi penyakit infeksi yaitu menggunakan antibiotik. Semakin sering menggunakan antibiotik yang tidak tepat dapat meningkatkan kejadian resistensi. *Pseudomonas aeruginosa* merupakan salah satu bakteri penyebab penyakit infeksi. *Piper betle* L. merupakan tanaman yang diketahui memiliki aktivitas antibakteri terhadap *Pseudomonas aeruginosa*. Disisi lain *Pseudomonas aeruginosa* telah dilaporkan mengalami resistensi terhadap antibiotik *ciprofloxacin*. Oleh karena itu dilakukan penelitian efek kombinasi antibiotik *ciprofloxacin* dan ekstrak etanol daun sirih terhadap pertumbuhan bakteri *Pseudomonas aeruginosa*.

Metode: Uji aktivitas antibakteri menggunakan metode sumuran dan *checkboard*. Data diameter zona hambat dan *optical density* yang diukur kemudian diuji secara statistik menggunakan uji *Kruskal- Wallis* dan *Post- Hoc Dunn*.

Hasil: Zona hambat yang didapat menunjukkan terdapat perbedaan aktivitas antibakteri antara perlakuan tunggal dan kombinasi. Analisis statistik menunjukkan terdapat perbedaan bermakna pada tiap perlakuan. Hasil dari *FIC index* menunjukkan efek *indifferent*.

Kesimpulan: Terdapat perbedaan aktivitas antar perlakuan antibakteri dan kombinasi ekstrak dan antibiotik menunjukkan efek *indifferent*.

Kata kunci: *ciprofloxacin*, kombinasi, zona hambat, *FIC index*, *Pseudomonas aeruginosa*