UNIVERSITAS
GADJAH MADA
Efek Ekstrak Kayu Manis (Cinnamomum burmannii L.) terhadap Motilitas Swimming Bakteri Pseudomonas aeruginosa ATCC 10145
DILLA DARISTA PUTRI, drg. Heni Susilowati, M.Kes., Ph.D.; Dr. drg. Juni Handajani, M.Kes., Ph.D.
Universitas Gadjah Mada, 2020 | Diunduh dari http://etd.repository.ugm.ac.id/

INTISARI

Pseudomonas aeruginosa merupakan bakteri aerob Gram-negatif yang berbentuk batang dan bersifat patogen oportunistik. Motilitas *swimming* merupakan pergerakan bakteri pada lingkungan cair yang didorong oleh flagela. Kayu manis (*Cinnamomum burmannii* L.) mengandung zat fitokimia seperti *cinnamaldehyde, eugenol,* dan flavonoid yang berpotensi sebagai antibakteri. Penelitian ini bertujuan untuk mengetahui efek ekstrak kayu manis terhadap motilitas *swimming* bakteri *P. aeruginosa* ATCC 10145.

Subjek penelitian ini adalah *P. aeruginosa* ATCC 10145. Uji motilitas *swimming* dilakukan pada kelompok kontrol negatif, kelompok perlakuan berupa ekstrak kayu manis pada konsentrasi 0,78%; 3,13%; dan 12,50%, serta kelompok kontrol positif. Bakteri dari setiap kelompok dikultur pada suhu 37°C selama 24 jam, kemudian diinokulasikan pada media semi solid *tryptone swim plate* (0,3% agar), dan dilanjutkan inkubasi pada suhu 37°C selama 24 jam. Zona motilitas *swimming* diamati kemudian dilakukan pengambilan fotograf dari setiap kultur. Diameter zona motilitas diukur pada fotograf menggunakan *software ImageJ*. Data hasil pengukuran dianalisis menggunakan metode *one-way* ANOVA dan dilanjutkan *post hoc* LSD ($p<0,05$).

Hasil *one-way* ANOVA menunjukkan adanya perbedaan yang signifikan antar semua kelompok. Hal ini menunjukkan bahwa perlakuan menyebabkan perbedaan motilitas bakteri. Hasil LSD *Post hoc* menunjukkan bahwa ekstrak kayu manis pada konsentrasi 3,13% dan 12,50% memiliki perbedaan yang bermakna dalam menghambat motilitas *swimming* dibanding kelompok kontrol negatif. Disimpulkan bahwa ekstrak kulit kayu manis 3,13% dan 12,50% efektif menghambat motilitas *swimming P. aeruginosa* ATCC 1014. Ekstrak kayu manis pada konsentrasi 12,50% mempunyai efek yang setara dengan siprofloksasin 1µg/mL dalam menghambat motilitas *swimming*.

Kata kunci: kayu manis, motilitas *swimming, Pseudomonas aeruginosa* ATCC 10145

UNIVERSITAS
GADJAH MADA
Efek Ekstrak Kayu Manis (Cinnamomum burmannii L.) terhadap Motilitas Swimming Bakteri Pseudomonas aeruginosa ATCC 10145
DILLA DARISTA PUTRI, drg. Heni Susilowati, M.Kes., Ph.D.; Dr. drg. Juni Handajani, M.Kes., Ph.D.
Universitas Gadjah Mada, 2020 | Diunduh dari http://etd.repository.ugm.ac.id/

ABSTRACT

Pseudomonas aeruginosa is a Gram-negative aerob rod-shaped bacteria that classified as opportunistic pathogen. Swimming motility using flagella helps bacterial motility in a fluid environment. Cinnamon bark extract (*Cinnamomum burmannii* L.) contains phytochemical substance such as cinnamaldehyde, eugenol, and flavonoid that has potential as an antibacterial. The aim of this study was to determine the effect of cinnamon bark extract in the swimming motility of *P. aeruginosa*.

The subject in this study was *P. aeruginosa* ATCC 10145. Swimming motility tests were carried out on negative control group, cinnamon bark extract concentrations of 0.78%; 3.13%; and 12.50%, and positive control group. The tests were done by mixing the bacterial suspension within each group and incubated at 37°C for 24 hours. In the following day, those bacterial were inoculated on 0.3% tryptone swim plate semi solid and then incubated at 37°C for 24 hours. Swimming motility zone was observed and calculated from the photographs of each group by using software ImageJ. The results were statistically analysed using one-way ANOVA and post hoc LSD test ($p<0.05$).

The results of one-way ANOVA showed there was a significant difference between groups towards the inhibition of swimming motility of *P. aeruginosa* ATCC 10145 bacteria. The results of post hoc LSD showed significant difference between cinnamon bark extract and negative control group for a respective 13.13% and 12.50% concentration in inhibiting swimming motility of the bacteria. It was concluded that 3.13% and 12.50% extract effectively inhibited *P. aeruginosa* swimming motility. Cinnamon bark extract concentration of 12.50% was considered equivalent to ciprofloxacin 1µg/mL in inhibiting bacterial swimming motility.

Keywords: cinnamon, swimming motility, *Pseudomonas aeruginosa* ATCC 10145