

ABSTRAK

Pseudomonas aeruginosa merupakan bakteri patogen oportunistik yang dapat menyebabkan infeksi pada pasien *immunocompromised*. Bakteri *P. aeruginosa* memiliki flagela dan pili tipe IV untuk motilitas *swarming*. Motilitas *swarming* merupakan salah satu faktor virulensi bakteri. Daun kelor (*Moringa oleifera* L.) mengandung flavonoid, *quercetin*, fenol, dan tanin yang diduga dapat menghambat motilitas *swarming* bakteri. Penelitian ini bertujuan untuk mengetahui pengaruh rebusan daun kelor terhadap motilitas *swarming* *P. aeruginosa* ATCC 10145.

Uji pendahuluan, yaitu uji sensitivitas (*Minimum Inhibitory Concentration*) pada bakteri *Pseudomonas aeruginosa* ATCC 10145 menunjukkan hasil pada rebusan daun kelor dengan konsentrasi 12,5%. Uji motilitas *swarming* dilakukan pada kelompok perlakuan rebusan daun kelor 12,5%, 6,25%, 3,125%, kelompok kontrol positif (klorheksidin glukonat 0,2%) dan kelompok kontrol negatif (akuades steril). Rebusan daun kelor dicampur dengan media Luria Bertani dan suspensi bakteri *P. aeruginosa* ATCC 10145 kemudian diinkubasi dalam *shaking waterbath* pada suhu 37°C selama 2 jam, selanjutnya dilakukan inokulasi pada media bakto agar 0,5% dan diinkubasi pada suhu 37°C selama 24 jam. Radian pergerakan bakteri diukur dari titik inokulasi dengan menggunakan *sliding caliper*. Data yang didapatkan kemudian dianalisis menggunakan uji *One Way ANOVA* dan LSD ($p < 0,05$).

Hasil analisis *One Way ANOVA* menunjukkan perbedaan signifikan pada semua kelompok. Uji *Post-Hoc* menunjukkan perbedaan motilitas *swarming* bakteri yang tidak signifikan antara konsentrasi 6,25% dengan 3,125%. Disimpulkan bahwa rebusan daun kelor 12,5%, 6,25%, dan 3,125% dapat menghambat motilitas *swarming* *P. aeruginosa* ATCC 10145. Rebusan daun kelor 12,5% memiliki daya hambat lebih besar dibandingkan konsentrasi 6,25% dan 3,125%.

Kata Kunci : Daun kelor, Motilitas *swarming*, *Pseudomonas aeruginosa*

ABSTRACT

Pseudomonas aeruginosa is an opportunistic pathogenic bacteria that can cause infection in immunocompromised patients. *Pseudomonas aeruginosa* have flagella and type IV pili for swarming motility. *Moringa oleifera* L. leaves contain flavonoids, quercetin, phenols, and tannins which are thought to inhibit bacterial swarming motility. This study aims to determine the effect of moringa leaves decoction on the swarming motility of *P. aeruginosa* ATCC 10145.

Preliminary study on bacterial sensitivity (*Minimum Inhibitory Concentration*) showed 12,5% moringa leaves concentration as the MIC value. Swarming motility was studied on 12,5%, 6,25%, and 3,125% moringa leaves concentration group. Aquadest was used as negative control and chlorhexidine gluconate 0,2% was used as positive control. Tested materials were mixed together with LB broth and suspension of *P. aeruginosa* ATCC 10145. Bacterial culture were incubated in shaking waterbath at 37°C for 2 hours and inoculated into 0,5% agar powder, then the culture was incubated at 37°C for 24 hours. The radiant of bacterial movement was measured from the point of inoculation by using sliding caliper. Data were analyzed by using One Way ANOVA and LSD test at the significance level of 0,05.

The result of One Way ANOVA analysis showed significant differences between groups. Post-Hoc test showed insignificant differences of bacteria motility between 6,25% and 3,125% moringa leaves-treated groups. It was concluded that 12,5%, 6,25%, and 3,125% moringa leaves decoction has the ability to inhibit swarming motility of *P. aeruginosa* ATCC 10145. Solution with a concentration of 12.5% had the greatest inhibitory effect compared to concentrations of 6.25% and 3.125%.

Keywords : Leaves of moringa, Swarming motility, *Pseudomonas aeruginosa*