

INTISARI

Pseudomonas aeruginosa merupakan salah satu jenis bakteri Gram negatif yang dapat ditemukan pada *Dental Unit Water Line* (DUWL). Bakteri ini berpotensi menyebabkan terjadinya infeksi nosokomial. Motilitas *swimming* yang dimiliki oleh *P. aeruginosa* berperan penting dalam proses adhesi awal bakteri pada pembentukan biofilm pada permukaan DUWL. Daun kemangi memiliki kandungan senyawa aktif, seperti eugenol dan kuersetin yang dapat menghambat proses motilitas *swimming*. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh ekstrak daun kemangi terhadap motilitas *swimming* bakteri *P. aeruginosa* ATCC 10145 secara *in vitro*.

Uji motilitas *swimming* dilakukan dengan mengkultur suspensi bakteri *P. aeruginosa* ATCC 10145 dalam media BHI-B bersama dengan ekstrak daun kemangi (24,5%, 12,25%, 6,13%), hidrogen peroksida 4% (kontrol positif), dan larutan PBS (kontrol negatif) kemudian diinkubasi selama 24 jam. Biakan bakteri diambil dengan ose jarum kemudian ditusukkan pada media *Tryptone swim agar* 0,3% lalu diinkubasi selama 48 jam pada suhu 37°C. Setiap subkelompok dan kelompok kontrol dilakukan triplikasi pengulangan. Pengamatan dilakukan dengan mengukur radian pergerakan bakteri dari titik inokulasi menggunakan jangka sorong. Analisis data dilakukan menggunakan uji *One-way ANOVA* dan *Post Hoc Tukey* ($p < 0,05$).

Hasil uji *One-way ANOVA* menunjukkan terdapat perbedaan yang signifikan antar kelompok. Hasil uji *Post Hoc Tukey* menunjukkan terdapat perbedaan yang signifikan antara kelompok ekstrak daun kemangi konsentrasi 12,25% dan 6,13% dengan kontrol negatif. Kesimpulan dari penelitian ini adalah ekstrak daun kemangi konsentrasi 12,25% dan 6,13% memiliki kemampuan dalam menghambat motilitas *swimming* bakteri *P. aeruginosa* ATCC 10145 dengan ektivitas yang setara, namun efektivitasnya masih di bawah hidrogen peroksida.

Kata kunci: ekstrak daun kemangi, motilitas *swimming*, *Pseudomonas aeruginosa*

ABSTRACT

Pseudomonas aeruginosa is one of Gram-negative bacteria that can be found in Dental Unit Water Lines (DUWL). This bacterium has the potential to cause nosocomial infections. The swimming motility of *P. aeruginosa* plays an important role in the initial adhesion process of the bacteria during biofilm formation on the surface of the DUWL. Basil leaves contain active compounds, such as eugenol and quercetin, which can inhibit the swimming motility process. The aim of this study is to determine the effect of basil leaf extract on the swimming motility of *P. aeruginosa* ATCC 10145 in vitro.

The swimming motility test was conducted by culturing *P. aeruginosa* ATCC 10145 bacterial suspension in BHI-B medium with basil leaf extract (24.5%, 12.25%, 6.13%), 4% hydrogen peroxide (positive control), and PBS solution (negative control), then incubating for 24 hours. The bacterial cultures were sampled with a needle loop and then inoculated onto 0.3% Tryptone swim agar medium, followed by incubation for 48 hours at 37°C. Each subgroup and control group were tested in triplicate. Observations were made by measuring the radial movement of the bacteria from the inoculation point using calipers. Data analysis was performed using One-way ANOVA and Post Hoc Tukey tests ($p < 0.05$).

The results of the One-way ANOVA test showed significant differences between the groups. The Post Hoc Tukey test results indicated significant differences between the basil leaf extract groups at concentrations of 12.25% and 6.13% compared to the negative control. The conclusion of this study is that basil leaf extract at concentrations of 12.25% and 6.13% has the ability to inhibit the swimming motility of *P. aeruginosa* ATCC 10145 with equivalent effectiveness, although its effectiveness is still lower than that of hydrogen peroxide.

Keyword: basil leaf extract, swimming motility, *Pseudomonas aeruginosa*