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Pengaruh Penambahan Resveratrol pada Ekstrak Biji Ketumbar (Coriandrum sativum) Fraksinasi Etil Asetat terhadap Pertumbuhan Pseudomonas aeruginosa ATCC 10145 (Kajian In Vitro)
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Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

INTISARI

Area bibir dan sekitarnya rentan mengalami masalah kesehatan seperti kekeringan dan luka ringan yang berpotensi menjadi jalan masuk bagi infeksi bakteri patogen, termasuk *Pseudomonas aeruginosa*. Ketumbar (*Coriandrum sativum*) merupakan salah satu tanaman obat tradisional Indonesia yang memiliki kandungan senyawa antibakteri. Baik ekstrak biji ketumbar maupun resveratrol telah terbukti memiliki kemampuan menghambat bakteri melalui jalur kerja yang berbeda. Penelitian ini bertujuan mengkaji pengaruh kombinasi resveratrol dengan ekstrak biji ketumbar fraksinasi etil asetat terhadap penghambatan pertumbuhan *P. aeruginosa* ATCC 10145.

Metode penelitian eksperimental kuasi secara *in vitro* menggunakan teknik difusi cakram dengan lima variasi perlakuan: ekstrak biji ketumbar fraksinasi etil asetat 0,5%, resveratrol 2,5%, kombinasi keduanya, klorheksidin 0,2% sebagai kontrol positif, dan *Tween* 20 1% sebagai kontrol negatif. Setiap kelompok perlakuan dilakukan lima kali pengulangan. Cakram diskus yang telah direndam dalam masing-masing larutan uji ditempatkan pada medium *Mueller Hinton Agar* yang sebelumnya telah diinokulasi dengan bakteri *P. aeruginosa*. Pengukuran diameter zona bening dilakukan dengan jangka sorong ketelitian 0,001 mm setelah masa inkubasi 24 jam pada temperatur 37°C. Analisis data menggunakan uji *One-way ANOVA* dilanjutkan dengan uji *Post Hoc Games-Howell*.

Hasil pengukuran menunjukkan rerata diameter zona bening pada kelompok kombinasi sebesar 0,45 ± 0,444 mm, kelompok resveratrol 0,28 ± 0,342 mm, dan kelompok ekstrak biji ketumbar 0,12 ± 0,164 mm. Kelompok kontrol positif memberikan zona hambat paling luas yaitu 11,84 ± 1,02 mm, sementara kontrol negatif tidak menghasilkan zona hambat. Hasil uji statistik memperlihatkan tidak ada perbedaan bermakna ($p>0,05$) di antara kelompok perlakuan bahan alami. Berdasarkan hasil tersebut, disimpulkan bahwa penambahan resveratrol pada ekstrak biji ketumbar fraksinasi etil asetat tidak berpengaruh terhadap pertumbuhan *P. aeruginosa* ATCC 10145.

Kata kunci: Ekstrak Biji Ketumbar, Resveratrol, *Pseudomonas aeruginosa*, Zona Hambat, Antibakteri

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ABSTRACT

The lip area is susceptible to health issues such as dryness and minor wounds that may serve as entry sites for pathogenic bacterial infections, particularly *Pseudomonas aeruginosa*. Coriander (*Coriandrum sativum*) is one of Indonesia's traditional medicinal plants that contains antibacterial compounds. Both coriander seed extract and resveratrol have been proven to possess bacterial inhibition capabilities through different mechanisms of action. The purpose of this study was to examine the effect of resveratrol addition to ethyl acetate-fractionated coriander seed extract on the inhibition of *P. aeruginosa* ATCC 10145 growth.

A quasi-experimental *in vitro* study was conducted using disc diffusion technique with five treatment variations: ethyl acetate-fractionated coriander seed extract 0.5%, resveratrol 2.5%, their combination, chlorhexidine 0.2% as positive control, and Tween 20 1% as negative control. Each treatment group was performed with five replications. Paper discs that had been soaked in each test solution were placed on Mueller Hinton Agar medium that had been previously inoculated with *P. aeruginosa* bacteria. Clear zone diameter was measured using a caliper with 0.001 mm precision after 24-hour incubation period at 37°C temperature. Data were analyzed using One-way ANOVA test followed by Post Hoc Games-Howell test.

The results showed mean clear zone diameters in the combination group of 0.45 ± 0.444 mm, resveratrol group 0.28 ± 0.342 mm, and coriander seed extract group 0.12 ± 0.164 mm. The widest inhibition zone was produced by the positive control group at 11.84 ± 1.02 mm, while no inhibition zone was formed by the negative control. Statistical analysis showed that no significant differences ($p>0.05$) were found among natural material treatment groups. Based on these results, it was concluded that resveratrol addition to ethyl acetate-fractionated coriander seed extract had no effect on the growth of *P. aeruginosa* ATCC 10145.

Keywords: Coriander Seed Extract, Resveratrol, *Pseudomonas aeruginosa*, Inhibition Zone, Antibacterial Activity