

**SKRIPSI SARJANA FARMASI**

**ISOLASI BAKTERI ENDOFIT DARI KULIT JERUK NIPIS  
(*Citrus aurantifolia* Swingle) DAN UJI AKTIVITAS ANTIBAKTERI  
DARI METABOLIT SEKUNDERNYA**



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## ABSTRAK

### ISOLASI BAKTERI ENDOFIT DARI KULIT NIPIS (*Citrus aurantifolia* Swingle) DAN UJI AKTIVITAS ANTIBAKTERI DARI METABOLIT SEKUNDERNYA

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Jeruk nipis (*Citrus aurantifolia* Swingle) merupakan tanaman obat yang mengandung metabolit sekunder yang memiliki aktivitas sebagai antibakteri. Penelitian ini bertujuan untuk mengisolasi bakteri endofit kulit jeruk nipis (*C. aurantifolia* Swingle) dan uji aktivitas antibakteri dari metabolit sekundernya terhadap *Staphylococcus aureus* ATCC 25923, *Escherichia coli* ATCC 8739 dan *Methicilin Resistant Staphylococcus aureus* (MRSA) ATCC 43300. Berdasarkan hasil isolasi diperoleh sebanyak enam isolat bakteri endofit. Masing-masing isolat difermentasi dalam media *Nutrient Broth* (NB) menggunakan alat *incubator shaker*. Hasil fermentasi disentrifus untuk memisahkan substrat dan sel bakteri endofit. Sebagian substrat disimpan untuk uji aktivitas sementara bagian lain diekstraksi menggunakan pelarut etil asetat. Substrat dan ekstrak etil asetat masing-masing isolat diujikan aktivitas antibakteri menggunakan metode difusi *Kirby-Bauer*. Berdasarkan hasil pengukuran zona hambat menunjukkan bahwa terdapat dua isolat bakteri endofit yang mempunyai potensi sebagai antibakteri dengan diameter hambat kuat >10 mm yaitu isolat 3 dan isolat 5. Pemeriksaan metabolit dilakukan terhadap dua isolat tersebut, isolat 3 mengandung senyawa alkaloid dan flavonoid sedangkan isolat 5 mengandung senyawa alkaloid, flavonoid dan polifenol. Isolat yang memiliki aktivitas diidentifikasi secara biokimia di Laboratorium Balai Veteriner Bukittinggi dengan hasil isolat 3 merupakan *Pseudomonas* sp. dan isolat 5 merupakan *Staphylococcus* sp.

**Kata Kunci** : Bakteri endofit, kulit jeruk nipis (*Citrus aurantifolia* Swingle), antibakteri.

## ABSTRACT

### ISOLATION OF ENDOPHYTIC BACTERIA FROM LIME PEEL (*Citrus aurantifolia* Swingle) AND ITS SECONDARY METABOLITE ANTIBACTERIAL ACTIVITY TEST

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Lime (*Citrus aurantifolia* Swingle) is a medicinal plant that contains secondary metabolites that have antibacterial activity. This study aimed to isolate endophytic bacteria on lime peel (*C. aurantifolia*) and test the antibacterial activity of its secondary metabolites against *Staphylococcus aureus* ATCC 25923, *Escherichia coli* ATCC 8739 and *Methicilin Resistant Staphylococcus aureus* (MRSA) ATCC 43300. Based on the isolation results, six isolates of endophytic bacteria were obtained. Each isolate was fermented in Nutrient Broth (NB) media using an incubator shaker. The results of the fermentation were centrifuged to separate the substrate and endophytic bacterial cells. Half of the substrate was stored for activity testing while another half was extracted using ethyl acetate solvent. The substrate and ethyl acetate extract of each isolate were tested for antibacterial activity using the Kirby-Bauer diffusion method. Based on the results of the measurement of the inhibition zone, it showed that there were two isolates of endophytic bacteria that had antibacterial potential with a strong inhibitory diameter of >10 mm, namely isolate 3 and isolate 5. Metabolite identification was carried out using those isolates, isolate 3 contained alkaloids and flavonoids while isolate 5 contained alkaloids, flavonoids and polyphenols. The isolates that had activity were identified biochemically at the Laboratory of Bukittinggi Veterinary Center with the result that isolate 3 was *Pseudomonas* sp. and isolate 5 was *Staphylococcus* sp.

**Keywords** : Endophytic bacteria, lime peel (*Citrus aurantifolia* Swingle), antibacterial