

**FAKULTAS KEDOKTERAN  
UNIVERSITAS PEMBANGUNAN NASIONAL “VETERAN” JAKARTA**

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**SYAFA INDESQIA PUTRI INDIAWAN, No. NRP 2210211093**

**ISOLASI DAN UJI AKTIVITAS ANTIBAKTERI ISOLAT BAKTERI  
ENDOFIT BATANG TANAMAN PATIKAN KEBO (*Euphorbia hirta* L.)  
TERHADAP PERTUMBUHAN *Staphylococcus aureus* DAN *Escherichia coli***

RINCIAN HALAMAN (xvii + 139 halaman, 24 tabel, 19 gambar, 6 lampiran)

**ABSTRAK**

**Latar Belakang**

Resistensi antimikroba menjadi ancaman kesehatan global dan mendorong pencarian sumber antibakteri baru, termasuk dari bakteri endofit tanaman. Patikan kebo (*Euphorbia hirta* L.) diketahui memiliki metabolit sekunder antimikroba, namun data mengenai kegiatan antibakteri isolat bakteri endofit dari batang tanaman ini masih terbatas. Riset bertujuan mengisolasi dan mengidentifikasi bakteri endofit batang patikan kebo serta mengevaluasi kegiatan antibakterinya terhadap *Staphylococcus aureus* dan *Escherichia coli*.

**Metode**

Riset eksperimental murni dijalankan melalui isolasi batang patikan kebo dengan metode *direct culture* pada media *Nutrient Agar*, dilanjutkan karakterisasi makroskopik, mikroskopik, uji biokimia, dan pewarnaan endospora. Selanjutnya, identifikasi genus bakteri endofit dilakukan dengan mengaplikasikan acuan *Bergey's Manual of Determinative Bacteriology*. Uji kegiatan antibakteri dilaksanakan mengaplikasikan metode difusi cakram guna menaksir area hambat dibandingkan kontrol positif (kloramfenikol 30 µg) dan kontrol negatif (akuades).

**Hasil**

Lima isolat bakteri endofit diperoleh (S1, S2, S3, S4, S5). Namun, S2 dan S3 memiliki kesamaan karakteristik dengan S4 sehingga hanya digunakan tiga isolat bakteri endofit (S1, S4, S5) dan keseluruhannya menunjukkan kesesuaian karakter dengan genus *Bacillus* sp. Terhadap *S. aureus*, zona hambat terbesar diperoleh pada isolat S1 (4,75 mm), diikuti S5 (3,25 mm) dan S4 (0,75 mm), seluruhnya termasuk kategori aktivitas antibakteri lemah. Terhadap *E. coli*, zona hambat tertinggi diperoleh pada isolat S4 (5,41 mm), diikuti S1 (5,19 mm) dan S5 (3,42 mm), dengan kategori aktivitas antibakteri sedang untuk S1–S4 dan lemah untuk S5.

**Kesimpulan**

Ketiga isolat bakteri endofit batang patikan kebo memiliki kemiripan genus *Bacillus* sp. dan aktivitas antibakteri terhadap *S. aureus* dan *E. coli*.

**Daftar Pustaka** : 65 (1994 – 2025)

**Kata Kunci** : antibakteri, bakteri endofit, *Euphorbia hirta*, *Escherichia coli*, *Staphylococcus aureus*

**FACULTY OF MEDICINE  
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**Undergraduate Thesis, November 2025**

**SYAFA INDESQIA PUTRI INDIAWAN, No. NRP 2210211093**

**ISOLATION AND ANTIBACTERIAL ACTIVITY EVALUATION OF  
ENDOPHYTIC BACTERIAL ISOLATES FROM THE STEM OF PATIKAN  
KEBO (*EUPHORBIA HIRTA* L.) AGAINST THE GROWTH OF  
*STAPHYLOCOCCUS AUREUS* AND *ESCHERICHIA COLI***

PAGE DETAIL (xvii + 139 pages, 24 tables, 19 figures, 6 appendices)

**ABSTRACT**

**Background**

Antimicrobial resistance has become a major global health threat, prompting the search for new antibacterial sources, including plant-derived endophytic bacteria. *Euphorbia hirta* L. is known to contain antimicrobial secondary metabolites; however, data on the antibacterial activity of endophytic bacteria isolated from its stem remain limited. This study aimed to isolate and identify endophytic bacteria from the stem of *E. hirta* and to evaluate their antibacterial activity against *Staphylococcus aureus* and *Escherichia coli*.

**Method**

A true experimental study was conducted by isolating endophytic bacteria from *E. hirta* stems using the direct culture method on Nutrient Agar, followed by macroscopic and microscopic characterization, biochemical tests, and endospore staining. Identification of bacterial genera was performed using Bergey’s Manual of Determinative Bacteriology. Antibacterial activity was assessed using the disc diffusion method to measure inhibition zones in comparison with positive control (chloramphenicol 30 µg) and negative control (distilled water).

**Result**

Five endophytic bacterial isolates were obtained (S1, S2, S3, S4, S5). However, S2 and S3 exhibited characteristics similar to S4, resulting in the selection of three isolates (S1, S4, S5) for further analysis. All three isolates showed characteristics consistent with the genus *Bacillus* sp. Against *S. aureus*, the largest inhibition zone was produced by isolate S1 (4.75 mm), followed by S5 (3.25 mm) and S4 (0.75 mm), all categorized as having weak antibacterial activity. Against *E. coli*, the largest inhibition zone was produced by S4 (5.41 mm), followed by S1 (5.19 mm) and S5 (3.42 mm), categorized as moderate activity for S1–S4 and weak activity for S5.

**Conclusion**

The three endophytic bacterial isolates from the stem of *Euphorbia hirta* showed similarity to the genus *Bacillus* sp. and demonstrated antibacterial activity against *S. aureus* and *E. coli*.

**Reference** : 65 (1994 – 2025)

**Keywords** : antibacterial activity, endophytic bacteria, *Euphorbia hirta* L., *Escherichia coli*, *Staphylococcus aureus*