

## ABSTRAK

### UJI AKTIVITAS SENYAWA ANTIBAKTERI *Bacillus* sp. DARI TANAH KEBUN RAYA LIWA LAMPUNG BARAT TERHADAP *Dickeya* sp.

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Kelompok *Bacillus* tanah banyak dilaporkan menghasilkan senyawa antibakteri terhadap bakteri patogen tanaman. Salah satu bakteri patogen tanaman yaitu *Dickeya* sp. yang menyebabkan penyakit busuk lunak pada organ daun, batang, dan akar tanaman. Kebun Raya Liwa (KRL) Lampung Barat memiliki kondisi tanah dan lingkungan yang memungkinkan ditemukannya keberadaan genus *Bacillus*. Telah berhasil ditemukan isolat *Bacillus* sp. TSR 6 asal tanah KRL. Isolat *Bacillus* sp. kode TSR 6 merupakan hasil skrining terbaik pada uji antagonis terhadap *Dickeya* sp. Penelitian ini bertujuan mengetahui aktivitas senyawa antibakteri *Bacillus* sp. asal tanah KRL terhadap *Dickeya* sp. Isolat *Bacillus* sp. TSR 6 dikulturkan pada medium produksi antibakteri cair dan dilakukan ekstraksi menghasilkan ekstrak kasar etil asetat (222 mg) dan menunjukkan aktivitas antibakteri terhadap *Dickeya* sp. Pemisahan senyawa ekstrak kasar dengan kromatografi kolom terbuka menghasilkan 8 fraksi dan terdapat 3 fraksi aktif yang menunjukkan hambatan terhadap *Dickeya* sp. pada uji aktivitas antibakteri melalui difusi agar cakram. Fraksi 54 memperlihatkan daya hambat terbesar dan tergolong kuat dengan zona hambat 13,5 mm pada konsentrasi stok 5000 µg/ml. Fraksi tersebut memiliki Kadar Hambat Minimum (KHM) pada konsentrasi 500 µg/ml berdasarkan nilai turbiditas dan pewarnaan resazurin melalui mikrodilusi cair. Hasil identifikasi Kromatografi Lapis Tipis (KLT) pada fraksi aktif dengan eluen n-heksana:etil asetat (7:3) menunjukkan senyawa polar yang positif membentuk noda keunguan terhadap ninhidrin. Hal tersebut mengindikasikan bahwa senyawa pada fraksi aktif mengandung senyawa peptida.

Kata kunci: antibakteri, *Bacillus* sp., Kadar Hambat Minimum, Kromatografi Lapis Tipis.

## ABSTRACT

### ANTIBACTERIAL ACTIVITY OF *Bacillus* sp. FROM SOIL IN LIWA BOTANICAL GARDENS WEST LAMPUNG AGAINST *Dickeya* sp.

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Soil *Bacillus* groups have been reported to produce antibacterial compounds against plant pathogenic bacteria. One of the plant pathogenic bacteria is *Dickeya* sp. which causes soft rot disease in leaf, stems, and roots of plants organ. Liwa Botanical Garden (KRL) West Lampung has soil and environmental conditions that allow existence of the genus *Bacillus*. It has been successfully found isolates of *Bacillus* sp. TSR 6 from the soil of the KRL. The isolate with code TSR 6 of *Bacillus* sp. showed the best antagonistic activity against *Dickeya* sp. This study aims to determine antibacterial compound activity of the *Bacillus* sp. from soil in KRL against *Dickeya* sp. *Bacillus* sp. TSR 6 was cultured on liquid antibacterial production medium and extracted to produce crude ethyl acetate extract (222 mg) and showed antibacterial activity against *Dickeya* sp. Fractionation of compounds in crude extract by open column chromatography resulted in 8 fractions and there were 3 active fractions which showed inhibition against *Dickeya* sp. on the antibacterial activity test via agar disc diffusion. Fraction 54 showed the strongest inhibition with an inhibition zone 13.5 mm at a stock concentration 5000 ug/ml. This fraction has a Minimum Inhibitory Concentration (MIC) at concentration 500 g/ml based on turbidity value and resazurin assay via broth microdilution. The identification of compounds in active fractions by Thin Layer Chromatography (TLC) with eluent n-Hexane:IPA (7:3) showed polar compounds and positive results in ninhydrin by purplish stain. This indicated the compounds in active fractions have peptide compounds.

Keywords: Antibacterial, *Bacillus* sp., Minimum Inhibitory Concentration, Thin Layer Chromatography.