

ABSTRAK

EKSPLORASI BAKTERI ENDOFIT CABAI DAN *FREE CELL SUPERNATANT* SEBAGAI PEMACU PERTUMBUHAN DAN MENEKAN PERKEMBANGAN PENYAKIT KUNING CABAI

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Penelitian ini bertujuan untuk mengeksplorasi bakteri endofit tanaman cabai dan *free cell supernatant* (FCS) yang berpotensi sebagai pemacu pertumbuhan tanaman dan menekan perkembangan penyakit kuning. Penelitian ini dilakukan pada April 2025 – Maret 2026 di Laboratorium Bioteknologi Pertanian, Fakultas Pertanian, Universitas Lampung dan di lahan percobaan, Kecamatan Rajabasa, Lampung Selatan. Sebanyak 67 isolat bakteri berhasil diisolasi dari daun, batang, dan akar tanaman cabai sehat. Tiga isolat terpilih, yaitu B2P1.3, B2P1.4, dan B2P1.5, dipilih berdasarkan kemampuan melarutkan fosfat tinggi dan memproduksi siderofor, kemudian diuji lebih lanjut sebagai *plant growth promoting bacteria* (PGPB) serta kemampuannya sebagai agen biokontrol penyakit kuning cabai di lapangan. Pengujian lapangan dilakukan menggunakan sel hidup bakteri dan FCS. Hasil uji di lapangan menunjukkan bahwa ketiga isolat bakteri endofit tersebut menunjukkan kecenderungan positif dalam memacu pertumbuhan tanaman serta berpotensi menekan perkembangan penyakit kuning tanaman lainnya, seperti bercak daun dan antraknosa. Hasil identifikasi menggunakan gen pengkode 16S rDNA menunjukkan bahwa dua diantara tiga isoat tersebut (isolat B2P1.3 dan B2P1.5) termasuk ke dalam spesies *Pseudomonas oryzyhabitans*.

Kata kunci: Bakteri endofit, biokontrol, cabai, *free cell supernatant*, penyakit kuning.

ABSTRACT

EXPLORATION OF CHILI ENDOPHYTIC BACTERIA AND THEIR FREE CELL SUPERNATANT AS PLANT GROWTH PROMOTERS AND SUPPRESSORS OF CHILI YELLOW DISEASE DEVELOPMENT

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This study aimed to explore endophytic bacteria isolated from chili plants and their free cell supernatant (FCS) for their potential to promote plant growth and suppress the development of chili yellow disease. The study was conducted from April 2025 to March 2026 at the Agricultural Biotechnology Laboratory, Faculty of Agriculture, Universitas Lampung, and at an experimental field in Rajabasa District, South Lampung. A total of 67 bacterial isolates were successfully obtained from the leaves, stems, and roots of healthy chili plants. Three selected isolates, namely B2P1.3, B2P1.4, and B2P1.5, were chosen based on their high phosphate-solubilizing ability and siderophore production. These isolates were further evaluated for their potential as plant growth-promoting bacteria (PGPB) and as biological control agents against chili yellow disease under field conditions. Field experiments were conducted using both viable bacterial cells and their FCS. The results demonstrated that all three endophytic bacterial isolates showed positive potential to enhance plant growth and suppress the development of chili yellow disease, as well as other plant diseases, including leaf spot and anthracnose. Molecular identification based on the 16S rDNA gene revealed that two of the three selected isolates (B2P1.3 and B2P1.5) belonged to the species *Pseudomonas oryzihabitans*.

Keywords: biological control, chili, endophytic bacteria, free cell supernatant, plant growth-promoting bacteria, yellow disease.