

INTISARI

Salah satu penanganan cemaran logam berat, termasuk Pb, di tanah adalah fitoremediasi yang dioptimasi dengan mikrobial menguntungkan. Aplikasi bakteri penghasil ACC-deaminase dapat menghambat sintesis ACC (*Aminocyclopropane-1-carboxylate*) menjadi etilen pada tanaman yang tercekam Pb, sehingga pertumbuhan dan serapan Pb tanaman meningkat. Penelitian ini bertujuan untuk mengetahui peran bakteri ACC-deaminase terhadap pertumbuhan dan serapan Pb tanaman rami (*Boehmeria nivea*) yang tercekam Pb. Strain bakteri penghasil ACC-deaminase yang digunakan adalah *Roultella terrigena* PCM8, *Pantoea dispersa* CK4, *Pseudomonas monteilii* KS12, dan *Pseudomonas putida* UW4. Larutan $\text{Pb}(\text{NO}_3)_2$ ditambahkan pada media tanam dengan konsentrasi 600-1800 mg.kg⁻¹ Pb. Tinggi tanaman, berat kering tajuk, dan berat kering akar tanaman diamati pada umur 54 hari setelah tanam (HST). Kandungan Pb tanaman dianalisis menggunakan AAS (*Atomic Absorption Spectroscopy*). Hasil penelitian menunjukkan bahwa inokulasi bakteri penghasil ACC-deaminase secara signifikan mampu meningkatkan pertumbuhan tanaman rami sebesar 39,65 - 40,86%, serta mampu meningkatkan serapan Pb tanaman rami sebesar 14,85 - 187,34%.

Kata kunci: bakteri, ACC-deaminase, fitoremediasi, serapan Pb, *Boehmeria nivea*.

ABSTRACT

One way to deal with Pb metal contamination in the soil is phytoremediation which is optimized with beneficial microbes. Application of ACC-deaminase producing bacteria can inhibit plants from synthesizing ACC (Aminocyclopropane-1-carboxylate) into ethylene due to Pb stress, thereby enhancing the growth and Pb uptake of the plants. This study aimed to determine the role of ACC-deaminase-producing bacteria on the growth and Pb uptake of Ramie (*Boehmeria nivea*) plants under Pb stress. The bacterial strains used were *Roultella terrigena* PCM8, *Pantoea dispersa* CK4, *Pseudomonas monteilii* KS12, and *Pseudomonas putida* UW4. Pb(NO₃)₂ solution is added to the planting medium with a concentration of 600-1800 mg.kg⁻¹ Pb. Plant height, dry weight of plant shoots and roots were observed at 54 days after planting (DAP). The Pb content of plant was analyzed using AAS (Atomic Absorption Spectroscopy). The results showed that inoculation of ACC-deaminase producing bacteria was able to significantly increase the growth of Ramie plants by 39,65 - 40.86%, and enhance the Pb uptake of Ramie plants by 14.85 - 187.34%.

Keywords: bacteria, ACC-deaminase, phytoremediation, Pb uptake, *Boehmeria nivea*