Intisari

Teh merupakan komoditas perkebunan penting di Indosesia. Habitat rhizosfer banyak dihuni oleh bakteri yang menguntungkan bagi tanaman. Penelitian ini bertujuan untuk mendapatkan isolat bakteri rhizosfer (rhizobakteri) yang mempunyai kemampuan menambat nitrogen. Isolasi bakteri penambat nitrogen dilakukan dengan metode sebar pada medium Ashby agar. Seleksi kualitatif dilakukan berdasarkan pertumbuhan dan morfologi koloni. Seleksi kuantitatif dilakukan berdasarkan kemampuan menambat nitrogen melalui pengukuran amonium yang disekresikan ke dalam medium. Isolat yang mampu menambat nitrogen selanjutnya diuji ketahanannya terhadap 3 jenis antibiotik. Hasil penelitian menunjukan bahwa sebanyak 82 isolat diperoleh dari sampel rhizosfer tanaman teh klon GMB 7, PGL 10 dan TRI 2024 di 3 ketinggian tempat. Dua puluh tujuh diantaranya memiliki morfologi koloni yang berbeda dan 18 isolat dipilih berdasarkan laju pertumbuhan yang lebih tinggi. Delapan belas isolat terpilih menambat nitrogen dengan laju antara 1,25 hingga 43,916 µM NH_4/jam. Isolat yang mempunyai kemampuan tertinggi dalam menambat nitrogen adalah GM4 sebesar 43,916 µM NH_4/jam. Isolat terpilih memiliki resistensi yang berbeda terhadap antibiotik, *ampicilin*, *kanamycin*, dan *chloramphenicol*.

Kata kunci: teh, rhizobakteri, fiksasi nitrogen, dan antibiotik

Abstract

Tea is an important plantation commodity in Indonesia. Rhizosphere is colonized by many beneficial bacteria. The aim of this research was to isolate nitrogen fixing bacteria from a rhizosphere of tea plantation. Rhizosphere bacteria (Rhizobacteria) were isolated by surface plating method on Ashby agar. Qualitative selection was done by determination of growth rate and morphology. Quantitative selection was done by measuring ammonium production rate. The isolates that have the ability to fix nitrogen were evaluated based upon resistance to three antibiotics. A total of 82 bacteria were isolated from the rhizosphere of 3 tea clones (GMB 7, PGL 10, and TRI 2024) cultivated at different altitudes. Among them, 27 isolates have different morphology and 18 isolates have higher growth rate. The selected isolates demonstrated the ability to fix nitrogen based upon NH_4 secretion from 1,25 up to 43,916 µM NH_4/hour. GM4 isolate demonstrated the highest ability in nitrogen fixing activity. It was also observed that the selected isolates demonstrated different resistance to ampicillin, chloramphenicol, and kanamycin.

Keyword: tea, rhizobacteria, nitrogen fixing, and antibiotic.