Research Journal of Pharmaceutical, Biological and Chemical Sciences, 2016, vol.7, N5, pages 1538-1542

Characterization of growth-promoting activity of Pseudomonas Putida Strain MG-2.

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Abstract

The present study was conducted to isolate and characterize the native plant growth-promoting bacterium from potato rhizosphere in the Republic of Tatarstan, Russia. Based on the gyrB (DNA gyrase subunit B) gene sequence analysis, bacterial isolate was identified as Pseudomonas putida MG-2. Production of indole-3-acetic acid (IAA) was dependent on tryptophan: maximum of IAA accumulation was 11.5 µg/ml on 72nd hour of growth. Furthermore, the ability to synthesize the catechol siderophores, phytate-mobilizing activity and halotolerance were revealed. The treatment of pea and rye seeds by P. putida MG-2 suspension stimulate the seedlings growth and roots biomass by up to 24-28% and 5-14%, respectively. Therefore, this bacterial isolate may be potentially beneficial as growth-promoting factor.

Keywords

Growth-promoting factor, Indole-3-acetic acid, Potatoes, Pseudomonas putida, Rhizosphere, Siderophores