An Assessment on Plant Growth Promoting Activities of Phosphorus Solubilizing Bacteria

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ABSTRACT

Plant growth promoting traits like production of indoleacetic acid (IAA), ammonia, hydrogen cyani (HCN), siderophore, and like the enzyme activities of catalase, ACC deaminase, cellulase, chitinase protease were assayed *in vitro* for twenty one phosphorus solubilizing bacteria isolated from soil isolat Except SPP-5 and SPP-15 strains, all the other isolated strains produced IAA in various amounts of 10 t μg ml^{-1}. All strains showed positive response for ammonia production and ACC deaminase activity impl that they are capable of growing in a N-free basal medium. Catalase activity was found to be superior SPP-2, SPP-7, SPP-12 and SPP-17 compared to the other strains tested. HCN production was detected b strains and among them SPP-9, SPP-15, SAph-11, and SAph-24 were found to be strong HCN produce Except the isolates SPP-10, SPP-12, SPP-13 and SPP-14, all the other isolates produced more than siderophore units. None of the strains showed cellulose and chitinase activity. SAph-8, SAPh-11, SAP and SPP-15 strains showed 35.84, 50.33, 56.64 and 34.78 U/ml protease activities, respectively. SPP- SPP-2, SPP-3, SPP-11, SPP-17, SPP-18, SAph-11 and SAph-24 strains showed positive response for al tested plant growth promotion traits except cell wall degrading enzyme activities. According to the resu all the tested phosphorus solubilizing isolates could exhibit more than three or four plant growth promoti traits, which may promote plant growth directly or indirectly or synergistically. Therefore, these phosph solubilizing strains could be employed as bio-inoculants for agriculture soils.

Keywords: Phosphorus solubilization, plant growth promoting activities, bio-inoculants

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