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PHOSPHATE SOLUBILIZING ENDOPHYTIC BACTERIA AND THEIR ROLE IN MAIZE PLANT GROWTH PROMOTION

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ABSTRACT: *Phosphate solubilizing bacteria were isolated from maize roots and their beneficial effects on plant growth were studied. Among 9 isolates, 6 showed high phosphate solubilization efficiency. These isolates were investigated for maximum phosphate solubilization in regard to different pH and incubation periods. Results showed high solubilization efficiency at pH 7 and incubation periods between 6- 12 days. Based on solubilization levels, three isolates 4PC, 5PC and 6PC were selected and studied for their possible growth promoting potential for maize (Zea mays L.) in pot experiment. Plants sown in soil containing rock phosphate and inoculated with phosphate solubilizing isolates, recorded a significant increase in root length and plant height, fresh and dry weight of root and shoot as well as number of leaves / plant, photosynthetic pigments and N, P and K concentrations as compared to uninoculated plants. The isolate 6PC and 4PC exhibited better performance and therefore they identified based on 16S rDNA as Planococcus sp. and Bacillus cereus, respectively. This study showed that these isolates can be applied as phosphate solubilizers in the soil containing insoluble form of phosphate.*

Key words: *Phosphate solubilization, endophytes, maize, biofertilizer, Plant growth promoting bacteria.*