

Isolation and Identification of Potential Phosphate Solubilizing Bacteria from the Rhizoplane of *Oryza sativa* L. cv. BR29 of Bangladesh

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A total of 30 bacteria were isolated from the rhizoplane of rice cv. BR29 cultivated in Mymensingh, Bangladesh and from the seedlings obtained from surface-sterilized seeds of BR29. Upon screening, 6 isolates showed varying levels of phosphate solubilizing activity in both agar plate and broth assays using National Botanical Research Institute's phosphate medium. The bacterial isolates were identified based on their phenotypic and 16S rRNA genes sequencing data as *Acinetobacter* sp. BR-12, *Klebsiella* sp. BR-15, *Acinetobacter* sp. BR-25, *Enterobacter* sp. BR-26, *Microbacterium* sp. BRS-1 and *Pseudomonas* sp. BRS-2. The BR-25 exhibited highest phosphate solubilizing activity followed by BR-15. They grew rapidly in the liquid medium at pH 5 and 7 but almost no growth occurred at pH 3. The pH value of the culture medium was decreased with bacterial growth suggesting that they might secrete organic acids to solubilize insoluble phosphorus. Scanning electron microscope analysis of two-week-old rice seedlings germinated from seeds previously inoculated with BR-25 and BR-15 revealed dense colonization at the root surfaces presumably using fimbriae on the bacterial cells.

Key words: Phosphate Solubilizing Bacteria, *Oryza sativa* L., Root Colonization