

Novel Plant Growth Promoting Rhizobacteria (PGPR) Enhance the Growth and Yield of Chickpea (*Cicer arietinum*) Under Salt Stress

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ABSTRACT

Soil under salt stress has been reported to bring down the crop productivity. Microbial application seems an effective solution as rhizospheric bacteria are not only known for plant growth promotion but also for their ability to improve the plant responses under stress conditions. Based on this information, isolation of microorganisms from rhizosphere of Chickpea growing under salt conditions was done. Screening was carried out on the basis of phosphate solubilization and plant growth promoting attributes e.g. siderophore production and Indole Acetic acid (IAA) production. Three isolates positive for these three attributes were selected and identified (using 16S rRNA gene sequencing) as *Klebsiella pneumoniae* subsp. *ozaenae* (I), *Klebsiella pneumoniae* subsp. *pneumonia* (II) and *Pantoea dispersa* (III), were used to study their effects with individual (I,II,III) as well consortium treatments (I+II), (II+III), (III+I), (I+II+III) on Chickpea (GPF2 cultivar) grown at 40mM and 60mM salt concentrations. The phosphate solubilization and IAA production by these three isolates ranged from 3.3 to 4.4µg/ml and 188 to 580µg/ml respectively. A significant increase in growth and yield was observed in case of microbial treatments with respect to negative control (plants in salt stress). Results indicated that PGPR can be contemplated as an effective strategy for plant stress tolerance.