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Screening of Wheat Endophytes with PGPR Traits

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Abstract—*Wheat (Triticum spp.) is considered one of the most important crops in the world and it is a staple food for over 35% of the world's population.but due to use of Chemical fertilizer soil fertility and crop yield affected gradually worldwide. Endophytes are well known for their potential to improve plant growth by direct and indirect mechanisms.*

Direct mechanisms involve the microbial synthesis of phytohormones like Indole-3-acetic acid (IAA), ethylene, cytokinins and gibberellins. In addition, these endophytic bacteria also have the ability of nitrogen fixation. The other indirect mechanisms include assisting plants in acquiring nutrients via phosphate solubilisation, nitrogen fixation and siderophores production.

The aim of the present study was to isolate, characterize and Screened plant growth promoting (PGP) potential of endophytic bacteria from Wheat Triticum aestivum

In the present study eight bacterial endophytes were isolated from wheat exudates and from different parts of developing wheat embryo.Identification of isolated bacteria was done by morphological and various biochemical tests followed by ABIS bacterial identification software. These strain were identified as Strain 1 (Bacillus circulans), Strain 2 (Paenibacillus montaniterrae) Strain 3 (Paenibacillus lautus), Strain 4 (Bacillus subtilis), Strain 5 (Bacillus niacini) Strain 6 (Bacillus licheniformis), Strain 7 (Paenibacillus glucanolyticus) Strain 8 (Paenibacillus cellulositrophicus) Endophytes were also checked for extracellular enzymes production. Strain no 3, 5, 7 were protease producers.. Strain 6 produces amylase where as strain 2, 4 ,8 produce amylase as well as protease extracellularly . Further, all the endophytic bacterial isolates were tested for quantitative IAA production and Strain 2,4,5 & 8 gave positive result. While most of the strains produce Gibbrellic acid, Ammonia production, Phosphate solulization ,HCN Production

Thus, it is obvious from this investigation that the isolated endophytes offer potential in field applications as PGP agents in wheat. Further studies would be focused on the detailed molecular and functional characterization of these PGPR for practical applications in the field.

Keywords: *Triticum aestivum IAA, Endophytes , Extracellular enzymes.*

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