

***Pseudomonas aurantiaca* – a bacterium 'extraordinaire'**

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Pseudomonas aurantiaca- A rare species of *Pseudomonas*, till now few strains have been reported from Belarus, Canada, Switzerland, Korea, Argentina, Japan, and Pakistan. Most of these have their genome sequenced due to their significant importance in agriculture. It is a gram-negative rod shape bacterium, well known for its ability to promote plant growth and kill plant pathogens, mainly due to the production of a large number of primary and secondary metabolites. In addition, it has the ability to produce extracellular enzymes such as pectinase, protease and cellulase; and solubilizes potassium and zinc in soil to make it available to the plants. Our group has isolated large number of plant growth promoting bacteria including *P. aurantiaca*. Nine strains of this species have been isolated from sugarcane, cotton, and cactus. These strains have been used as biofertilizer and promoted the growth of wheat, corn and tomato under controlled environment and field conditions. These strains inhibited the growth of fungal pathogens including *Fusarium* spp. and *Colletotricum falcatum*, of economically important plants, rice, wheat, sugarcane, corn, etc. Several metabolites have been extracted and reported from these strains. Among these are phenazine derivatives, bacteriocins (antibacterial peptides), Cyclic lipopeptides, Quorum sensing signals (Acyl homoserine lactones), Pyoverdine, Pyocin, rhizoxin analogue, auxins, HCN, and pyrrolnitrin. A new compound "**Lahorenoic Acid**" (alkyl-substituted aromatic acid) has been reported by our group. Production of these metabolites vary depending on strain and growth media. Genomes of two strains PBSt2 and ARS38 are published. Bacterial cultures and their metabolites have shown positive results for antimicrobial activity against human bacterial pathogens. Phenazine-1-Carboxylic acid has shown activity against *Mycobacterium tuberculosis*. Some metabolites were screened against cancer cell lines and 2,8-dihydroxy Phenazine showed anticancer potential. These bacteria have great potential to be used as biofertilizer, biopesticide and play role in cure of human diseases.