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Comparative Analysis of Secondary Metabolites of *Pseudomonas aurantiaca* Isolates from Different Sources

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Extended Abstract

The scope of developing microbial metabolites for commercial pesticides as an alternative to chemical fungicides is gaining importance due to increased concerns on environmental pollution, pathogen resistance and high plant protection costs (Web-1). *Pseudomonas* species are well known for the production of biologically active metabolites that widely function in microbial competitiveness and the suppression of soil-borne plant pathogens (Coleman et al., 2011). Present study aims to identify, characterize and comparatively analyze the secondary metabolites produced by different strains of *Pseudomonas aurantiaca*. Among these, six bacterial isolates (FSL-2, GSL-1, GSL-3, GSL-4, GSL-6 and GSL-7) were from cactus *(Opuntia humifusa).* One strain ARS-38 was isolated from cotton rhizosphere and another RP-4 (*Pseudomonas chlororaphis)* was isolated from paragrass rhizoplane. These isolates were earlier characterized morphologically and biochemically following their 16S rRNA molecular characterization. Next, these strains were grown for secondary metabolites production along with type strain of *Pseudomonas aurantiaca* and extracted with ethyl acetate (Niyaz Ahamed., 2012). TLC was carried out with the crude extract on silica gel and certain crucial metabolites were detected through LC-MS. Comparison of secondary metabolites production of these strains with previously reported secondary metabolites of *P.aurantica* PB-St2 (Mehnaz et al., 2009) indicated the presence of commercially important antimicrobial compounds such as 2-hydroxy phenazine, Phenazine-1-carboxylic acid, WLIP, Acyl homoserine lactones, pyrrolnitrin and bactericidal peptides. These strains were screened for the presence of phenazine O (*phzO*) and pyrrolnitrin A (*prnA*) genes. All ten strains were positive for *pyrrolnitrin A* antibiotic and nine for *Phenazine O* gene. Phenazines and pyrrolnitrin are anti-fungal metabolites of considerable interest as they are good replacement of environmentally toxic antimicrobial chemicals. Antifungal potential of these strains was tested on familiar *Colletotrichum falcatum* causing red-rot disease in sugarcane. These isolates exhibited certain plant growth promoting abilities through HCN production, extracellular enzymes like lipase, protease and cellulase production and zinc solubilization. These beneficial properties make these *Pseudomonas aurantiaca* isolates the suitable candidates for being used as biocontrol agents (Web-2).

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Web sites:
Web-1: http://link.springer.com/chapter/10.1007%2F978-1-4020-5799-1_2
Web-2: https://microbewiki.kenyon.edu/index.php/Biocontrol