

### البحث الثالث

Sayed Abdelaziz, <b>Nada F. Hemeda</b> , Eman E Belal and Rabee Elshahawy (2018). Efficacy of Facultative Oligotrophic Bacterial Strains as Plant Growth-Promoting Rhizobacteria (PGPR) and their Potency against Two Pathogenic Fungi Causing Damping-off Disease. Appli Microbiol Open Access 4 (3): 153. doi: 10.4172/2471-9315.1000153	البحث الثالث
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<b>Title</b>	<b>Efficacy of Facultative Oligotrophic Bacterial Strains as Plant Growth-Promoting Rhizobacteria (PGPR) and their Potency against Two Pathogenic Fungi Causing Damping-off Disease.</b>
<b>Date</b>	<b>2018</b>

### ABSTRACT

Plant growth promoting is a multitask phenomenon. The bacteria achieve this by suppressing plant pathogens, production of plant-growth regulators, fixing atmospheric nitrogen, and solubilizing phosphate and micronutrients. Therefore, the present study aimed to examine the facultative oligotrophic bacteria isolates as biocontrol and plant growth promoting agents. The test isolates (FNS1 and FNS2) possessed Plant Growth Promoting Rhizobacteria (PGPR) (abilities including Indole Acetic Acid (IAA) production, Salicylic acid (SA) production, zinc and phosphate solubilization, N<sub>2</sub>-fixation, cellulase and chitinase production) and potency against pathogenic fungi causing damping off disease (*Pythium ultimum* and *Rhizoctonia solani*). Isolates were tested against high temperature, pH and salt tolerant characters which prevail in this region. Molecular identification by 16s rDNA and nucleotide sequencing was made for the test isolates. Snap bean (*Phaseolus vulgaris* L. cv, Xera) plants were inoculated with bacterial isolates (FNS1 and FNS2) in presence of 1/3 Nitrogen (N)-recommended dose. Inoculated plants increased significantly in N-content and plants dry weight. The antagonist strains together enhanced the level of defense principles like Peroxidase (PO), Polyphenol Oxidase (PPO) and Total phenol content of plants. Damping-off disease suppression was expressed as there was increase in the percentage of survived plants which were inoculated when compared with uninoculated plants. These results indicate that *Bacillus thio-parans* and *Stenotrophomonas maltophilia* have growth promoting potential and can be tested at field level for investment as bioinoculant.

