

**Halotolerant Rhizobacteria *Pseudomonas pseudoalcaligenes* and *Bacillus subtilis* Mediate Systemic Tolerance in Hydroponically Grown Soybean (*Glycine max* L.) Against Salinity Stress .**

Humaira Yasmin

Department of Biosciences, COMSATS University Islamabad (CUI), Islamabad Campus

**Abstract :** Salt stress is one of the devastating factors that hampers growth and productivity of soybean. Use of *Pseudomonas pseudoalcaligenes* to improve salt tolerance in soybean has not been thoroughly explored yet. Therefore, we observed the response of hydroponically grown soybean plants, inoculated with halotolerant *P. pseudoalcaligenes* (SRM-16) and *Bacillus subtilis* (SRM-3) under salt stress. *In vitro* testing of 44 bacterial isolates revealed that four isolates showed high salt tolerance. Among them, *B. subtilis* and *P. pseudoalcaligenes* showed ACC deaminase activity, siderophore and indole acetic acid (IAA) production and were selected for the current study. We determined that  $10^6$  cells/mL of *B. subtilis* and *P. pseudoalcaligenes* was sufficient to induce tolerance in soybean against salinity stress (100 mM NaCl) in hydroponics by enhancing plant biomass, relative water content and osmolytes. Upon exposure of salinity stress, *P. pseudoalcaligenes* inoculated soybean plants showed tolerance by the increased activities of defense related system such as ion transport, antioxidant enzymes, proline and MDA content in shoots and roots. The  $\text{Na}^+$  concentration in the soybean plants was increased in the salt stress; while, bacterial priming significantly reduced the  $\text{Na}^+$  concentration in the salt stressed soybean plants. However, the antagonistic results were observed for  $\text{K}^+$  concentration.



**Biography :** Dr. Humaira Yasmin is an Assistant Professor of Applied microbiology and Plant physiology at the department of biosciences, COMSATS University, Islamabad. Her research interest includes searching for economic, ecofriendly and sustainable strategies (PGPR, Nano particles, growth regulators etc.) for crop improvement under biotic and abiotic stresses. She has published significant number of articles in national and international journals in the field of plant physiology and plant microbe interaction. She has numerous national and international collaborations. She is active member of governing body of Pak PGPR society.

**Publications :**  $\alpha$ -Alkoxyalkyl Triphenylphosphonium Salts: Synthesis and Reactions  
Facile synthesis of  $\alpha$ -alkoxymethyltriphenylphosphonium iodides: new application of PPh<sub>3</sub>/I<sub>2</sub>  
Facile Efficient Synthesis of New Alkoxyethylphosphonium Tetrafluoroborates; Valuable Alternative to Their Halide Analogues.

[International Conference on Global Warming and Natural Disasters, June 01-02, 2020, Webinar](#)