Auxin production and agronomic significance of halotolerant bacterial communities associated with *Suaeda fruticosa* (L.)

Ali B.

Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, Pakistan

E-mail: basharat.ali.mmg@pu.edu.pk

Key message. Natural plant settings of saline habitats are a good source for the isolation of beneficial salt tolerant bacteria to grow crops under saline conditions.

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Halotolerant bacterial strains associated with the rhizosphere and phytosphere of *Suaeda fruticosa* (L.) growing in saline habitats were isolated to mitigate the salinity stress of *Zea mays*. 16S rRNA gene sequencing confirmed the presence of strains that belong to *Gracilibacillus*, *Staphylococcus*, *Virgibacillus*, *Salinicoccus*, *Bacillus*, *Zhihengliuella*, *Brevibacterium*, *Oceanobacillus*, *Exiguobacterium*, *Pseudomonas*, *Arthrobacter* and *Halomonas* genera. Strains were screened for auxin production, 1-aminocyclopropane-1-carboxylate (ACC) deaminase and biofilm formation. Bacterial auxin production ranged from 14 to 215 $\mu\text{g ml}^{-1}$. Moreover, several bacterial isolates were also recorded positive for ACC-deaminase activity, phosphate solubilization and biofilm formation. In pot trials, bacterial strains significantly mitigated the salinity stress of *Z. mays* seedlings. For instance, at 200 and 400 mM NaCl, significant increase for shoot and root length (up to 1-fold) was recorded with *Staphylococcus jettensis* F-11. At 200 mM, *Zhihengliuella flava* F-9 (45%) and *Bacillus megaterium* F-58 (42%) witnessed significant improvements for fresh weight. For dry weight, *S. jettensis* F-11 and *S. arlettae* F-71 recorded up to three-fold increase at 200 mM, over respective control. Results of this study suggested that natural plant settings of saline habitats are a good source for the isolation of beneficial salt tolerant bacteria to grow crops under saline conditions.