

PA-019

## Silicate and Phosphate Solubilizing Halotolerant Rhizobacterium *Pseudomonas koreensis* MU2 Mitigates Salinity Stress in Soybean (*Glycine max* L.)

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### [Introduction]

Salinity has been a major limiting factor for the growth of several leguminous plants such as soybean. Silicon (Si) and phosphorus(P) play a key role to combat several biotic and abiotic stresses. These nutritional elements were supplied externally in a large quantity due to low use efficiency which is ultimately posing environmental threat. Hence, the present study is focused on identification of halotolerant rhizobacterium that augment salt stress tolerance in soybean plants through regulating plant metabolism and nutrient acquisition.

### [Materials and Methods]

Rhizobacterium *Pseudomonas koreensis* MU2(NCBI accession no. KP676116) was identified for possessing high silicate and phosphate solubilizing ability under salt stress. *P. koreensis* MU2 culture was inoculated in soybean plants treated with Si ( $\text{Na}_2\text{SiO}_3$ ; 1.0 mM) and P ( $\text{KH}_2\text{PO}_4$ ; 3.0 mM), and exposed to 150mM NaCl stress.

### [Results and Discussion]

*P. koreensis* MU2 inoculation significantly enhanced the Si and P uptake in plants and downregulated the  $\text{Na}^+$  ion in plant shoot. Moreover, *P. koreensis* MU2 inoculation significantly lowered abscisic acid (ABA) and improved plant morphological characteristics. Current findings indicate that *P. koreensis* MU2 may be a potential biofertilizer for alleviating salt stress in plants.

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