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Tolerance to Salt Stress by Plant Growth-Promoting Rhizobacteria on *Brassica rapa* var. *glabra*

Khalid A. Hussein^{1,2} and Jin Ho Joo²

¹Botany and Microbiology Department, Assiut, Egypt

²Department of Biological Environment, Kangwon National University, Republic of Korea

Salinity has been a threat to agriculture in some parts of the world; and recently, the threat has grown. Plant growth-promoting rhizobacteria (PGPR) may benefit plant growth, either by improving plant nutrition or producing plant growth hormones. The effects of rhizobacterial strains to attenuate the salinity stress on the germination of Chinese cabbage seeds were tested using four different concentrations of NaCl (50, 100, 150, and 200 mM). Also, PGPR strains were tested to enhance the early germination of Chinese cabbage seeds under normal conditions. *Azotobacter chroococcum* performed best with enhancing the radicle length of 4.0, 1.2, and 1.0 times at treatments of 50, 100, and 150 mM of NaCl, respectively. Additionally, significant differences were found in plumule length, *A. chroococcum* and *Lactobacillus* sp. showed remarkable activation either in normal or under stress conditions. Co-inoculation by three rhizobacterial strains (LAPmix) indicated synergistic effect to enhance the early germination of the seeds. The results of this study are promising for application of rhizobacterial strains that possess plant growth promoting traits to enhance the plant tolerance against salinity.

Biography

Khalid A. Hussein, PhD is a Lecturer at Assiut University, Faculty of Science and a Post-Doctor fellow in the Kangwon National University, in South Korea. He has over thirteen published scientific papers. He is a faculty member of Botany and Microbiology Department, Science Faculty, Assiut University, Egypt. He has been awarded the Excellence Award from Kangwon National University (KNU) at PhD, graduation. He has served as a member of various scientific projects and supervising post graduate students. He got the BSc. in "Chemistry & Microbiology" from Assiut University and the MSc. in using "Fungi as Biocontrol Agents". He holds the PhD degree in "Microorganisms as Biofertilizers" from Kangwon National University, in South Korea in 2013. Currently He is a Post-Doc fellow at Biological Environment Department, Kangwon National University, South Korea. He attended several International Conferences and Symposiums, and participated in many workshops.

khussein@kangwon.ac.kr