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The ACC deaminase from rhizobateria promoted resistance of salininty stress in seedling and growth of plant

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Rhizobacteria are a diverse group of free-living soil bacteria that live in plant rhizosphere and colonized the root system. Plant growth-promoting rhizobacteria (PGPR) possessing ACC deaminase (ACCD) can reduce ACC and ethylene in plant tissue and mediated the growth of plants under various stresses including salt stress. ACCD decrease ethylene levels in plant tissue that produce high levels of ethylene in tissue via elevated levels of ACC under salt stress. We selected strains of *Pseudomonas sp*. possessing ACCD activity for their ability to promote plant growth under salt stress from soil sample collected at Byeonsan, Jeonbuk, South Korea. The *Pseudomonas* strains possessing ACCD increased the rate of the seedling and growth of chinese cabbage seeds under salt stress. We cloned ACCD gene from *P.fluorescens* and expressed recombinant protein in *Escherichia coli*. The active form of recombinant ACCD converted ACC to a-ketobutyrate. The *in vivo* treatment of recombinant ACCD itself increase the rate of the seedling and growth of Chinese cabbage seeds under salt stress. The polyclonal *P.fluorescens* anti-ACCD antibody specifically reacted with ACCD originated from *Pseudomonas*. This indicates that the antibody might act as an important indicator for ACCD driven from *Pseudomonas* exhibiting plant growth-promoting activity. This study will be useful for identification of newly isolated PGPR containing ACCD and exploioting the ACCD activity from PGPR against various biotic and abiotic stresses.

Key words : Plant growth-promoting rhizobacteria(PGPR), *Pseudomonas,* 1-Aminocycloprophane-1-carboxlyate deaminase (ACCD), Salt stress, Recombinant Protein.