

Characterization of ACC Deaminase Producing Bacteria Isolated from Peanut Root Nodules

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Sharp increases in aminocyclopropane-1-carboxylic acid (ACC) levels and consequent ethylene synthesis in plants under drought stress have been reported in many plant species; however, little information is available for peanut. The enzyme ACC deaminase catalyzes the degradation of ACC, the immediate precursor of the plant hormone ethylene, and is widespread among rhizobia. In this study, we determined if rhizobia isolated from peanut root nodules contained ACC deaminase activities. A total of 87 bacterial isolates was isolated from root nodules of three peanut genotypes subjected to middle- and late-season drought treatments in the greenhouse. A PCR-based DNA fingerprinting technique was used to determine the similarity among the isolates. All isolates were screened for ACC deaminase activity and 13 of which had positive reactions. The ACC deaminase positive isolates were then identified by 16S rRNA gene sequencing and further characterized phenotypically. Three of the 13 ACC-deaminase positive isolates were able to nodulate peanut plants grown in Leonard Jars. Further study is needed to determine if rhizobia with ACC deaminase activities help alleviate drought stress in peanut.