

Deletion of *acdS* Gene in a *Bradyrhizobium japonica* Strain Does not Affect Peanut Root Nodulation

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Aminocyclopropane-1-carboxylic acid (ACC) deaminase interferes with the production of a plant stress hormone, ethylene, and has been implicated in nodule formation and rhizobial competitiveness in legumes. However, little information is available on the effect of ACC deaminase on nodulation in peanuts. Here, we evaluated the effects of rhizobial ACC deaminase on nodulation of two peanut genotypes. Two rhizobial mutant strains, one with ACC deaminase gene knocked out and the other over-expressed, as well as the wild strain, were inoculated onto pre-germinated seeds in Leonard jars and uninoculated plants served as controls. The dry weights (shoot and root) for inoculated plants were similar. The nodule numbers and N concentrations in shoot differed between the uninoculated and the inoculated treatments, but there were no significant differences among plants inoculated with different rhizobial strains. Based on the N balance method, the amounts of N fixed in the shoots for treatments inoculated with mutant strains were not significantly different from those inoculated with the wild strain. The results show that the absence or over-expression of the ACC deaminase gene in rhizobia did not impair its ability to form root nodules in peanuts. Furthermore, the nodulation assay suggests that symbiotic nitrogen fixation was not affected by ACC deaminase activity.