

ACC DEAMINASE IN *Bacillus* ISOLATED FROM BROMELIADS OF LATERITIC HILL - CORUMBÁ, MS, BRAZIL

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The ethylene is plant hormone that in high concentration can result in inhibition of seed germination and root growth. Certain soil bacteria contain the enzyme 1-aminocyclopropane-1-carboxylate (ACC) deaminase that hydrolyzes ACC, the immediate precursor of the plant's ethylene hormone, to ammonium and α -ketobutyrate, reducing the level of ethylene and leading to the elimination of the effects caused by high levels of ethylene. Therefore, the aim of the present study was identify ACC deaminase gene (*acdS*) in 39 strains of *Bacillus spp.* isolated from bromeliads on lateritic hill in Corumbá, MS, Brazil. For PCR amplification of *acdS* gene, two primers pairs were used: DegACCf/DegACCr, that were reported to be universal and F1937f/F1939r, that were used to amplify *acdS* genes from Proteobacteria. The screening for ACC deaminase activity of *Bacillus* isolates was done based on their ability to use ACC as a sole nitrogen source. All the isolates were grown in 5 ml of Dygs medium incubated at 28°C at 120 rpm for 72 h. Then, 5 μ l of each bacterial culture was inoculated on petri plates containing modified DF minimal medium supplemented with 3 mM ACC as sole nitrogen source. The plates were incubated at 28°C for 4 days. Colonies were re-inoculated and incubated in the same experimental conditions. Colonies formed in DF medium with addition of ACC were considered positive for ACC deaminase activity. PCR product of the expected size was obtained in 29 isolates, confirming the presence of *acdS* gene in bacteria associated with bromeliads. Among twenty-nine isolates, twelve isolates grew well on DF minimal medium with ACC as the sole nitrogen source. The introduction of ACC deaminase producing microorganisms in the stressed soils allow their adaptation under environmental stress conditions. Further evaluation of these bacterial strains is needed to evaluate their potential as plant growth promoting bacteria.

Keywords: *acdS* gene, ethylene, stress

Development Agency: Fundect - MS, Cnpq.