

Título: EFFECT OF *Bacillus megaterium* and *Alcaligenes faecalis* IN THE GROWTH OF COWPEA (*Vigna unguiculata* L. Walp) – GERMINATION, BIOMASS, CHLOROPHYLL AND BIDIMENSIONAL ELECTROPHORETIC PATTERNS OF TOTAL LEAF PROTEINS

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Resumo:

The efficacy of two phosphate solubilizing bacteria, which also produced indole acetic acid *in vitro* and were isolated from samples of A-horizon (10 cm deep, then the organic material layer surface) of yellow clay latosol with a continuous sugar cane crop during the last 40 years, in promoting the growth of cowpea (*Vigna unguiculata* L. walp, cultivar BR3) - an edible bean cultivated in the North and Northeast region of Brazil, was evaluated under greenhouse conditions, separately and as consortium (isolates LBPMA- *Bacillus megaterium* and *Alcaligenes faecalis*, in 1:1 ratio). The germination percent, shoot length, root length, total chlorophyll content of the leaves, fresh and dry weight of the whole plant were significantly enhanced by the consortium. To understand how cowpea seedlings were influenced by the presence of these microbial consortium or isolated bacteria, we have performed two-dimensional gel electrophoresis analysis of total leaf proteins from cowpea. Most of the leaf polypeptides from the inoculated and non-inoculated seedlings separated in pls between 4 and 7, with molecular mass of 5 and 160 kDa. Zooming in the region of such pls indicates that after 8 days of inoculation, only few proteins were induced after microbial contact. Comparison of each of these bidimensional gel patterns with resolved proteins from the leaves of control (non-inoculated) and inoculated showed a main serial "train of spots" with pls around 4.5 and molecular weight of 32 kDa. Two spots isolated from the bidimensional gel of inoculated plant were analyzed by peptide mass fingerprint and they correspond to two potential proteins stimulated by the bacterial consotirtium during the growth promotion. Hence, these isolates can further formulated and used for field application.

Palavras-Chave: plant growth promoting bacteria, indol acetic acid, phosphate solubilizing bacteria, bidimensional protein electrophoresis

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