

Title: RHIZOBACTERIA ASSOCIATED WITH THE CACTI OF CAATINGA TOLERANT THE ABIOTIC STRESS IN VITRO.

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Abstract: The biome Caatinga has high heterogeneity as its flora and fauna, with vegetation that can tolerate long periods of drought. The rhizosphere of these plants are colonized by bacteria that can influence the physiology of these plants, thus contributing to the growth and tolerance to drought conditions encountered in semi-arid regions. The objective of this work was to select rhizobacteria that have the potential to tolerate abiotic stresses in vitro. The area of study was the Estação Ecológica Raso da Catarina, where we selected two different points with different vegetation types. They collected five soil samples adhered to the root system of three plant genera (*Melocactus* spp., *Opuntia* spp. and *Pilosocereus* spp.), constituting composite samples for each genus. For isolation, 10 g of each sample were transferred to Erlenmeyer flasks containing 90ml of saline (0.85%) and make serial dilutions (10^{-2} - 10^{-7}). Morphologically distinct colonies were purified and preserved in glycerol. The isolates were tested for their ability of tolerance to water deficit in medium supplemented with sorbitol in different concentrations (285, 405, 520 and 780 g L⁻¹), producing Aw values corresponding to 0.957, 0.919, 0.897 and 0.807 respectively. Salt stress tolerance tests were performed in culture medium supplemented with different concentrations of NaCl (0, 2, 4, 6, 8 and 10%) and at different temperatures (28, 37, 42, 45 and 49° C). It was observed that with increasing temperature and NaCl concentrations of sorbitol, a reduction in the percentage of growth of tolerant isolates. Among the bacteria tested, 66, 39, 25 and 16% managed to grow in culture medium with 0.957, 0.919, 0.897, 0.807 Aw, respectively. Of those subjected to salinity tolerance tests, 100, 92, 69, 46, 34 and 13% were able to grow at concentrations of 0, 2, 4, 6, 8 and 10% NaCl, respectively. At temperatures of 28, 37, 42, 45 and 49 C, 100, 93, 90, 76 and 10%, respectively, were able to grow. Of the strains tested, the CF8.2 bacteria able to grow in three variables assessed, corresponding to 1% of the isolates. Rhizobacteria that tolerate high concentrations of NaCl, high temperatures and low water activity, have great potential for adaptation to arid and/or semiarid environments, since these are characteristics of these regions, which can reduce the negative effects on plant growth under these conditions.

Keywords: semi-arid, cactaceae, abiotic stress, rhizobacteria.

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