THE INFLUENCE OF VEGETATION IN STRUCTURING THE BACTERIAL COMMUNITIES IN MANGROVES

Colares, G.B.[1], Santos, Y.D.[1], Melo, V.M.M.[1]

[1] LEMBiotech – Laboratório de Ecologia Microbiana e Biotecnologia, Departamento de Centro de Ciências, Universidade Federal do Ceará – UFC, Rua Campus do Pici s/n, Fortaleza – CE, 60440-900

Mangroves are coastal ecosystems, which are under innumerous threats, including deforestation. The mangrove soil microbiota maintain the balance and health of these ecosystems, through their complex interaction with the plant species. However, despite the knowledge on the importance of plant-microorganism interactions, little is known about these relationships in mangroves. Given this fact, this study aimed to correlate the bacterial communities, plant species and physico-chemical variables in mangrove soils in two seasons (dry and wet) in Pacoti mangrove (State of Ceara, NE Brazil). Soil was sampled in 7 areas, i.e. 3 areas where mangroves species *Avicennia germinans* (A) *Rhizophora mangle* (R) and *Laguncunlaria racemosa* (L) were predominant, areas with a mixture of two species (RL and AL), 1 area with the three species (RLA) and a control area (C) without vegetation. Environmental variables such as pH, salinity, organic matter and silt-clay contents were measured and the structure of bacterial communities was accessed by PCR-DGGE of the 16S rRNA gene. Using Principal Component Analysis (PCA), we observed that for the abiotic data in both seasons, the RLA and C areas were different from the others, which were positively correlated with organic matter and silt-clay contents. The OTU richness was higher in dry season (33-23 OTUs) than in rainy season (22-13 OTUs). By analyzing the groupings formed by DGGE we observed a tendency of clustering according to the vegetation in both samplings with the areas colonized by *R. mangle* having higher similarity. Correlating the presence and absence of OTUs with the measured abiotic factors, we could not find any statistical significance, which reinforces the hypothesis that the mangrove vegetation, especially *R. mangle*, is largely responsible for structuring the bacterial community in mangroves. These data has a crucial importance in future reforestation projects in these areas.

Keywords: environmental variables, mangrove, microorganisms, soil, vegetation