

TITLE: Isolation and identification using macroscopic, microscopic and molecular analysis of endofitic fungi in roots of Cyperaceae in Restinga de Massambaba.

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ABSTRACT:

The restinga ecosystem is characterized by sandy and dystrophic soils, with low water and nutrients retention capacity, favoring the association of plants with microorganisms. Endophytic fungi are microorganisms that colonize the plant epidermis, aiding in the retention of water and nutrients, promoting the growth and survival of plants without causing apparent damage to their hosts. Dark Septate Endophytes (DSE) are a group of endophytic fungi that stands out for the melanization of their hyphae and colonization in extreme and stressed environments. Little is known about the biodiversity of these fungi in Restinga and their fungus-vegetable and fungus-environment relationships. The objective of the present work was to evaluate the colonization of *R. maritima* (Cyperaceae) present in Restinga of Massambaba, Arraial do Cabo - RJ by endophytic fungi, their isolation and their identification. Thus, *R. maritima* roots were collected, disinfected, and macerated for the later isolation of endophytic fungi. A total of five isolates were obtained by rarefaction. The isolates were identified morphologically through their macroscopic and microscopic characteristics. This identification was confirmed by two molecular methods: Mass spectrometry after matrix-assisted laser desorption ionization with detection in a time-of-flight analyzer (MALDI-TOF), a method that uses majority proteins (mainly ribosomal proteins) extracted from microorganisms as a way of identifying them through a database, and by PCR amplification of the internal spacer regions of transcripts (ITS) of the ribosomal DNA, a method that uses DNA sequence comparison. The isolated fungi were: *Aspergillus niger*, *Penicillium* sp., *Penicillium citrinum*, Pleosporales and *Trichoderma longibrachium*. The results described in this work are fundamental for the knowledge of the microbiota found in the roots of *R. maritima*, and bring the perspective of the importance of the preservation of the environment of Restinga to the maintenance of the genetic patrimony.

Keywords: Endophytic Fungi, Restinga, MALDI-TOF, ITS.

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