

CAN ENDOPHYTIC FUNGI BECOME SAPROBES AFTER LEAF SENESECE IN *Eucalyptus microcorys*?

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Abstract

Plants are hosts of diverse fungal communities and exhibit several interactions with these microorganisms. Endophytic fungi are present within plant tissues without causing disease. Although it has been suggested that fungal endophytes become saprobes after the death of plant tissues, few empirical evidences are available. Here, we assessed the fungal community found in fresh *Eucalyptus* leaves and leaves under different stages of decomposition at the “Floresta Estadual Edmundo Navarro de Andrade” (Rio Claro, SP). In April 2015 we collected 10 fresh healthy leaves of *Eucalyptus microcorys* F. Muell and 10 leaves of the leaf litter in three stages of decomposition (stages 1, 2 and 3), totaling 40 leaves in the study. Fungi found on leaves were cultured under two isolation approaches: (i) fragments of fresh leaves were plated on media and (ii) leaves from leaf litter were submitted to particle filtration technique. Two selective media were used for isolation: DRB (Dichloran Bengal Rose, without Dichloran) and SNA (Synthetic Nutrient Agar) both supplemented with antibiotic and bengal rose. The obtained isolates were identified using morphological and molecular (ITS barcoding) markers. A total of 344 isolates were recovered from *E. microcorys* leaves and the DRB medium recovered more isolates than SNA. An unidentified Coleomycetes isolate (29.5% of all isolates) and *Calonectria* sp. (18%) were the prevalent taxa found on fresh leaves and also in all stages of leaf decomposition. In addition, phytopathogenic genera such as *Colletotrichum*, *Fusarium* and *Neofusicoccum* appeared in minor proportions. The genera *Colletotrichum*, *Neofusicoccum*, *Nigrospora* and *Xylaria* were observed only in fresh leaves as endophytes. *Trichoderma* cf. *strigosum* was observed in fresh leaves and in stage 3 of leaf decomposition. On the other hand, the genera *Fusarium* and *Cladosporium* were observed only in stage 3. There were also differences in the number of isolates between the different stages. Stage 3 showed the highest number of CFUs (164) in comparison to stages 1 and 2, which showed 15 and 36 CFUs, respectively. Differences in the diversity and composition of fungal communities associated with eucalyptus leaves probably occurred due to physical and chemical changes of the substrate over the process of decomposition, influencing the sequential colonization of fungal species. However, the presence of certain taxa throughout the decomposition process suggests some endophytic strains can become saprobes after the senescence of plant tissues. Such results indicate that the endophytic continuum may extend from fresh leaves to latter stages of leaf decomposition.

Keywords: endophytes, leaf litter, particle filtration.

Support: CAPES and FAPESP.