

## EXPERIMENTAL EVIDENCES OF *Escovopsioides* ANTAGONISM TOWARDS THE SYMBIOTIC FUNGUS CULTIVATED BY LEAF-CUTTING ANTS

**Authors** Osti, J.F.<sup>1</sup>, Rodrigues, A.<sup>1</sup>

**Institution:** <sup>1</sup>Department of Biochemistry and Microbiology, UNESP – Univ. Estadual Paulista (Av. 24-A, 1515, Bela Vista, Rio Claro, SP, Brazil).

### **Abstract:**

Fungi in the genus *Escovopsioides* are found in the fungus gardens of leaf-cutting ants. These microorganisms are phylogenetically related to *Escovopsis*, a powerful mycoparasite of the fungus *Leucogaricus gongylophorus* cultivated by the ants for food. However, no studies investigated the antagonistic potential of *Escovopsioides*. In this sense, we carried out *in vitro* bioassays between the ant fungal cultivar and seven *Escovopsioides* isolates obtained from diverse leaf-cutting ant species (three *Atta* and four *Acromyrmex* species). Additionally, we used one *Escovopsis* isolate from *Atta sexdens rubropilosa* for comparisons. For the bioassays, mycelium plugs (0.8 mm diameter) of *L. gongylophorus*, isolated from a colony of *Atta sexdens rubropilosa*, were inoculated in PDA and incubated at 25°C for 14 days. Then, 0.8 cm mycelium plugs of *Escovopsioides* were inoculated 3 cm apart from the mutualistic fungus. After incubation under the same conditions, all plates were scanned in days 0, 7 and 14. Radial growth of the mutualistic fungus was measured and the inhibition rate was obtained with the treatments and their controls. Differences were observed by Kruskal-Wallis test in R. Our results showed that all *Escovopsioides* isolates significantly inhibited ( $p < 0.001$ ) the ant cultivar after 14 days of incubation. Comparisons between the different isolates revealed that the inhibition values varied between 42.28% to 65.61%. Most interesting, the inhibition of 65.61% was observed by an *Escovopsioides* strain isolated from a *A. sexdens rubropilosa* colony, the same ant species from which the mutualistic fungus was isolated. This result was statistically supported ( $p < 0.02$ ), further suggesting a degree of specificity of certain isolates towards a specific host cultivar. *Escovopsis*, inhibited the ant fungal cultivar by 73.24% ( $p < 0.002$ ), indicating stronger inhibition when compared to *Escovopsioides*. This study provided significant evidences of the antagonism of *Escovopsioides* to its host as well as support for a possible specificity of this antagonist towards the host fungus cultivated by leafcutter ants.

**Keywords:** *Escovopsis*, Hypocreaceae, biocontrol.

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