

Endophytic fungi for flavonoid production from *Passiflora* species

João Victor da S. Bartolo (EM), Jennifer S. Kely (EM), Fabiana F. Garboggini(PQ), Glyn M. Figueira (PQ), Derlene A. de Angelis (PQ)

Abstract

Endophytes are microorganisms able to live inside plant tissue at least during one cycle of their lives with no damage to the host. *Passiflora incarnata* L. is a fast-growing vine which presents medical properties. Considering the reports on the flavonoid production by endophytic microorganisms, the market to be explored and the lack of information about endophytes in *Passiflora*, this study aimed to isolate endophytic fungi from leaves to build up a culture collection of potential flavonoid-producers. The passion-fruit leaves were washed and plated. Isolation work obtained sixty-five strains, which were preserved in glycerol 10% at -80°C. *Aspergillus*, *Penicillium*, *Phoma* and *Cladosporium* were the prevalent genera in the sampled material. Fungi associated with passion-fruit leaves are very diverse. A second phase will start focusing on the tests to analyze the flavonoid production of these endophytes.

Key words: endophytes; *Passiflora*; culture collection.

Introduction

Fungi are of a great economic importance. Endophytes are found inside plants and they can significantly improve crops efficiency and produce organic compounds. Brazil is the largest consumer of natural sedative, and *P. incarnata* extract is the main substrate(1). Plants are subjected to loss of additives of interest and to seasonal and geographical changes (2). Studies on endophytic fungi may bring a solution to minimize these problems. This study aimed to isolate endophytic fungi present in passion-fruit leaves to start a fungal collection of interest to flavonoid-producers. The isolates are preserved at the Brazilian Collection of Environmental and Industrial Microorganisms - CBMAI / UNICAMP.

Isolates were preserved as following (3):

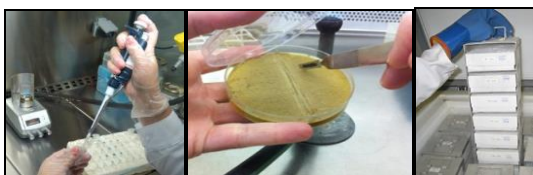


Figure 1. A. 2mL microtubes were filled with 400 uL of sterile 20% glycerol solution; B. Blocks with fungal mycelia were transferred from the colonies to microtubes; C. Microtubes were subjected to -20 ° C, and then to -80 C (ultrafreezers).

Results and Discussion

Material and methods: *P. incarnata* leaves were collected in the experimental field of PhytoBios company, Botucatu (S 23 55 50.3; W 48 33 49.6) in January/2015. The leaves were disinfected following the method found in the literature (4).

For isolation of endophytic fungi, leaf fragments were incubated at 29°C in appropriate media.

Results and Discussion: In total, 65 fungi were isolated from the passion-fruit leaves distributed in 7 yeasts and 58 filamentous fungi. Main genera found were *Aspergillus*, *Penicillium*, *Phoma* and *Cladosporium*. Different morphological types are shown in Figure 2.



Figure 2. Distribution of morphological types.

Conclusions

It is concluded that fungi associated with passion-fruit leaves are diverse. The fungi isolated and preserved during this project was the starting point to a thematic collection of microorganisms, and they will be available for future projects.

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