Planta Med 2013; 79 - P5
DOI: 10.1055/s-0033-1336447

Antifungal Fatty Acids Produced by Coniochaeta ligniaria: A Cryptic Endophytic Fungus Associated with Smallanthus sonchifolius' Autotrophic Cultures

LH Rosa [1], SCN Queiroz [2], RM Moraes [3, 4], X Wang [5], N Techen [3], Z Pan [5], CL Cantrell [5], DE Wedge [5]

[1]Departamento de Microbiologia, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil
[2]EMBRAPA Meio Ambiente, Jaguariúna, SP, Brazil
[3]National Center for Natural Products Research, Research Institute of Pharmaceutical Sciences, School of Pharmacy, University of Mississippi, University, Oxford, MS 38677, USA
[4]Center for Water and Wetland Resources, Biological Field Station, University of Mississippi, 15 County Road 2078, Abbeville, MS 38601, USA
[5]USDA-ARS, National Products Utilization Research Unit (NPURU), University, Oxford, MS 38677, USA

Congress Abstract (/ejournals/abstract/10.1055/s-0033-1336447)

Few studies have addressed the presence and bioactivity of endophytic fungi living in plantlets growing under *in vitro* conditions. The objectives of the study were: 1) to identify a fungus UM 109 growing as endophytes of autotrophic cultures of the medicinal plant *Smallanthus sonchifolius* (yacon), and 2) to isolate the compounds produced by this endophyte that showed antifungal properties. The species was identified as *Coniochaeta ligniaria* using molecular and morphological methods*.* The crude extract of *C. ligniaria* displayed antifungal activity. The identification of the active constituents was done by systematic bioactivity-guided fractionation of the dichloromethane extract against the phytopathogenic *Colletotrichum* species, NMR spectroscopy and GC-FID analysis. The antifungal fractions from the *C. ligniaria* were identified as a mixture of 12 antifungal fatty acids, including caproic, caprylic, myristic, palmitic, heptadecanoic, stearic, oleic, linoleic and stearic. The presence of antifungal fatty acids was not unique to the fractions of *C. ligniaria* culture and caproic, caprylic, myristic, palmitic, heptadecanoic, stearic, oleic and linoleic acids were isolated and detected in the antifungal fractions of *S. sonchifolius*. In conclusion, the identification of the fungus *C. ligniaria* isolated from *in vitro S. sonchifolius* plantlets suggest that autotrophic cultures can shelter specific endophytic fungal communities in a special symbiosis with their plant hosts. Furthermore, the detection of the antifungal fatty acids produced by *C. ligniaria* in the plant fractions suggests that fungus and host together produced compounds that may help *S. sonchifolius* to resist to phytopathogenic fungal attacks. **Acknowledgements:** This work received partial support of the Conselho Nacional de Desenvolvimento Científico e Tecnológico (processo 200774/2011 - 5). The authors thank Ms. J.L. Robertson, Ms. R. Pace, Ms. Amber Reichley and Mr. Solomon Green III for technical support.