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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 ⁵¹Departamento de Microbiologia, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil²EMBRAPA Meio Ambiente, Jaguariúna, SP, Brazil³National Center for Natural Products Research, Research Institute of Pharmaceutical Sciences, School of Pharmacy, University of Mississippi, University, Oxford, MS 38677, USA⁴Center for Water and Wetland Resources, Biological Field Station, University of Mississippi, 15 County Road 2078, Abbeville, MS 38601, USA⁵USDA-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.