

3-O18-6

Elucidation of the life cycle of the endophyte genus *Muscodor* based on a polyphasic taxonomic approach

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Purpose: The genus *Muscodor*, which exclusively consists of endophytes with sterile mycelia that produce volatile antibiotics, had been originally erected based on a highly questionable concept. Even though it was originally accommodated in the Xylariales (or the Xylariaceae, respectively), its affinities so far remained obscure for lack of morphological characters, since the cultures so far isolated did not produce a conidial state. We have recently encountered the sexual states of two xylarialean fungi that produced apiospores from Northern Thailand. Cultures derived from those apiospores were found to produce volatile antibiotics and could also be assigned with certainty to a clade that otherwise only contained species of *Muscodor* in a multi locus genealogy of representative species of the Xylariales. With this data at hand, we have tried to elucidate the life cycle of the genus.

Methods: Aside from a molecular phylogeny based on ITS, LSU, rpb2 and TUB2 DNA sequence data, the cultures were also subjected to a study of their volatile organic compounds (VOCs), using both, dual cultures for assessment of antimicrobial effects and extensive GC-MS analyses.

Results and conclusions: The morphological features and the molecular phylogeny of the new fungi, as well as their VOC profiles and their antibiotic effects in dual culture, will be presented and discussed. Our phylogeny shows that *Muscodor* species have affinities to the genera, *Emarcea* and *Induratia*. Phylogenetic and morphological data on both genera would allow for integration of *Emarcea* and *Muscodor* in *Induratia*, i.e. the genus that was historically described first.