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Abstract

Morphological and molecular characterization of Humaria and Genea ectomycorrhizae from Hungarian deciduous forests
Zsolt Erős-Honti, Gábor M. Kovács, Gyöngyi Szedlay, Erzsébet Jakucs

The ectomycorrhizae (EM) of Humaria and Genea, two closely related genera of the Pyronemataceae (Ascomycetes), were regularly found in different deciduous forests of Hungary. In the present paper, the morphology and anatomy of these EM are described in detail, including morphometric analyses. Identification of the EM was carried out by molecular taxonomic analyses of the nrDNA ITS seqences obtained from mycorrhizae, herbarium ascomata, and public databases. The anatomy of the EM, examined during this work, was almost identical. They possessed angular outer and epidermoid inner mantle layers and warted, thick-walled emanating hyphae. Ten of our EM sequences grouped into the clade of Humaria hemisphaerica sequences and one into the genus Genea. Both molecular taxonomic analysis and morphometry differentiated three sub-groups within the clade of Humaria, and these methods also clearly separated the EM of Genea from those of Humaria. We may suppose that the previous morphological-anatomical descriptions, lacking molecular taxonomic identification, do not concern the denominated taxa. As a consequence, we stress the importance of revaluating the literature data, based on morphotyping of Humaria and Genea EM, to prevent misidentification in future studies. The presented work demonstrates that combining molecular and morphological analysis is essential for the unambiguous identification of the EM formed by problematic taxa.

Notes

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