A new species concept for the clinically relevant *Mucor circinelloides* complex.


Abstract

*Mucor* species are common soil fungi but also known as agents of human infections (mucormycosis) and used in food production and biotechnology. *Mucor circinelloides* is the *Mucor* species that is most frequently isolated from clinical sources. The taxonomy of *Mucor circinelloides* and its close relatives (*Mucor circinelloides* complex – MCC) is still based on morphology and mating behaviour. The aim of the present study was a revised taxonomy of the MCC using a polyphasic approach. Using a set of 100 strains molecular phylogenetic analysis of five markers (ITS, *rpb1*, *tsr1*, *mcm7*, and *cfs*, introduced here) were performed, combined with phenotypic studies, mating tests and the determination of the maximum growth temperatures. The multi-locus analyses revealed 16 phylogenetic species of which 14 showed distinct phenotypical traits and were recognised as discrete species. Five of these species are introduced as novel taxa: *M. amethystinus* sp. nov., *M. atramentarius* sp. nov., *M. variicolumellatus* sp. nov., *M. pseudocircinelloides* sp. nov., and *M. pseudolusitanicus* sp. nov. The former formae of *M. circinelloides* represent one or two separate species. In the MCC, the simple presence of well-shaped zygospores only indicates a close relation of both strains, but not necessarily conspecificity. Seven species of the MCC have been implemented in human infection: *M. circinelloides*, *M. griseocyanus*, *M. janssenii*, *M. lusitanicus*, *M. ramosissimus*, *M. variicolumellatus*, and *M. velutinosus*.

Beteiligte Abteilungen und Gruppen

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HKI-Autoren