

Mucoralean fungi in Korea

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Purpose: Mucoromycotina and Mortierellomycotina consist of the largest number of described species within Mucoromycota. Many members into this subphylum are important in biotechnological areas. Especially, some species are known as causal fungi of human mucormycosis. However, the knowledge about the taxonomy of mucoralean fungi in Korea is limited. The present study aims to characterize 13 new species and 27 unrecorded mucoralean species in Korea by morphological and molecular study.

Methods: Mucoralean fungi were isolated from dung, insect, fruits, freshwater, and soil by using the dilution plating and baiting technique. To identify fungal strains, the ITS, 18S, 28S, EF-1 α , and act-1 gene were amplified with the primer pairs ITS1/ITS4, NS1/NS4, LROR/LR5F, MEF11/MEF41, and Act-1/Act-4R, respectively. Phylogenetic analyses were performed using MEGA 7 software. In addition, the micro-morphological features of strain were investigated by LM with an Olympus BX51 microscope and SEM.

Result: In this study, 92 isolates representing 43 species belonging to 14 genera were isolated from different sources, including dung, insect, fruits, freshwater, and soil. Among these genera, *Mucor* presented with highest number of species, and followed by *Mortierella*. The phylogenetic analyses of sequence data of the loci, ITS, 18S, 28S, EF-1 α , and act-1 showed that 13 species of the genus *Backusella*, *Absidia*, *Gongronella*, *Mucor*, *Rhizopus*, *Mortierella*, and *Umbelopsis* were represented as new species and 27 species were identified as unrecorded species in Korea.

Conclusions: In this study, 92 isolates representing 43 species belonging to 14 genera were isolated from different sources in Korea. Herein, 13 new species and 27 unrecorded mucoralean species were discovered and characterized through this study. Especially, *Backusella*, *Blakeslea*, *Gilbertella*, and *Pilobolus* species known as rare species were found in Korea.