

# Phylogeny, Ecology and Distribution of the Order Mucorales in Korea

Hyang Burm Lee

Environmental Microbiology Lab, Department of Agricultural Biological Chemistry, College of Agriculture & Life Sciences, Chonnam National University, Gwangju 61186, Korea.

Email: hblee@jnu.ac.kr

## ABSTRACT:

Mucorales is the largest order within the phylum Mucoromycota and now comprises 14 families, 55 genera and nearly 300 species. The members of Mucorales are saprobes or parasites of animals and other fungi. However, there has been little information on taxonomic study as well as indigenous fungal list of Mucorales fungi in Korea. With the publication online, more than 60 species, 16 genera, and 10 families have been currently listed in Korea. In view of the lack of knowledge concerning this fungal group, we surveyed the richness of the group and described new species. We conducted a large-scale sampling from soils, feces, waters to invertebrate materials from different areas. Dilution plating, blotter, baiting and direct plating methods were used as techniques for the isolation of fungi. The species were identified based on a polyphasic approach including phylogenetic analysis of the partial internal transcribed spacer region (ITS) and the partial 28S rDNA (LSU), physiological and morphological characters. Results from these analyses showed that 67 species belonging to the order Mucorales consisted of 14 genera such as *Absidia*, *Actinomucor*, *Backusella*, *Blakeslea*, *Choanephora*, *Circinella*, *Cunninghamella*, *Gilbertella*, *Gongronella*, *Lichtheimia*, *Mucor*, *Pilobolus*, *Poitrasia* and *Rhizopus*. Among the groups found, genus *Mucor* presents the greatest number of species, followed by *Backusella*, *Cunninghamella* and *Absidia*. The highest species richness has been found to be associated with invertebrates. Twenty-two are described as new species, and twenty-eight represented as new records in Korea. This study contributes to a better understanding of Mucorales fungal taxa in Korea, not only discovering new species, but also adding important genera. More detailed studies are required to construct the classification system.

## KEYWORDS:

Ecology, Distribution, Taxonomy, Phylogeny