

DIVERSITY OF LICHENICOLOUS AND ENDOLICHENIC FUNGI FROM ALPINE LICHEN COMMUNITIES

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Lichen symbioses are shaped and colonized by biologically and phylogenetically diverse fungi. Lichenicolous fungal species are recognized by diagnostic structures and symptoms on the host lichen, whereas endolichenic fungi occur cryptically in the lichen thalli. We hypothesize that patterns of host specificity are insufficiently known because lichenicolous fungi could also occur cryptically in other lichen thalli than their known hosts. We aim to test this hypothesis with a community-based approach using sequencing of the fungal ITS, fingerprint methods (SSCP) and phylogenetic analyses of fungal isolates. We selected lichen communities from an alpine range in southern Austria, a particularly lichen-rich area which remained free of ice during the last glaciation. We comprehensively sampled Alpine lichen communities in ten plots including uninfected thalli and those visibly infected by lichenicolous fungi. We present results demonstrating that lichenicolous and endolichenic fungi occurring in alpine lichens show a pattern of distribution correlated to the host species. We also provide phylogenetic analyses of culture isolates of lichen-inhabiting fungal strains showing their relatedness with fungal families belonging to Dothideomycetes and Chetothyriomycetes. New fungal lineages and the close relationships with fungi from other poikilohydric habits indicate that lichens represent reservoirs of fungal diversity and evolutionary hot-bed of polyextremotolerant fungi.