

Molecular genetical and morphological analysis of the *Geosmithia lavendula* komplex

Geosmithia lavendula (Ascomycota: Hypocreales) is fungus associated with bark beetle *Hypoborus ficus* on *Ficus carica*. The main aim of this Diploma thesis was a resolving of population structure, phylogeny, morphology and partially also ecology of *Geosmithia lavendula* complex. The task included sampling of wood and beetle specimens from the Mediterranean, isolation of fungi, DNA isolation, and subsequent optimization and using of DNA fingerprinting methods (RAPD and ISSR). Molecular data were used to distinguish isolates into putative new species with consideration of morphological markers. Sequencing of ITS rDNA region was used to determine the phylogenetic relations within the complex and with other representatives of *Geosmithia* spp. Also a type of reproduction system was indirectly assessed based on molecular data.

147 isolates of *Geosmithia lavendula* were obtained from natural material from various areas of the Mediterranean and three requested from culture collections. Genetic relationships among 123 strains were investigated using RAPD and ISSR analysis, and rDNA sequences. Thirteen reliable macro- and micromorphological characteristics were found. Based on rDNA data, molecular and morphological markers, the species *G. lavendula* and two taxonomically related and unknown species were characterised. Reproduction mode inside the *G. lavedula* was found mostly clonal. The population structure of *G. lavendula* in Mediterranean was assessed. Bark beetle *Hypoborus ficus* was found intimately connected to *Geosmithia lavendula* as a vector.

Kľúčové slová: *Geosmithia lavendula*, kôrovec, *Hypoborus ficus*, molekulárne znaky, RAPD, ISSR, ITS fylogenéza, populačne genetická štruktúra, OTU

Key words: *Geosmithia lavendula*, bark beetle, *Hypoborus ficus*, molecular markers, RAPD, ISSR, ITS phylogeny, population genetic structure, OTU