

Abstract:

This bachelor thesis deals with the issue of bioaerosol, properties of airborne fungal spores, describes their significance, concentration, methods of spreading and influence on human health. This work provides information about sampling and detection methods of bioaerosol. Was proved the suitability of using of the first step of the high volume cascade impactor (Hi-Vol) BGI-900 to collect bioaerosol samples for subsequent scanning electron microscope (SEM) analysis. Using the optimized method, bioaerosol samples were isolated from the polyurethane foam, which is the impact substrate of the impactor.

Bioaerosol samples were taken from 3 locations in the Czech Republic: Prague, Březno, Láz. During the SEM analysis of 15 bioaerosol samples, 605 SEM images were taken, on 340 of them were identified fungal spores. The smallest number of spores were found in Prague. Approximately the same amount of fungal spores was found in Březno and Láz. Fungal spores were identified into 9 genus, 1 family, and 1 species. The percentage of deformed spores in Prague was 48%, in Březno 23%, in Láz 25%. The greatest variability of spores was at the Březno and Láz localities. The most common fungal genus was the *Cladosporium* genus. No positive or negative correlation was observed between the number of fungi and the bioaerosol mass. In winter samples from Prague, bioaerosol was found, when a detailed microscopic analysis of the other stages did not confirm the existence of bioaerosol.

Key words: fungal spores, bioaerosol, cascade impactor, SEM.