

Taxonomic diversity of potentially pathogenic fungi constituting a risk to children's health isolated from sandpits in Lodz

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The presence of organic matter, and their wide range of enzyme activity and variety of spores allows fungi to survive in soil and sand. A great number of harmful saprotrophic and parasitic species can be found in sand, and these are classified into three levels of biosafety (BSL) based on their ability to induce pathological changes: BSL1 includes saprotrophes and plant pathogens rarely causing mild superficial infections, BSL2 includes pathogens responsible for superficial and opportunistic infections, and systemic infection in patients with the immune system disorders, and BSL3 comprises fungi capable of inducing severe systemic infections in healthy individuals.

The aim of the study was to identify potentially pathogenic fungi and confirm their biosafety level (BSL) in the sand of public sandpits in Lodz. The study included 17 sandpits from different parts of the city of Lodz. A total of 68 samples were collected from the surface and deeper (10-15 cm) layers of sand in the autumn and summer seasons. The material was inoculated on Sabouraud and rose bengal medium. The fungi were then passaged on Sabouraud, Czapek-Dox and PDA media. Hair bait test was performed, and dermatophytes were passaged on Mycoline medium. The fungi were identified on the basis of their morphological and biochemical features.

A total of 352 isolates of fungi were obtained from 79 taxonomic units. Yeast and yeast-like fungi were isolated from 73.5% of examined samples taken in autumn and from 58.8% in spring: these included 12 species, of which three were classified to BSL 2 and eight to BSL1. Molds were observed in the autumn and spring in all tested samples. Among the isolated species, 15 were classified to BSL2 and 39 to BSL1. Dermatophytes were detected in 14.7% of samples taken in autumn and in 17.6% in spring, with two species in BSL2 and two in BSL1. The dominant species were *Trichosporon cutaneum*, *Cryptococcus neoformans*, *Fusarium oxysporum, F. solani* and *Paecilomyces variotii* for BSL2, and *C. laurentii*, *Cladosporium herbarum, Penicillium chrysogenum* and *Alternaria alternata* for BSL1. The species of fungi isolated in this study belong to BSL levels 1 and 2, and may be the etiological agent of superficial and systemic fungal infections. Therefore, their presence in an environment where children play may constitute a risk to their health. The results of these studies indicate a need for a systematic mycological monitoring of sandpits.