

A GUIDE TO IDENTIFY AIRBORNE FUNGI IN INDOOR ENVIRONMENTS

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ABSTRACT

Issues related to air quality in internal spaces have attracted especial attention due to the fact that people spend over 80% of their time indoors. The main factors involved with health problems in indoor environments are dust, mites and insects, toxins and microorganisms, like fungi and bacteria, including their spores and metabolites. Air quality indoors can be comprehended as a series of environmental conditions, which contribute to the health and well-being of the occupants. Its deterioration leads to significant adverse effects and could contribute to structural degradation, which could considerably affect the economy. According to the United States Environmental Protection Agency (USEPA), internal environment air pollutants are placed on the top five environmental risks to public health. Although many of these factors are quite silent and have slow progress, they can have a long-term massive impact in public health, causing millions of losses, not only in the building structures, but also in public health budgets, not to mention the risk of epidemics. Many fungi have an intrinsic pathogenic potential and are responsible for the production of allergenic compounds, irritable products and, in some cases, substances that are potentially toxic. In this context, Ambientalís, a company specialized in environmental analysis, along with the Laboratory of Microbial Diversity from the Universidade Federal de Santa Catarina, put forward a partnership project with the aim to develop a guide to identify airborne fungi in indoor environments. This project is based on direct plating systems, where samples are collected and replicated to different media. Depending on the fungi macroscopic and microscopic characteristics, several literatures are used to assess identification of the species, whenever possible. Due to the intrinsic complexity of fungal identification, additional methodologies are employed, such as DNA-based identification. So far, the project has collected over 100 isolates and it is in the stage of sample processing, which include morphological visualizations, screening for molecular-based identifications (sequencing). Preliminary results indicate that indoor spaces serve as habitat for fungi belonging to genera like *Aspergillus*, *Curvularia*, *Penicillium* and *Rhizopus*, among others, which, in many cases, can be involved with health issues.

Keywords: airborne fungi, identification, indoor air quality, molds.