

MOLECULAR CHARACTERIZATION AND ANTIFUNGAL SUSCEPTIBILITY OF *ASPERGILLUS* COLLECTED IN INDOOR SETTINGS

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Introduction: The exposure to *Aspergillus* conidia is an increased risk factor for the development of respiratory symptoms, such as asthma, in occupational and non-occupational settings. *Aspergillus* identification should be based on molecular methods as there are species with similar morphology but distinct at the molecular level (cryptic species), with variable antifungal susceptibility profiles. The aim of this study was to perform the molecular identification of *Aspergillus* species collected from different occupational and non-occupational settings. Due to the emergence of azole-resistance in *A. fumigatus*, the susceptibility of the collected *Fumigati* isolates was determined.

Methods: Sixty *Aspergillus spp.* isolates were studied. The isolates were collected from 28 samples of non-occupational settings (houses) and 32 from occupational environments (veterinary clinic, faculty environment, waste industry, dairy farms, bakery and taxis). All the isolates were plated onto malt extract agar with chloramphenicol and incubated at 27°C, during 5 days. These isolates were identified on the basis of macro and micromorphology and also by sequencing the calmodulin gene. All the *Aspergillus* of the *Fumigati* section were screened (for azole resistance detection) using media supplemented with itraconazole, voriconazole and posaconazole.

Results: From the 60 isolates, 41 (68%) were identified as belonging to the *Fumigati* section, 15 (25%) to the *Nigri* section and 1 (2%) to the *Versicolores*, *Terrei*, *Clavati* and *Nidulantes* sections. In the majority of the settings, *Aspergillus fumigatus sensu stricto* was the most frequently isolated species (55%). However, in the waste industry the majority of the isolates (92%) belong to the *Nigri* section, 82% of them being *Aspergillus tubingensis*. None of the tested isolates belonging to *Fumigati* section presented resistance to the tested azoles.

Discussion: Environments contaminated with *Aspergillus* may be the cause or enhance respiratory problems in workers of specific settings. The most frequent species found in the studied environments was *A. fumigatus sensu stricto*, described as the major etiological fungal agent of respiratory infections/allergies. In the waste industry setting, however, the most frequent species found was *A. tubingensis*, described as less susceptible to azoles. The knowledge of the *Aspergillus* epidemiology in specific indoor environments will allow a better risk characterization regarding *Aspergillus* burden.

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