

BIOBURDEN CHARACTERIZATION IN PORTUGUESE DWELLINGS

Carla Viegas^{1,2*}, Flávio Sá³, Margarida Mateus³, Patrícia Santos³, Ana Monteiro¹, Tiago Faria^{1,4}, Liliana Aranha Caetano^{1,5}, Elisabete Carolino¹, Anita Quintal Gomes^{1,6}, Estela Vicente⁷, Célia Alves⁷

¹ H&TRC- Health & Technology Research Center, ESTeSL- Escola Superior de Tecnologia da Saúde, Instituto Politécnico de Lisboa. ² Centro de Investigação em Saúde Pública, Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa, Lisbon, Portugal, ³ GIAS, ESTeSL - Escola Superior de Tecnologia da Saúde de Lisboa, Instituto Politécnico de Lisboa, Lisbon, Portugal ⁴ Centro de Ciências e Tecnologias Nucleares, Instituto Superior Técnico, Universidade de Lisboa, E.N. 10 ao km 139,7, 2695-066 Bobadela LRS, Portugal, ⁵ Research Institute for Medicines (iMed.U LISBOA), Faculty of Pharmacy, University of Lisbon, Lisbon, Portugal, ⁶ University of Lisbon - Institute of Molecular Medicine, Faculty of Medicine, Lisbon, Portugal, ⁷ Centre for Environmental and Marine Studies, Department of Environment and Planning, University of Aveiro, 3810-193 Aveiro, Portugal

*Presenting author: carla.viegas@estesl.ipl.pt

Several studies have indicated that bioburden presence in the indoor environment is associated with serious health effects. Passive sampling methods are easy to use and represent a long-term integrated sample. This study intended to characterize bioburden and assess the azole resistant fungi through electrostatic dust cloth from 23 dwellings from Aveiro.

Each EDC (a total of 69 indoor EDC in each season – summer and winter) were placed at bedroom, kitchen and living room from each dwelling for 30 days. EDC wash suspension was inoculated onto 4 different culture media for bioburden characterization. Suspensions were also inoculated onto saboraud screening media supplemented with 4 mg/L itraconazole (ITC), mg/L voriconazole (VCZ), and 0.5 mg/L posaconazole (PCZ). Molecular detection of toxigenic *Aspergillus* sections will be performed shortly. Dwellings characteristics were collected covering several environmental parameters.

Regarding summer season fungal contamination in one of the two applied media ranged from 448 to 74742 CFU/m². *Chrysonilia sitophila* (68.8%) was the most frequent, followed by *Rhizopus* sp. (16.54%) and *Penicillium* sp. (7.99%). Total bacterial load ranged from 1 to 581 CFU/m². Gram-negative bacteria load ranged from 1 to 14 CFU/m² and was found in 10 sampling places. Fungal growth in azole-supplemented media was observed in 55 EDC samples, ranging from 1 to 24881 CFU/m². Of note: *Penicillium* sp. load ranged from 1 to 1493 CFU/m² in azole-supplemented medium (ITC, VCZ and PCZ); *Rhizopus* sp. load ranged from 1 to 24881 CFU/m² in azole-supplemented medium (ITC and VCZ). No *Aspergillus* sp. colonies were observed in azole-supplemented media. There were no significant correlations between cleaning frequency and the footwear use indoors with the bioburden observed.

Bioburden characterization in Portuguese dwellings was obtained by a simplified sampling method (EDC). Further studies should be performed using this sampling method in chronically immunocompromised patients' dwellings, such as cystic fibrosis or cancer and transplant and hemodialysis patients.

Acknowledgments: The authors are grateful to Instituto Politécnico de Lisboa, Lisbon, Portugal for funding the Projects: " Pilot-project for bioburden exposure assessment in dwellings from cystic fibrosis patients in Portugal" (IPL/2017/B2CF -ESTeSL) and "Pilot-project for bioburden exposure assessment in hemodialysis settings in Portugal" (IPL/2017/B2 Hemo – ESTeSL).