

BIOLOGICAL INDOOR AIR ASSESSMENT IN ELDERLY CARE CENTERS: THE GERIA PROJECT

Ana Mendes^{1*}, Livia Aguiar¹, Cristiana Pereira¹, Manuela Cano¹, Paula Neves¹, Diana Mendes¹, Maria do Carmo Proença¹, João Paulo Teixeira^{1,2}

¹ Environmental Health Department, Portuguese National Health Institute Doutor Ricardo Jorge, Porto and Lisbon, Portugal.

² Institute of Public Health (ISPUP), Porto University, Portugal.

*Corresponding author: asestevao@gmail.com (Tel.: +351 964 780 242)

Airborne bacterial and fungal exposures have been documented to induce allergic diseases, toxicoses, irritation, infections and their components are linked to development and exacerbation of chronic respiratory illness. This paper presents results which have been produced within the GERIA ongoing project 'Geriatric study in Portugal on Health Effects of Air Quality in Elderly Care Centers', by measuring and characterizing biological indoor air assessment in 22 elderly care centers (ECC) in Porto and 18 in Lisbon, in winter and summer seasons, and its health effects particularly hazardous for individuals with underlying respiratory disease, such as the elderly.

After a building walk-through survey the microorganism air sampling was conducted using a microbiological air sampler and two agars, tryptic soy agar for bacteria and malt extract agar for fungi. Both indoor and outdoor samples (250 L of air) were collected in duplicate and with one field blank per culture medium per day. Results were expressed as colony-forming units per cubic meter of air (CFU/m³).

Most of the evaluated ECC presented condensations and infiltrations along walls and roofs inside the buildings. Bacteria showed significantly higher indoor levels compared to outdoor, in both seasons, as well as, indoor significant differences between seasons. Moreover, bacteria concentration show significant variation between ECC rooms. Although fungi main species found were *Cladosporium* and *Penicillium*, considered to be common in indoor air, *Aspergillus flavus*, *Aspergillus fumigatus*, and *Aspergillus niger* were also identified, pathogenic species that produce mycotoxins and therefore may produce several adverse health effects.

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