ASSESSMENT OF AZOLE RESISTANCE IN CLINICAL SETTINGS BY PASSIVE SAMPLING

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INTRODUCTION

Clinical settings (hospitals, primary health care centers – PHCC), with high occupation rates, present microbiologic agents in their environment. Exposure to mycobiota in indoor environments is related to several adverse human health effects, such as respiratory symptoms.[1]

Azole resistance in fungal species and consequent failure of antifungal therapy are a major concern for public health.[2] Portuguese legislation recommends active air sampling for bioburden assessment indoor. Passive sampling can be used in complement to determine bioburden levels from longer periods.[3]

AIM: To assess the fungal burden and prevalence of azole resistance in clinical settings in Portugal using passive sampling methods.

MATERIALS AND METHODS

I. Ten Portuguese Primary Health Care Centers (PHCC) were sampled between June and September 2018 by passive sampling:

- **Electrostatic dust cloths (EDC)** – in place for 15 days
- **Heating Ventilation and Air Conditioning (HVAC)** – equipment filters
- **Settled dust** – 10 minutes vacuumed

II. Samples seeded onto azole- supplemented Sabouraud dextrose agar (SDA) supplemented with 4mg/L itraconazole (ITRA), 1mg/L voriconazole (VORI), or 0.5 mg/L posaconazole (POSA).

III. Fungal count and identification after 5 days incubation at 27ºC.

RESULTS

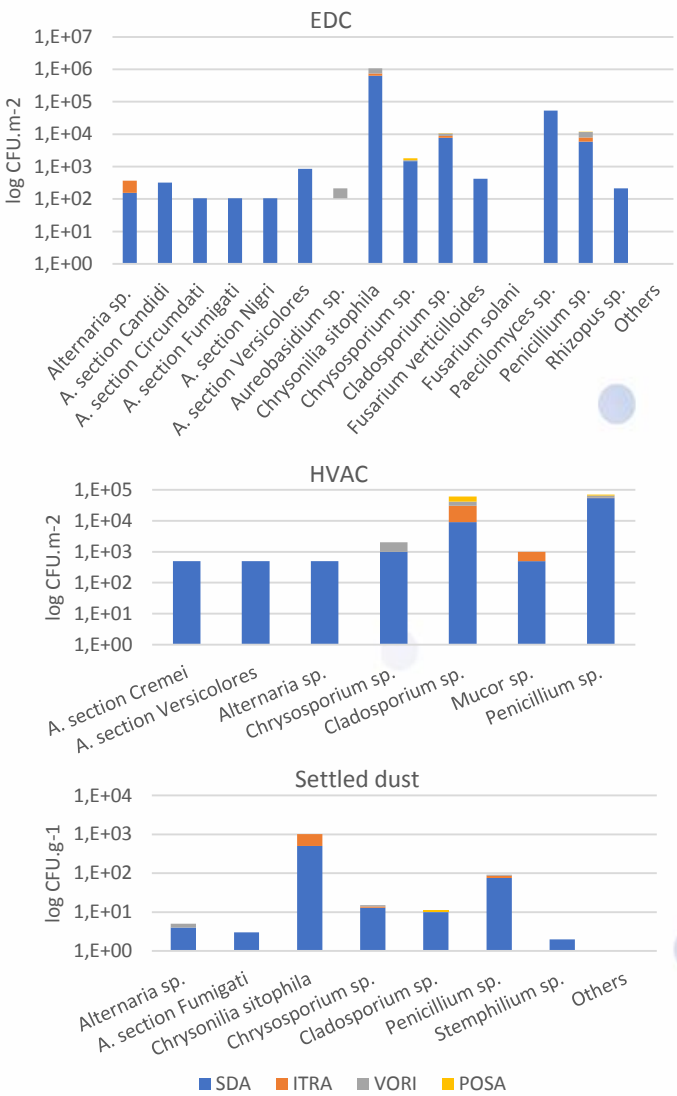
TOTAL FUNGAL BURDEN PER PHCC PER SAMPLING

Fungal load (SDA):

- **EDC – 348 to 424628 CFU.m^{-2}**
- HVAC - 0 to 56500 CFU.m^{-2}
- Settled dust - 2 to 514 CFU.g^{-1}

FUNGAL GROWTH IN THREE AZOLES

- EDC – 4 PHCC
- HVAC – 2 PHCC
- Settled dust – 1 PHCC



Fungal growth in >1 azole in 9/10 PHCC for:

- *Penicillium* sp.
- *C. sitophila*
- *Cladosporium* sp.

No azole resistance found for *Aspergillus* sp.

CONCLUSIONS

- Passive sampling enables an accurate characterization both quantitative and qualitative of total and azole-resistant fungal burden.[3]
- Passive sampling should be included in sampling protocols in the assessment of total and azole-resistant bioburden in clinical settings.

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