AZOLE-RESISTANT MOLDS IN ENVIRONMENTAL SAMPLES FROM PORTUGUESE DWELLINGS

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Introduction

The indoor environment is a source of bioburden associated with serious health effects. The emergence of fungal resistance to antifungals is a problem in the management of fungal diseases, being a major concern for Candida sp., Aspergillus sp., and Mucorales order.1-3 This study determines the prevalence of azole resistant bioburden in Portuguese dwellings through passive sampling methods and screening in azole-supplemented media.

Methodology

I. Electrostatic dust cloth (EDC) was used to collect dust for 30 days at:
   - 9 dwellings in Lisbon (bedroom and living room)
   - 23 dwellings in Aveiro (bedroom, kitchen and living room) (summer season)
II. Screening of azole resistance on sabouraud media supplemented with either:
   - 4 mg/L itraconazole (ITC)
   - 1 mg/L voriconazole (VCZ)
   - 0.5 mg/L posaconazole (PCZ)

Results and discussion

Fungal growth inazole-media (1 to 24,881 CFU/m²) was observed in:

- 57% samples from 5 dwellings in Lisbon
- 80% samples from dwellings in Aveiro

In the larger survey (23 Aveiro dwellings, summer season):

- Penicillium sp. load ranged from 1 to 1,493 CFU/m² in the three azole-media (ITC, VCZ and PCZ)
- Rhizopus sp. load ranged from 1 to 24,881 CFU/m² in ITC and in VCZ media
- No Aspergillus sp. was observed in azole-media in summer season (winter results are being processed)

Results suggest a multi-azole resistant phenotype.

Conclusions

- EDC sampling method is suitable for the assessment of azole-resistance indoors.4
- The detection in dwellings of fungal species able to grow in azole-supplemented media rises concern regarding potential health risks for inhabitants, specially for high-risk subpopulations, such as immunocompromised individuals and other susceptible populations.3
- Screening of azole-resistance should be adopted as a protocol in exposure assessments at homes of immunocompromised individuals. Further molecular studies are necessary to fully characterize azole-resistance.5,6

References


Acknowledgements

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 - B2CF” (IPL/2017/B2CF_ESTEiSL)