AZOLE-RESISTANCE OF MUCORALES IN OCCUPATIONAL ENVIRONMENTS AND POTENTIAL HEALTH RISKS FOR WORKERS

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PURPOSE

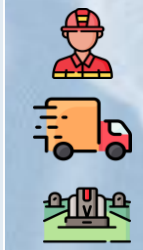
Mucorales can cause severe infections, such as mucormycoses, associated with a great deal of morbidity. The frequency and clinical importance of these infections are common, likely due to the increasing number of immunocompromised hosts in the last decades. (1,2)

Triazoles, including the newer posaconazole are alternatives to first line treatment for mucormycoses, with azole activity reported as species-dependent. (3,4)

The emergence of azole resistance in the environment, including occupational environments, is of concern, representing a risk for exposed workers. (5)

Here, we present the distribution and screening of azole resistance of two common species of Mucorales in the environment of three distinct occupational settings in Portugal.

METHODS



Air (N=24) and passive (N=54) samples

- Firefighter Headquarters (FFH) (N=11)
- Waste Collection Trucks (N=32)
- Graveyards (N=3)

Sample extraction

- 0.1% Tween™ 80 saline solution (NaCl 0.9%)
- 30 min, 250 rpm

Fungal culture

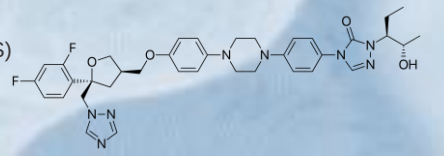
- Malt extract agar (MEA) with 0.05% chloramphenicol
- Dichloran-glycerol agar (DG18)
- 5-7 days, 27 ºC

Azole screening (adapted from EUCAST)

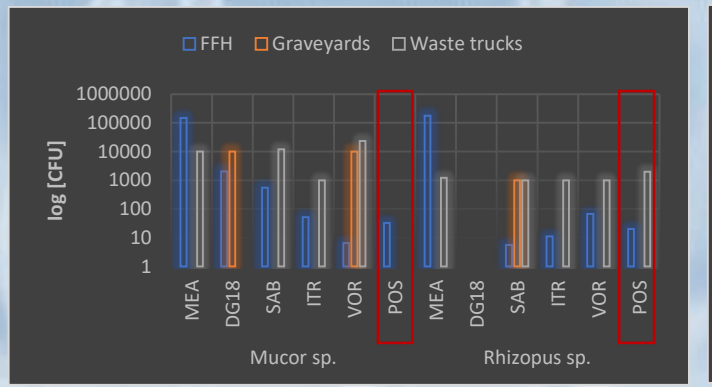
Azole-supplemented Sabouraud (SAB) media
- 4 µg/mL itraconazole (ITR)
- 2 µg/mL voriconazole (VOR)
- 0.5 µg/mL posaconazole (POS)
- 3-4 days, 27 ºC

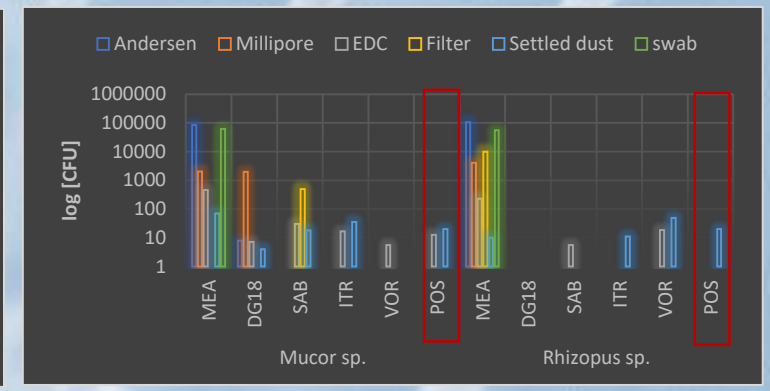
Mucorales species identification

- Macro and microscopic morphology



RESULTS





Air sampling (Andersen an Millipore) tested on MEA and DG18 only; Passive sampling (Electrostatic dust collector- EDC, Filter, Settled dust, Swab) tested on all media.

CONCLUSIONS

- Reduced susceptibility to posaconazole found in FFH (*Mucor* and *Rhizopus* spp.) and waste trucks (*Rhizopus* sp.) might represent an increased risk for workers from these settings (specially the immunocompromised), and must be further investigated.

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