Aspergillus spp. distribution on waste collection trucks

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Introduction

While better waste management is viewed as a critical contributor to reducing health outcomes and harmful environmental impacts, microbiological occupational exposure in waste management industry is often overlooked, resulting in detrimental health effects on employees [1,2]. Some waste workers, such as garbage collectors and truck drivers transporting residential waste, spend part of their shift in a truck cabin and part of it in a workplace where organic materials are processed. **The aim of this study was to investigate the *Aspergillus* spp. contamination present in 32 waste collection trucks (WCT).**

Materials and Methods

Surface swabs – 64 samples
Filters (settled dust) – 32 samples
EDC – 16 samples

Extraction with 0.1% Tween™ 80 saline solution (NaCl 0.9%) for 30 min at 250 rpm

Antifungal resistance screening through samples inoculation in azoles (ITZ, VOZ, POZ), according with the proposed values of EUCAST norm

Inoculation onto MEA and DG18 (27°C - 5 to 7 days)

Molecular tools for the detection of four *Aspergillus* sections: *Fumigati*, *Flavi*, *Nidulantes* and *Circumdati*

Aspergillus sections identification through macro and microscopic characteristics

Results

- *Aspergillus* sp. was identified as one of the most prevalent species in MEA (0.85%) and DG18 (7.13%).
- *Fumigati* (51.3%) and *Nigri* (48.7%) sections were the only sections identified on MEA
- *Aspergilli* section presented the highest prevalence on DG18 (36.7%)
- *Fumigati* section was identified in almost all matrixes (30% MEA on Swabs; 21.12% MEA on Filters; 3.21% DG18 on Swabs).

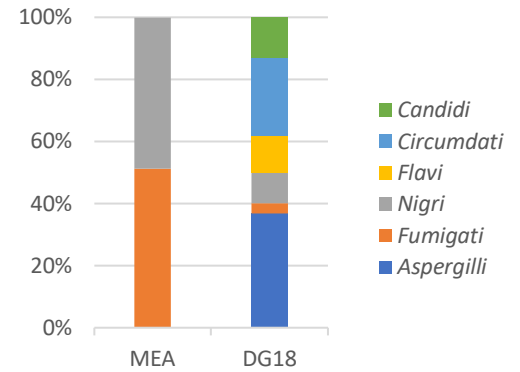

Fig. 1 - Most prevalent *Aspergillus* sections by culture media

- *Aspergillus* sp. was not identified in azole-supplement media.

Discussion and Conclusion

Aspergillus sp. was one of the most prevalent in the WCT following the same trend of waste management industries previously assessed in Portugal [3]. Besides being the most prevalent section identified with culture-based methods, *Fumigati* was also detected through molecular methods, enhancing the importance of both methods to be applied in occupational exposure assessments [4].
The obtained results raise concerns about the risks to which these workers are exposed due to *Aspergillus* sp. clinical relevance and toxicological potential.

References

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