Fast growing fungi: a problem to be solved to achieve characterization of occupational exposure to fungi in cork industry

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Introduction

Fungal contamination in occupational settings is one of the main factors affecting workers health. Implementation of measures aiming to limit its spread is therefore essential[1].

Although limit values for fungal air contamination have already been proposed, these values are not consensual also because of the lack of uniformity in the environmental monitoring procedures[2] and laboratory methods among laboratories.

Chrysonilia sitophila is a common mould in cork industry and has been identified as a cause of IgE sensitization and occupational asthma. This fungal species has a fast growth rate that may inhibit other species' growth causing underestimated of data when characterizating occupational fungal exposure [3].

Aim of the study

To identify the best methodology, namely the most suitable sampling method, to be used when assessing occupational exposure to fungi in cork industry, besides the ones that have fast-growing rates.

Materials and Methods

Were analyzed papers published in 2000 about the best air sampling method, taking into account fast growing fungi.

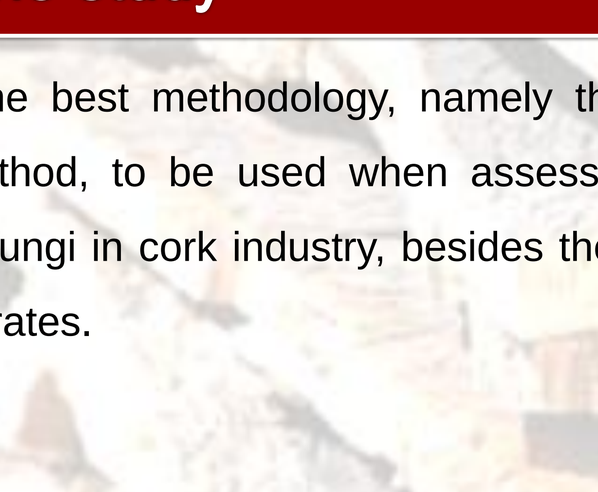

Fig. 1 - Fast growing fungi covering all the plates used in impaction method .

Results

Impaction method doesn't allow the collection of a representative air volume, because even with some media that restricts the growth of the colonies, in environments with higher fungal load, such as cork industry, the counting of the colonies is very difficult.

Fig. 2 - Device used for air samples collection through impaction method

Fig. 3 - Equipment used for air samples collection through impinger method

Otherwise, impinger method permits the collection of a representative air volume, since we can make dilutions of the collected volume.

Besides culture methods that allow fungal identification through macro and micro-morphology, growth features, thermotolerance and ecological data, we can apply molecular biology with the impinger method, to detect the presence of non-viable particles and potential mycotoxin producers' strains, and also to detect mycotoxins presence with ELISA or HPLC.

Conclusions

Selection of the best air sampling method in each setting is crucial to achieve characterization of occupational exposure to fungi.

Previous knowledge about the prevalent fungal species in each setting and also the eventual fungal load is helpful for a suitable selection.

References

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