

Fungal Communities in Archives

Ana Catarina Pinheiro (PhD Student)
Valme Jurado Lobo PhD (CSIC, Seville, Spain)
Laura Rosado PhD (INSA IP, Lisbon, Portugal)
Filomena Macedo PhD (FCT- UNL, Lisbon, Portugal)



Catarina Pinheiro

Has a degree in Pharmaceutical Sciences and Conservation and Restoration. Has lectured Preventive Conservation at FCT-UNL and FCSH-UNL and has several published articles in peer-reviewed international journals.

E-mail: catmarpin@gmail.com



Objectives

- To perform an air quality assessment in a selection of Portuguese archives
- To identify the fungal species or genera present in these selected premises
- To develop a protocol for fungal identification and isolation using:
 - classical methodologies like media culture and microscopic identification;
 - molecular biology protocols such as Polymerase Chain Reaction (PCR) and denaturing high performance liquid chromatography (DHPLC)
- To determine possible interactions between fungi, ancient documents and the people who consult them or tend to their care.

Methodology

- Sampling:
 - Air samples collected by a Milipore Air sampler (250ml) (figure 1)
 - Swab samples from surfaces and documents (figures 2 and 3)
- Inoculation on Culture Media (MEA and DG18)
- Identification of fungal colonies using microscopic features and atlas (figures 4 and 5)
- Fungal identification using PCR (figure 6)
- Development of a DHPLC protocol to distinguish between mixed cultures (figure 7)

Expected Results

- The biological assessment of the environment has yielded the identification of potentially toxinogenic fungi (*Stachybotrys* sp.) which was followed by remedial action. This same assessment in documents surfaces made it possible to identify potentially damaging fungi both human and documents.
- The dHPLC is a possible method for resolving complex mixtures of fungal DNA. It can be used for both cultural heritage (Pinheiro et al, 2013) and clinical samples (Pinheiro et al, submitted for publication).



Fig.1



Fig.2



Fig.3



Fig.4



Fig.5

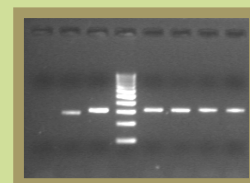


Fig.6

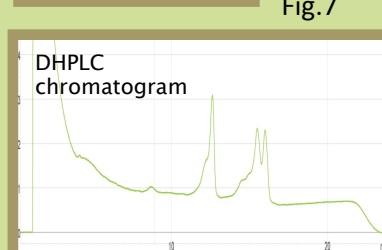


Fig.7

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References

AC Pinheiro, B Oliveira, C Veríssimo, JBrandão, L Rosado, V Jurado, MF Macedo. 2013. Identification of a fungal community on gilded wood carved heritage; *Journal of Cultural Heritage* 14 pp 76-81.
AC Pinheiro, V Jurado, H Moallaie, H Antoniazzi, R Sabino, JC Brandão, C Veríssimo, L Rosado, MF Macedo. DHPLC and AFCE to resolve mixed *Candida* spp. cultures (submitted for publication to *Diagnostic Microbiology and Infectious Disease*)