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FACULDADE DE CIÊNCIAS E TECNOLOGIA
UNIVERSIDADE NOVA DE LISBOA

Department of Conservation and Restoration

Treatment of paper biodeteriorated by fungi

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Objectives

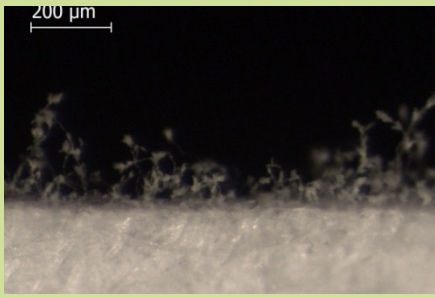
Fungal biodeterioration is a major concern in paper conservation. Nevertheless, there are few viable alternatives to the toxic treatments used in the past. In this project the main goals are:

- Evaluate the need of using antifungals to treat the biodeterioration by fungi on paper;
- Study the efficacy of alternative non-toxic and economic antifungal and deacidification mixtures to treat paper affected by fungal biodeterioration;
- Determine the safeness of the tested methods regarding their long term effects on paper items.

Book affected by fungal deterioration

Methodology

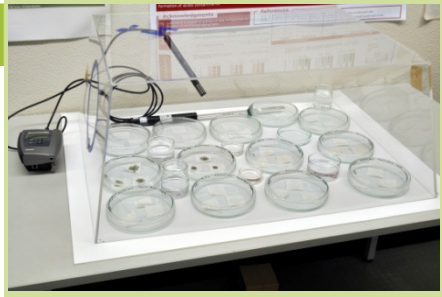
- Simulation of real and extreme storage environmental conditions to test the need of using antifungals on paper already affected by fungal biodeterioration, by comparing it with the use of only cleaning procedures;
- Use of a fluorogenic 4-Methylumbelliferyl labeled substrate N-acetyl-Beta-D-glucosamine (MUF-NAG) to quantify fungal growth, trough measurement of beta-N-acetylhexosaminidase activity.
- Evaluation of the influence of the antifungal-deacidification mixtures on the long term stability of treated paper samples, through chemical and physical characterization before and after artificial ageing tests.



Penicillium chrysogenum growing on paper sample.

Expected Results

- Determining in which situations the use of antifungals on paper is necessary;
- Finding safer alternatives to the traditional antifungal compounds and methods used nowadays to stop fungal biodeterioration on paper;
- Developing further the fluorimetric method to quantify fungal development, by defining its limitations and potentials.



Paper samples in high humidity chamber simulating inadequate storage conditions.

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