LINSEED OIL-BASED COATING FOR RETARDING MOULD GROWTH ON WOOD

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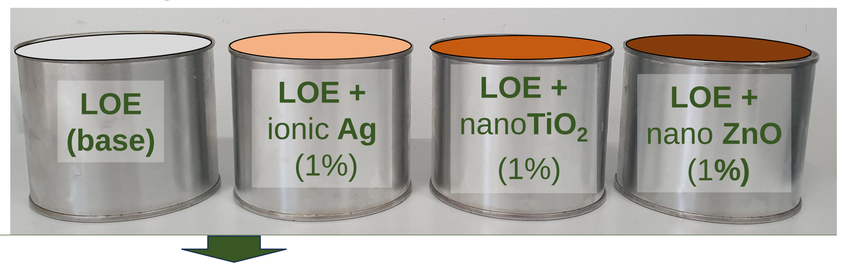
INTRODUCTION

In addition to reducing the adverse effects of water and photodegradation, wood coating formulations can be tailored to provide additional benefits including antimicrobial resistance. A certain period of favourable environmental conditions is detrimental to the initiation of mould growth. Therefore, inhibition of germination and growth may allow sufficient time to prevent conditions that favour mould growth and thus avoid the problem. In the present study, the possibility of retarding mould growth on wood surfaces by using a linseed oil-based emulsion without and with antimicrobial additives incorporated into the formulation was investigated.

MATERIALS & METHODES

1. Development of coating formulations:

LOE:
linseed oil (65%)
water (30%) emulsion



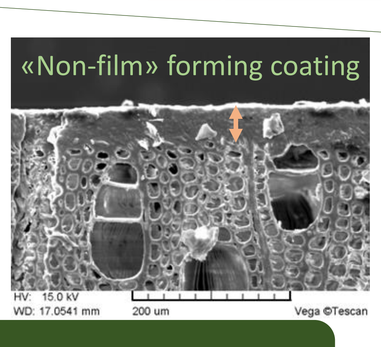
2. Coating of samples

2 layers

Wood substrate:

Birch (*Betula spp.*) – 92 ± 9 g/m^2

Pine (*Pinus sylvestris* L.) – 107 ± 3 g/m^2

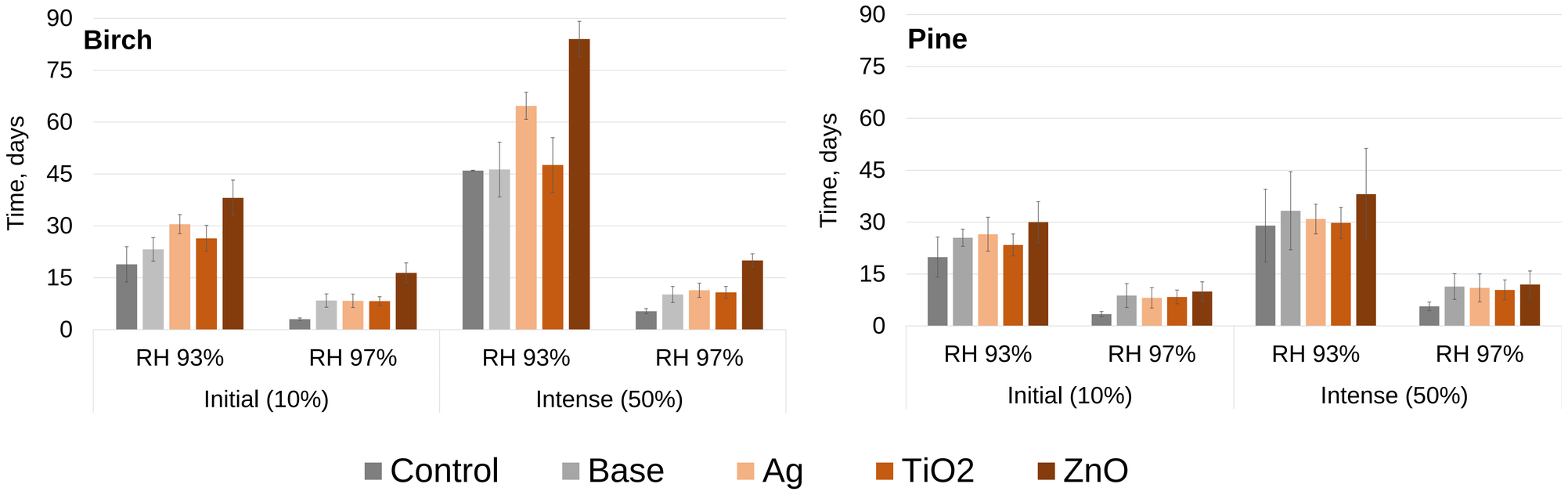


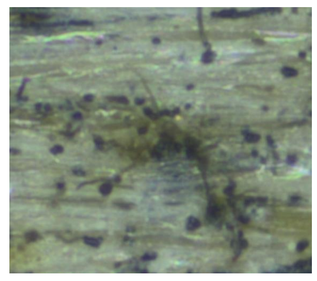
3. Mould tests (Without inoculation)

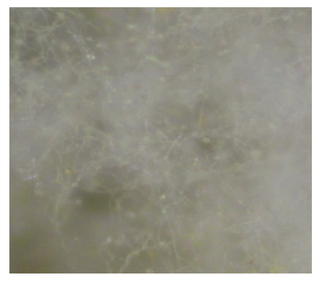
4. Evaluation of mould development

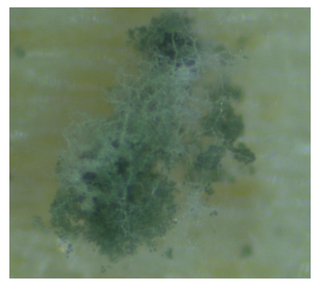
RESULTS

Mould development on samples with different coatings









CONCLUSIONS

The results show that the **linseed oil emulsion** when used as a non-film-forming coating, allowing for maintaining the natural appearance of the wood surface, can **hinder mould development**. The performance of the formulation can be improved by antimicrobial additives. **ZnO** was **the most effective between the tested additives**. However, to finalize the formulation, further work is needed to assess the optimal concentrations and to test the potential synergistic effect of ZnO and Ag, which were the two more effective additives.

Acknowledgment

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