

Biobased protective agent from plant cell culture for wood-based materials

MOTIVATION:

Conventional wood preservatives often contain substances that are harmful to the environment and to health. With the new biocide regulation of 21-05-21, the approval conditions for these substances have been tightened. As a result some have lost their approval. Sustainable, biological and nontoxic active substances will be irreplaceable in the future. The phytoextract obtained from sage contains oleanolic and ursolic acids, which have fungicidal and waterrepellent effects. So they are suitable as wood preservatives. In addition, it can be produced biotechnologically - i.e. without competing with agricultural land.



Beneficial properties of phytoextract from cell cultures of sage plant



LARGE POTENTIAL:

Due to its positive properties, a wide field of application for phytoextract from sage cell culture in coatings for the protection of wood is conceivable:

- Children's toys (DIN EN 71)
- Furniture for indoor & outdoor
- Structural & building timber for indoor & outdoor use
- Accessories and clothing







bio **pin**° | *Naturfarben*

N & GROH Veneers naturfarbenwerkstatt

Project SchuPlaHolz 2020-2022

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MARKET & DEMAND SITUATION:

An online survey of wood products and paint manufracturers revealed a high level of acceptance of bio-based wood preservatives. The most important factor for the respondents was the antifungal effect of the substance.

water repellent effect anti-fungal UV- protection long-term protection odor- inhibiting suitable for allergic persons suitabel für children's toys



WHAT PHYTOEXTRACT IS CAPABLE OF:

The water-repellent effect of the phytoextract in a wood oil is highest at 5 percent dosage (Fig.1). Furthermore, the fungistatic efficacy of the extract was shown in the reduced growth rate of molds (Fig. 2).



Figure 2: Agar diffusion test, left: Control, right plant extract



Figure 1: Contact angle determination of water with A- 0 %, B- 5 % and C- 10 % phytoextract of impregnated copper beech

ADVANTAGES OF BIOTECHNOLOGICAL PRODUCTION:

Instead of an agricultural cultivation, the production of the sage cells takes place with defined parameters in the bioreactor. This results in several advantages:

- Manufacture according to good manufacturing practice (GMP)
- Constant quality and quantity
- Higher concentration → greater yield

This creates a natural product which could replaces synthetic and environmentally harmful substances.

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