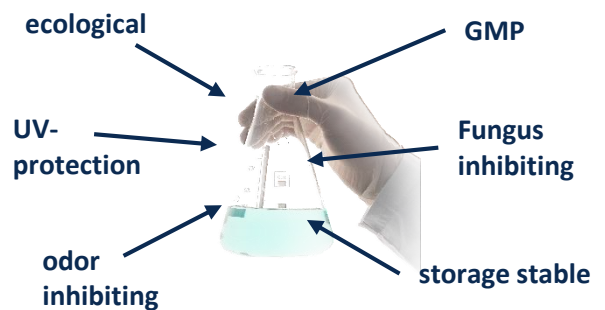


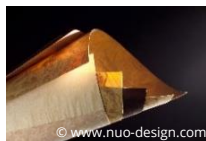
Biobased protective agent from plant cell culture for wood-based materials

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 non-toxic active substances will be irreplaceable in the future. The phytoextract obtained from sage contains oleanolic and ursolic acids, which have fungicidal and water-repellent 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:

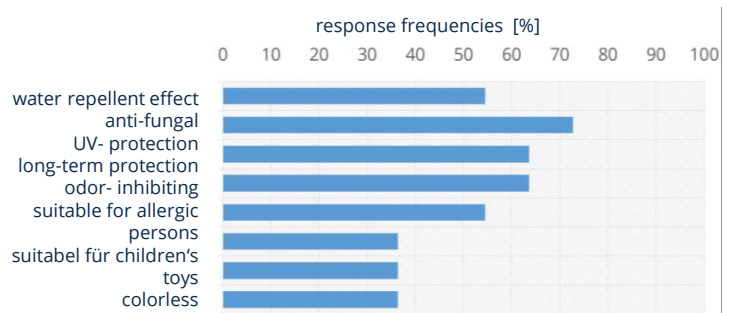
Due to its positive properties, a wide field of application for phytoextract from sage cell culture in coatings for the protection of wood is conceivable:

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



MARKET & DEMAND SITUATION:

An online survey of wood products and paint manufacturers 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.



WHAT PHYTOEXTRACT IS CAPABLE OF:

The water-repellent effect of the phyto-extract 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).

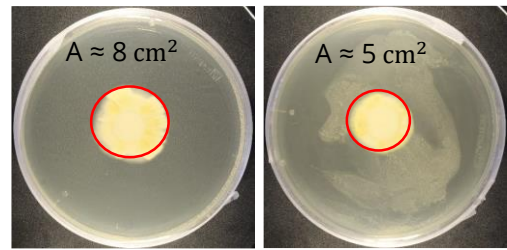


Figure 2: Agar diffusion test, left: Control, right: plant extract

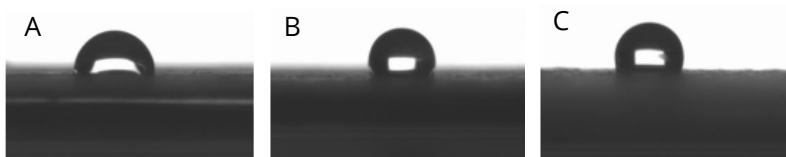


Figure 1: Contact angle determination of water with A- 0 %, B- 5 % and C- 10 % phyto-extract of impregnated copper beech

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 replace synthetic and environmentally harmful substances.