

INNOVATIVE AND EFFICIENT ANTIFUNGAL COMPOSITION FOR PHARMACOLOGICAL AND PHYTOSANITARY APPLICATIONS

 PATENTED TECHNOLOGY

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ABSTRACT

The Plant Pathology research group of the University of Alicante has developed an antifungal composition based on the combined use of chitosan, or chitosan oligosaccharides together with inhibitors capable to modify gene expression of specific molecular targets to enhance sensitivity of eukaryotic cells to the effects of the chitosan or its oligosaccharides.

This composition is harmless to humans/animals and effectively inhibits growth of many fungal species, including pathogens. The main applications of this technology are: Pharmacology and Agriculture, but it is also applicable in other sectors.

The research group is looking for companies acquiring this invention for licensing agreement or technical cooperation.

ADVANTAGES AND INNOVATIVE ASPECTS

This technology aims to help controlling resistant strains of important filamentous fungi and yeast fungi (e.g. *Candida* spp.) originated after prolonged treatment with currently used antifungals.

The present invention provides for these purposes:

- The use of novel antifungals (COS and chitosan).
- The combined use (synergical) with existing antifungals (e.g. fluconazole) to reduce their doses.
- The use of COS and chitosan (alone or in combination with existing synergical antifungals) with an inhibitor of ARL1 gene to increase the sensitivity of fungi (including yeast) or their chitosan oligosaccharides (COS).

Several experiments carried out have shown the significant synergistic effect of the combination object of the present invention (chitosan or COS, and an inhibitor of ARL1 gene or a currently used antifungal such as fluconazole) in inhibiting growth of filamentous fungi and yeast.

Chitosan and COS are non-toxic for mammals, and therefore, they have a particular interest to use them as antifungal agents in some applications.

MARKET APPLICATIONS

This composition can be used as **antifungal** in various applications:

- **Pharmaceutical:** medicinal use (drugs).
- **Human use or veterinary treatment** and/or prevention of fungal infections by pathogenic fungi, such as *Candida* spp., *Botrytis cinerea*, *Fusarium oxysporum*, *Aspergillus fumigatus*, *Cryptococcus* spp., *Saccharomyces cerevisiae*, *Zygosaccharomyces bailii*, *Trichosporon* spp., *Malassezia* spp., *Scedosporium* spp., etc.
- In **agriculture** (phytosanitary treatments, preferably in infections caused by *Botrytis cinerea* and *Fusarium oxysporum*), but also in other pathogens in pre- and post-harvest plant diseases.

- In the **food industry** (for example, to coat foods in order to avoid microbial contamination).
- In the **textile industry**.
- As **detergent** (for cleaning different surfaces).

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COLLABORATION SOUGHT

The research group is looking for companies interested in acquiring this technology for commercial exploitation through licensing agreements or technical cooperation.

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