

Patent application of antimicrobial activity of a protein-rich aqueous extract of oyster mushroom (*Pleurotus ostreatus*) against *Aspergillus* spp. and *Penicillium* spp. moulds

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Bioactive proteins and peptides derived from fruits, vegetables, meat or fish have great potential as functional foods or as substitutes for clinically used antimicrobials. In recent years, it has also been shown that the fungal kingdom could be a source of these compounds. This study investigated the bioactivity of an extract of the oyster mushroom *Pleurotus ostreatus* and its hydrolysate against *Aspergillus* spp. and *Penicillium* spp. reference strains (no. of the patent application: P.445190).

The antifungal activity of the tested extract and hydrolysate was evaluated against moulds reference (*Aspergillus fumigatus* ATCC 46645, *Aspergillus niger* ATCC 16404, *Penicillium chrysogenum* ATCC 10106), from the collection of the Department of Pharmaceutical Microbiology, Medical University of Lublin, Poland, by using the microdilution broth method according to EUCAST guidelines. The *in vitro* activity of the test compounds (initial concentration of 50 mg/mL) was determined on the basis of the minimum inhibitory concentration (MIC) and the minimum fungicidal concentration (MFC). The MFC/MIC ratio was also used to assess the fungistatic (MFC/MIC \geq 4) or fungicidal (MFC/MIC <4) effect.

We found fungicidal activity of the the oyster mushroom *Pleurotus ostreatus* extract and its hydrolysate against strains of the *Aspergillus* and *Penicillium* genera, with MIC ranging from 1000 to 8000 μ g/mL. According to the invention, extracts obtained from *P. ostreatus* show strong antimicrobial activity, in particular with high fungicidal species-dependent activity against moulds of extracts obtained from the lyophilisate.

The protein-rich *P. ostreatus* extract and its hydrolysate can be used to produce preparations with antimicrobial activity, especially antimicrobial and antioxidant activity, including bioactive ingredients in cosmetics and anti-aging supplements or natural preservatives.