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EVALUATION OF ANTIFUNGAL POTENTIAL OF D-B-GLUCAN EXTRACTED FROM THE FRUITING BODIES OF *PLEUROTUS OSTREATUS*

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Abstract

The recent development of fungus-resistant strains has caused concern in healthcare settings in Iraq. This has led to increased research interest in Basidiomycetes because it contains compounds with high medical efficacy. The current research explores the medical potential of the compound D-β-glucan extracted from the fungus *Pleurotus ostreatus* as an antifungal agent against clinical fungal pathogens that are resistant to the current generation of antifungals.

During this study, samples of a fungus belonging to the genus *P. ostreatus* were obtained from different locations in the city of Mosul - Iraq. Standard isolations of *Candida* sp. species include *Candida albicans, C. glabrata, C. tropicales,* and *C. lusitaniae* which were obtained and activated. The active compound D-β-glucan was extracted using the Soxhlet extractor and purified from *P. ostreatus* using high-performance liquid chromatography (HPLC) and for the aqueous and ether extractors. The antifungal effect of D-β-Glucan complex was tested using enzyme-linked immunosorbent assay (ELISA), and turbidity or growth density was observed based on optical density (OD).

The results showed that the highest concentration of D-β-glucan aqueous extract was 9.842 µg/mL in Mosul forest area, followed by 3.171 µg/mL for the Alhadba' farms, while the highest concentration of D-β-glucan in the ether extract was 265.205 µg/mL for the Mosul forest area, followed by the Alsalamia, where the concentration was 143.368 µg/mL. Finally, the highest inhibitory concentration against *Candida lusitaniae* was found at 200 pg/mL at OD 0.086, while the lowest OD value for *Candida gabrata* was 0.143 at the same concentration.

We conclude through the study that it is possible to extract D-β-glucan compound from Basidiomycetes, including *P. ostreatus*, and we can conclude that D-β-glucan has the ability to inhibit the growth of fungi.

***Key words**: Basidiomycetes, Pleurotus ostreatus, D-β-glucan, Antifungal, Candida sp.*