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Bio-prospective potential of Pleurotus djamor and Pleurotus florida mycelial extracts towards Gram positive and Gram negative microbial pathogens causing infectious disease(Article)(Open Access)

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Abstract

Background: The emergence of resistance to commonly used antibiotics by human infections occurred mostly due to their overuse, that prompted individuals to pursue novel and innovative treatments. The phytochemical characteristics, antibacterial activity, and cytotoxicity of MCF7 cells were evaluated in two Pleurotus spp. mycelial extracts in this work. Methods: Pleurotus djamor and Pleurotus florida mycelial extracts from pure cultures were tested for antibacterial activity by a well-diffusion assay and antimicrobial activity against mold fungi was evaluated for biomass inhibition. Mycelial extracts were obtained from dichloromethane extracts and their biophysical characteristics are analyzed by UV–vis spectrum and FTIR analysis. By spraying detection reagents onto TLC plates, the chemicals in dichloromethane extraction of chosen mushroom fungus mycelia were identified. Using the MTT test, the cytotoxic effect of dichloromethane extracts of selected mushroom fungi was evaluated on MCF7 Cell lines. Results: Mycelial extracts of P. djamor and P. florida exhibited significant antimicrobial effect on the bacterial and fungal pathogens tested. Dichloromethane mycelial extracts were obtained using soxhlet extraction which response positive for various phytochemical analysis. Detection of metabolites in thin layer chromatography using spray reagents documented one of few first accounts on flavonoids, anthroquinone and terpenoid compounds in P. djamor and P. florida. P. djamor and P. florida had dose-dependent antiproliferative activity against MCF7 cells, with an inhibitory impact of 55.72% and 64.47% percent at 125 µg/mL, respectively. Conclusion: The study has reported the identification with the potent biological activity of some of the key bioactive components present in DCM extracts from the mycelia of P. djamor and P. florida.

Author keywords

Antimicrobial Activity | Bioactive Constituents | MCF7 Cells | Oyster mushroom | Pleurotus | Thin-layer Chromatography

Indexed keywords

EMTREE drug terms: antibiotic agent | antifungal agent | antineoplastic agent | dichloromethane | flavonoid | fungal extract | phytochemical | Pleurotus djamor extract | Pleurotus florida extract | terpenoid | unclassified drug