

# SCREENING OF BIOSORPTION CAPACITY OF MACROPOROUS FUNGAL BIOMASS OF TRICHODERMA VIRIDE FOR LEAD REMOVAL: A PROPOSED BIOREMEDIATION IN AQUACULTURE

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**E**nvironment pollution by heavy metals is a global disaster, lead is considered one of the persisting heavy metal pollutants throughout the world due to its continuous anthropogenic generation and non-biodegradability. Its mobilization towards aquaculture escalates its threat due to its introduction to the food chain via aquatic fish and consequently to human beings consuming fish. Removal of heavy metals by conventional methods are not economically and environmental friendly as it produce massive quantity of toxic chemical compounds. Bioremediation and biological treatments especially with filamentous fungi is an alternative methods which have gained an increasing attention for heavy metal removal and recovery due to their upright performances, low cost and huge quantities. This study is a preliminary research for a proposed bioremediation in aquaculture was carried out using 3D macroporous fungal biomat formed of *Trichoderma viride* immobilized on luffah was used for lead removal. The biomate was able to remove up to 79.44% of 400 ppm lead within 24 h and was increased to 89.05% after optimizing temperature and pH. Gamma radiation and NaOH Pre-treatment of the biomat was performed, lead removal increased to 95% within 1 hour of incubation at 30°C and pH 6. FT-IR and SEM spectroscopy indicated some changes in functionality and texture of the immobilized *T. viride* biomat. The re-use of the biomat was efficient for three consecutive cycles and was also used in fixed bed column and showed 89% removal. The biomat is very suitable for use in fixed bed reactors. and may could be used as a biofilter and contribute to water conservation.

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