



The potential of *Aspergillus fumigatus* and *Aspergillus niger* in bioaccumulation of heavy metals from the Chemu Lagoon, Ghana

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ABSTRACT

Objectives: Bioaccumulation of heavy metals by fungi has been a major focus of most bioremediation studies owing to the excellent metal binding properties of the fungal cell wall. The capability of fungi isolated from sediments of the Chemu Lagoon to bioaccumulate heavy metals in lagoon water was investigated.

Methodology and Results: Fungi were isolated using pour plate technique and sub cultured to obtain pure cultures. Fungi isolated included *Aspergillus candidus*, *A. fumigatus*, *A. niger*, *A. tamarii*, *Mucor rouxii*, *Penicillium notatum* and *Rhizopus* sp. *Aspergillus fumigatus* and *Aspergillus niger* were selected for heavy metals bioaccumulation studies on PDB-amended with lagoon water in ratios of 1:1, 1:3 and 1:5 respectively for 3 weeks. Lead and Iron were the most bioaccumulated metals in *A. niger* and *A. fumigatus* with levels of 36.92 mg/L and 73.09 mg/L respectively. Bioaccumulation of heavy metals by both fungi during the wet season was higher than the dry and semi-wet seasons.

Conclusions and applications of findings: Both *Aspergillus fumigatus* and *Aspergillus niger* have good potential for the remediation of heavy metals in polluted water bodies. Comparatively *A. fumigatus* is a good candidate for Arsenic accumulation whilst *A. niger* is good candidate for Cadmium. The relatively longer period of inoculation of media with fungi is essential in increasing the levels of toxic metals accumulated by fungi. The ability of *A. fumigatus* and *A. niger* to bioaccumulate less toxic metals such as Iron, Lead and Zinc at high concentrations in the presence of more toxic metals could imply their versatility in tolerating and or bioaccumulating both classes of metals.

Key words: Bioaccumulation potential, fungi, heavy metals, *Aspergillus*, Chemu lagoon.