

## QUANTIFICATION AND BIOREMEDIATION OF ENVIRONMENTAL SAMPLES BY DEVELOPING A NOVEL AND EFFICIENT METHOD

Mohammad Osama<sup>a\*</sup>, Felicia Armstrong<sup>a</sup>, Peter Norris<sup>b</sup>, Habiba Tahira Hussain<sup>c</sup>

<sup>a</sup>Department of Geological and Environmental Sciences, Youngstown State University, Ohio 44555, US

<sup>b</sup>Department of Chemistry, Youngstown State University, Ohio 44555, US

<sup>c</sup>Department of Microbiology, Jawaharlal Nehru Medical College and Hospital,  
Aligarh Muslim University, Aligarh 202002, India

\*e-mail: osama.alig@gmail.com

**Abstract.** *Pleurotus ostreatus*, a white rot fungus, is capable of bioremediating a wide range of organic contaminants including Polycyclic Aromatic Hydrocarbons (PAHs). Ergosterol is produced by living fungal biomass and used as a measure of fungal biomass. The first part of this work deals with the extraction and quantification of PAHs from contaminated sediments by Lipid Extraction Method (LEM). The second part consists of the development of a novel extraction method (Ergosterol Extraction Method (EEM)), quantification and bioremediation. The novelty of this method is the simultaneously extraction and quantification of two different types of compounds, sterol (ergosterol) and PAHs and is more efficient than LEM. EEM has been successful in extracting ergosterol from the fungus grown on barley in the concentrations of 17.5-39.94  $\mu\text{g g}^{-1}$  ergosterol and the PAHs are much more quantified in numbers and amounts as compared to LEM. In addition, cholesterol usually found in animals, has also been detected in the fungus, *P. ostreatus* at easily detectable levels.

**Keywords:** ergosterol, cholesterol, gas chromatography-mass spectrometry (GC-MS), sediments, polycyclic aromatic hydrocarbons (PAHs), ergosterol extraction method.