



“Gheorghe Asachi” Technical University of Iasi, Romania



---

## BIODEGRADATION OF POLYCYCLIC AROMATIC HYDROCARBONS BY INDIGENOUS FUNGI ISOLATED FROM PETROLEUM CONTAMINATED SOILS

Sonia Ben Amor<sup>1</sup>, Mohamed Neifar<sup>1</sup>, Dietmar Schlosser<sup>2</sup>, Abdellatif Boudabous<sup>1</sup>,  
Ameur Cherif<sup>1</sup>, Atef Jaouani<sup>1</sup>

<sup>1</sup>Laboratoire Microorganismes et Biomolécules Actives, Faculté des Sciences de Tunis, Campus Universitaire, 2092, Tunis, Tunisia ; <sup>2</sup>Department of Environmental Microbiology, Centre for Environmental Research-UFZ Permoserstr, 15 04318 Leipzig, Germany

---

### Abstract

Uncontrolled releases of petroleum compounds that are carcinogenic and mutagenic into environment pose a serious threat to human and animal health. Biodegradation of hydrocarbon-contaminated soils has been established as an efficient, economic, versatile and environmentally sound treatment. The objectives of this study were therefore, to isolate and identify some of the indigenous fungal flora of different sediment areas contaminated with wastewaters released by petroleum refining industry situated in Bizerte (North of Tunisia) and evaluate the biodegradation efficiencies of the potent isolates. Results of the culture-independent ARISA analysis showed clearly that there was a large difference in the fungal diversity between concentrated and diluted contaminated areas. Thirty nine indigenous fungi have been successfully isolated from the different contaminated sites. All of the pure fungal isolates obtained were identified, characterized and subjected to preliminary screening by evaluating the average growth rate of each fungal isolates on minimal media containing 1 % (v/v) of crude petrol as a sole carbon source. Among the 39 fungal isolates *Fusarium oxysporum*, *Mucor circinelloides*, *Hypocrea lixii* and *Hypocrea nigricans* exhibited the fastest and highest extent of growth, thus they were selected for further study on specific polycyclic aromatic hydrocarbon (PAH) biodegradation in a shake-flask culture. All isolates exhibited above 75 % PAH degradation efficiency when grown in a culture medium incorporated with 50 mg/l of pyrene for 10 days.

*Key words:* fungal community, hydrocarbon biodegradation, petroleum contaminated soils

---