

ISOLATION AND SCREENING OF FUNGI AS POTENTIAL DEGRADORS OF VOLATILE AROMATIC HYDROCARBONS

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Volatile aromatic hydrocarbons are components of gasoline and aviation fuels and extensively used in industrial processes as solvents and base reagents for the production of a range of chemicals. They may be released in the environment during their production, transport, use, disposal as well as for accidental spills from storage tanks. Volatile aromatic compounds represent a serious problem for the public health considering their toxic or carcinogenic potential. In this context fungi, because of their recognized and wide degradative abilities, are a useful tool in environment protection and are successfully used both in bioremediation (Badali *et al.*, 2011; Prenafeta-Boldù *et al.*, 2004) and biofiltration (García-Peña *et al.*, 2008).

Due to the scale of the problem of environmental pollution it is of great interest to look for new fungal strains able to mineralize efficiently these substrates.

To date fungi reported as degraders of volatile aromatic compounds were mainly isolated from polluted sites; some of them are opportunistic pathogens or closely related to a restricted number of human-pathogenic fungal species causing severe mycoses, especially neurological infections, in immunocompetent individuals (Prenafeta-Boldù *et al.*, 2006).

Phenolic and hydrocarbon assimilation in fungi may represent, in fact, an additional virulence factor because make them able to infect the central nervous system in reason of their high content in monoaromatic catecholamine neurotransmitters such as dopamine, and lipids, mainly consisting of aliphatic aminoalcohols such as sphingosine (Prenafeta-Boldù *et al.*, 2006).

Aim of this work is find new volatile-hydrocarbon-degrading strains also in habitats never investigated before; black fungal strains of the Culture Collection of Fungi from Extreme Environments (CCFEE) that result phylogenetically close to known degraders strains were also tested for their ability to degrade aromatic hydrocarbons.

Badali H., Prenafeta-Boldú F.X., Guarro J., Klaassen C.H., Meis J.F., De Hoog G.S., 2011. *Cladophialophora psammophila*, a novel species of *Chaetothyriales* with a potential use in the bioremediation of volatile aromatic hydrocarbons. Fungal Biology (accepted)

García-Peña I., Ortiz I., Hernández S., Revah S., 2008. Biofiltration of BTEX by the fungus *Paecilomyces variotii*. International Biodeterioration & Biodegradation. 62: 442-447

Prenafeta-Boldú F.X., Ballerstedt H., Gerritse J., Grotenhuis J.T.C., 2004. Bioremediation of BTEX hydrocarbons: effect of soil inoculation with the toluene-growing fungus *Cladophialophora* sp. strain T1. Biodegradation 15: 59–65.

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