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Biotransformation of phenanthrene and benzo[a]pyrene by selected filamentous fungi grown on wet sand

Rachel Rama-Mercier, Christian Mougin, Christian Malosse, Jean-Claude Sigoillot, Laurent Sohier, Veronique Chaplain, Marcel Asther

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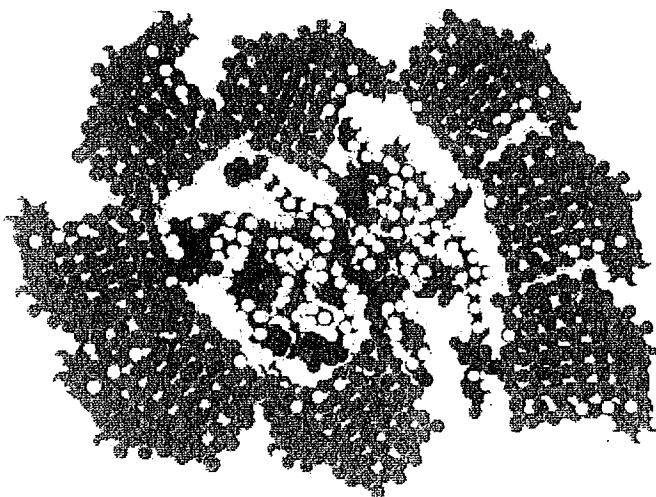
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ISEB

ISEB – International Society of Environmental Biotechnology:
President: Prof. Donald L. Wise, Northeastern University, Boston, Mass. U.S.A.

ISEB '97-MEETING BIOREMEDIATION



24 - 27 SEPTEMBER 1997
IN LEIPZIG • GERMANY

PROGRAMME

ORGANIZED by the UFZ Centre for Environmental Research Leipzig-Halle
and the Technical University of Dresden



UbZ Umweltbiotechnologisches Zentrum

UFZ-Umweltforschungszentrum Leipzig-Halle GmbH
PF 2, 04301 Leipzig

Institut National de la Recherche Agronomique
Unite de Phytopharmacie et Mediateurs
Chimiques - Equipe Pesticides et Environment
Dr. Christian Mougin
Route de Saint-Cyr

**F-78026 Versailles - cedex
FRANCE**

Ihr Zeichen / Ihr Schreiben vom:

Unser Zeichen:
iseb0005.doc
muenker@san.ufz.de

Telefon:
0341/235-2054
<http://www.ufz.de>

Fax:
-2885

Datum:
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**ISEB Meeting on Bioremediation
Poster Presentation**

Dear Dr. Mougin,

Many thanks for your interest in the '97 ISEB MEETING on BIOREMEDIATION!

Your abstract entitled *Biotransformation of phenanthrene and benzo[a]pyrene by selected filamentous fungi grown on wet sand*

has been accepted by the scientific committee for a poster presentation. We are looking forward to welcoming you to Leipzig in September.

Enclosed please find the second circular for the meeting and we hope that the preliminary programme corresponds to your expectations.

In conjunction with the meeting we are organizing a "Contact Forum" which is a market place for technology transfer between research and industry. Therefore we would appreciate it if you could emphasize the technological or transferable aspect of your results.

Best regards

Prof. Dr. U. Stottmeister

Dr. T. Munker

UFZ - UMWELTFORSCHUNGSZENTRUM LEIPZIG-HALLE GMBH

Biotransformation of phenanthrene and benzo[a]pyrene by selected filamentous fungi grown on wet sand¹

RACHEL RAMA-MERCIER¹, CHRISTIAN MOUGIN², CHRISTIAN MALOSSE², JEAN-CLAUDE SIGOILLOT³, LAURENT SOHIER¹, VERONIQUE CHAPLAIN² AND MARCEL ASTHER³

¹KREBS Réseau Eurisys, Division Réhabilitation de sites, 8 Rue Jean-Pierre Timbaud, BP 67, 78184 Saint Quentin en Yvelines, France

²INRA, Unité de Phytopharmacie et Médiateurs Chimiques, Route de Saint-Cyr, 78026 Versailles Cedex, France

³INRA, Laboratoire de Biotechnologie des Champignons Filamenteux, Faculté des Sciences de Luminy, Centre d'Enseignement Supérieur en Biotechnologies/ESIL, Parc Scientifique et Technologique, CP 925, 163 Avenue de Luminy, 13288 Marseille Cedex 09, France

Nine filamentous fungi grown on wet sand were assayed for biodegradation of phenanthrene and benzo[a]pyrene. Among them, two strains were the most efficient in carrying out the degradation of the two PAHs applied in mixture, after 28-day incubations. In our experimental conditions, PAH degradation generally led to low levels of organic soluble metabolites, whereas one of the two strains produced high amounts of water soluble metabolites. In all cases, PAH mineralization was low or negligible.

SPME analysis showed differences in PAH degradation pathways by the two strains. The former, producing low levels of soluble metabolites, released high levels of volatile products. At the opposite, reduced levels of volatiles were evidenced in the presence of the second strains, producing also high levels of soluble metabolites. Its biomass could act as a trap for volatiles including phenanthrene.

The growth of the two fungal strains was then investigated versus inoculation and incubations parameters in an industrial soil polluted by at the least 2000 ppm PAHs.

Our results confirm that both strains can be used for PAH-contaminated soil bioremediation by using a bioaugmentation approach.

Références

[1] Rachel Rama-Mercier, Christian Mougin, Christian Malosse, Jean-Claude Sigoillot, Laurent Sohier, Véronique Chaplain and Marcel Asther, Submitted for publication to Environmental Science and Technology.