Second Mediterranean Conference
WATMED 2
Marrakesh, November 14-17, 2005

TGGE ANALYSIS OF MICROBIAL CONSORTIA IN JACTO BIOREACTORS TREATING WINERY AND OLIVE OIL WASTEWATERS

A. Eusébio[1], M. Gadanho[2], R. Tenreiro[2], E. Almeida-Vara[1], J. C. Duarte[1]

[1]INETI, Departamento de Biotecnologia, Unidade de Monitorização e Ecotoxicidade, Estrada do Paço do Lumiar, 22, 1649-038 Lisboa, Portugal
[2]Univ. de Lisboa, Faculdade de Ciências, Centro de Genética e Biologia Molecular e Instituto de Ciência Aplicada e Tecnologia, Ed. ICAT, Campus FCUL, Campo Grande, 1749-016 Lisboa, Portugal

Corresponding author: A.Eusébio[1], Tel +351210924600, Fax +351217166966, ana.eusebio@ineti.pt

---

In Portugal two of the most typical and representative industries in terms of economical dimension are the production of wine and the production of olive oil. Nowadays these Portuguese agro-industries are focussed in the production of high quality wines and olive oils, produced from local grape varieties and from local olive trees.

Both industries are responsible for large negative environmental impacts as a result of the large volumes of effluents containing high organic loads and recalcitrant compounds like polyphenols, tannins, lipids, etc. The small dimension and disperse localization of many of the wineries and of the olive oil mills as well as their seasonal nature, often difficult the treatment and/or disposal of their wastewaters. At INETI, we developed JACTO bioreactors for efficient bio-treatments of both effluents using the native microbial consortia [1,2].

The aim of this work is to study the role of microbial consortia composition on the reactor performance and to determine microbial structure shifts along the bio-treatments. Molecular profiles were determined by temperature gradient gel electrophoresis (TGGE) of PCR-amplified 16S rRNA gene fragments in crude effluents, at the start-up, along and at the end of both bio-treatments.

Correlation of microflora profiling with bio-treatment efficiency provides a methodology to monitor and define optimisation strategies for reactor microbial performance.

Acknowledgements

This work was founded through the European INCO-MED Programme (ICA3-CT-1999-00010: Medusa Water) and the Portuguese FCT-SAPIENS Programme (POCTI/BIO/41253/2001: JACTO Reactor).

References

[1] A. Eusébio, M. Petruccioli, M. Lageiro, F. Federici, J.C. Duarte (2004) *J. Ind. Microbiol. Biotechnol.,* 31: 29 -34.
[2] A. Eusébio, M. Mateus, L. Baeta-Hall, M. C. Sàágua, R. Tenreiro, E. Almeida-Vara, J.C. Duarte (2005) *Int. Biodet. Biodeg.* (submitted).