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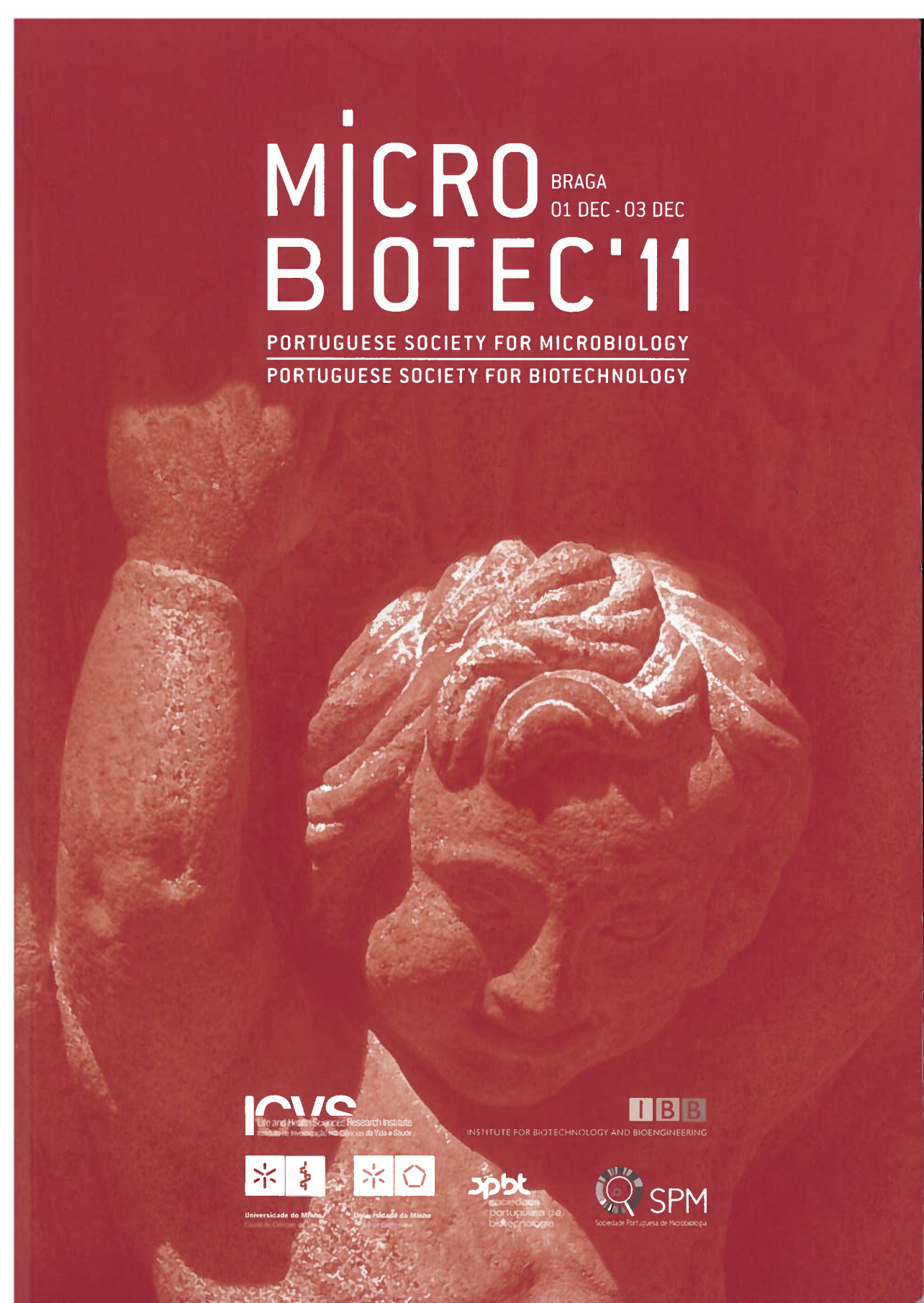

ICVS Life and Health Sciences Research Institute

IBB INSTITUTE FOR BIOTECHNOLOGY AND BIOENGINEERING

Universidade do Minho

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spbt sociedade portuguesa de biotecnologia

SPM Sociedade Portuguesa de Microbiologia

PS2: 14

Enantioselective quantification of fluoxetine by a chiral HPLC-FD method in biodegradation assays

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Chiral pharmaceuticals and the fate and effects of their enantiomers in the environment are still largely unknown [1]. Enantiomers have different interactions with enzymes, receptors and any chiral molecules leading to different biological activities and affecting organisms in a different manner. Thus, biodegradation tends to be enantioselective in contrast to abiotic degradation. Fluoxetine (FX), a selective serotonin uptake inhibitor antidepressant, is one of the most prescribed fluorinated pharmaceuticals and has been detected in surface waters. The methods developed to quantify the enantiomeric fraction in the environment and to follow biodegradation are scarce [2]. Thus, in this work we describe the quantification of FX during biodegradation assays by a developed and validated HPLC method, that allow the enantiomeric separation of FX. The macrocyclic antibiotic vancomycin CSP (ASTEC Chirobiotic V 5µm) was used under polar ionic mode and fluorescence detection for enantiomeric fraction quantification. The developed method was established using a minimal medium inoculated with activated sludge. The ability to degrade FX was tested by using two consortia: a consortium of bacteria (FP1, F11, S2) isolated at ESB and able to degrade different fluorinated compounds and activated sludge collected from a municipal WWTP. Concerning to CF, the enantiomer ratio did not change during degradation, so the consortium seems to be equally able to degrading *(S)*- and *(R)*-fluoxetine. Over half of the compound was degraded in both cases, slightly more in the enrichments without acetate than with acetate as a supplemental carbon source. Activated sludge consortium was able to degrade partially FX, with and without an additional carbon source. The enrichment with acetate led to a slightly higher degradation, contrary to the CF

enrichments. This study shows wastewater treatment aimed at fluorinated compounds can be more effective than currently, using a consortium of specific bacterial strains.

*[1] Stanley et al. Integr Environ Assess Manag 5: 3, 364–373 (2009). [2] Hashim et al EnvironTechnol 31:12, 1349-1370 (2010).**A.R. Ribeiro acknowledges FCT, Portugal for the grant (SFRH/BD/64999/2009), QREN-POPH, European Social Fund and MCTES.This work was also financially supported by CESPU (09-GCQF-CICS-09) and Fluoropharma -PTDC/EBBEBI/111699/2009.*