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## Abstracts Book



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## STUDIES ON ENANTIOSELECTIVE BIODEGRADATION OF FLUOXETINE

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Fluoxetine (FLX) is a chiral fluorinated pharmaceutical indicated mainly for treatment of depression and is one of the most dispensed drugs in the world. There is a clear evidence of environmental contamination with this drug. Granular sludge sequencing batch reactors (SBR) constitute a promising technology for the treatment of effluents containing micropollutants.

In this study, a SBR was operated in order to assess its performance when treating a synthetic wastewater containing racemic FLX (rac-FLX), under continuous and intermittent feeding of the compound. The concentration of FLX enantiomers was followed using an enantioselective HPLC method. A removal of 70% of the total supplied FLX was observed in the first continuous feeding period. However, the subsequent feeding periods revealed a significant decrease in the FLX removal: FLX liberation occurred during periods when no compound was supplied. This can be probably explained by desorption of FLX previously adsorbed to the granules. No intermediate metabolites or fluoride release were detected, corroborating the hypothesis that adsorption of FLX to the aerobic granules occurred. Moreover, the absence of enantioselectivity in the decrease of FLX enantiomers concentration is also an indicator of an abiotic mechanism.

In face of the incapacity of the aerobic granules to biodegrade FLX, the ability of *Labrys portucalensis* F11, a previously isolated microbial strain with the capacity to degrade a range of fluorinated aromatic compounds, to biodegrade this compound was investigated. In this study, the enantioselective biodegradation of rac-FLX and of its enantiomers was assessed. The results obtained revealed that this strain is able to degrade both enantiomers of FLX, when supplemented as a racemic mixture, as well as when supplemented as single enantiomers. Preferential degradation of the (*R*)-enantiomer was observed. This feature makes *L. portucalensis* F11 a potential candidate for devising biodegradation technologies able to deal with contamination by this pharmaceutical.

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