

## ENANTIOSELECTIVE BIODEGRADATION OF FLUOXETINE BY THE WILD STRAIN LABRYS PORTUCALENSIS F11

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Fluoxetine (FX) is a chiral fluorinated pharmaceutical indicated mainly for treatment of depression and is one of the most dispensed drugs in the world. Environmental contamination with this drug and its active metabolite norfluoxetine (Nor-FX) has been detected in sewage effluents and in surface waters. Microbial degradation of this compound is largely unknown. Moreover, the biodegradation of enantiomers in chiral pharmaceuticals in the environment is scarcely studied.

The biodegradation of FX was achieved by the wild strain *Labrys portucalensis* F11. When FX was supplied as sole carbon source, strain F11 was able to biodegrade 2  $\mu\text{M}$  of FX in 20 days with stoichiometric liberation of fluoride. When sodium acetate was added, strain F11 was able to biodegrade the total amount of 21  $\mu\text{M}$  of FX, with liberation of half of the stoichiometrically expected fluoride. In both experiments, Nor-FX was detected as intermediary metabolite during biodegradation. Experiments revealed higher biodegradation extent for the R-enantiomeric form of FX and the formation of only one enantiomer of the metabolite Nor-FX as indicated by the enantioselective HPLC method developed. To the best of our knowledge this is the first time that biodegradation of fluoxetine is reported.

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