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Enantioselective Degradation of Enantiomers of Fluoxetine Followed by HPLC-FD

Ana R Ribeiro¹, Alexandra S Maia², Irina S Moreira³, Carlos M Afonso⁴, Paula ML Castro⁵,
Maria E Tiritan⁶

¹CICS-ISCSN-CESPU, CBQF-ESB-UCP, CEQUIMED-UP, Gandra - Paredes, PT; ²CICS-ISCSN-CESPU, CBQF-ESB-UCP, Gandra - Paredes, PT; ³CBQF-ESB-UCP, CEQUIMED-UP, Porto, PT; ⁴CEQUIMED-UP, Porto, PT; ⁵CBQF-ESB-UCP, Porto, PT; ⁶CICS-ISCSN-CESPU, CEQUIMED-UP, Gandra - Paredes, PT

Abstract: Environmental fate assessment of chiral pharmaceuticals is an important issue and little information is known about enantioselectivity in the environment. This kind of information is important for regulation of pharmaceutical industry and chiral switching

processes. Fluoxetine (FLX), an anti-depressant worldwide used, is a chiral pharmaceutical prescribed in racemic form, and its main metabolite norfluoxetine (NFLX) is also chiral. In this study, enantioselective degradation of rac-FLX and degradation of its enantiomers separately, in a minimal salts medium inoculated by a bacterium consortium was examined both at light and dark conditions. The assays were performed in a shaker at aerobic and ambient temperature conditions. The analytical method used was an enantioselective HPLC-FD method using a vancomycin-based chiral stationary phase in reversed mode to monitor enantiomers of FLX and NFLX. No degradation of enantiomers of FLX in the abiotic controls was observed. In the all assays (*R*)-FLX was degraded faster and totally until day 24th while (*S*)-FLX remained up to 20% of its initial concentration until the end of the experiment (38 days). NFLX was detected in all biotic experiments.

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