

Biodegradation of chiral pharmaceuticals by an activated sludge consortium followed by a Chiral HPLC-FD

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Biodegradation tends to be enantioselective in contrast to abiotic degradation and it is necessary enantioselective analytical methods to quantify the enantiomeric fraction of chiral pharmaceuticals in the environment for correct risk assessment.

In this work, we developed HPLC-FD methods to follow the biodegradation of four *beta*-blockers: alprenolol, propranolol, metoprolol and atenolol and the antidepressant fluoxetine during 15 days in batch mode. The biodegradation assays were performed using AS from the aerated tanks of a municipal wastewater treatment plant with a singly compound supplementation and a mixture compound supplementation similar to those found in wastewater influents. Abiotic degradation in the presence of light and in the dark was evaluated. Either the low concentration or the mixture effects are situations closer to those found in the environment. The results indicate the higher degradation extents for the *S*-enantiomer forms, as is shown in Figure 1.

[Figure 1]

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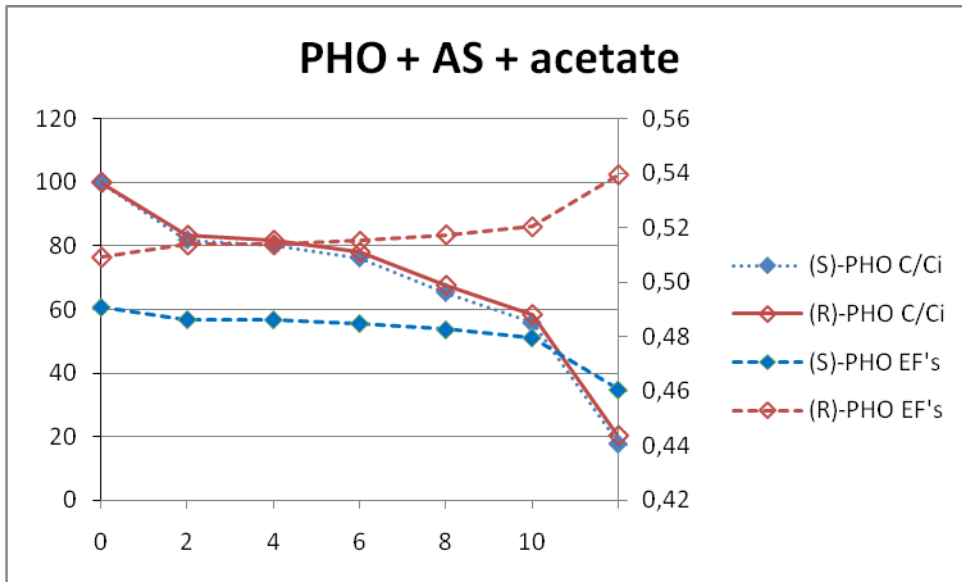


Figure 1. Removal (C/Ci) and Enantiomeric Fraction (EF) of S- and R-enantiomers of propranolol (PHO) when inoculated with AS in the presence of sodium acetate as carbon and energy source.