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## Environment and water

### Determination of sertraline antidepressant drug in aqueous effluents by SPE/HPLC-DAD

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The presence of pharmaceutical drugs, their metabolites and degradation products in the environment requires research and monitoring studies to assess the potential risks to human health and to the ecosystem. This type of compounds is present in the environment in very low concentrations, in the order of magnitude of  $\mu\text{g.L}^{-1}$  and  $\text{ng.L}^{-1}$ , which requires an optimization of the removal processes, so that they are simpler, faster, cheaper and more environmentally friendly than traditional techniques.<sup>1</sup> There are several possible sources and routes for drugs to reach the environment, but wastewater treatment plants (WWTP) have been identified as one of the main sources. After the treatment carried out at the WWTP, the treated effluents are discharged into rivers, and the sludge produced is disposed of or reused in agriculture as a fertilizer. As a consequence of the incomplete elimination of drugs and metabolites in the WWTP, these compounds end up reaching almost all the environmental matrices.<sup>2</sup> For this study, sertraline (See Fig. 1) was chosen because it is one of the most prescribed antidepressants in recent years in Portugal. Therefore, it is not surprising that it is regularly detected in wastewater, surface water and sediments and in WWTP.<sup>3</sup> The main objective of this study is to experimentally implement an expeditious method of solid phase extraction followed by quantification using high performance liquid chromatography with diode array detector (SPE/HPLC-DAD) to monitor sertraline concentration levels in aqueous matrices (see Fig. 2).

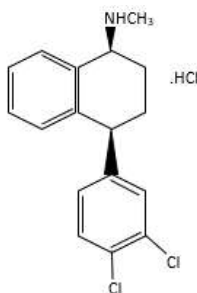


Figure 1. Sertraline chemical structure.

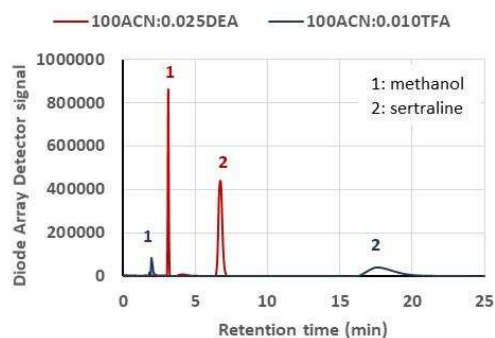


Figure 2. HPLC-DAD pulses of sertraline standard using two different mobile phase compositions. (Effect of mobile phase composition on retention and dispersion).

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