

150 ANOS PARA 118 ELEMENTOS A TABELA PERIÓDICA

XXVI ENCONTRO NACIONAL

DA SOCIEDADE PORTUGUESA DE QUÍMICA

24, 25 E 26 DE JULHO DE 2019
FACULDADE DE CIÊNCIAS DA UNIVERSIDADE DO PORTO



ANO INTERNACIONAL
DA TABELA PERIÓDICA



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Environment

Extraction and quantification of pharmaceutical drugs in aqueous matrices

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The increasing demand of modern societies for the production and use of chemical compounds coupled with inefficient sewage collection and treatment systems, results in an inadequate release of all types of pollutants in the environment.¹ Emerging pollutants are potentially toxic substances that although typically found in very small concentrations can produce hazard effects on the environment. Due to their very small concentrations they are not yet included in the water quality monitoring programs neither in the environmental control legislation standards. Pharmaceutical and Personal Care Products (PPPs) represents an important group of emerging pollutants due to their continued increase in worldwide consumption and to their inherent capacity to induce physiological effects in very low doses, which raises concerns about the potential adverse effects on humans, animals and environmental systems.²

In this work, it will be presented the development and validation of an analytical methodology based in solid phase extraction (SPE) and high performance liquid chromatography with diode array detection (HPLC-DAD). The method is validated through its application using real samples of aqueous matrices obtained from different hydric media (swimming pools, rivers and wastewater treatment plants). To extend the scope of the analytical method and thereby a more comprehensive study, the study includes five pharmaceutical drugs that belong to four different pharmacological classes, namely, an analgesic (paracetamol), two antibiotics (azithromycin and sulfamethoxazole), an anticonvulsant (carbamazepine) and a stimulator of the central nervous system (caffeine). These compounds were selected due to their high use and medical prescription levels and consequently leading to a high probability of environmental contamination. In **Figure 1**, the molecular structures of the compounds under study are presented.

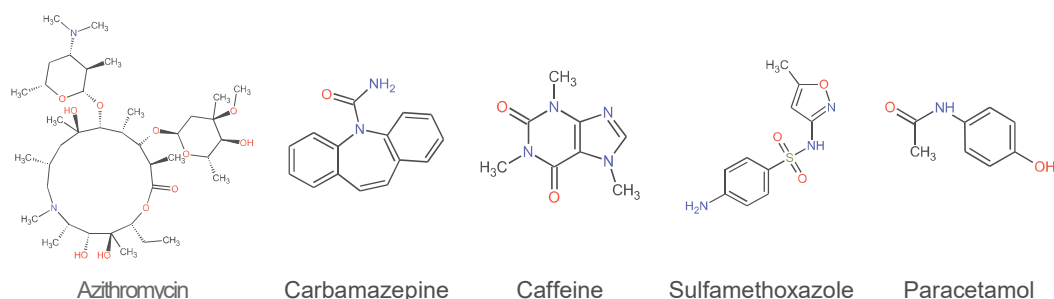


Figure 1: Chemical structures of the studied compounds.

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