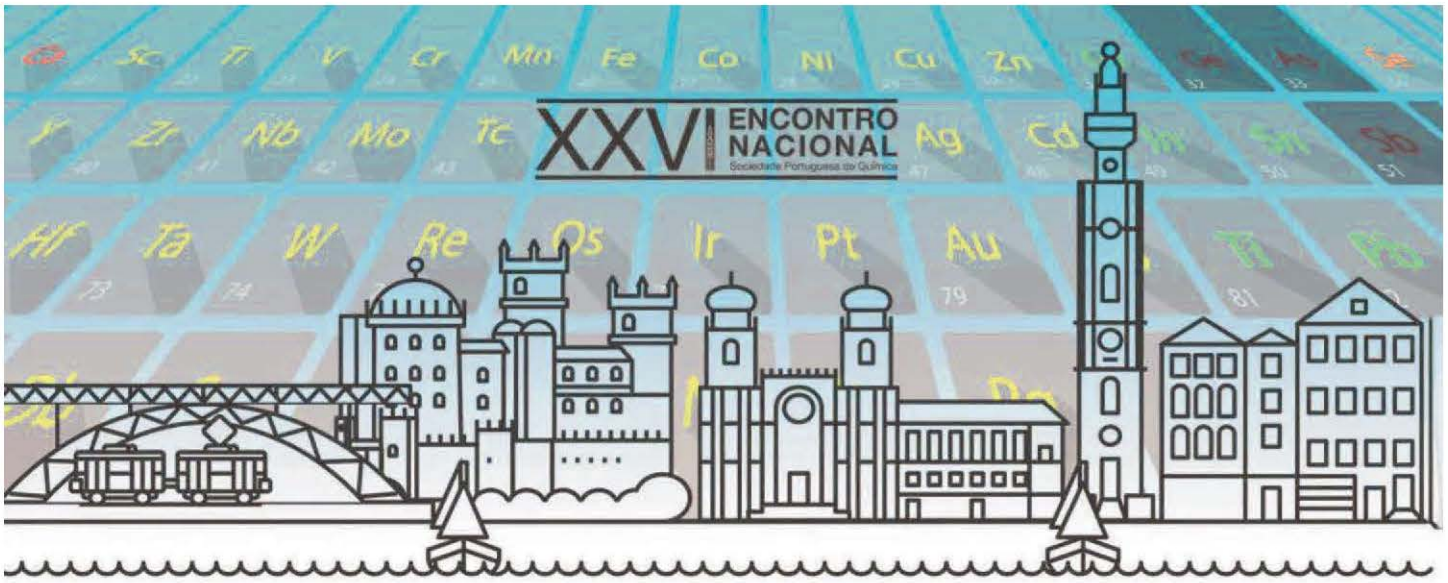

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Environment

Monitoring of non-steroidal anti-inflammatory drugs in hydric media from the Bragança region

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Emerging micropollutants are substances found in the environment in very low concentrations, at scales ranging from nanograms to micrograms per liter. Usually, wastewater treatment plants are not designed with the purpose of removing these pollutants.[1] Non-steroidal anti-inflammatory drugs (NSAIDs) are some of the most prescribed drugs worldwide in order to relief pain and inflammatory conditions. Several studies report the presence of these pharmaceuticals in different aqueous matrices.[2] Therefore, in this work will be presented an extensive set of experimental results obtained for the development and validation of a complete methodology used to identify and quantify five selected NSAIDs (acetylsalicylic acid, diclofenac, ibuprofen, ketoprofen and naproxen) in samples collected from different hydric media of the Bragança region, northern Portugal. The molecular structures of the studied compounds are presented in **Figure 1**.

Experimental results includes the optimization of solid phase extraction (SPE) and high performance liquid chromatography with diode array detector (HPLC-DAD) operating conditions, namely, SPE recoveries, HPLC mobile phase composition and pH based on different acetonitrile/water/trifluoroacetic acid contents under isocratic or gradient modes, and optimum wavelengths to improve limits of detection and quantification, among others. The SPE extraction is performed using Chromabond® HLB cartridges, and the optimized extraction process resulted in mass recovery values between 86.5% and 99.3%. After SPE extraction the samples were analyzed by HPLC-DAD using a C18 column, a 60%acetonitrile:40%water:0.01%trifluoroacetic acid solvent composition and a flow-rate of 1.2 mL/min. The selected wavelengths were 219 nm for ibuprofen, 224 nm for acetylsalicylic acid and naproxen, 254 nm for ketoprofen and 275 nm for diclofenac. The experimental methodology was validated using real samples from different aqueous matrices collected in the Bragança region.

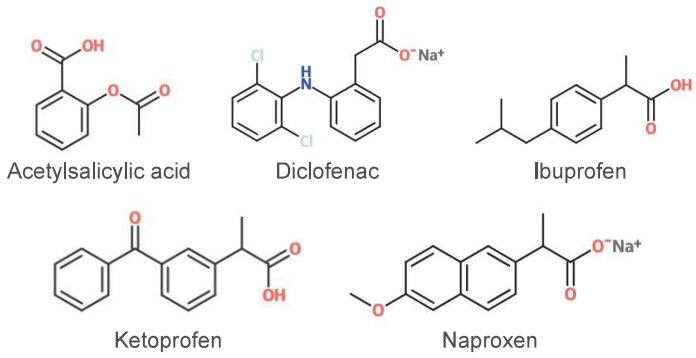

Figure 1: Chemical structures of the analyzed compounds.

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1. Sousa J. C. G.; Ribeiro A. R.; Barbosa M. O.; Pereira M. F. R.; Silva A. M. T. *Journal of Hazardous Materials* **2018**, *344*, 146.
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