



## KEY PARAMETERS FOR ACTIVATED CARBON ADSORPTION OF PHARMACEUTICAL COMPOUNDS FROM WASTEWATER

Ana S. Mestre<sup>1\*</sup>, Rui M. C. Viegas<sup>2</sup>, Elsa Mesquita<sup>2</sup>, Marta A. Andrade<sup>1</sup>, Maria João Rosa<sup>2</sup>, Ana P. Carvalho<sup>1</sup>

<sup>1</sup> *Centro de Química e Bioquímica and Centro de Química Estrutural, Faculdade de Ciências, Universidade de Lisboa, 1749-016 Lisboa, Portugal*

<sup>2</sup> *Water Quality and Treatment Laboratory, Urban Water Unit, Hydraulics and Environment Department, National Civil Engineering Laboratory (LNEC), Av. Brasil 101, 1700-066 Lisboa, Portugal*

\*corresponding author email: [asmestre@fc.ul.pt](mailto:asmestre@fc.ul.pt)

The panoply of pharmaceuticals (PhC), nowadays detected in wastewater and recipient water bodies, is a challenge for wastewater treatment plants that in the future may need to improve their barriers against this particular class of organic compounds in order to comply with legislation. The addition of powdered activated carbon (PAC) is one of the most promising treatment technologies due to the high adsorption capacity of these materials and their tuneable pore structure, surface chemistry and morphology. However, the complexity of the water matrices and the large range of properties and therapeutic classes of pharmaceuticals call for a deeper understanding of the key properties of activated carbons that ensure their best performance for the target PhCs. Herein we present the relations obtained between parameters of the selected PhCs (log  $D_{7.4}$ , charge), PACs (BET area, pore volumes,  $pH_{PZC}$ ) and water matrices (DOC, UV<sub>254</sub>, SUVA) and the PhC removal efficiencies from spiked secondary effluent. The experimental results were produced within the LIFE Impetus project (LIFE14 ENV/PT/000739). The relations constitute the first approach to identify the key parameters of the three players PAC-PhC-water matrix and will support a deeper multivariate analysis of the complex adsorption process, to identify the critical descriptors and thus deliver a sound process prediction tool to better foresee PAC performance for other PhCs, PACs, and real water systems.

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