

**Title:** Non-target analysis of organic contaminants mixtures in mussel from Ebro Delta

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Nowadays, the levels of chemical contamination present in the aquatic environment are of high relevance and pose a potential risk for the environment and also for human health. Marine organisms suffer alterations in metabolic pathways as a direct consequence from anthropogenic activities, which are considered one of the main sources of chemical and environmental pollution. Besides, the accumulation of contaminants in edible species may have negative implications in human health due to the ingestion of contaminated seafood.

In this context, the present study arose, as part of the XENOMETABOLOMIC project, with the main goal of assessing environmental pollution present in Ebro delta through the identification of priority mixtures of contaminants bioaccumulated in wild mussels (*Mytilus galloprovincialis*), a high consumed seafood type. Besides, this work is focused on the characterization of contamination patterns present in the two bays located at Ebro Delta (Alfacs and Fangar), and scientific evidence regarding the identity of the pollutants bioaccumulated in mussels from each bay is presented.

For this purpose, a non-target approach was applied based on ultra-high performance liquid chromatography (UHPLC) coupled to high resolution mass spectrometry (HRMS). The analysis of priority mixtures of contaminants was performed in two different biological matrices: haemolymph and soft tissue.

The non-target analysis reveals the presence of 17 and 25 organic contaminants in mussel's haemolymph serum and soft tissue, respectively, and demonstrate that both pesticides and pharmaceutically active compounds might cause a major environmental impact in the Ebro Delta area among other contaminants.

**Keywords:** priority contaminant mixtures, non-target analysis, bioaccumulation, environmental impact, chemical pollution, mussels, UHPLC-HRMS