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MULTI-RESIDUE ANALYSIS AND ENVIRONMENTAL RISK ASSESSMENT OF PHARMACEUTICAL COMPOUNDS IN SURFACE WATERS IN GREECE

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In recent years, the occurrence, fate and adverse effects of pharmaceutical residues in aquatic organisms have become a noteworthy issue. These compounds constitute new risks for both environmental and human health. In order to face up to these new risk challenges there is an increasing need to assess their occurrence and behaviour in the environment, as well as, that of their degradation products [1]. Analytical techniques used for the detection of PhACs presence at (ultra)trace quantities in environmental matrices have advanced significantly in the last few years and have been summarized in recent reviews.

This work describes the development and application of a method for the determination of 23 multi-class pharmaceuticals in surface waters, selected according to their detection frequency in these matrices and to their potential negative effects as well. The method developed is based on an extraction step using SPE followed by LC-ESI-MS for the detection of target compounds.

The method was subsequently applied to assess the occurrence of target compounds in water samples collected from different points along the River Kalamas and Lake Pamvotis (Epirus, Greece). Finally, an Environmental Risk Assessment study was carried out regarding both acute and chronic toxicity for three different types of aquatic organisms.

KEYWORDS: Pharmaceuticals, LC-MS, Risk Assessment, Surface waters

REFERENCES:

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