

# Simultaneous determination of multiresidue and multiclass emerging contaminants in waters by rotating-disk sorptive extraction?derivatization-gas chromatography/mass spectrometry

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An efficient method has been developed for the multiresidue and multiclass determination of 16 emerging contaminants (parabens, hormones, anti-inflammatory drugs, triclosan and bisphenol A) in water samples using rotating-disk sorptive extraction (RDSE) and gas chromatography coupled to mass spectrometry (GC-MS). Silylation of the compounds prior to GC-MS analysis was optimized using a factorial experimental design; the optimal derivatization conditions to maximize the response of the set of analytes included 70  $\mu$ L of N-methyl-N-(trimethylsilyl)trifluoroacetamide at 80 °C for 35 min. RDSE was implemented using Oasis® HLB as a sorptive phase and an extraction time of 60 min. The method was applied to Chilean environmental samples. In tap water, none of the analytes under study were detected. In the river and well waters, the concentrations of the four detected contaminants were below 0.38  $\mu$ g L<sup>-1</sup>. In the effluent and influent of the wastewater treatment plant, the maximum concentrations of contaminants were 3.1 and 4.2  $\mu$ g L<sup>-1</sup>, respectively. The proposed analytical strategy suggests clear improvements with respect to other methods reported in the literature, considering not only the different steps involved in the analytical process (extraction, derivatization and chromatography) but also taking into account that this method involves the determination of different families of analytes with different physicochemical and structural properties.