

# Design of Derivatization Strategies for Anticonvulsants Determination Using Molecular Fluorescence †

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**Abstract:** Emerging pollutants (EC) are chemical substances that reach the environment due to different human activities and generate problems in the metabolism of living beings and in human health in particular. Anticonvulsants are drugs which have been considered as EC, causing interest in recent years. Within this group are Phenytoin (FI), Phenobarbital (FB), and Topiramate (TOP). The main objective of this work is to develop different derivatization strategies that allow the determination of these three EC employing fluorescence detection, reaching detection limits compatible with the concentrations found in environmental samples. The derivatization of these CEs consists of reactions with appropriate agents and UV radiation to obtain products that are easily detectable spectrofluorimetrically. Several factors that affect the derivatization reaction were studied, such as the nature and concentration of the fluorophore, concentration of ligand, pH, the effect of different surfactants, etc. Promising results have been obtained using rhodamine B solution ( $1 \times 10^{-9}$  mol L<sup>-1</sup>) as a fluorophore agent. Thus, the experimental conditions were:  $\lambda_{ex}$  555 and  $\lambda_{em}$  575, slits width 5-5. The developed strategies will be evaluated into schemes that combine high-resolution liquid chromatography associated with fluorescent detection with the aim of automating the methodology and allowing the simultaneous determination of the CEs.

**Keywords:** emerging pollutants; anticonvulsants; molecular fluorescence; derivatization strategies.

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## Conflicts of Interest

The authors declare no conflict of interest.