

Poster 46

Optimization of the chromatographic conditions of a multi-residue GC-MS method for trace analysis of pesticides and endocrine disruptors in drinking water

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Abstract

Background: Nowadays, the presence of pesticide residues and endocrine disruptors in sources for abstraction of drinking water has become a serious concern [1,2]. These classes negatively affect the environment, biodiversity, and public health. In this sense, monitoring these compounds in drinking water is essential to ensure its quality and safety on its use. Therefore, the development of sensitive analytical methods able of detecting the presence of these compounds even at residual concentrations is needed [1-3]. **Objective:** The aim of this study is to develop an analytical procedure by gas chromatography coupled to mass spectrometry (GC-MS) for the simultaneous quantification of different classes of pesticides and endocrine disruptors in drinking water. **Methods:** A method is being developed to analyze 14 compounds from a wide range of pesticide and endocrine disruptor classes. The latter were derivatized using *N*-methyl-*N*-(trimethylsilyl) trifluoroacetamide with 1% trimethylchlorosilane (MSTFA +1% TMCS) reagent and pyridine. Afterwards, the mixture was evaporated, reconstituted in acetate ethyl anhydrous and analyzed by GC-MS. The chromatographic conditions were: a capillary column 5% diphenyl 95% dimethyl polysiloxane (30 m x 0.25 mm x 0.25 µm), the injector temperature set at 280 °C, and a temperature ramp from 70 °C to 280 °C in a total run time of 30 minutes. **Results:** The target pesticides do not need to be derivatized for analysis, however, since endocrine disruptors require this process, all compounds were subjected to the derivatization step using the optimized conditions for endocrine disruptors, with the aim of including all compounds in the same sample preparation procedure and in a single chromatographic run. Analysis of the results allowed for the distinction and identification of all compounds. **Conclusions:** Derivatization conditions were optimized, and an analytical chromatographic method was developed allowing the separation and identification of 14 compounds belonging to various classes of pesticides and endocrine disruptors in 30 minutes.

Keywords: water quality assessment; environmental contaminants; chromatographic analysis

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