ESTABLISHMENT OF A GREEN METHOD COMBINING MICROWAVE ASSISTED MICELLAR EXTRACTION AND SPE FOR THE DETERMINATION OF ORGANOCHLORINE PESTICIDES IN SEAWEEDS

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INTRODUCTION

The analysis of organochlorine pesticides residues in seaweeds has received an increasing attention in the last decades. These compounds tend to accumulate in seaweeds due to their hydrophobicity and persistence.

Sample preparation is a critical step in most analytical processes. The development of extraction and preconcentration steps prior to analytical determination of trace level compounds has been explored in considerable depth over recent decades.

Microwave assisted extraction of organic compounds from solid samples using micellar medium (MAME) represents an alternative to extraction with organic solvents. However, different components usually can be extracted together with target analytes and interfering on the determination. For this reason, it is necessary a clean-up step which eliminates these interferences and allows to preconcentrate the analytes. For this purpose solid phase extraction (SPE) can be used.

In this work a MAME-SPE procedure has been optimized for the extraction and preconcentration of six organochlorine pesticides in seaweed samples prior to their determination by HPLC-UV. The method’s precision, recoveries and linearity were also investigated. MAME-SPE procedure and traditional Soxhlet extraction method were compared in order to demonstrate the validity of proposed method. Finally it was applied to different kind of seaweeds from Canary Islands (Spain).

RESULTS AND DISCUSSION: MAME-SPE procedure

For MAME variables optimization was used a multiparametric analysis.

Analytical Parameters

Applications to different seaweed samples

References


CONCLUSIONS

The combination of microwave assisted micellar extraction (MAME) with SPE, provided sensitive and selective methods for the extraction of organochlorine pesticides residues in seaweed samples.

It can be successfully applied to the extraction and determination of these compounds in this kind of samples, using its coupling with HPLC-UV. Moreover, it presents significant advantages like simple handling, small solvent and sample amount needed and high sensitivity.

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