

عنوان مقاله:

Determination of fenthion in environmental water samples by dispersive liquid-liquid microextraction coupled with spectrofluorimetric and chemometrics methods

محل انتشار:

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خلاصه مقاله:

In the present study, a simple, rapid and efficient dispersive liquid-liquid microextraction (DLLME) coupled with spectrofluorimetry (SFM) and chemometrics methods have been proposed for the preconcentration and determination of fenthion in water samples. Box-Behnken design was applied for multivariate optimization of the extraction conditions (sample pH, the volume of dispersive solvent and volume of extraction solvent). Analysis of variance was performed to study the statistical significance of the variables, their interactions and the model. Under the optimum conditions, the calibration graph was linear in the range of 5.0–110 ng mL⁻¹ with the detection limit of 1.23 ng mL⁻¹ (3Sb/m). Parallel factor analysis (PARAFAC) and partial least square (PLS) modelling were applied for the multivariate calibration of the spectrofluorimetric data. The orthogonal signal correction (OSC) was applied for preprocessing of data matrices and the prediction results of model, and the analysis results were statistically compared. The accuracy of the methods, evaluated by the root mean square error of prediction (RMSEP) for fenthion by OSC-PARAFAC and OSC-PLS models were 0.37 and 0.78, respectively. The proposed procedure could be successfully applied for the determination of fenthion in water samples.

کلمات کلیدی:

Fenthion, Pesticides, Organophosphorus pesticides, Dispersive liquid-liquid microextraction, Box-Behnken design, Spectrofluorimetry

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