

Use of Fabric Phase Sorptive Extraction with Gas Chromatography-Mass Spectrometry for the Determination of Organochlorine Pesticides in Various Aqueous and Juice Samples

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Abstract : Fabric Phase Sorptive Extraction (FPSE) combined with Gas chromatography Mass Spectrometry (GCMS) has been developed for the determination of nineteen organochlorine pesticides in various aqueous samples. The method consolidates the features of sol-gel derived microextraction sorbents with rich surface chemistry of cellulose fabric substrate which could directly extract sample from complex sample matrices and incredibly improve the operation with decreased pretreatment time. Some vital parameters such as kind and volume of extraction solvent and extraction time were examined and optimized. Calibration curves were obtained in the concentration range 0.5-500 ng/mL. Under the optimum conditions, the limits of detection (LODs) were in the range 0.033 ng/mL to 0.136 ng/mL. The relative standard deviations (RSDs) for extraction of 10 ng/mL of OCPs were less than 10%. The developed method has been applied for the quantification of these compounds in aqueous and fruit juice samples. The results obtained proved the present method to be rapid and feasible for the determination of organochlorine pesticides in aqueous samples.

Keywords : fabric phase sorptive extraction, gas chromatography-mass spectrometry, organochlorine pesticides, sample pretreatment

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