

[Hollow fiber-solid phase microextraction of phthalate esters from bottled water followed by flash evaporation gas chromatography-flame ionization detection](#)

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Abstract:

A solid phase microextraction coupled with flash evaporation gas chromatography method was applied to the determination of phthalate esters (PAEs). Polysulfone (PSF) hollow fiber at 1 cm length was employed as extraction element to adsorb PAEs directly. Predominant parameters including stirring velocity, salt concentration, extraction time and extraction temperature were optimized. PSF fiber with absorbed PAEs was put into a small sample cup. The extracted analytes were thermally desorbed at 300 °C in a pyrolyzer, and then entered into a column for separation. The linearity of the method was satisfactory over a concentration range of 2–1000 µg/L with the correlation coefficients $r > 0.99$ for all analytes except dimethoxyethyl phthalate. The relative standard deviations for peak areas were below 9.5% ($n = 6$). The developed technique achieved high enrichment factors (280–9930 times) and low limits of detection (0.001–0.130 µg/L). The recoveries over the range of 87.0–117.7% were obtained by analyzing real spiked samples. The results demonstrated that this was a simple, environmentally friendly and accurate method for the determination of PAEs in bottled water samples.

* Excerpted from online journal website (Click the title)

Frontier Labs Products used:

Multi-functional Pyrolyzer (PY-2020iD)