

Abstract

Recently, a new group of compounds, namely switchable hydrophilicity solvents (SHSs), has been introduced into the extraction field. In this study, a new pH assisted homogeneous liquid-liquid microextraction method based on SHSs followed by GC-MS detection has been developed for preconcentration and determination of polycyclic aromatic hydrocarbons (PAHs) in water samples. PAHs are important compounds because of their prevalence in the environment. The extraction technique makes use of 200 μL of a water-immiscible solvent (Dipropylamine) that can be solubilized in the aqueous phase (6 mL) using HCl as a reagent. Afterwards, phases separation is induced by the addition of sodium hydroxide. The effects of Experimental parameters of the extraction such as, temperature, time, volume of acceptor phase, pH of donor phase, and ionic strength of solution were investigated. Under the optimum conditions, proposed method provided good linearities in the range of 2–1000 $\mu\text{g L}^{-1}$ for anthracene and pyrene and 4–1000 $\mu\text{g L}^{-1}$ for naphthalene, low limits of detection for anthracene and pyrene 0.6 $\mu\text{g L}^{-1}$ and for naphthalene 1/21 $\mu\text{g L}^{-1}$ and acceptable extraction repeatabilities (RSD% = 4.3–6.8). Finally, the proposed method allows the determination of the target analytes in different types of natural water samples and acceptable recoveries were obtained.

Keywords: Homogeneous liquid–liquid microextraction, Switchable hydrophilicity solvent, N,N-Dipropylamine, Polycyclic aromatic hydrocarbons.



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**Determination of polycyclic aromatic hydrocarbons
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pled with gas chromatography–mass spectrometry**

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