

Abstract

In this study, a new pH assisted homogeneous liquid-liquid microextraction method based on Switchable-Hydrophilicity Solvents followed by gas chromatography-Mass spectrometry detection has been developed for preconcentration and determination of methamphetamine in urine sample. The extraction technique makes use of a water-immiscible solvent (N,N-Dipropylamine) that can be solubilized in the aqueous phase in 1:1 ratio using HCL as a reagent. Afterwards, phases separation is induced by the addition of sodium hydroxide. The extraction technique has been optimized and characterized using the determination of methamphetamine by gas chromatography Coupled with mass spectrometry in water samples. series of parameters that influence extraction were investigated systematically. The effects of operational parameters of the extraction such as volume of acceptor phase, volume of donor phase, temperature, pH of donor phase, and ionic strength of solution were investigated. Under optimal conditions, good linear relationship of methamphetamine was obtained in the range 5.0–1500.00 μgL^{-1} , the limit of detection were $1.5 \mu\text{gL}^{-1}$, and the enrichment factor was 87. Finally, The proposed method allows the determination of the target analytes at the low microgram per liter range with acceptable precision.

Keywords: Methamphetamine, Homogeneous liquid–phase microextraction, Switchable hydrophilicity solvent, N,N-Dipropylamine.



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**Development of a new pH assisted homogeneous
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switchable-hydrophilicity solvents: application
for preconcentration of methamphetamine and
its determination with GC-MS analysis**

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