

Abstract

In this work, a new method based on homogeneous liquid–phase microextraction was developed for the determination of methadone and tramadol in biological samples. Di-propylamine was used as extraction solvent with switchable hydrophilicity that can be miscible/immiscible upon the addition or removal of CO₂ as a reagent. The effects of operational parameters of the extraction such as volume of acceptor phase, volume of donor phase, pH of donor phase, and ionic strength of solution were investigated. Under optimal conditions, the preconcentration factors, the detection limits and the linearity of the method were achieved in the ranges of 135–138, 1.2 µgL⁻¹ and 4–1000 µgL⁻¹ respectively. Finally, the proposed method has been successfully applied to the analysis of methadone and tramadol in biological samples.

Keywords: Homogeneous liquid-liquid microextraction, Switchable hydrophilicity solvent, Mono and dinitro toluenes, Gas chromatography



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**The Thesis Submitted for the Degree of M. Sc
In the field of Analytical Chemistry**

**Homogeneous liquid-liquid microextraction of
methadone and tramadol using a switchable-
hydrophilicity solvent and determination by gas
chromatography**

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Feb 2017