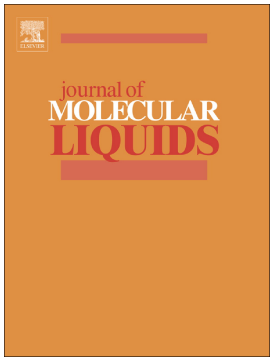

Ultrasound assisted deep eutectic solvent based on dispersive liquid liquid microextraction of arsenic speciation in water and environmental samples by electrothermal atomic absorption spectrometry

Rizwan Ali Zounr, Mustafa Tuzen, Muhammad Yar Khuhawar

PII: S0167-7322(17)32230-4
DOI: doi: 10.1016/j.molliq.2017.07.053
Reference: MOLLIQ 7631

To appear in: *Journal of Molecular Liquids*

Received date: 22 May 2017
Revised date: 12 July 2017
Accepted date: 15 July 2017

Please cite this article as: Rizwan Ali Zounr, Mustafa Tuzen, Muhammad Yar Khuhawar , Ultrasound assisted deep eutectic solvent based on dispersive liquid liquid microextraction of arsenic speciation in water and environmental samples by electrothermal atomic absorption spectrometry, *Journal of Molecular Liquids* (2017), doi: 10.1016/j.molliq.2017.07.053

Ultrasound assisted deep eutectic solvent based on dispersive liquid liquid microextraction of arsenic speciation in water and environmental samples by electrothermal atomic absorption spectrometry

Rizwan Ali Zounr [ab], Mustafa Tuzen[a*], Muhammad Yar Khuhawar[b]

[a] Faculty of Science and Arts, Chemistry Department, Gaziosmanpasa University, Tokat, Turkey.

[b] Institute of Advanced Research Studies in Chemical Sciences, University of Sindh, Jamshoro Pakistan

Abstract

A green and highly efficient deep eutectic solvent ultrasound-assisted liquid phase microextraction (DES-UALPME) method have been developed for speciation of As(III) and As(V). Extraction of As(III) was observed by using sodium diethyldithiocarbamate (DDTC) as a chelating agent, choline chloride-phenol as extracting solvent and tetrahydrofuran (THF) as dispersive solvent. Arsenic concentration was determined by electrothermal atomic absorption spectrometry (ETAAS). The developed procedure established on significant recoveries of As(III) and also As(V) recoveries were obtained as <5%. Whereas the reduction of As(V) was achieved with potassium iodide and ascorbic acid. This technique was useful for the analysis of total arsenic. Whereas As(V) was originated as variation among total As and As(III) levels. The key factors affecting the microextraction efficiency including pH, ultrasonication time, and amount of ligand were studied and optimized. Under optimum conditions, limit of detection (LOD), limit of quantification (LOQ), preconcentration factor (PF) and relative standard deviation (RSD) were calculated as 10 ng L^{-1}, 33 ng L^{-1}, 25 and 4.3%, respectively. The accuracy of developed