

Accepted Manuscript

Preparation and characterization of magnetic metal–organic framework nanocomposite as solid-phase microextraction fibers coupled with high-performance liquid chromatography for determination of non-steroidal anti-inflammatory drugs in biological fluids and tablet formulation samples



Roya Mirzajani, Fatemeh Kardani, Zahra Ramezani

PII: S0026-265X(18)30447-8
DOI: doi:[10.1016/j.microc.2018.09.014](https://doi.org/10.1016/j.microc.2018.09.014)
Reference: MICROC 3362
To appear in: *Microchemical Journal*
Received date: 12 April 2018
Revised date: 13 September 2018
Accepted date: 15 September 2018

Please cite this article as: Roya Mirzajani, Fatemeh Kardani, Zahra Ramezani , Preparation and characterization of magnetic metal–organic framework nanocomposite as solid-phase microextraction fibers coupled with high-performance liquid chromatography for determination of non-steroidal anti-inflammatory drugs in biological fluids and tablet formulation samples. *Microc* (2018), doi:[10.1016/j.microc.2018.09.014](https://doi.org/10.1016/j.microc.2018.09.014)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Preparation and characterization of magnetic metal–organic framework nanocomposite as solid-phase microextraction fibers coupled with high-performance liquid chromatography for determination of non-steroidal anti-inflammatory drugs in biological fluids and tablet formulation samples

Roya Mirzajani^{a*}, Fatemeh Kardani^a, Zahra Ramezani^b

^a Chemistry Department, College of Science, Shahid Chamran University of Ahvaz, Ahvaz, Iran

^b Department of Medicinal Chemistry, School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

A novel solid-phase microextraction (SPME) fiber based on a capillary glass tube coated with magnetic Fe₃O₄/Cu₃(BTC)₂ metal organic frameworks nanocomposite was prepared by sol–gel technique. The magnetic Fe₃O₄/Cu₃(BTC)₂ metal organic frameworks nanocomposite were synthesized by a simple hydrothermal reaction and the resultant powder was mixed with sol–gel precursors to prepare sol–gel solution of the magnetic Fe₃O₄/Cu₃(BTC)₂ coating material. In this study, glass tubes with a specific diameter were used as substrates. The magnetic Fe₃O₄/Cu₃(BTC)₂ MOF nanocomposites coating was characterized using Fourier transform infrared (FTIR) spectroscopy, powder x-ray diffraction (XRD) and scanning electron microscopy (SEM). Then, the synthesized fiber as novel solid-phase microextraction (SPME) fiber combined with high-performance liquid chromatography (SPME–HPLC) was applied for the determination and quantification of non-steroidal anti-inflammatory drugs (NSAIDs) (ibuprofen, diclofenac, naproxen and nalidixic acid) in real samples including human urine, serum, plasma, and tablet formulation. To found optimum microextraction conditions, the influences of effective variables were investigated using one-factor-at-a-time experiments and the significant variables were optimized using a Box–Behnken design (BBD) combined with desirability function. Under optimized conditions, calibration graphs of analytes were linear in a concentration range of 0.1–400 µg L⁻¹ with correlation coefficients more than 0.9966. Limits of detection and quantification were in the ranges of 0.03–0.05 µg L⁻¹ and 0.12–0.18 µg L⁻¹, respectively. This procedure was successfully employed in

Download English Version:

<https://daneshyari.com/en/article/10140992>

Download Persian Version:

<https://daneshyari.com/article/10140992>

[Daneshyari.com](https://daneshyari.com)