

Author's Accepted Manuscript

Highly efficient electrochemical determination of propylthiouracil in urine samples after selective electromembrane extraction by copper nanoparticles-decorated hollow fibers

Zeinab Tahmasebi, Saied Saeed Hosseiny Davarani, Ali Akbar Asgharinezhad



PII: S0956-5663(18)30353-1
DOI: <https://doi.org/10.1016/j.bios.2018.05.014>
Reference: BIOS10472

To appear in: *Biosensors and Bioelectronic*

Received date: 26 February 2018
Revised date: 8 May 2018
Accepted date: 8 May 2018

Cite this article as: Zeinab Tahmasebi, Saied Saeed Hosseiny Davarani and Ali Akbar Asgharinezhad, Highly efficient electrochemical determination of propylthiouracil in urine samples after selective electromembrane extraction by copper nanoparticles-decorated hollow fibers, *Biosensors and Bioelectronic*, <https://doi.org/10.1016/j.bios.2018.05.014>

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 galley proof before it is published in its final citable 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.

Highly efficient electrochemical determination of propylthiouracil in urine samples after selective electromembrane extraction by copper nanoparticles-decorated hollow fibers

Zeinab Tahmasebi, Saied Saeed Hosseiny Davarani*, *Ali Akbar Asgharinezhad*

Faculty of Chemistry, Shahid Beheshti University, G. C., 1983963113, Evin, Tehran, Iran

*Corresponding author. Tel.: +98 21 22431661; fax: +98 21 22431661. ss-hosseiny@sbu.ac.ir (S.S.H. Davarani).

ABSTRACT

In this work, a novel, inexpensive and fast strategy was described for selective and effective extraction and determination of propylthiouracil (PTU) with a high polarity ($\log P = 1.2$) based on electromembrane extraction (EME) followed by differential pulse voltammetry (DPV). For this purpose, copper nanoparticles (CuNPs)-decorated hollow fiber was used as the selective membrane for EME of PTU in urine samples. The influential parameters on extraction such as extraction solvent, pH, agitation speed, applied potential and extraction time were systematically investigated. In optimized conditions, acceptable linearity was attained between 0.05 and 5 $\mu\text{g mL}^{-1}$ (R^2 value = 0.9994); moreover, superb enrichment factor (200) and repeatability (RSD%, $n = 4$, 5.7%) for 0.1 $\mu\text{g mL}^{-1}$ of PTU solution were in desirable range. In addition, extraction recovery of 80.0% was achieved in this condition and the limit of detection (S/N ratio of 3:1) was 0.02 $\mu\text{g mL}^{-1}$. Finally, the proposed method was successfully applied to determine PTU concentration in urine samples.

Download English Version:

<https://daneshyari.com/en/article/7229187>

Download Persian Version:

<https://daneshyari.com/article/7229187>

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