

Accepted Manuscript

Title: Nicotine and tyrosine detection in blood and urine samples using taurine/reactive blue-immobilized conducting polymer composite

Authors: Won-Chul Lee, Hui-Bog Noh, Khalil K. Hussain, Su-Jin Min, Yoon-Bo Shim



PII: S0925-4005(18)31470-9
DOI: <https://doi.org/10.1016/j.snb.2018.08.039>
Reference: SNB 25186

To appear in: *Sensors and Actuators B*

Received date: 11-5-2018
Revised date: 7-8-2018
Accepted date: 7-8-2018

Please cite this article as: Lee W-Chul, Noh H-Bog, Hussain KK, Min S-Jin, Shim Y-Bo, Nicotine and tyrosine detection in blood and urine samples using taurine/reactive blue-immobilized conducting polymer composite, *Sensors and amp; Actuators: B. Chemical* (2018), <https://doi.org/10.1016/j.snb.2018.08.039>

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.

Nicotine and tyrosine detection in blood and urine samples using taurine/reactive blue-immobilized conducting polymer composite

Won-Chul Lee¹, Hui-Bog Noh¹, Khalil K. Hussain, Su-Jin Min, and Yoon-Bo Shim*

Department of Chemistry and Institute of BioPhysio Sensor Technology (IBST), Pusan National University, Busan 46241, South Korea

[*] Corresponding author, Prof. Yoon-Bo Shim

Department of Chemistry and Institute of Biophysio Sensor Technology (IBST), Pusan National University, Busan 609-735, South Korea.

Tel.: +82-51-510-2244; Fax: +82-51-514-2122; E-mail: ybshim@pusan.ac.kr

¹ Both authors contributed equally to this work.

Highlights:

- Functionalized conductive polymer was used to covalently immobilize Taurine and Reactive Blue 4.
- The interferences of negatively charged species was blocked by the sulfonate groups and carboxylic acid groups present on the Tau/RB4 layer.
- The modified electrode demonstrated an excellent performance for the detection of Nic and Tyr in urine and whole blood samples.
- The effect of cigarette smoking onto the concentrations of Nic and Tyr was investigated using human whole blood samples.

Abstract

A sensor for the nicotine (Nic) and L-tyrosine (Tyr) detection was developed with a taurine (Tau) and reactive blue 4 (RB4) bonded-conducting polymer ((poly (2,2':5',5''-Terthiophene-3'-*p*-benzoic acid) (pTBA)) layer formed on AuNPs doped-glassy carbon. The sensing material facilitated a selective electron transfer for Nic and Tyr oxidations and effectively blocked the interferences of negatively charged species by the sulfonate groups and carboxylic acid groups present on the Tau/RB4-pTBA/AuNPs layer. Each layer was characterized employing electrochemical and surface analysis methods. The experimental parameters affecting the

Download English Version:

<https://daneshyari.com/en/article/7138630>

Download Persian Version:

<https://daneshyari.com/article/7138630>

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