

Author's Accepted Manuscript

Simultaneous determination of ethionamide and pyrazinamide using poly(l-cysteine) film-modified glassy carbon electrode

Bruno Regis Lyrio Ferrazi, Fernando Roberto Figueiredo Leite, Andréa Renata Malagutti



PII: S0039-9140(16)30185-0
DOI: <http://dx.doi.org/10.1016/j.talanta.2016.03.058>
Reference: TAL16439

To appear in: *Talanta*

Received date: 29 January 2016
Revised date: 16 March 2016
Accepted date: 17 March 2016

Cite this article as: Bruno Regis Lyrio Ferrazi, Fernando Roberto Figueiredo Leite and Andréa Renata Malagutti, Simultaneous determination of ethionamide and pyrazinamide using poly(l-cysteine) film-modified glassy carbon electrode *Talanta*, <http://dx.doi.org/10.1016/j.talanta.2016.03.058>

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 a 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.

Simultaneous determination of ethionamide and pyrazinamide using poly(L-cysteine) film-modified glassy carbon electrode

Bruno Regis Lyrio Ferraz^{*1}, Fernando Roberto Figueiredo Leite, Andréa Renata Malagutti

Department of Pharmacy, Federal University of Vales do Jequitinhonha e Mucuri, MGT 367 Highway – Km 583, Diamantina, MG, Brazil.

*E-mail address: brunoferraz96@hotmail.com

ABSTRACT

A selective, simple and rapid square wave voltammetry method, based on electropolymerization of L-cysteine (poly(L-Cys)) on a glassy carbon electrode (GCE), was developed in this study for simultaneous determination of ethionamide and pyrazinamide. Electroanalytical and electrochemical properties of the poly(L-Cys)/GCE were investigated by cyclic voltammetry (CV), square wave voltammetry (SWV), electrochemical impedance spectroscopy (EIS) and scanning electrochemical microscopy (SECM). The cyclic voltammetry studies revealed an remarkable electrocatalytic activity of poly(L-Cys)/GCE on ethionamide and pyrazinamide at pH 1.0. The best potential separation between the reduction peaks of the drugs in a mixed solution was found to be 0.14 V. It was also found that pyrazinamide exhibits a reversible wave with E_{pc} and E_{pa} at -404 mV and -347 mV (versus $E_{Ag/AgCl}$), respectively, while ethionamide presents an irreversible reduction peak at $E_{pc} = -536$ mV. The optimized calibration curves for simultaneous determination of ethionamide and pyrazinamide exhibited good and high linear responses within the concentration range $2.38 - 248.0 \mu\text{mol L}^{-1}$ and $0.476 - 51.2 \mu\text{mol L}^{-1}$, respectively. The limit of detection was found to be $0.531 \mu\text{mol L}^{-1}$ for ethionamide and $0.113 \mu\text{mol L}^{-1}$ for

¹ Phone: 55-38-3532-1230; Fax: 55-38 3532-1223

Download English Version:

<https://daneshyari.com/en/article/7678021>

Download Persian Version:

<https://daneshyari.com/article/7678021>

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