Detection of Ofloxacin by Differential Pulse Voltammetry in Drugs Based on a Novel p-Aminobenzene Sulfonic Acid/Graphene Electrochemical Sensor

Xiaojing Si¹, Chen Bai¹, Xia Gong¹, Jingting Han¹, Zichao Chen^{2*}, Yaping Ding^{3,*}

¹ Department of Food Science, Shanghai Business School, Shanghai, 200235, PR China;

² Experimental Center, Shandong University of Traditional Chinese Medicine, Jinan, 250355, PR China;

³ Department of Chemistry, Shanghai University, Shanghai, 200444, PR China

*E-mail: wdingyp@sina.com

doi: 10.20964/2020.07.46

Received: 4 March 2020 / Accepted: 27 April 2020 / Published: 10 August 2020

This work demonstrates fabrication and performance (towards ofloxacin (OFL) detection) of a unique electrochemical sensor, composed of p-aminobenzene sulfonic acid (ASBA) and graphene (GR). For this purpose, a glassy carbon electrode (GCE) was coated by GR using electrochemical deposition and then electro-polymerized by ABSA. The surface and morphology of the resulting composite pASBA/GR/GCE were analyzed using scanning electron microscopy. Oxidation peak currents obtained from the differential pulse voltammograms with the assistance of the composite pASBA/GR/GCE showed linear correlation to the OFL concentrations in the 0.1–40 $\mu\text{mol/L}$ range with the detection limits of acetaminophen is 0.03 $\mu\text{mol/L}$ ($S/N = 3$). We also demonstrated OFL detection using pASBA/GR/GCE in pharmaceutical formulations. These results indicate that pASBA/GR/GCE has very strong potential as an electro-analytical sensor for the detection of components in pharmaceutical formulations.

Keywords: Differential Pulse Voltammetry Determination; Modified electrode; Graphene; p-aminobenzene sulfonic acid; Ofloxacin

[FULL TEXT](#)

© 2020 The Authors. Published by ESG (www.electrochemsci.org). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).