Enhancement Effect of Sodium-dodecyl Sulfate on Voltammetric Behaviour and Determination of Phentolamine Mesylate using Carbon Paste Electrode

Sen Fan², Lei Ji¹, Guoliang Mao¹, Xin Sui¹, Huan Wang¹, Yuanhai Zhu^{1,*}, Hua Song¹

¹ College of Chemistry and Chemical Engineering, Northeast Petroleum University, Daqing 163318, P.R. China

² College of Petroleum Engineering, Northeast Petroleum University, Daqing 163318, P.R. China

*E-mail: yuanhaizhu@163.com

doi: 10.20964/2020.05.17

Received: 1 January 2020 / Accepted: 20 February 2020 / Published: 10 April 2020

A carbon paste electrode (CPE) in the presence of Sodium-dodecyl Sulfate (SDS) was used for determination of phentolamine mesylate (PM), an important cardiovascular dilatation drug. Experiment shows that the drug exhibiting low redox activity at naked CPE can produce a sensitive anodic peak current in the presence of SDS. Investigation indicates that the oxidation of PM at CPE in the presence of SDS is one electron/one proton process which is controlled by adsorption. Under optimal conditions, the anodic peak current is linear to the concentrations of PM within the range of 3.0×10^{-8} — 1.0×10^{-6} M with a detection limit of about 1.0×10^{-8} M. The electrode shows good stability and reproducibility. The electrochemical method proposed has been successfully applied to the determination of phentolamine mesylate in pharmaceutical formulations.

Keywords: phentolamine mesylate; SDS; carbon paste electrode; electrochemical method

[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/>).