Electrochemical Methods for Quantitative Estimation of Ambroxol Hydrochloride in drug for the Treatment of Asthmatic Bronchitis

Lina Li

Medical School, Xuchang University, Xuchang, 461000 China

E-mail: LinaLi02@hotmail.com, lilina7188@163.com

Received: 17 April 2021/ *Accepted:* 28 June 2021 / *Published:* 10 August 2021

This study presented the electrochemical quantitative estimation of ambroxol hydrochloride (AHC) as drug safety for asthmatic bronchitis on ZnO nanoparticles electrodeposited on carboxylated CNTs modified glassy carbon electrode (ZnO NPs/c-CNTs/GCE). The electrodeposition technique was applied for the preparation of the ZnO NPs/c-CNTs/GCE. The structural and morphological analyses using FESEM and XRD showed ZnO NPs in hexagonal wurtzite crystal structure electrodeposited on the twisted and wrapped tubular structure of c-CNTs. The electrochemical study using the CV technique showed that ZnO NPs/c-CNTs/GCE indicated lower peak potential, higher sensitivity and stability than c-CNTs/GCE and ZnO NPs/GCE due to the synergetic effect of ZnO NPs and c-CNTs. The studies of interference and concentration effects using DPV technique showed to the selective response of ZnO NPs/c-CNTs/GCE to the electrochemical determination of AHC, and the linear range, sensitivity and detection limit were obtained 1 to 120 μM , 10.7393 $\mu\text{A}/\mu\text{M}$ and 0.02 μM , respectively. The practical ability of ZnO NPs/SWCNTs modified GCE was investigated for the determination of AHC content in ambroxol hydrochloride syrup as a real sample. The results evidenced to good precision and appropriate validity for practical analyses in pharmaceutical samples.

Keywords: Ambroxol hydrochloride; Differential pulse voltammetry; Carboxylated CNTs; ZnO nanoparticles; Electrodeposition

[FULL TEXT](#)

© 2021 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/>).