Voltammetric Sensor Based on 1-Benzyl-4-ferrocenyl-1H-[1,2,3]-triazole /Carbon Nanotube Modified Glassy Carbon Electrode; Detection of Hydrochlorothiazide in the Presence of Propranolol

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doi: 10.20964/2016.12.92

Received: 28 August 2015 / *Accepted:* 27 October 2016 / *Published:* 10 November 2016

In this work, 1-benzyl-4-ferrocenyl-1H-[1,2,3]-triazole (BFT) and carbon nanotubes has been applied to construct a modified glassy carbon electrode. This modified electrode showed electrocatalytic activity for oxidation of hydrochlorothiazide (HCT) and reduced the overpotential for oxidation of hydrochlorothiazide about 870 mV. Also, the modified electrode can resolve the overlapped voltammetric peaks of hydrochlorothiazide and propranolol into two voltammetric peaks. This property allows to selective determination of hydrochlorothiazide in the presence of propranolol. The transfer coefficient (α) and diffusion coefficient of hydrochlorothiazide were also investigated. In phosphate buffer solution (PBS) of pH 8.0, the oxidation currents for hydrochlorothiazide increased linearly from 0.1 to 500.0 μ M using square wave voltammetry (SWV). The detection limit (3σ) was obtained 0.08 μ M. The proposed method was successfully applied to the determination of hydrochlorothiazide and propranolol in pharmaceutical and biological samples.

Keywords: Hydrochlorothiazide, Propranolol, Carbon Nanotubes, Chemically modified electrodes

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