A Nanocomposite Material Based on Carbon Nanotubes and $\text{Fe}_3\text{O}_4@\text{SiO}_2$ for the High Selective and Sensitive Electrochemical Determination of Norepinephrine

Hadi Mahmoudi Moghaddam^{1,2,*}, Zohreh Razmara³, Asghar Makarem^{4,5},
Mohammad Reza Aflatoonian^{5,6}

¹ Pharmaceuticals Research Center, Institute of Neuropharmacology, Kerman University of Medical Sciences, Kerman, Iran

² Environmental Health Engineering Research Center, Kerman University of Medical Sciences, Kerman, Iran

³ Department of Chemistry, University of Zabol, P.O.Box 98613-35856, Zabol, Iran

⁴ Department of Rehabmanagement, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

⁵ Bam University of Medical Sciences, Bam, Iran

⁶ Research Center of Tropical and Infectious Diseases, Kerman University of Medical Sciences, Kerman, Iran

*E-mail: h.mahmoudi4@yahoo.com

doi: 10.20964/2018.03.68

Received: 27 August 2017 / Accepted: 21 January 2018 / Published: 5 February 2018

An electrochemical sensor was prepared by modifying a graphite screen printed electrode (SPE) with a nanocomposite of magnetic $\text{Fe}_3\text{O}_4@\text{SiO}_2$ nanocomposite and carbon nanotubes (CNTs) for the determination of norepinephrine (NE). Compared with a bare SPE, the $\text{Fe}_3\text{O}_4@\text{SiO}_2/\text{CNTs}/\text{SPE}$ highly enhanced the current response for NE. A linear plot was obtained for current responses versus the concentrations of NE in the range of 0.5 to 400.0 μM with a detection limit of 0.2 μM .

Keywords: Norepinephrine, Carbon nanotubes, $\text{Fe}_3\text{O}_4@\text{SiO}_2$ nanocomposite, Graphite screen printed electrode

[FULL TEXT](#)

© 2018 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/>).