Molecular Imprinting Electrochemical Sensor for Sensitive Creatinine Determination

Zhenyu Zhang¹, Yang Li², Xiaoqin Liu¹, Yanhui Zhang² and Dongmei Wang^{3,*}

¹ Department of Nephrology, Hongqi Hospital Affiliated to Mudanjiang Medical University, Mudanjiang, Heilongjiang, 157000, P.R. China

² Department of Orthopedic Surgery, Hongqi Hospital Affiliated to Mudanjiang Medical University, Mudanjiang, Heilongjiang, 157000, P.R. China

³ Department of Laboratory Medicine, Hongqi Hospital Affiliated to Mudanjiang Medical University, Mudanjiang, Heilongjiang, 157000, P.R. China

*E-mail: dongmeiwan3@163.com

doi: 10.20964/2018.03.67

Received: 1 November 2017 / Accepted: 14 January 2018 / Published: 5 February 2018

Creatinine has been considered indicative of renal condition measurement after a dialysis. In the present work, a silver nanoparticles (AgNPs)/polyoxometalate functionalized reduced graphene oxide (rGO) coated glassy carbon electrode (GCE) based molecular imprinted voltammetric biosensor was for the first time prepared for the analysis of creatinine. XRD and X-ray photoelectron spectroscopy (XPS) measurements were used for the characterization of the modified surface. The limit of detection (LOD) was obtained as 1.51×10^{-11} M, with a linear range of 0.05-1.5 nM. And the developed biosensor has been used for the detection of real specimens with desirable stability, recovery and selectivity.

Keywords: Molecular imprinting; Electrochemical sensor; Creatinine; Renal disease; Saliva

[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/>).