

Author's Accepted Manuscript

A melamine based molecularly imprinted sensor for the determination of 8-hydroxydeoxyguanosine in human urine

Neeraj Kumar, Rosy, Rajendra N. Goyal



www.elsevier.com/locate/talanta

PII: S0039-9140(17)30168-6
DOI: <http://dx.doi.org/10.1016/j.talanta.2017.01.058>
Reference: TAL17240

To appear in: *Talanta*

Received date: 27 December 2016
Revised date: 19 January 2017
Accepted date: 20 January 2017

Cite this article as: Neeraj Kumar, Rosy and Rajendra N. Goyal, A melamine based molecularly imprinted sensor for the determination of 8 hydroxydeoxyguanosine in human urine, *Talanta*, <http://dx.doi.org/10.1016/j.talanta.2017.01.058>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain

A melamine based molecularly imprinted sensor for the determination of 8-hydroxydeoxyguanosine in human urine

Neeraj Kumar, Rosy, Rajendra N. Goyal*

*Department of Chemistry, Indian Institute of Technology Roorkee, Roorkee - 247 667, India
E.Mail: rngcyfcy@iitr.ac.in; Tel +91-1332-285794 (O)

Abstract

A sensitive and facile molecular imprinted sensor has been fabricated using edge plane pyrolytic graphite (EPPG) for the determination of an important oxidative DNA damage product, 8-hydroxydeoxyguanosine (8-OHdG). The molecularly imprinted polymer film was fabricated by electropolymerization of melamine in the presence of 8-OHdG, on glutaraldehyde/poly 1,5-diaminonaphthalene modified EPPG. The imprinted sensor surface was characterized by using Field Emission Scanning Electron Microscopy, Electron Impedance Spectroscopy, Cyclic Voltammetry, Square Wave Voltammetry and UV-visible spectroscopy. The calibration response was linear over a concentration range of 20×10^{-9} - 3×10^{-6} M of 8-OHdG with sensitivity and limit of detection ($3\sigma/b$) as $10.59 \mu\text{M}/\mu\text{A}$ and 3×10^{-9} M respectively. The common metabolites in urine, like uric acid, ascorbic acid, xanthine, hypoxanthine do not interfere up to 100-fold concentration. The imprinted sensor is also successfully employed for the determination of 8-OHdG in human urine sample of a renal failure patient.

Keywords

8-Hydroxydeoxyguanosine; 1,5-Diaminonaphthalene; Glutaraldehyde; Melamine; Molecular imprinted technique; Human urine.

1. Introduction

Download English Version:

<https://daneshyari.com/en/article/5141099>

Download Persian Version:

<https://daneshyari.com/article/5141099>

[Daneshyari.com](https://daneshyari.com)