

A Facile Synthesis of 3D NiFe₂O₄ Nanospheres Anchored on a Novel Ionic Liquid Modified Reduced Graphene Oxide for Electrochemical Sensing of Ledipasvir: Application to Human Pharmacokinetic Study

Mohamed M. El-Wakil, Ashraf M. Mahmoud, Saad A. Alkahtani, Adel A. Marzouk, Ramadan Ali



PII: S0956-5663(18)30189-1
DOI: <https://doi.org/10.1016/j.bios.2018.03.015>
Reference: BIOS10341

To appear in: *Biosensors and Bioelectronics*

Received date: 25 December 2017

Revised date: 24 February 2018

Accepted date: 8 March 2018

Cite this article as: Mohamed M. El-Wakil, Ashraf M. Mahmoud, Saad A. Alkahtani, Adel A. Marzouk and Ramadan Ali, A Facile Synthesis of 3D NiFe₂O₄ Nanospheres Anchored on a Novel Ionic Liquid Modified Reduced Graphene Oxide for Electrochemical Sensing of Ledipasvir: Application to Human Pharmacokinetic Study, *Biosensors and Bioelectronics*, <https://doi.org/10.1016/j.bios.2018.03.015>

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 Facile Synthesis of 3D NiFe₂O₄ Nanospheres Anchored on a Novel Ionic Liquid Modified Reduced Graphene Oxide for Electrochemical Sensing of Ledipasvir: Application to Human Pharmacokinetic Study

Mohamed M. El-Wakil^{*1}, Ashraf M. Mahmoud^{1,2}, Saad A. Alkahtani², Adel A. Marzouk³, , Ramadan Ali⁴

¹ Department of Pharmaceutical Analytical Chemistry, Faculty of Pharmacy, Assiut University, Assiut, Egypt.

² Department of Pharmaceutical chemistry, College of Pharmacy, Najran University, Kingdom of Saudia Arabia

³ Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Al Azhar University, Assiut, Egypt.

⁴Department of Pharmaceutical Analytical Chemistry, Faculty of Pharmacy, Al Azhar University, Assiut, Egypt.

* Corresponding author: Mohamed.mohamoud@ymail.com*

ABSTRACT

Novel and sensitive electrochemical sensor was fabricated for the assay of anti-HCV ledipasvir (LEDV) in different matrices. The designed sensor was based on 3D spinel ferromagnetic NiFe₂O₄ nanospheres and reduced graphene oxide (RGO) supported by morpholinium acid sulphate (MHS), as an ionic liquid (RGO/NSNiFe₂O₄/MHS). This sensor design was assigned to synergistically tailor the unique properties of nanostructured ferrites, RGO, and ionic liquid to maximize the sensor response. Electrode modification prevented aggregation of NiFe₂O₄, increasing electroactive surface area and allowed remarkable electro-catalytic oxidation of LEDV with an enhanced oxidation response. Differential pulse voltammetry was used for detection LEDV in complex matrices whereas; cyclic voltammetry and other techniques were employed to characterize the developed sensor properties. All experimental factors regarding sensor fabrication and chemical sensing properties were carefully studied and optimized. Under the optimum conditions, the designated sensor displayed a wide

Download English Version:

<https://daneshyari.com/en/article/7229505>

Download Persian Version:

<https://daneshyari.com/article/7229505>

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