

Accepted Manuscript

Three-dimensional reduced graphene oxide aerogel modified electrode for the sensitive quercetin sensing and its application

Xueliang Niu, Xiaoyan Li, Wei Chen, Xiaobao Li, Wenju Weng, Chunxiao Yin, Ruixia Dong, Wei Sun, Guangjiu Li



PII: S0928-4931(17)33333-7
DOI: doi:[10.1016/j.msec.2018.04.015](https://doi.org/10.1016/j.msec.2018.04.015)
Reference: MSC 8472
To appear in: *Materials Science & Engineering C*
Received date: 19 August 2017
Revised date: 15 December 2017
Accepted date: 10 April 2018

Please cite this article as: Xueliang Niu, Xiaoyan Li, Wei Chen, Xiaobao Li, Wenju Weng, Chunxiao Yin, Ruixia Dong, Wei Sun, Guangjiu Li, Three-dimensional reduced graphene oxide aerogel modified electrode for the sensitive quercetin sensing and its application. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. *Msc*(2017), doi:[10.1016/j.msec.2018.04.015](https://doi.org/10.1016/j.msec.2018.04.015)

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 proof before it is published in its final 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.

Three-dimensional reduced graphene oxide aerogel modified electrode for the sensitive quercetin sensing and its application

Xueliang Niu^a, Xiaoyan Li^a, Wei Chen^b, Xiaobao Li^a, Wenju Weng^b, Chunxiao Yin^b, Ruixia Dong^a, Wei Sun^{a*}, Guangjiu Li^b

^aKey Laboratory of Tropical Medicinal Plant Chemistry of Ministry of Education, College of Chemistry and Chemical Engineering, Hainan Normal University, Haikou 571158, P. R. China

^bCollege of Chemistry and Molecular Engineering, Qingdao University of Science and Technology, Qingdao 266042, P. R. China

Abstract Quercetin belongs to flavonoid drug that has favorable properties such as antiviral, anticancer, anti-allergic and anti-tumor. Therefore a sensitive method is highly required for quercetin determination. In this paper, a three-dimensional reduced graphene oxide aerogel (3D-rGA) with excellent porous framework was synthesized via one-step hydrothermal technique. The characteristics and performances of 3D-rGA were checked by SEM, TEM, BET, XRD, Raman, FT-IR, XPS and electrochemical methods, which exhibited good properties including unique porous structure, large surface area and excellent conductivity. 3D-rGA was further used as the modifier on carbon ionic liquid electrode (CILE) to construct a modified electrode, which was applied to sensitive and selective determination of quercetin. Electrochemical responses of quercetin were accelerated with a pair of symmetrical cyclic voltammetric peaks in good shape appeared and the electrochemical parameters were calculated. The sensitive oxidation response of quercetin from differential pulse voltammetry was verified. Under the selected conditions, electroanalysis of quercetin was established by plotting the oxidation peak currents against quercetin concentrations with linear regression analysis. A wider linear range from 0.1 $\mu\text{mol/L}$ to 100.0 $\mu\text{mol/L}$ was obtained with a detection limit of 0.065 $\mu\text{mol/L}$ ($3S_0/S$). This as-explored approach could be successfully utilized for quercetin detection in Ginkgo tablets.

Keywords: Three-dimensional reduced graphene aerogel; Modified electrode;

*Corresponding author. Tel./fax: +86 898 31381637.

E-mail address: swyy26@hotmail.com (W. Sun).

Download English Version:

<https://daneshyari.com/en/article/7866399>

Download Persian Version:

<https://daneshyari.com/article/7866399>

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