First investigation of electrochemical behavior and Detection of 2-O-(β -D-glucopyranosyl) ascorbic acid

Xin Shi¹, Fengfeng Zhang¹, Xia Liu¹, Yuhong Zheng^{2,*}, Li Fu^{3,*}, Haobing Shi³, Fang Wang¹, and Zenglai Xu²

¹ Ningxia Institute of Quality Standards and Testing Technology for Agricultural Products, Yinchuan 750002, PR. China

² Institute of Botany, Jiangsu Province and Chinese Academy of Sciences, Nanjing Botanical Garden, Mem. Sun Yat-Sen, Nanjing 210014, PR. China

³ Key Laboratory of Novel Materials for Sensor of Zhejiang Province, College of Materials and Environmental Engineering, Hangzhou Dianzi University, Hangzhou, 310018, PR. China

*E-mail: zhengyuhong@cnbj.net, fuli@hdu.edu.cn

Received: 6 July 2021 / Accepted: 29 August 2021 / Published: 10 October 2021

In this work, the electrochemical behavior of 2-O-(β -D-glucopyranosyl) ascorbic acid, a vitamin C analogue, was reported, with glassy carbon electrode as working electrode. It is the first report regarding the study of electrochemical property of 2-O-(β -D-glucopyranosyl) ascorbic acid. In addition, an analytical method for 2-O-(β -D-glucopyranosyl) ascorbic acid detection based on its electrochemical oxidation signal was established. In the range of 100 nM to 300 μ M, the proposed electrochemical method was allowed for linear detection. The detection limit was calculated as 30 nM based on S/N=3. This result was more sensitive than the two HPLC-based analytical protocols that had been reported.

Keywords: *Lycium barbarum*; Electrochemical behavior; Chemical component; Chinese traditional medicine; Electrochemical oxidation

[FULL TEXT](#)

© 2021 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/>).