

عنوان مقاله:

Modified glassy carbon electrode with Polydopamine - multiwalled carbon nanotubes for simultaneous electrochemical determination of biocompounds in biological fluids

محل انتشار:

پنجمین کنفرانس بین المللی پژوهش در علوم و مهندسی و دومین کنگره بین المللی عمران، معماری و شهرسازی آسیا (سال: 1399)

تعداد صفحات اصل مقاله: 14

نویسندگان:

S Narouie

M Shahbakhsh

Z Hashemzai

M Noroozifar

خلاصه مقاله:

In this study, a simple modified glassy carbon electrode with Polydopamine-multiwalled carbon nanotubes (GCE/PDA-MWCNTs) is described for selective and sensitive simultaneous voltammetric determination of dopamine (DA), acetaminophen (AC), and xanthine (XN). A detailed investigation by field emission scanning electron microscopy, Fourier transform infrared spectroscopy and electrochemistry methods such as cyclic voltammetry (CV) and differential pulse voltammetry (DPV) are performed in order to elucidate the preparation process and properties of the GCE/ PDA-MWCNTs. The proposed modified electrode displays intense and indelible electrooxidation response for simultaneous determination of DA, AC, and XN to three well-separated peaks in the potential range from 0.0 to 0.8 V/Ag/AgCl using CV and DPV methods in phosphate buffer solution with pH 7.0. Under the optimum conditions, detection limits of 20, 30 and 50 nM were obtained for DA, AC and XN, respectively. Moreover, GCE/PDA-MWCNTs were successfully used for simultaneous determination of DA, AC and XN in real samples.

کلمات کلیدی:

polydopamine-multiwalled carbon nanotubes, simultaneous determination, dopamine / dopamine quinone functional groups.

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