عنوان مقاله:

Simultaneous Voltammetric Determination of Dopamine and Ascorbic Acid Using Graphene Oxide/ Ionic Liquid-Modified Electrode

محل انتشار:

دوفصلنامه ایرانی شیمی تجزیه, دوره 10, شماره 1 (سال: 1402)

تعداد صفحات اصل مقاله: 10

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خلاصه مقاله:

In this study, the surface of the glassy carbon electrode (GCE) is modified with the nanocomposite of graphene oxide (GO)/ ionic liquid (۱-Butyl-۳-methylimidazolium tetrafluoroborate; [BMIM]BF۴). The electrochemical behavior of ascorbic acid (AA) and dopamine (DA) at the surface of the modified glassy carbon electrode was studied using the differential pulse and cyclic voltammetric methods (DPV and CV). The results show good response sensitivity to AA and DA. The acceleration of the electron transfer rate and enhancement of the electroactive surface area is obtained due to a synergistic effect in the concurrent presence of GO and [BMIM]BF۴ at the surface of the electrode. The presence of GO caused to a higher specific surface of the electrode, and ionic liquid ([BMIM]BF۴) increased the ion conductivity and dispersibility in the modifier layer at the surface of the GCE. These results obtained in optimum conditions, show good peak separation for AA and DA (more than ۳۰۰ mV), and the sub-micromolar detection limits for them. The obtained results in this work, make the modified GCE very effective in the manufacture of simple devices for the detection of AA and DA in human urine samples.

کلمات کلیدی:

graphene oxide, ionic liquid, Modified Electrode, ascorbic acid, dopamine