Highly Sensitive Ascorbic Acid Sensor Based on Ionic Liquid Functionalized Graphene Oxide Nanocomposite

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A simple, convenient and highly sensitive sensor for ascorbic acid (AA) detection is presented. The sensor was prepared based on graphene oxide (GO) and ionic liquid (IL) 1-butyl-3-methylimidazolium hexafluorophosphate (BMIMPF₆) nanocomposites. Scanning electron microscopy and Fourier transform infrared spectroscopy were used to study the morphology and functionalization of the sensing materials. The electrochemical detection of ascorbic acid was studied by differential pulse voltammetry, utilising a GO-IL modified glassy carbon electrode (GCE) in a linear response range from 0.01 mM to 4.0 mM, which exhibited a relatively low detection limit of 3.33 μ M ($S/N=3$). In addition, the GO-IL nanocomposite exhibited appreciable stability, reproducibility and selectivity. The electrochemical sensor can be used for the determination of ascorbic acid in actual drugs.

Keywords: Graphene oxide Ionic liquid Electrochemical sensor Ascorbic acid
Differential pulse voltammetry (DPV)

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