Electrochemical Determination of Ascorbic Acid, Dopamine and Uric Acid at Polyaniline-Graphene Nanocomposites Modified Electrode

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In this work, we proposed a novel liquid-liquid interface polymerization method for preparing of PANI/GN nanocomposites. The interface polymerization method can effectively suppress secondary growth. This method was benefit for growing PANI onto GN surface uniformly. Then an electrochemical sensor for the determination of DA, AA, and UA was fabricated on glassy carbon electrode (GCE) modified with the obtained PANI/GN nanocomposites. Cyclic voltammetry (CV) and amperometric i-t curve were performed to investigate the electrochemical behaviour of DA, AA, and UA. The results indicated the PANI/GN-modified electrode had a good electrochemical response toward AA, AD, and UA in the concentrations range between 0.167 μM to 600 μM , 0.0557 μM to 530 μM , 1.500 μM to 890 μM , respectively. And the corresponding detection limit for AA, DA, and UA were 0.053 μM , 0.019 μM , and 0.57 μM , respectively. Good detection limit of 0.053 μM , 0.019 μM , and 0.57 μM were achieved for determination of AA, AD, and UA, respectively.

Keywords: graphene; polyaniline; electrochemical sensor; ascorbic acid; dopamine; uric acid

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