Simultaneous Electrochemical Determination of Hydroquinone and Catechol Using a Carboxylated Graphene/Poly-L-asparagine Modified Electrode

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In this study, a novel electrochemical sensor was developed by modifying carboxylated graphene/poly-L-asparagine (CG/poly-L-Asn) on glassy carbon electrode (GCE) using a combination of electropolymerization and adsorption methods. The electrochemical catalytic activity of hydroquinone (HQ) and catechol (CC) was studied by cyclic voltammetry and differential pulse voltammetry. Under the optimized conditions, the peak potential difference between HQ and CC is ~108 mV. This indicates the electrochemical sensor has anti-interference ability, and it can simultaneously detect these compounds. The limit of detection (S/N = 3) for HQ and CC is 0.0750 μM and 0.1362 μM , respectively. The results show that the prepared CG/poly-L-Asn/GCE has good repeatability and sensitivity, and the proposed sensor can be prepared using a simple method with a low cost.

Keywords: Electropolymerization; Cyclic voltammetry; Differential pulse voltammetry; Hydroquinone; Catechol

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