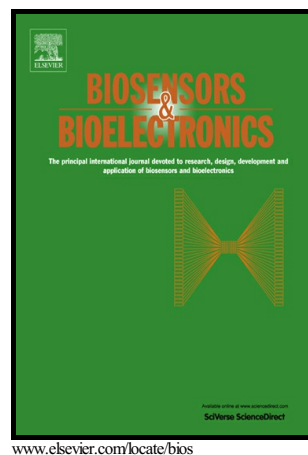


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Electrochemical Sensing Platform Based on the Biomass-Derived Microporous Carbons for Simultaneous Determination of Ascorbic acid, Dopamine, and Uric acid

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Abstract

A novel and highly selective electrochemical sensing platform ($\text{ZnCl}_2\text{-CF/GCE}$) based on combination of kiwi skin and zinc chloride nanoparticles was developed for the simultaneous detection of ascorbic acid (AA), dopamine (DA), and uric acid (UA). The constructed electrode shows a high surface area and micro-mesoporous structure. And the electrochemical behaviors of the electrode were further explored by cyclic voltammetry (CV), impedance analysis (EIS), and differential pulse voltammetry (DPV). Under the optimal conditions, the $\text{ZnCl}_2\text{-CF}$ provides a high sensitivity and selective signaling in the co-existence system of AA, DA, and UA with linear response ranges of 0.05–200 μM , 2–2000 μM , and 1–2500 μM , respectively. The detection limits ($S/N = 3$) were calculated to be 0.02 μM , 0.16 μM , and 0.11 μM , respectively. In addition, the method has been successfully applied to determine AA, DA, and UA in real samples, which provides potential applications in further sensing study.

Keywords: *kiwifruit-derived carbon, ascorbic acid, dopamine, uric acid, simultaneous detection, biological samples*

¹ The authors contributed equally to this work.

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