Short Communication

Electrochemical Detection of Ascorbic Acid in Citrus Juices using Mn-doped ZnO nanorods modified graphene oxide

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Modified graphene oxide (GO) electrochemical sensor was successfully used to determine ascorbic acid (AA). Manganese (Mn)-doped ZnO nanorods (ZnO NRs) was synthesized through the electrochemical technique and applied for modification of GO/glassy carbon electrode (GCE). Field emission scanning electron microscopy and X-ray diffraction analysis were applied to characterize the morphological and structural properties of synthesized Mn-doped ZnO NRs. Cyclic voltammetry and differential pulse voltammetry analysis were used to electrochemically sensing the properties of Mn-doped ZnO NRs/GO/GCE. The electrochemical studies exhibited the modified electrode had fast response, selective and stable in determining AA. The sensitivity and detection limit of sensor were estimated $0.169 \mu\text{A}\cdot\text{mM}^{-1}\cdot\text{cm}^{-2}$, $0.02 \mu\text{M}$, respectively. The sensor response was studied to determine AA content in orange juice as real sample.

Keywords: Mn-doped ZnO nanorods; Ascorbic acid electrochemical sensor; Graphene oxide; Cyclic voltammetry; Differential pulse voltammetry

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