Phosphate-mediated Silver Nanodendrites Modified Glassy Carbon Electrode for the Determination of Nitrophenol

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We present the simple electrochemical fabrication of silver nanodendrites (AgNDs) modified glassy carbon electrode (GCE) for the sensitive determination of nitrophenol (NP) through linear sweep voltammetry (LSV). The surface morphology and elemental composition of the prepared AgNDs were investigated using FESEM (Field Emission Scanning Electron Microscopy), EDX (Electron Diffraction X-ray spectroscopy) and XRD (X-ray diffraction) spectroscopic techniques. The calculated electroanalytical parameters in terms of linear range (20–1380 μM), limits of detection (1.76 μM) and sensitivity (1970 $\mu\text{A mM}^{-1} \text{cm}^{-2}$) evidence the excellent electrocatalytic activity of AgNDs/GCE towards NP determination. The fabricated AgNDs modified electrode possess good selectivity for the detection of NP among other interfering agents. Our constructed LSV sensor for the determination of NP additionally displays appreciable stability and reproducibility.

Keywords: Silver nanodendrites, linear sweep voltammetry, nitrophenol, electrocatalytic activity, appreciable reproducibility.

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