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# Design of Cobalt Oxide Functionalized Carbon Paste Electrode for the Detection of Levofloxacin

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This study prepared a modified cobalt oxide ($Co_3O_4$) carbon paste electrode to detect Levofloxacin (LEV). $Co_3O_4$ nanoparticles were synthesized by the chemical coprecipitation method. The electrochemical properties of LEV at this electrode were investigated by cyclic voltammetry (CV) and square wave voltammetry (SWV). In addition, electrochemical impedance spectroscopy (EIS), inductively coupled plasma–optical emission spectrometry (ICP-OES), transmission and scanning electron microscopy (TEM and SEM), and X-ray diffraction (XRD) were used to characterize the synthesized materials. The prepared electrode showed a better electrocatalytic response than the bare carbon paste electrode. After optimization of square wave voltammetry (SWV), the electrode showed a wide linear working range from 1 to 85 μM at pH 5 of Britton–Robinson buffer solution (BRBS) as the supporting electrolyte. The satisfactory selectivity of the proposed method, with good repeatability and reproducibility, strongly suggests a potential application of the method for determining LEV in real samples, especially in pharmaceutical formulations.

**Keywords**: fluoroquinolone alkaloid; electrochemical sensor; modified electrode; pharmaceutical formulations

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