A Novel Method for Indomethacin Determination Based on Graphene Loaded Nickel Oxides Nanoparticles Film

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A novel method was described for sensitive voltammetric determination of indomethacin based on a graphene loaded nickel oxides nanoparticles (Gr-NiO) film by one-step electrodeposition. The as-prepared electrode (Gr-NiO/GCE) was characterized by electrochemical methods and scanning electron microscopy. The electrocatalytic properties of Gr-NiO/GCE toward the oxidation of indomethacin were analyzed via cyclic voltammetry (CV) and differential pulse voltammetry (DPV). The results indicate that the one-step prepared Gr-NiO/GCE can remarkably enhance electrocatalytic activity towards the oxidation of indomethacin. Under optimized conditions, voltammetric response of Gr-NiO/GCE was linear to indomethacin within the concentration range of 2.0×10^{-7} – 7.0×10^{-5} mol L⁻¹, with the detection limit of 5.4×10^{-8} mol L⁻¹ (S/N=3). And, the method was also applied to detect indomethacin in pharmaceutical dosage forms with wonderful satisfactory.

Keywords: Graphene; nickel oxides nanoparticles; Voltammetric sensor; indomethacin; determination

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