High Sensitive Electrochemical Quantification of Isoniazid in Biofluids Using Copper Particles Decorated Graphene Oxide Nano Composite

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The excessive consumption and harming side effects of chemical antibiotics and NSAIDs are lead to the necessity of a simple analytical tool for high sensitive, quantitative detection of hepatotoxic drugs in human body fluids. In this work, we report an electrochemical sensor constructed by the facile electrochemical deposition of copper micro particles over graphene oxide nanosheets modified glassy carbon electrode and their potential application towards quantitative detection of isoniazid (*isonicotinylhydrazide* INH) (hepatotoxic drug) in bio fluids. The constructed Cu/GO/GCE electrode was further characterized by SEM, EDX, and Raman spectroscopy. As constructed electrode displayed excellent synergy and enhanced electrocatalytic activity towards INH. The described sensing platform of INH exhibits low limit of detection (LOD) 23.4nM and wide linear range 0.15 μ M -500 μ M with high sensitivity of 1.2394 μ A μ M⁻¹ cm⁻². The practical feasibility of the Cu/GO/GCE electrode is demonstrated in urine, and human serum sample with direct spiking of INH and achieved good recoveries.

Keywords: Hepatotoxic drugs, Isoniazid, Graphene oxide nanocomposite, Electrocatalysis, Bio-fluid analysis.

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