Electrochemical Determination of Adrenaline Using Voltammetric Sensor Employing NiO/CNTs Based Carbon Paste Electrode

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In the presence study we tried for synthesis of NiO/CNTs nanocomposite and application of synthesized nanocomposite for fabrication of NiO/CNTs nanocomposite modified carbon paste electrode (CPE/NiO/CNTs) as highly square wave voltammetric sensors for determination of adrenaline. The NiO/CNTs was characterized with transmission electron microscopy (TEM) and x-ray powder diffraction (XRD) methods. The electro-oxidation signal of adrenaline showed an irreversible response at 0.3 V. The oxidation current of adrenaline improved ~2.0 times compared to carbon paste electrode. At the best electrochemical conditions, the voltammetric oxidation signal of adrenaline showed linear dynamic ranges (0.08-900.0 μM) with a detection limit of 0.01 μM . The CPE/NiO/CNTs has been found highly selective tool for the detection of adrenaline in ampule and urine samples.

Keywords: NiO/CNTs nanocomposite, Modified electrode, Adrenaline, Voltammetric determination

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