Voltammetric Rizatriptan benzoate nano-Biosensor

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The main target of this study is to develop a sensitive and ive nano-biosensor for the voltammetric determination of Rizatriptan benzoate (RB). In this work, a chemically modified electrode using bovine serum albumin and multiwalled carbon nanotubes (BSA/NWCNTs) for the voltammetric determination of RB in solution was introduced. The modified electrode was applied for electrochemical characterization and determination of RB in phosphate buffer solution (pH = 7) using cyclic voltammetry (CV) and differential pulse voltammetry (DPV). Experimental parameters for RB determination, such as scan rate, effect of pH and supporting electrolyte have been optimized. Under the optimum experimental condition, RB could be determined in the wide concentration range of 10-2 M to 10-4 M (R^2 = 0.9946). The detection limit was around 2.86×10^{-5} M and maximum current response was obtained at pH = 7. Since the prepared modified electrode exhibits a very good resolution between the DPV peaks of RB, Sumatriptan, Propranolol and Ergotamine, it can be applied for simultaneous detection of RB in the presence of these compounds in pharmaceutical preparations. The results showed that the modified electrode exhibited excellent electrocatalytic activity to RB and showed great promise for simple, sensitive and quantitative detection of RB. There is no voltammetric report using (BSA/NWCNTs) for construction of RB nano-biosensor in the literature. Keywords: Nano-Biosensor, Voltammetry, Bovine Serum Albumin, Multiwalled carbon nanotubes, Rizatriptan benzoate

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