

Electrochemical Behavior and Cathodic Stripping Voltammetric Determination of Dianabol Steroid in Urine at Bare Glassy Carbon Paste Electrode

Authors : N. Al-Orfi, M. S. El-Shahawi, A. S. Bashammakh

Abstract : The electrochemical response of glassy carbon electrode (GCE) for the sensitive and selective determination of dianabol steroid (DS) in phosphate, Britton-Robinson (B-R) and HEPES buffers of pH 2.0 - 11, 2.0 - 11 and 6.2 - 8.0, respectively using cyclic voltammetry (CV) and differential pulse- adsorptive cathodic stripping voltammetry (DP-CSV) at bare GCE was studied. The dependence of the CV response of the developed cathodic peak potential (E_p , c), peak current (i_p , c) and the current function (i_p , c / $v^{1/2}$) on the scan rate (v) at the bare GCE revealed the occurrence of electrode coupled chemical reaction of EC type mechanism. The selectivity of the proposed method was assessed in the presence of high concentrations of major interfering species e.g. uric acid, ascorbic acid, citric acid, glucose, fructose, sucrose, starch and ions Na^+ , K^+ , PO_4^{3-} , NO_3^- and SO_4^{2-} . The recovery of the method was not significant where $t(\text{critical})=2.20 > t_{exp}=1.81-1.93$ at 95% confidence. The analytical application of the sensor for the quantification of DS in biological fluids as urine was investigated. The results were demonstrated as recovery percentages in the range $95 \pm 2.5-97 \pm 4.7\%$ with relative standard deviation (RSD) of 0.5-1.5%.

Keywords : dianabol, determination, modified electrode, urine

Conference Title : ICNA 2016 : International Conference on Nucleic Acids

Conference Location : Singapore, Singapore

Conference Dates : January 07-08, 2016