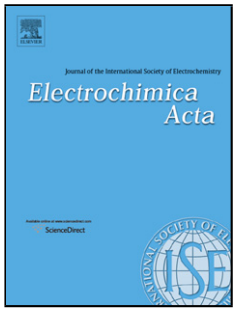

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Authors: Sharad S. Upadhyay, Pramod K. Kalambate, Ashwini K. Srivastava

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Enantioselective analysis of Moxifloxacin hydrochloride enantiomers with graphene-β-Cyclodextrin-nanocomposite modified carbon paste electrode using adsorptive stripping differential pulse Voltammetry

Sharad S. Upadhyay, Pramod K. Kalambate, Ashwini K. Srivastava*

Department of Chemistry, University of Mumbai, Vidyanagari, Santacruz (East), Mumbai-400 098, India

* Corresponding Author. Tel.: +91 22 26543570; fax: +91 22 26528547, Email: aksrivastava@chem.mu.ac.in, akschbu@yahoo.com

Abstract:

Enantioselective analysis of Moxifloxacin hydrochloride (MOX) enantiomers was investigated on carbon paste electrode (CPE) modified with chiral selector β-Cyclodextrin and graphene nanosheets (GNS) employing adsorptive stripping differential pulse voltammetric (AdSDPV) technique. Electrochemical chiral discrimination was obtained due to β-Cyclodextrin, which has 35 chiral centres as a binding site resulting in very tight fit inclusion complex based on host-guest interactions. Enantioselectivity of present electrode system of graphene nanosheets and β-cyclodextrin modified carbon paste electrode (GNS-β-CD-CPE) gives difference in anodic oxidation peak potential of enantiomers S,S-MOX and R,R-MOX at 1.039 V and 0.917 V in B.R buffer solution in pH 7 confirming successful enantiomer detection respectively. Various techniques such as X-Ray diffraction (XRD), Scanning electron microscopy (SEM), Thermogravimetric analysis (TGA) and Fourier transform infra red spectroscopy (FT-IR) were employed for characterization of electrode surface. The electrocatalytic response of MOX at GNS-β-CD-CPE was measured using cyclic voltammetry (CV) and differential pulse voltammetry (DPV). Electrical conductivity of modified electrode was investigated by electrochemical impedance spectroscopy (EIS) which indicates its good conductivity over plain CPE. The proposed enantioselective electrochemical sensor was highly efficient and capable of sensing optically active isomers of