

Graphene modified glassy carbon electrode for the voltammetric behavior and determination of an anti-HIV drug topotecan

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Graphene (GRP) modified glassy carbon electrode has been fabricated for the study of electrochemical behavior of an anti-HIV drug topotecan in BR buffer (pH-5.6) by square-wave and cyclic voltammetry techniques. The electroactive surface was produced by drop casting a suspension of GRP prepared in dimethyl formamide onto the surface of glassy carbon electrode. A remarkable enhancement in the oxidation peak current value was observed on the modified electrode. The electrochemical impedance spectroscopy revealed a lowering in charge transfer resistance at the modified electrode as compared to the bare sensor that can be attributed to the higher electrocatalytic behavior of modified electrode. The effect of surfactants on the determination of the analyte has been investigated with cetyl trimethyl ammonium bromide (CTAB), sodium dodecyl sulfate (SDS), and Triton X-100 (TTN). Cyclic voltammetry revealed the oxidation of topotecan, as an irreversible diffusion controlled process. The oxidation mechanism was proposed and the electrode dynamics parameters were investigated.