

Highly Sensitive Polymer based Sensor for Determination of the Drug Mitoxantrone

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Abstract

A carbon paste electrode modified with electropolymerization of glycine exhibited an attractive performance for the detection and determination of an anticancer drug, Mitoxantrone (MTX). Cyclic Voltammetry (CV) and Differential Pulse Voltammetry (DPV) were used in a combined way to identify the electrochemical characteristics and to optimize the conditions for detection of MTX. The electrochemical behaviour of MTX was investigated and a well-defined oxidation peak with high sensitivity was observed at the film electrode. Poly (Glycine) Modified Carbon Paste Electrode (PGMCPE) greatly enhanced the oxidation peak current of MTX owing to the extraordinary properties of glycine film. Based on this, a sensitive and simple voltammetric method was developed for measurement of MTX. A sensitive linear voltammetric response for MTX was obtained in the concentration range of 4×10^{-8} – 1×10^{-5} mol/L, detection limit was 3.2×10^{-7} M and quantification limit was 10×10^{-7} M using CV. The proposed method possessed advantages such as low detection limit, fast response, low cost and simplicity.