Electrochemical Determination of Chloramphenicol based on ZnO-NPs/SWCNTS Composite modified glassy carbon electrode

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This paper was focused on studying the electrochemical properties of Zinc Oxide nanoparticles (ZnO NPs)/SWCNTs/glassy carbon electrode (GCE) to determine chloramphenicol (CAP) through voltammetric techniques. ZnO NPs/SWCNTs composite was synthesized using sol-gel technique for modification of GCE surface. The morphology and structure of ZnO NPs/SWCNTs was studied by FESEM and XRD analyses. The results indicated that the ZnO NPs were successfully synthesized in wurtzite hexagonal structure on SWCNTs structure. Electrochemical results revealed that ZnO NPs/SWCNTs/GCE possess high stability, selectivity and repeatability response for determination of CAP. The wide linear range, high sensitivity and low detection limit for CAP detection were 10 μ M-140 μ M, 1.65931 μ A/ μ M and 0.03 μ M, respectively. Determination of CAP by ZnO NPs/SWCNTs/GCE sensor in eye drops showed that it can be a suitable choice for practical detection of CAP in real samples.

Keywords: Chloramphenicol; ZnO NPs/SWCNTs composite; Electrochemical sensor; Voltammetric techniques

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