Determination of Salicylic Acid by Differential Pulse Voltammetry Using ZnO/Al₂O₃ Nanocomposite Modified Graphite Screen Printed Electrode

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A simple strategy for determination of salicylic acid (SA) based on ZnO/Al₂O₃ nanocomposite modified graphite screen printed electrode (ZnO/Al₂O₃/SPE) is reported. Cyclic voltammetry (CV) and differential pulse voltammetry (DPV) were employed to evaluate the performance of the sensor. The ZnO/Al₂O₃/SPE demonstrated noticeable electrochemical catalytic activity. The oxidation of salicylic acid at ZnO/Al₂O₃/SPE was accompanied by the considerable decrease in overpotential and dramatic increase in peak current. The response of salicylic acid under the optimized conditions is linear within the ranges of 0.5-80.0 µM. A low detection limit of 0.25 µM was found for salicylic acid target. The function of this modified electrode in the concentration measurement of the real samples such as urine and pharmaceuticals was acceptable and approved its practical application.

Keywords: Salicylic acid, ZnO/Al₂O₃ nanocomposite, Graphite screen printed electrode, Voltammetry, Real sample analysis

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