Application of Glassy Carbon Electrode modified with Chitosan and ZnO nanoparticles as Enzymatic Glucose Biosensor

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In this study, the modified chitosan/ZnO electrode was applied to electrochemical determination of glucose. ZnO nanoparticles (ZnO NPs) was synthesized through the hydrothermal treatment and applied to modification of glassy carbon electrode (GCE). The chitosan was immobilized on ZnO NPs/GCE electrode. TEM and XRD analysis were applied to structural studies of synthesized ZnO NPs. Cyclic voltammetry and amperometry analysis were used to electrochemical sensing properties of Chit/ZnO NPs/GCE. The electrochemical studies exhibited the modified electrode had fast response, selective and stable in determining glucose. The wide linear range and detection limit of sensor were estimated 10 to 90 mM and 0.9 μ M, respectively. The sensor response was studied to determine glucose content in grape juice as real sample.

Keywords: Glucose; Electrochemical sensor; ZnO nanoparticles; Chitosan/ZnO/glassy carbon electrode

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