

Comparative Study of Chronoamperometry of PANI/ZnO/Urease and PANI/MnO₂/Urease Biosensors

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Abstract: Polyaniline (PANI) based electrochemically synthesized PANI/ZnO/Urease and PANI/MnO₂/Urease biosensors have been prepared. The stainless-steel transducer was used for electrodeposition using potentiostat. Chronoamperometric response of as-synthesized PANI/ZnO/Urease and PANI/MnO₂/Urease biosensors in potential range 0.2 to 0.6 volt vs. reference electrode for time interval of 100 Sec in PBS of pH 7 was carried out. The immobilization of urease on modified PANI/ZnO (15%) film, results in getting larger saturation current in 10 sec suggests that the immobilized enzyme by physical adsorption method is well entrapped in PANI/ZnO matrix and show lesser degradation of the Urease. PANI/MnO₂ matrix, show degradation of the Urease on account of the less stable curve. The decay of the saturation current in PANI/MnO₂/Urease suggests the predominance of the degradation of enzyme layer over electron transfer at the electrode surface. PANI/ZnO matrix is found more suitable for the entrapment of Urease compared to the PANI/MnO₂ matrix.

Keywords: Polyaniline, ZnO, MnO₂, Chronoamperometry, Urease, biosensor

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