

Symp C02

Electrochemical Enzyme Immunoassay

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Electrochemical enzyme immunoassay (EEI) is a portable device for a wide range of uses because precise amperometric measurements can be performed with simple detecting instrumentation, using opaque device materials and colored and turbid samples, minimizing pretreatment procedures. We have been studied the electrochemical enzyme immunoassay with two electron-conducting redox polymers, PAA-AMP-[Os(dme-bpy)₂Cl]⁺²⁺, polyacryl acid-amino methyl pyridine (PAA-AMP) partially complex with [Os(dme-bpy)₂Cl]⁺²⁺ and PVI-[Os(dme-bpy)₂Cl]⁺²⁺, a poly(N-vinylimidazole) (PVI) partially complexed with [Os(dme-bpy)₂Cl]⁺²⁺, (dme-bpy = 4,4'-dimethyl-2,2'-bipyridine), were electrodeposited on the screen printed carbon electrodes (SPEs) and thiol-modified gold electrodes. The electrical signals were amplified by HRP which is electrically "wired" by two cationic and anionic redox polymer films, converting the films into an electrocatalyst for the two-electron reduction of H₂O₂ to water. The resulting catalytically current was linearly related with the concentration of anti-IgG-HRP on IgG-modified electrodes. A study of the competitive assay with different species between rabbit and mouse indicated that the electrochemical immunoassay offer the development of cheap, miniature devices capable of performing rapid immunoassays.