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Bienzymatic Nanocomposites Biosensors Complexed with Gold Nanoparticles, Polyaniline, Recombinant MN Peroxidase from Corn, and Glucose Oxidase to Measure Glucose

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Abstract : Using a recombinant enzyme derived from corn and a simple modification, we are fabricating a facile, fast, and cost-beneficial novel biosensor to measure glucose. We are applying Plant Produced Mn Peroxidase (PPMP), glucose oxidase (GOx), polyaniline (PANI) as conductive polymer and gold nanoparticles (AuNPs) on Au electrode using electrochemical response to detect glucose. We applied the entrapment method of enzyme composition, which is generally used to immobilize conductive polymer and facilitate electron transfer from the enzyme oxidation-reduction center to the sample solution. In this work, the oxidation of glucose on the modified gold electrode was quantified with Linear Sweep Voltammetry(LSV). We expect that the modified biosensor has the potential for monitoring various biofluids.

Keywords : plant-produced manganese peroxidase, enzyme-based biosensors, glucose, modified gold nanoparticles electrode, polyaniline
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