

Manufacturing a Modified Carbon Paste Electrode with Catalase Enzyme-Au Nanoparticles for Electrochemical Sensing of Hydrogen Peroxide and Their Electrocatalytic Properties

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To find hydrogen peroxide, different techniques applied, recently. In this practice we decided to produce a modified carbon paste electrode by catalase enzyme-Au nanoparticles for electrochemical sensing hydrogen peroxide and their electroactivity characteristics. Cyclic voltammetry were done electrochemical researches. A three-electrode method including a modified carbon paste electrode with catalase enzyme-Au nanoparticles as the operant electrode, a platinum string electrode as a counter electrode, and saturated calomel electrode as a reference electrode, was applied. Cyclic voltammetric assays were done with different scan speed area from of 50 mV s^{-1} to 500 mV s^{-1} . Transmission electron microscopy was checked external morphological characteristics of Au nanoparticles. H_2O_2 in $100 \mu\text{M}$ to $450 \mu\text{M}$ area could find out by designed biosensor. By perform assays in two weeks regular interval, the resistance of modified carbon paste electrode with catalase enzyme-Au nanoparticles biosensor has been determine and it has been discovered that after 14 days, modified carbon paste electrode with catalase enzyme-Au nanoparticles keeps its 97% activity.

Keywords: electrochemical sensing, hydrogen peroxide, catalase enzyme, Au nanoparticles

1. INTRODUCTION

Nanotechnology is an appearing technology trying to extract different technological improves of regulating the construction of substances at a decreased dimensional measurement accosting