

Electrochemical biosensor based on hemoglobin/DNA conjugate on nanoporous Au electrode for H₂O₂ detection

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It is very important to accurately determine the concentration of H₂O₂ in body, which is parameter of activity coefficient in physiological reactions. Therefore, in this study, electrochemical biosensor based on hemoglobin (Hb)/DNA conjugate on the nanoporous Au electrode was developed to detect H₂O₂ with high sensitivity. The nanoporous Au electrode was designed to increase surface area of the electrode. The electrochemical biosensor was fabricated by hybridization of Hb/DNA conjugate and complementary DNA (cDNA) which immobilized on the nanoporous Au electrode. Since cDNA was firstly immobilized on the nanoporous Au electrode, Hb/DNA conjugate which introduced later could be uniformly arranged on the nanoporous Au electrode. Fabricated biosensor showed a wide linear range from 250 nM to 5.00 mM with a detection limit of 250 nM. Proposed biosensor could be utilized as a powerful sensing platform for development of electrochemical biosensor with high sensitivity. **Acknowledgments:** This research was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government(MSIT) (No.2019R1A2C3002300) and by the Ministry of Education (No.2016R1A6A1A03012845).