A Facile synthesis of the Nickel Oxide Nanoparticles for the Effective Electrochemical Detection of Hydrogen peroxide in Contact Lens Solution

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Hydrogen peroxide (H₂O₂) was secreted in the mitochondria during the cell production. Moreover, H₂O₂ was act as a key member for reactive oxidative species. The imbalance of reactive oxidative species causes various health risks. Therefore, it is important to develop a device to detect H₂O₂. Thus, nickel oxide nanoparticles (NiO NPs) were synthesized using the simple co-precipitation method for the detection of H₂O₂. The morphological and chemical composition of the as prepared NiO NPs was characterized by using FESEM and XRD. Herein, we reported that the synthesized NiO NPs modified GCE shows a selective detection towards the H₂O₂. Moreover, the NiO NPs/GCE has displayed wider covering range of 8.6 nM to 433.24 μM with the detection limit up to 4.28 nM. The NiO NPs/GCE has successfully examined with contact lens cleaning solution for the practical application for detection of H₂O₂, which shows the appreciable found and recovery.

Keyword: Nickel oxide; H₂O₂ sensor; reactive oxidative species; electrochemical method; contact lens cleaning solution.

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