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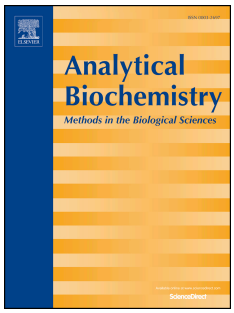

A novel electrochemical DNA biosensor for Ebola virus detection

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A novel electrochemical DNA biosensor for Ebola virus detection

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Abstract

The aim of this study was to fabricate a novel electrochemical-based DNA-sensing device for Ebola virus DNA diagnostic by an enzyme-amplified detection, which improves the sensitivity and selectivity of the sensor. A thiolated DNA capture probe sequence was immobilized on the screen printed electrode surface and hybridized with biotinylated target strand DNA for the fabrication of Ebola DNA-sensing devices. Prior to the electrochemical detection of the enzymatic product by differential pulse voltammetry (DPV) method, the biotinylated hybrid was labelled with a streptavidin-alkaline phosphate conjugate on the surface of the working electrode. All the experiment steps were optimized using electrochemical impedance Spectroscopy (EIS) and the optimum condition for biosensor fabrication was achieved. The last step, the selectivity, reproducibility and sensitivity of fabricated electrochemical DNA biosensor was obtained.

Keywords: Electrochemical DNA biosensor, Ebola virus, Electrochemical impedance spectroscopy, Hybridization