Electrochemical Genosensor For Prostate Cancer Diagnosis

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Prostate cancer is a disease that has caused 30,720 deaths per year in the world. This means that 1 in 6 men is diagnosed with prostate cancer. In Brazil, it has affected 60,180 men. The diagnostic methods are highly invasive, needing a better way of diagnosis. The use of biosensor is being postulated as an attractive alternative for diagnostic of several diseases. This is an analytical device comprising of a biological recognition element, as nucleic acids, directly interfaced to a transducer, which converts the biological information in a measurable signal. The aim of this study was to find a specific sequence to prostate cancer using bioinformatics tools, test the optimal concentration for immobilization of DNA, and confirm the presence of the hybridization procedure. Firstly, the marker sequence of prostate cancer was collected from the database National Center for Biotechnology Information and analyzed by software CLC Main Workbench. Subsequently, the sequence selected was immobilized in different concentrations on gold screen-printed electrode modified with polypyrrole film. The hybridization was realized using the complementary sequence. Like a result of analyses we obtained the sequence with 51 base pairs, the best concentration of immobilization was 0.5 µM, and the hybridization were confirmed by the decrease of oxidation signal. Then the biosensor for prostate cancer is characterized by being a non-invasive method that can be used as a method of diagnosis.

Keywords: Biosensor, Prostate Cancer, DNA, Genosensor, Polypyrrole

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