Rabih Khoder, J Biosens Bioelectron 2016, 7:3(Suppl)
http://dx.doi.org/10.4172/2155-6210.C1.031

Biosensor based on nanowire polypyrrole for sensitive electrochemical detection and discrimination of DNA *rpob* gene resistance of *M. Tuberculosis*

Rabih Khoder
Paris Saclay University, France

Tuberculosis (TB) is an infectious disease caused by the *Mycobacterium Tuberculosis* (MTB). Tuberculosis generally affects the lungs, but can also affect other parts of the body. Tuberculosis is spread through the air when people who have active TB in their lungs cough, spit, speak, or sneeze. In this study, we developed new biosensor based on nanowire of polypyrrole as transducer for electrochemical DNA detection of *rpob* gene of *Mycobacterium tuberculosis*. The nonowire of PPy was deposited on gold electrode by electrochemical polymerization. Further, the polypyrrole were chemically modified with PAMAM dendrimers which were coated through electrochemical patterning approach following amine oxidation. The formation of PPY-PAMAM was characterized by Fourier transform infrared spectroscopy. Ferrocenyl groups were then attached as electrochemical redox reporter and redox properties were characterized by square wave voltammetry and cyclic voltammetry. The DNA probe bearing amine in 5' position was cross-linked on the surface through glutaraldehyde linker. The properties of the biosensors were followed through redox properties of ferrocenyl groups. High performance in the DNA detection was obtained with detection limit of 36 atomolaire compared to the same biosensors obtained with polypyrrole or carbon nanotube. This demonstrated the potential of using high surface area of polypyrrole nanowire and the soft modification approaches. The biosensor was applied in detection of DNA in real samples of genomic DNA of *Mycobacterium tuberculosis* and the mutated one which present the resistance of rifampicin. We demonstrate that the biosensor has a potential application in DNA sensing and specific detection and ability to discriminate *rpob* gene from the muted one and could be applied as platform in the biosensors technologies.

Biography

Rabih Khoder has completed his Master's degree from Paris Sud University. He is pursuing his PhD and has obtained his first satisfactory results following to that he has published a paper in an international scientific journal. He has supervised several license students. In addition, he works on different scientific approaches to develop this project with the aim to deepen several disciplines, namely Nanoscience, Biology and Physical Chemistry.

rabih.khoder@outlook.fr

Notes: