

Carbon nanofibers modified eight-channel array of electrodes for detection of lysozyme

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Abstract

Carbon nanofiber is a nanomaterial with graphene layers stacked in different shapes [1]. Due to their unique structure, physical and chemical properties, carbon nanofibers have applications in materials science, nanotechnology, energy storage, environmental science, biosensing, biomedicine and many other fields [1 – 3]. An impedimetric aptasensor was developed in this study [4] for the label-free detection of lysozyme. In this context, 8-channel array of carbon nanofiber modified screen-printed electrode (8-CNF-SPE) was used for the determination of lysozyme in order to show the application of the developed aptasensor in simultaneous multiple analytes. Amino linked lysozyme specific aptamer was immobilized onto the electrode surface. After the interaction of lysozyme with aptamer at electrode surface, the measurement was done by electrochemical impedance spectroscopy (EIS) technique. An increase in Rct value was obtained proportionally with increasing concentration and lysozyme was determined quantitatively. The limit of detection was obtained as 0.38 µg/mL under optimum conditions. In addition, the determination of lysozyme was performed with a simultaneous multiple analysis system with a good reproducibility.

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Reference:

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