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Aptasensor for thrombin based on carbon nanotubes-methylene blue composites

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Abstract

The amperometric and EQCM aptasensors based on DNA aptamers immobilized by avidin-biotin method or by electrostatic adsorption onto multiwalled carbon nanotube layer contained methylene blue (MB) have been developed and examined for thrombin detection in buffer and in spiked blood serum. The presence of MB increases the binding capacity of the surface layer and enhances the range of thrombin concentrations to be determined. This results in significant improvement of analytical characteristics of thrombin detection. The EQCM aptasensors allowed us to detect 0.3-100 nM and amperometric aptasensors 10-1000 nM of thrombin. © 2008 Wiley-VCH Verlag GmbH&Co. KGaA.

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Keywords

Aptasensor, Carbon nanotubes, DNA aptamer, EQCM, Thrombin