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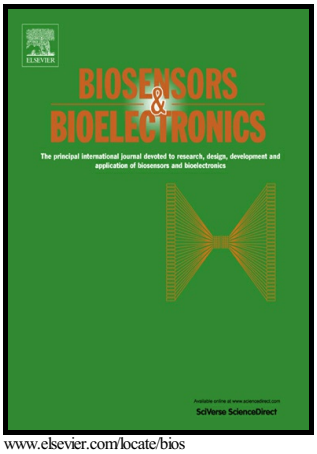

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Recent advances in DNA-based electrochemical biosensors for heavy metal ion detection: A Review

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Abstract:

The presence of heavy metal in food chains due to the rapid industrialization poses a serious threat on the environment. Therefore, detection and monitoring of heavy metals contamination are gaining more attention nowadays. However, the current analytical methods (based on spectroscopy) for the detection of heavy metal contamination are often very expensive, tedious and can only be handled by trained personnel. DNA biosensors, which are based on electrochemical transduction, is a sensitive but inexpensive method of detection. The principles, sensitivity, selectivity and challenges of electrochemical biosensors are discussed in this review. This review also highlights the major advances of DNA-based electrochemical biosensors for the detection of heavy metal ions such as Hg^{2+}, Ag^{+}, Cu^{2+} and Pb^{2+}.

Keywords:

DNA; Electrochemical biosensors; Heavy metal; T-Hg^{2+}-T; DNAzyme; G-quadruplex.