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Electrochemical genosensors as innovative tools for detection of genetically modified organisms

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HIGHLIGHTS

- Detection methods for genetically modified organisms (GMOs) by selectivity
- We review the design and the performance of GMO genosensors
- We critically discuss current genosensors and envision future trends
- We discuss the challenges of GMO genosensors applied to real samples

ABSTRACT

A genetically modified organism (GMO) is defined as a living organism whose genome has been modified by the introduction of an exogenous gene able to express an additional protein that confers new characteristics, such as enhancement of the nutritional properties, herbicide resistance or insect protection. The need to monitor and to verify the presence and the amount of GMOs in agricultural crops and in food products has generated interest in analytical methods for accurate, sensitive, rapid, cheap detection of these products. A novel DNA-detection technology was developed: genosensors. This article reviews electrochemical DNA biosensors reported for the qualitative and quantitative determination of transgenic traits. We discuss critical aspects of genosensor design with particular emphasis on analytical characteristics and analysis of real samples.

Keywords:

Analytical characteristic
Detection method
DNA detection
Electrochemical DNA biosensor
Electrochemical genosensor
Food product
Genetically modified organism

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