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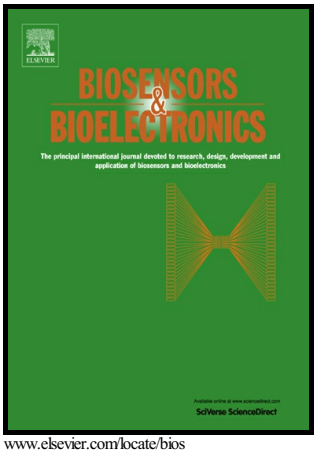

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A graphene oxide-based strand displacement amplification platform for ricin detection using aptamer as recognition element

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Abstract

The toxic plant protein ricin is a potential agent for criminal or bioterrorist attacks due to the wide availability and relative ease of preparation. Herein, we developed a novel strategy for the detection of ricin B-chain (RTB) based on isothermal strand-displacement polymerase reaction (ISDPR) by using aptamer as a recognition element and graphene oxide (GO) as a low background platform. In this method, ricin-binding aptamer (RBA) hybridized with a short blocker firstly, and then was immobilized on the surface of streptavidin-coated magnetic beads (MBs). The addition of RTB could release the blocker, which could hybridize with the dye-modified hairpin probe and trigger the ISDPR, resulting in high fluorescence intensity. In the absence of RTB, however, the fluorescence of the dye could be quenched strongly by GO, resulting in the extremely low background signal. Thus, RTB could be sensitively detected by the

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