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Abstract

Zearalenone (ZEN) is a non-steroidal estrogenic mycotoxin produced by fungi on stored grains. The earlier detection methods used for ZEN rely on expensive equipment, time-consuming sample preparation and temperature sensitive antibodies. The current work, proposed a novel strategy based on ZEN aptamer labeled with amine-functionalized magnetic nanoparticle (MNPs) as a capture probe and time-resolved fluorescence (TRFL) nanoparticles labeled with complementary DNA (cDNA) as a signal probe. Under the optimized conditions, TRFL intensity at 544 nm was used to measure ZEN ($R^2 = 0.9920$) in the range of 0.001-10 ng mL⁻¹ and limits of detection (LOD) for proposed method was 0.21 pg mL⁻¹. The specificity of bioassay was also determined by using other mycotoxins (OTA, AFB₂, DON and Patulin) and results showed that

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