عنوان مقاله:

A colorimetric aptasensor for selective detection of oxytetracycline in milk, using gold nanoparticles and oxytetracline-short aptamer

محل انتشار:

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خلاصه مقاله:

Objective (s): In light of misuse of antibiotics in animal husbandry and their side effects on human health, there is an argent need to develop simple and rapid methods for determining the quantification of antibiotics in biological systems. Materials and Methods: In this work a facile and ultrasensitive colorimetric aptasensor was reported for detection of oxytetracycline (OTC) in water and milk samples employing OTC-short aptamer and gold nanoparticles (AuNPs). Results: In the presence of OTC, the interaction between OTC and its aptamer leads to the separation of OTC aptamer from the surface of AuNPs which is followed by the aggregation of AuNPs by salt, showing an evident color change from red to blue. On the contrary, in the absence of OTC, the attachment of aptamer on the surface of AuNPs can protect AuNPs against salt-induced aggregation with a wine-red color. The proposed aptasensor exhibits excellent sensitivity for detection of OTC with linear range between 20 to 2000 nM with limit of detection (LOD) as low as 10 nM. Furthermore, this strategy was applied to detect OTC in spiked milk samples and presented satisfying linear range from 25 to 1500 nM with the LOD of 20 nM. Conclusion: Owing to demonstrating appropriate sensitivity and selectivity, the designed biosensor can be considered as a promising tool to be applied in the field of biomedicine .and food safety

کلمات کلیدی:

Aptasensor, colorimetry, Gold Nanoparticle, Oxytetracycline