Electrochemical Aptasensor based on the Hybridization Chain Reaction for Kanamycin Detection

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Received: 1 August 2021 / Accepted: 9 September 2021 / Published: 10 October 2021

In this work, a novel electrochemical aptamer sensor was fabricated for the sensitive and label-free detection of kanamycin in milk. The kanamycin aptamer was fixed on the magnetic nanoparticle for capturing kanamycin or complementary probe. The complementary probe and a pair of hairpin probes were used as initiators for the hybridization chain reaction. Methylene blue was used as electroactive indicator for electrochemical detection. Under optimal experimental conditions, the aptamer sensor has a good linear relationship with kanamycin concentration in the range of 1.0×10^{-12} to 1.0×10^{-7} mol/L. The detection limit of the aptamer sensor is 1.0×10^{-12} mol/L (S/N = 3). The proposed method can be successfully applied for the detection of kanamycin in milk.

Keywords: kanamycin; aptamer; hybridization chain reaction

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