Electronic Supplementary Material (ESI) for Analytical Methods.

An efficient electrochemical biosensor for the detection of heavy metal lead in food based on magnetic separation strategy and Y-DNA structure

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Experimental Details

Table.1 Sequences of oligonucleotides used in the experiments.

Oligonucleotides	Sequence(5'-to-3')
Apt	GGGTGGGTGGGTGGGT
cDNA	ACCCACCCACCCGGAATATGGCGTAGGCAAT
HP1	ATTGCCTACGCCATATTCCCTGCCTAACCATATCCG
HP2	CGGATATGGTTAGGCAGAGGGGTGGGTGGGT

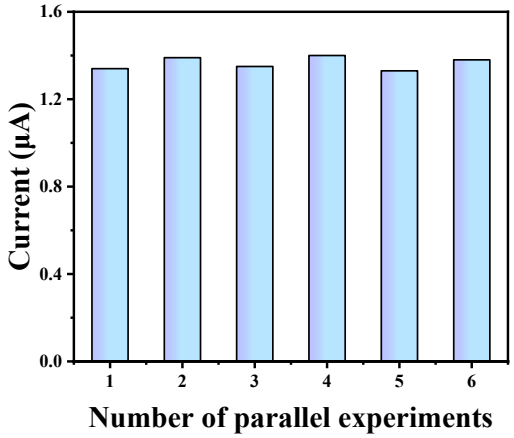

Fig.S1 Blank parallel sample test

Pre-treatment of the gold electrode

The gold electrode was treated according to the previous study. [1] First, the gold electrode was soaked in fresh piranha solution (98% H_2SO_4:30% H_2O_2 = 3:1) for 30 min and cleaned with ultrapure water. Next, the electrode was polished to a mirror shape by an electric polisher on 0.05 μm alumina powder. To remove the excess alumina powder on the electrode surface, the electrode was sonicated for 5 min by putting it into ultrapure water, anhydrous ethanol and ultrapure water, respectively. The cleaned electrode was placed into an H_2SO_4 solution containing 0.5 M for activation. (parameter setting: scanning potential -0.3~0.5 V, scanning rate 100 mV/s, number of scanning turns 40) until a stable cyclic voltammetric curve was obtained. Finally, the activated electrode was removed, cleaned with ultrapure water and dried with dry N_2.

[1] M. Wei, X. He and Y. L. Xie, *J Chin Chem Soc.*, 2020, **67**, 1247-1253.