Supplementary information

An all-in-one enzyme-free fluorescent aptasensor integrating localized catalyzed hairpin assembly for sensing of antibiotic in food with improved detection efficiency

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Table S1 Sequences of oligonucleotides used in this study.

The red sequence in S2 is the primer sequence, and the green sequence in S2 is the aptamer sequence.

Name	Sequences (5'-3')
S1	CCCACAGTTAGATTCTTTTTTTTTTTTTTTTTTTTTT
S2	AATCAACTGCGAGAATCTAACTGTGGGGGTTGAGGCTAAGCCGA
H1	AGATTGAGGGTTTGGGTGATTTTCAGTTAGATTCTCGCAGTTGATTCCATGT GTAGAAATCAACTGCGAGAA
H2	TAGTTAGTATGCTTGGCTGATTTAGTTGATT**(BHQ2)**-CTACACATGGAATCAA CTGCGAGAACCATGTGTAGA-**(Cy5)**
A	ATCACCCAAACCCTCAATCTTTTACATTCCTAAGTCTGAAACATTACAGCTT GCTACACGAGAAGAGCCGCCATAGTA
B	TCAGCCAAGCATACTAACTATTTTATCACCAGGCAGTTGACAGTGTAGCAA GCTGTAATAGATGCGAGGGTCCAATAC
C	TCAACTGCCTGGTGATAAAACGACACTACGTGGGAATCTACTATGGCGGCT CTTCAAAAAAAAAAAAAAAAAAA
D	TTCAGACTTAGGAATGTGCTTCCCACGTAGTGTCGTTTGTATTGGACCCTCG CAT

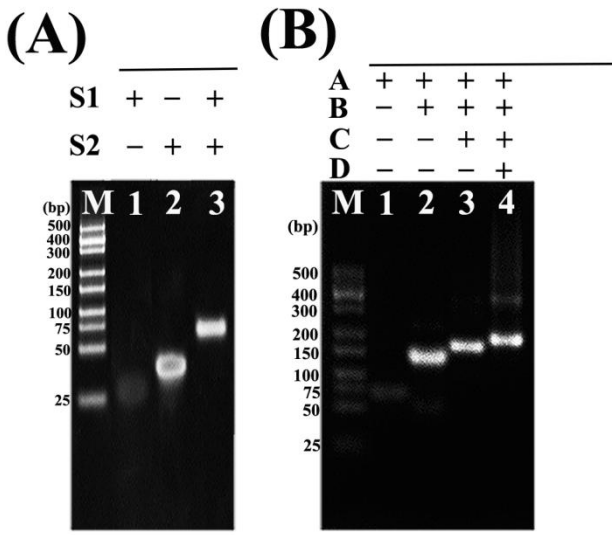

Fig. S1. (A) Polyacrylamide gel electrophoresis (15%) characterization the fabrication of dsDNA S1-S2. (B) Agarose gel electrophoresis (3%) characterization the assembly of DNA tetrahedron.

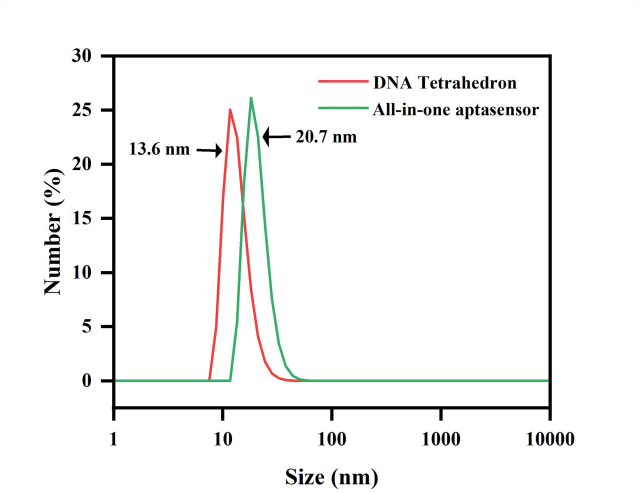

Fig. S2. DLS analysis of DNA tetrahedron and L-CHA-based all-in-one enzyme-free aptasensor.

DLS characterization was performed to provide the sizes of DNA tetrahedron before and after modification. DNA tetrahedron (50 μL, 100 nM) and L-CHA-based all-in-one enzyme-free aptasensor (50 μL, 100 nM) were respectively added into 50-μL disposable cuvettes for DLS measurements. As shown in Fig. S2, the size of DNA tetrahedron was 13.6 nm whereas the size of the all-in-one aptasensor was 20.7 nm. The increase in size was attributed to the connection of S1-S2, H1, and H2 to the DNA tetrahedron.

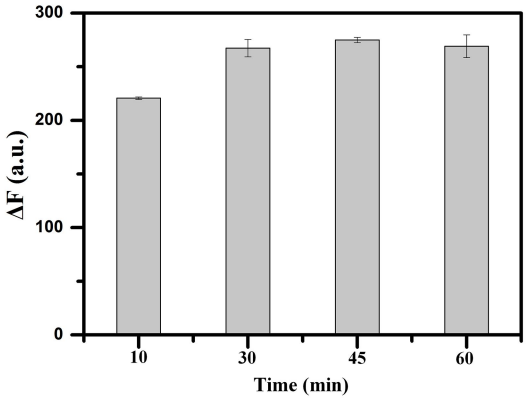

Fig. S3. Optimization the reaction time of dsDNA S1-S2, hairpins H1, and H2 binding to DNA tetrahedron. Condition: $C_{S1\text{-}S2} = C_{H1} = C_{H2} = C_{DNA\ tetrahedron}$ = 100 nM, $C_{kanamycin}$ = 100 μg/mL. Error bars were the standard derivation (n=3).