Electronic Supplementary Material (ESI) for Analytical Methods.

Supplementary Information

A lateral flow strip for on-site detection of homocysteine based on a truncated aptamer

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Table S1. The sequences used in this study.

Name	Sequence (5'-3')
Original aptamer	ACCAGCACATTCGATTATACCAGCTTATTCAATTC
	ACAGCTATGTCCTATACCAGCTTATTCAATT
Apt	ACCAGCACCCAGCTTATTCAATTCACAGCTATGT
	CCTATACCAGCTTATTCAATT
Apt-F	6'FAM-
	ACCAGCACCCAGCTTATTCAATTCACAGCTATGT
	CCTATACCAGCTTATTCAATT
Apt-B	BHQ-1-
	ACCAGCACCCAGCTTATTCAATTCACAGCTATGT
	CCTATACCAGCTTATTCAATT
Apt-C	AATTGAATAAGCTGGTATAGGACATAGCTGTGAA
	TTGAATAAGCTGGGTGCTGGT
cDNA	HS-$(CH_2)_6$-AAAAAAAATTGAATAAG
cDNA-F	AAAAAAAATTGAATAAG-6'FAM
DNA1	biotin-AAAAAA*CTTATTCA*
DNA2	biotin-*CTTATTCAATTTTTTTT*

The underlined oligonucleotides are complementary sequences between cDNA and Apt, while the italicized segments correspond to the complementary region of DNA1 and DNA2 with cDNA.

Table S2 The comparison of the sensor with other reported homocysteine sensors.

Method	Linear range	LOD	Time	Reference
Electrochemical detection	2-14 mM	6.9 μM	1 h	[33]
Fluorescence detection	10-100 μM	1.45 μM	40 min	[34]
Immunofluorescence strip	1-50 μM	0.26 μM	30 min	[35]
LFS biosensor	5-50 μM	4.18 μM	5 min	This work

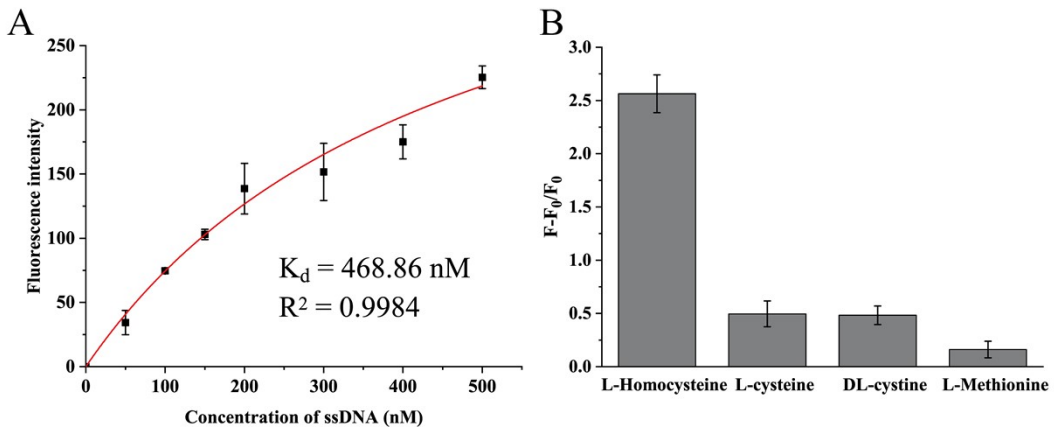

Fig. S1. (A) The saturation curve and K_d value of the original aptamer. (B) Verification of the specificity of original aptamer.

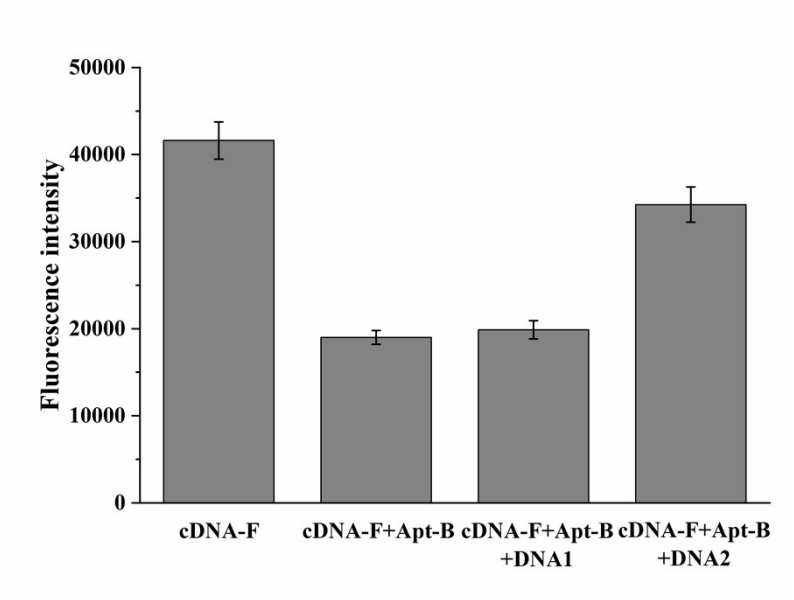

Fig. S2. Verification of the principle of the capture probes DNA1 and DNA2.

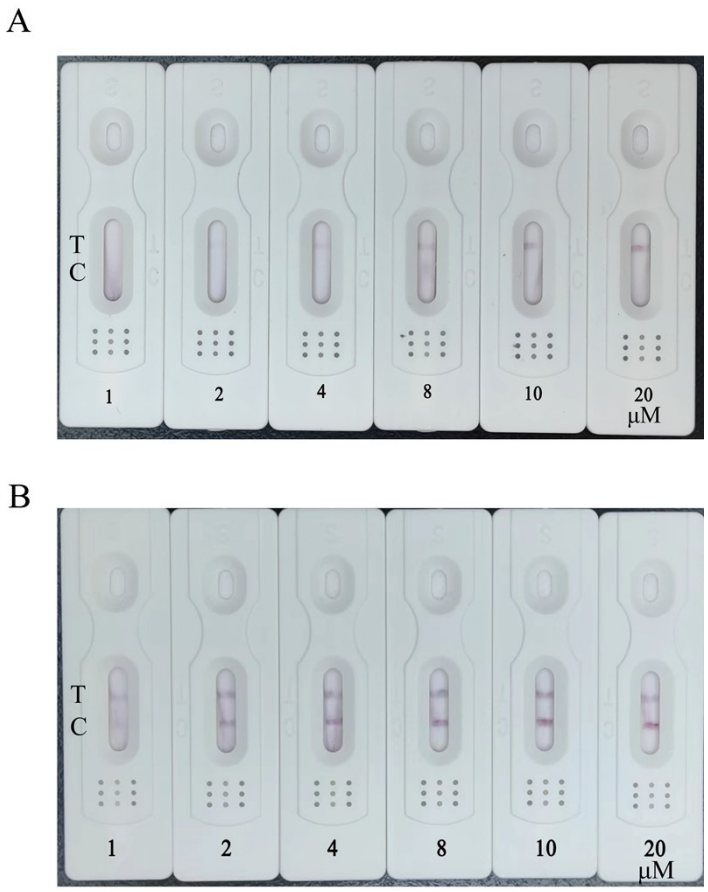

Fig. S3. Images of the test strips fabricated with (A) Different concentrations of DNA1 and (B) Different concentrations of DNA2. The concentration of Hcy in the running buffer is 50 μM.

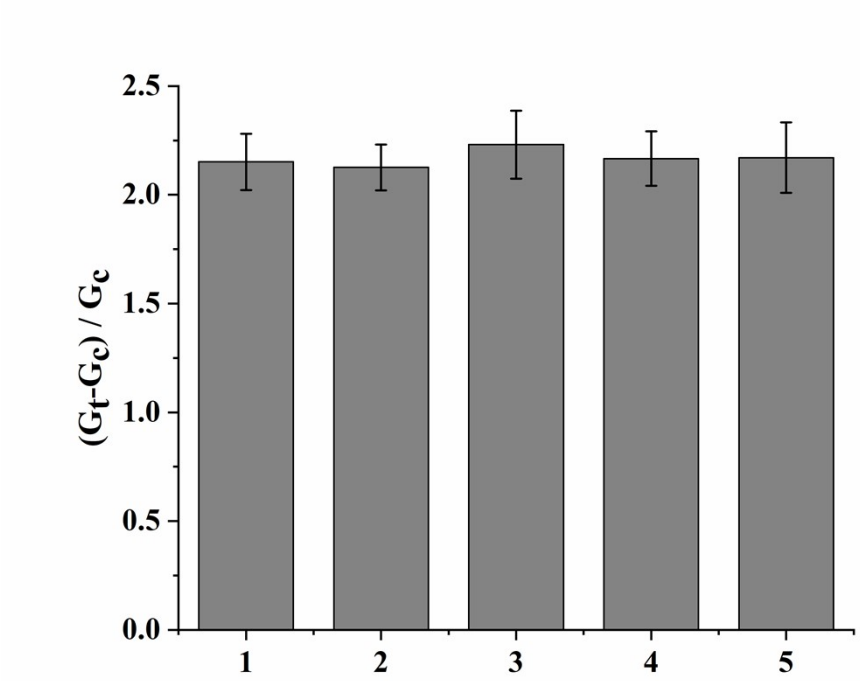

Fig. S4. Repeatability evaluation of the test strips.

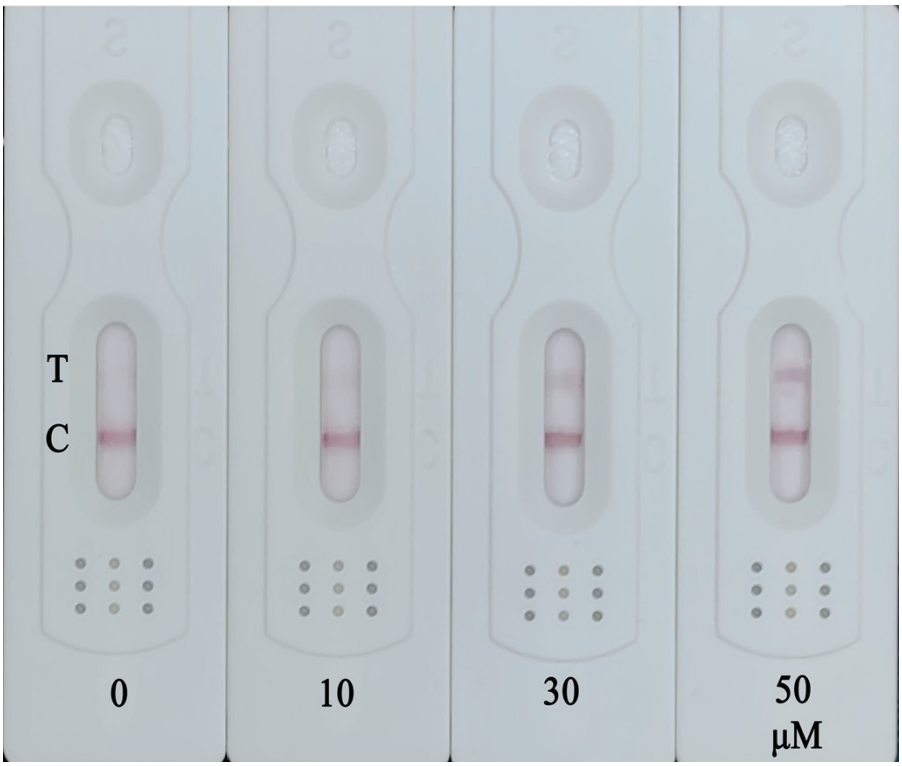

Fig. S5. Image of the test strips used to detect homocysteine in human serum with different concentrations.