

Colorimetric detection of streptomycin in milk based on the peroxidase mimics catalytic activity of gold nanoparticles

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Electronic Supplementary Information

(Including Supplementary table and figures)

References of Table S1

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Supplementary table:

Table S1 Comparison with earlier reported methods based on aptamer for streptomycin detection

Methodology	Transduction principle	Linear range (nM)	LOD (nM)	Refs.
Electrochemical Aptasensor	Disassembly of aptamer-complementary strand conjugate to release redox probe to the electrode surface	30–1500	11.4	[1]
	Self-assembly of quantum dot (QD) tagged sequences on the electrode surface	50–1000	10	[2]
	Signal amplification using AuNPs-functionalized magnetic multi-walled carbon nanotube composite	0.09-172	0.01	[3]
	Signal amplification utilizing porous carbon nanosphere and multifunctional graphene composite	0.09-344	0.05	[4]
	Signal amplification utilizing porous carbon nanorods, AuNPs and copper oxide functionalized multi-walled carbon nanotube composites	0.09–516	0.06	[5]
Fluorescent Aptasensor	Disassembly of aptamer/FAM-labeled complementary strand dsDNA to quench fluorescence by AuNPs	30-2000	47.6	[6]
	Disassembly of aptamer-complementary strand dsDNA to bind SYBR Gold and turn on fluorescence	60-1000	54.5	[7]
Colorimetric Aptasensor	Aggregation of AuNPs caused by the competitive binding of target molecules and aptamer 8-2 sequences in NaCl solution	180-1000	47.2	[8]
	Aggregation of AuNPs caused by the competitive binding of target molecules and STR1 aptamer sequences in NaCl solution	200-1200	none	[9]
	Enhancement of the peroxidase catalytic activity of AuNPs based on the binding of target molecules and STR1 aptamer sequences	100-500	86	This work

Supplementary figures:

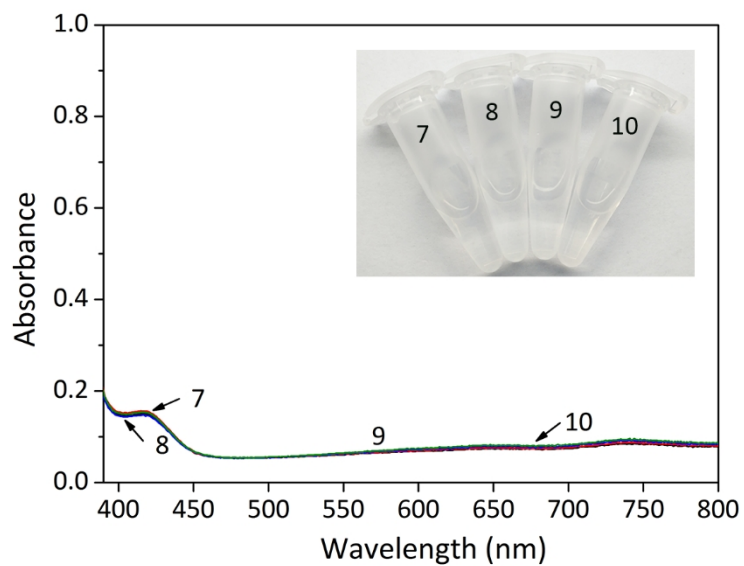


Figure S1 Absorption spectra and colour of solutions contain different substances. Sample 7: ABTS + H₂O₂; Sample 8: STR1 aptamer + ABTS + H₂O₂ + STR (1 μM); Sample 9: STR1 aptamer + ABTS + H₂O₂; Sample 10: ABTS + H₂O₂ + STR (1 μM). The final concentration of STR1 aptamer is 50 nM.

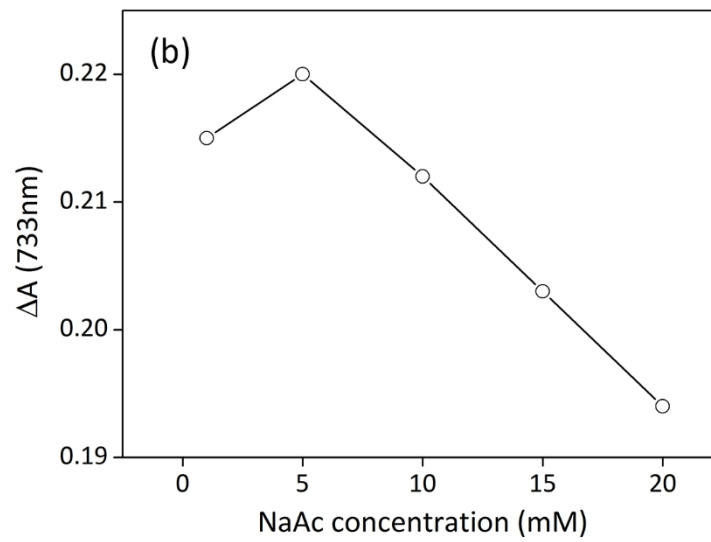
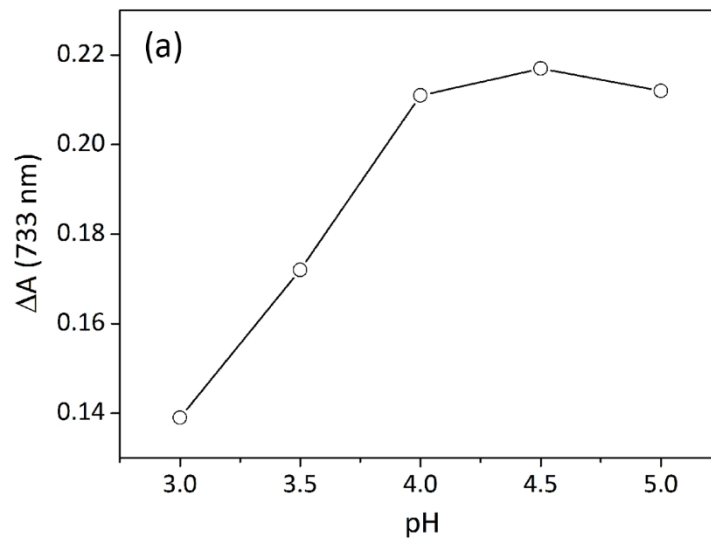


Figure S2 Effect of buffer conditions on STR detection. (a) The sensing signals of the colorimetric aptasensor treated with 1 μM of STR under different pH. (b) The sensing signals of the colorimetric aptasensor treated with 1 μM of STR under different NaAc concentrations.

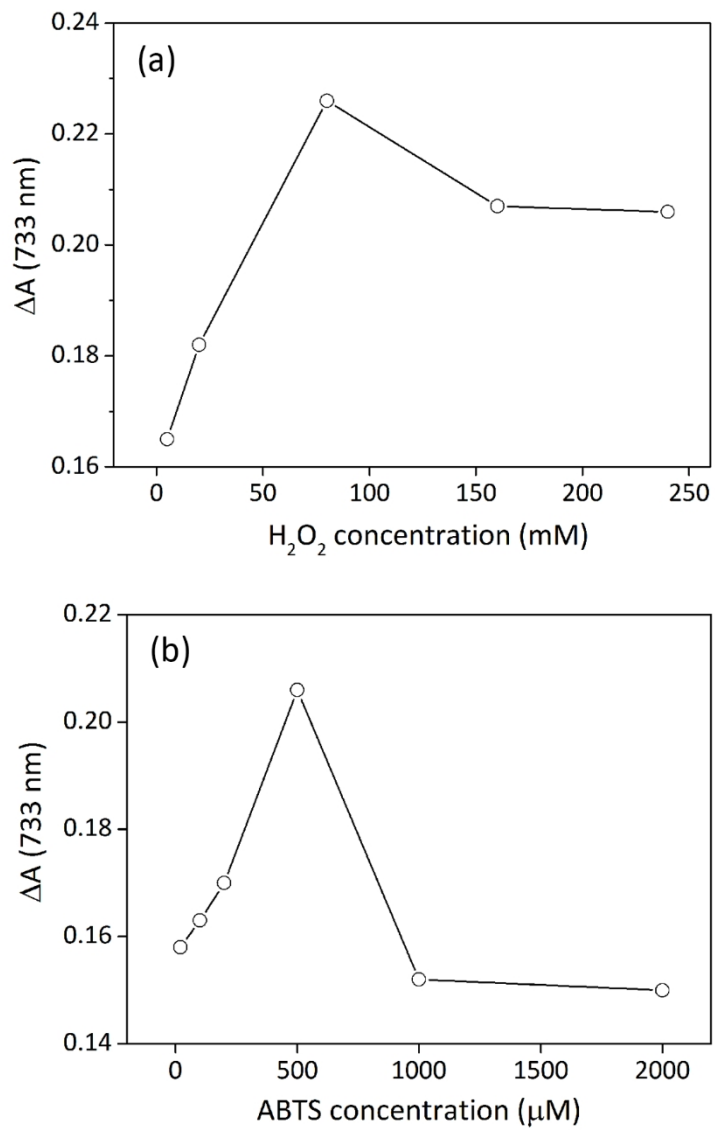


Figure S3 Effect of substrates on STR detection. (a) The sensing signals of the colorimetric aptasensor treated with 1 μM of STR using different concentrations of H_2O_2 . (b) The sensing signals of the colorimetric aptasensor treated with 1 μM of STR using different concentrations of ABTS.

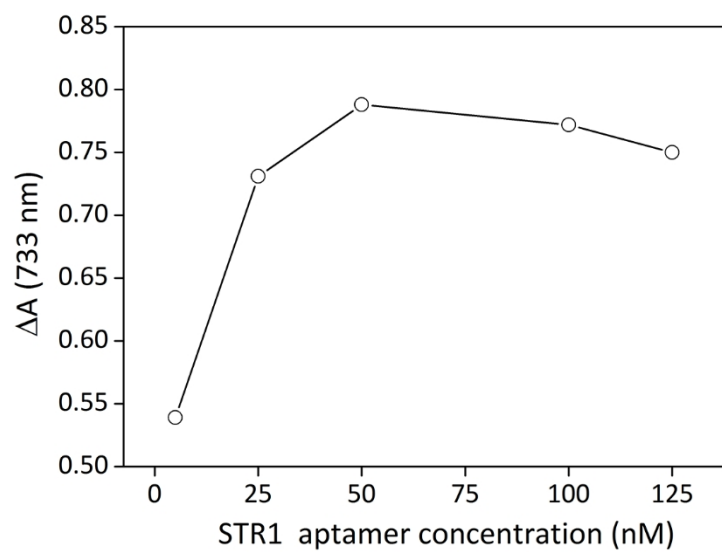


Figure S4 The sensing signals of the colorimetric aptasensor treated with 1 μM of STR using different STR1 aptamer concentrations.

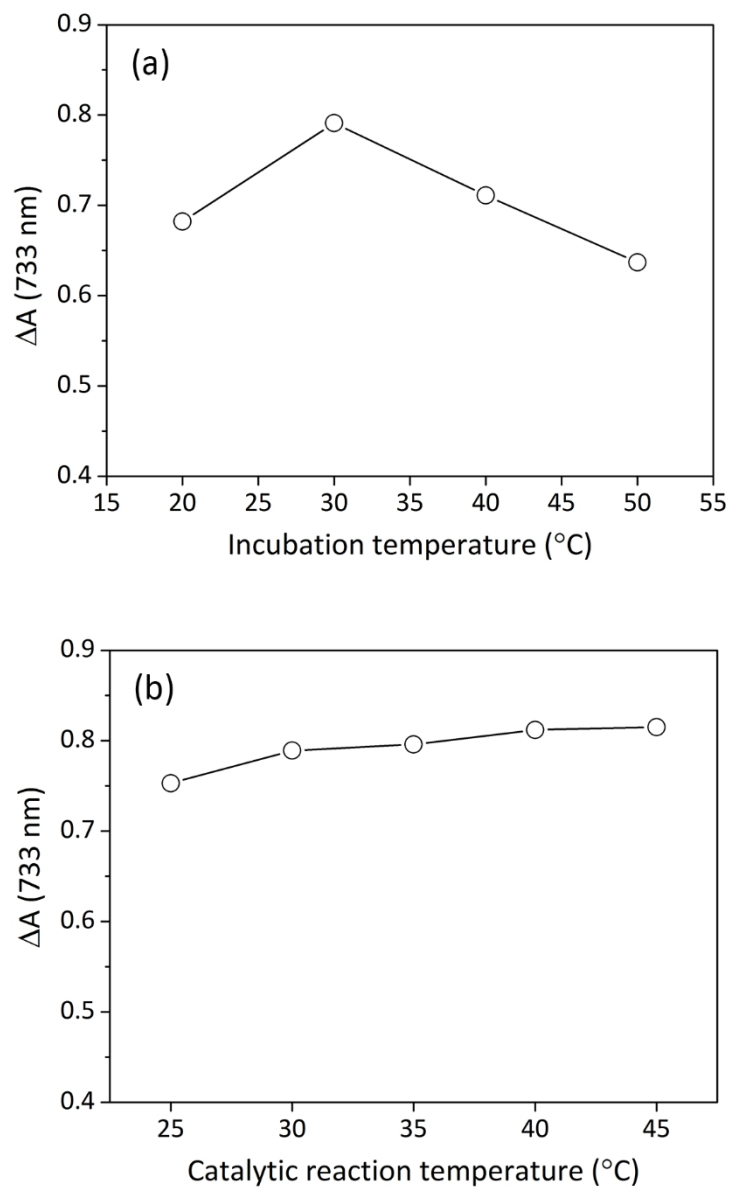


Figure S5 Effect of temperature on STR detection. (a) The sensing signals of the colorimetric aptasensor treated with 1 μM of STR under different incubation temperature. (b) The sensing signals of the colorimetric aptasensor treated with 1 μM of STR under different catalytic reaction temperature.