Colorimetric Detection of Cholic Acid Based on Aptamer

Adsorbed Gold Nanoprobe

Qiuyun Zhu,^a [†]Tingting Li,^a [†] Yi Ma,^a Zhaohui Wang,^a Jinxin Huang,^a Ruonan Liu,^a Yueqing Gu^{a*}

^aDepartment of Biomedical Engineering, School of Engineering, China

Pharmaceutical University, 24 Tongjia Lane, Gulou District, 210009 Nanjing , China

* Corresponding author.

E-mail address: guyueqingsubmission@hotmail.com (Y.Q. Gu).



Fig. S1 The DNA Mass report for CA aptamer.



Fig. S2 UV-vis spectra and color changes of grown Apt-Au NP added with or without MgCl₂.



Fig. S3 Comparison of the stability of Au NP and Apt-Au NP solutions incubated with NaCl. (a) UV-vis spectra and (b) photographs of Au NP and Apt-Au NP solutions before and after the addition of NaCl (25 and 50 mM).



Fig. S4 (a) Initial capillary scan and (b) the corresponding MST-curves of CA solutions incubated with FAM and FAM-Apt respectively.



Fig. S5 Photographs of the grown Apt-Au NP (Au NP : Apt = 1 : 250) with increasing amounts of CA aptamers adsorbed after stepwise addition of HAuCl₄.



Fig. S6 (a) Hydrate particle size distribution and (b) The mean diamter of grown Apt-Au NPs at various concentrations (0, 0.001, 0.01, 0.1, 1 and 10 μ M). Error bars indicate the SD of three independent experiments.



Fig. S7 UV-vis spectra of the growth reaction with and without Au NPs, in the presence of NH₂OH, HAuCl₄ and aptamers.



Fig. S8 (a) The fluorescence response for aptamer desorption analysis after incubation with CA. (b) pH analysis of CA solutions at various concentrations (0, 0.001, 0.01, 0.1, 1 and 10 μ M). (c) The fluorescence intensity of FAM-Apt incubated with CA solutions at various concentrations (0, 0.001, 0.01, 0.1, 1 and 10 μ M). Error bars indicate the SD of three independent experiments.



Fig. S9 Photographs (inner) and UV-vis spectra of grown Au NP (without aptamer adsorbtion) after incubating with different concentrations of CA



Fig. S10 (a) Photographs and (b) UV–vis spectra of grown Apt-Au NP after incubating with different concentrations of aptamer complementary sequence at 0.1, 1, 5 and 10 μ M..



Fig. S11 Structural comparison of CA, DCA, CDCA, GCA and LCA.



Fig. S12 (a) Photographs of grown Apt-Au NPs incubated with different concentrations (1, 5, 10 and 30 μ M) ofCA, DCA, CDCA, GCA and LCA, respectively. (b) Corresponding LSPR shifts of grown Apt-Au NPs. Error bars indicate the SD of three independent experiments.