

Electronic Supplementary Information

**The peroxidase-like activity of chitosan stabilized silver nanoparticles**

**for visual and colorimetric detection of glucose**

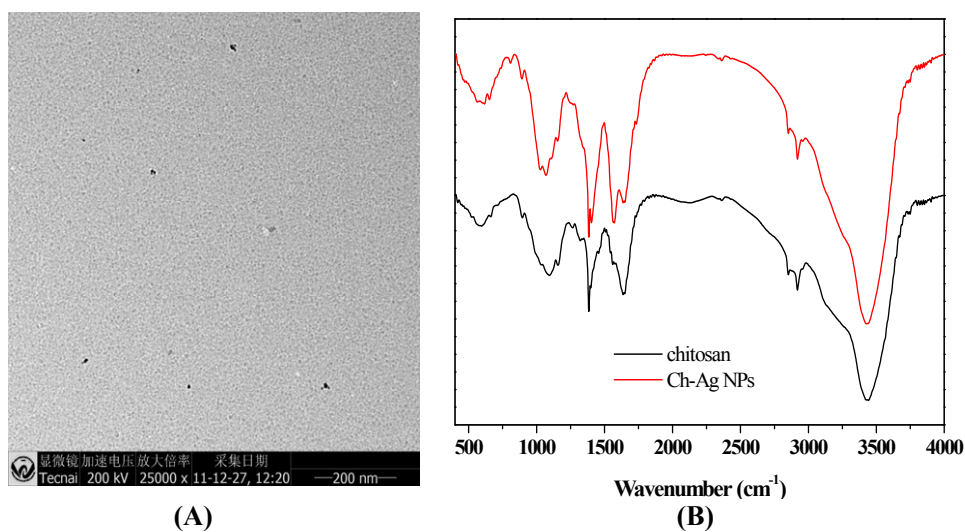
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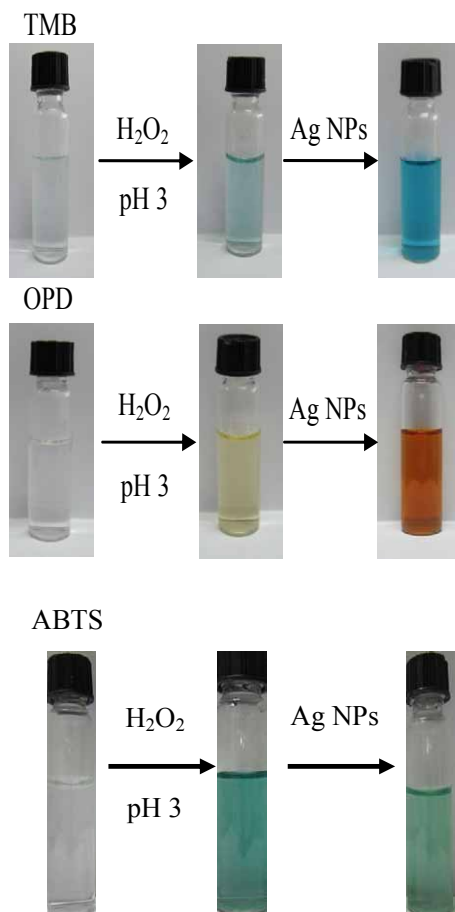
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**Table S1.** The surface charges of different ligands capped Ag nanoparticles.

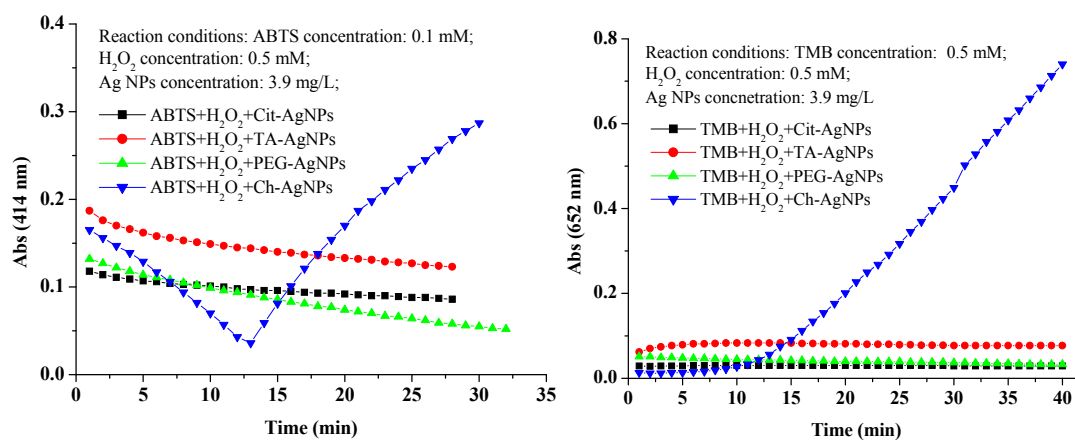
Nanoparticles	Zeta Potential (mV)
Ch-Ag NPs	+58.7
citrate-capped Ag NPs	-31.4
tannic acid-capped Ag NPs	-36.5
polyethylene glycol-capped Ag NPs	-24.4



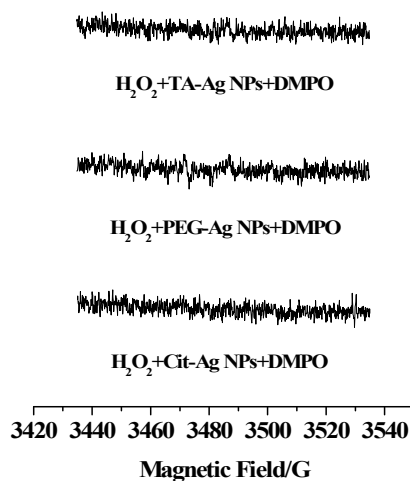
**Figure S1.** (A) TEM image of Ch-Ag NPs. (B) FT-IR spectra of chitosan and the synthesized Ch-Ag NPs.



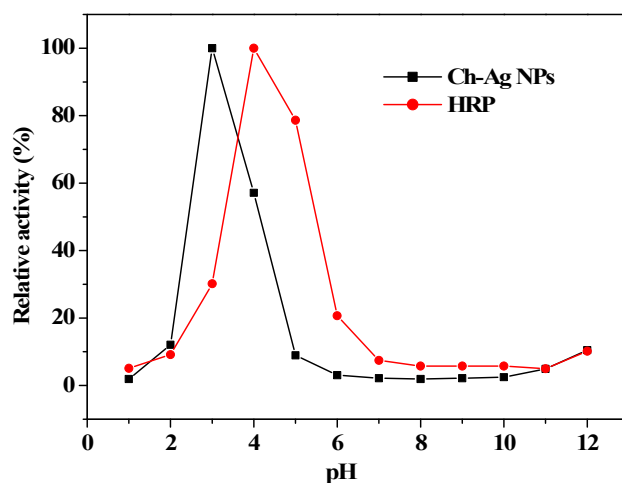
**Figure S2.** Images of oxidation color reaction of TMB, OPD and ABTS by  $H_2O_2$  with and without Ch-Ag NPs.



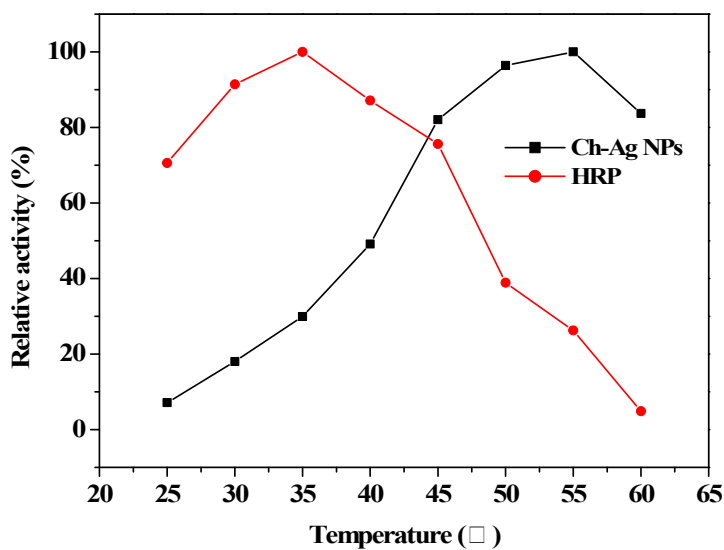
**Figure S3.** Time-dependent absorbance changes at 414 nm of ABTS and 652 nm of TMB with different ligands-capped Ag NPs.



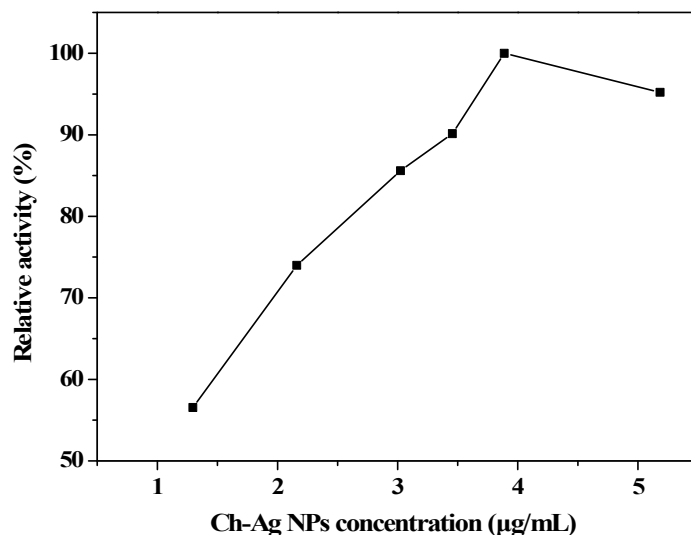
**Figure S4.** ESR spectra of hydroxyl radicals in the systems of H<sub>2</sub>O<sub>2</sub>/TA-Ag NPs/DMPO, H<sub>2</sub>O<sub>2</sub>/PEG-Ag NPs-DMPO, H<sub>2</sub>O<sub>2</sub>/Cit-Ag NPs/DMPO. Conditions: 12 mM DMPO, 30 mM H<sub>2</sub>O<sub>2</sub>, 13.1 mg L<sup>-1</sup> Ag NPs (as Ag), and 0.2 M NaAc buffer.



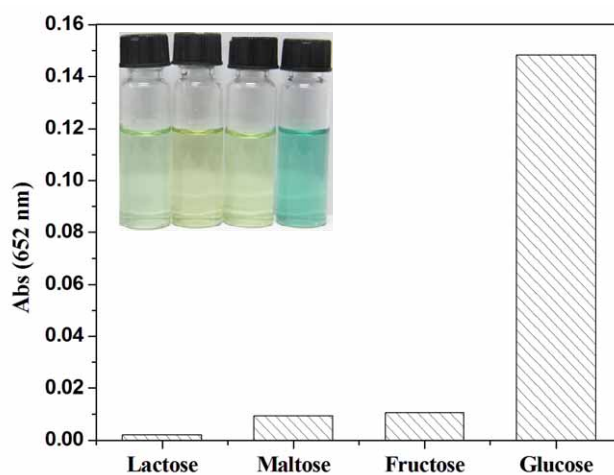
**Figure S5.** The effect of pH. Reaction conditions for Ch-Ag NPs are: Ch-Ag NPs:  $0.86 \text{ mg L}^{-1}$ , TMB:  $1 \times 10^{-4} \text{ M}$ ,  $\text{H}_2\text{O}_2$ :  $1 \text{ mM}$ ,  $0.2 \text{ M NaAc}$  buffer. Reaction conditions for HRP are: HRP:  $1 \text{ ng mL}^{-1}$ , TMB:  $5 \times 10^{-5} \text{ M}$ ,  $\text{H}_2\text{O}_2$ :  $1 \text{ mM}$ ,  $0.2 \text{ M NaAc}$  buffer.



**Figure S6.** The effect of temperature. Reaction conditions for Ch-Ag NPs are: Ch-Ag NPs:  $0.86 \text{ mg L}^{-1}$ , TMB:  $1 \times 10^{-4} \text{ M}$ ,  $\text{H}_2\text{O}_2$ :  $1 \text{ mM}$ ,  $0.2 \text{ M NaAc}$  buffer. Reaction conditions for HRP are: HRP:  $1 \text{ ng mL}^{-1}$ , TMB:  $5 \times 10^{-5} \text{ M}$ ,  $\text{H}_2\text{O}_2$ :  $1 \text{ mM}$ ,  $0.2 \text{ M NaAc}$  buffer.



**Figure S7.** The effect of Ch-Ag NPs concentration. Reaction conditions: Ch-Ag NPs:  $0.86 \text{ mg L}^{-1}$ , TMB:  $1 \times 10^{-4} \text{ M}$ ,  $\text{H}_2\text{O}_2$ : 1 mM, 0.2 M NaAc buffer (pH=3.0).



**Figure S8.** Determination of the selectivity of glucose detection was performed by 1 mM maltose, 5 mM lactose, and 5 mM fructose instead of 0.5 mM glucose under the same reaction conditions. Inset highlights the images of production of color product for different targets.