Supporting Information

Structural effects of amphiphilic protein/gold nanoparticle hybrid based nanozyme on peroxidase-like activity and silver-mediated inhibition

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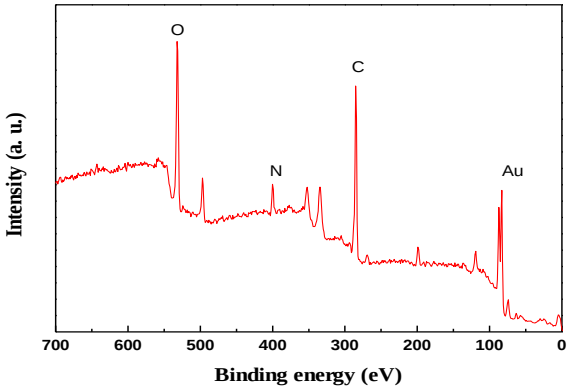

Fig. S1 The whole XPS spectrum of β-casein-AuNPs.

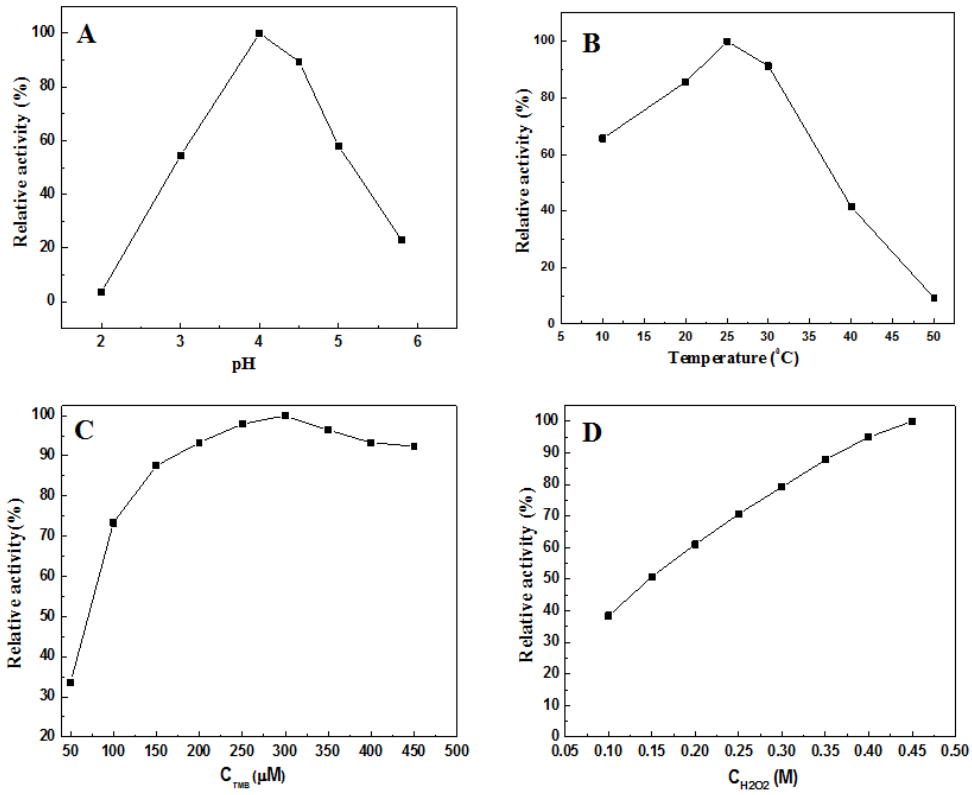

Fig. S2 Effect of pH (A), temperature (B), TMB concentration (C) and H_2O_2 concentration (D) on the catalytic relative activity of CM-AuNPs.

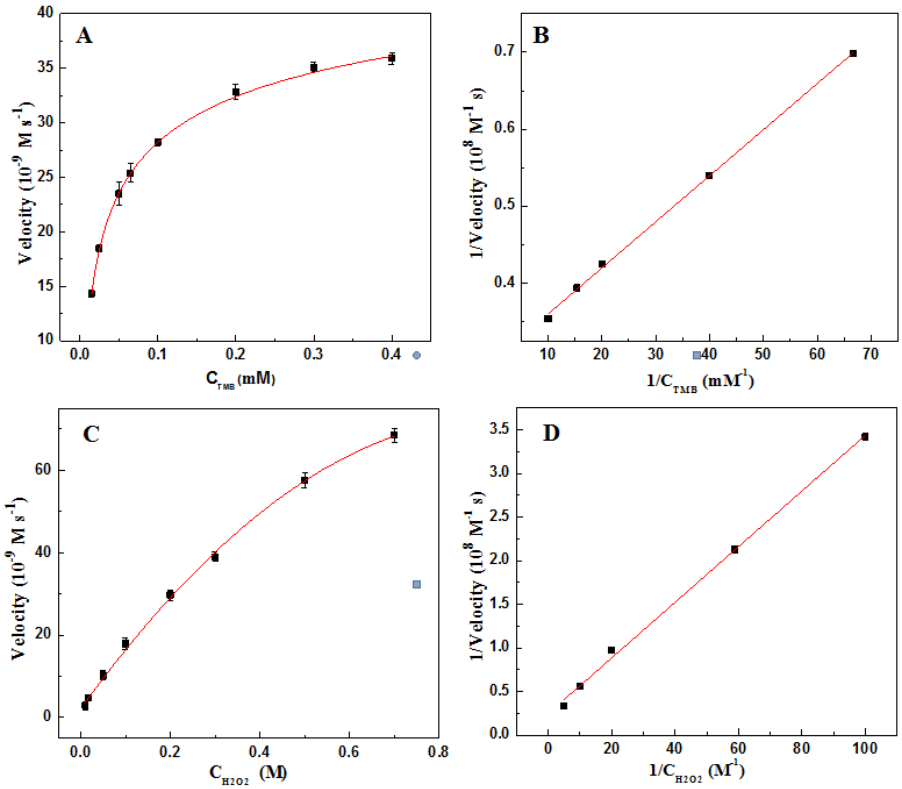

Fig. S3 (A, C) Correlation of initial reaction velocity with the concentration of one substrate (H_2O_2 or TMB) fixed and the other varied. (B, D) The double-reciprocal plots of (A) and (C).

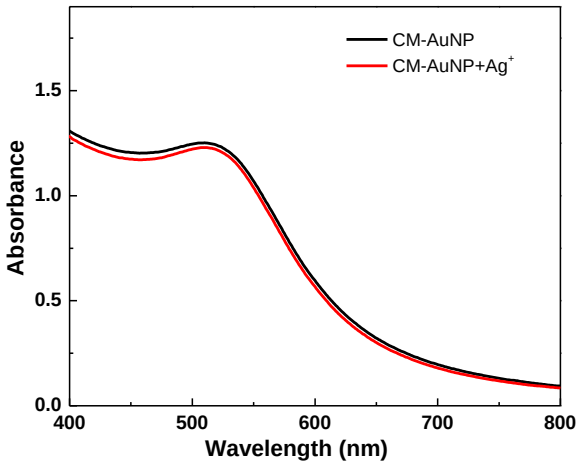

Fig. S4 UV–visible spectra of β-casein-AuNPs before (black) and after (red) the addition of 10 μM Ag^{+}.

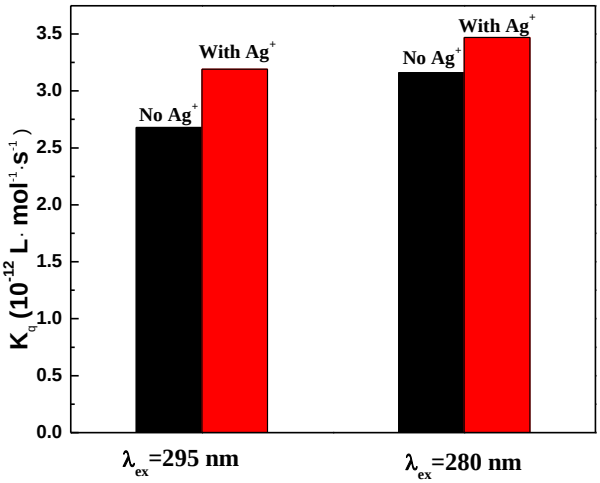

Fig. S5 Quenching constant of the interaction between TMB and β-casein with and without Ag^+.

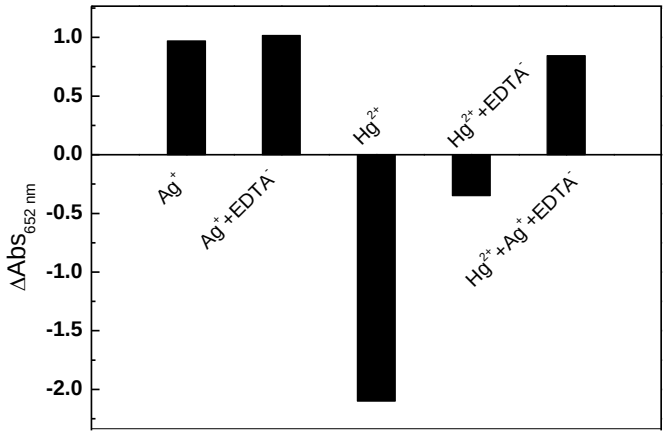

Fig. S6 Effect of 0.5 mM EDTA on $\Delta A_{652\ nm}$ generated by β-casein-AuNPs in the presence of Ag^{+} and Hg^{2+}. $\Delta A_{652\ nm} = A_0 - A$, A_0 and A are the absorbance at 652 nm obtained from the system without and with ions, respectively. The reaction system contains 0.3 mM TMB, 300 mM H_2O_2.

Table S1 Assay results of lake water samples by using the proposed β-casein-AuNP platform and the comparison of our results with the standard Ag^+ concentrations.

Sample	added Ag^+ concentration (μM)	Ag^+ concentration detected by β-casein-AuNP (μM)	Recovery (%)
1	0.50	0.48	96.0
2	1.00	1.07	107.0
3	2.00	1.94	97.0

The results are the average values of three parallel assays.