Supplementary Information

A colorimetric aptasensor based on hemin/EpCAM aptamer DNAzyme for sensitive exosomes detection

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Table S1. The sequences of ssDNA used in this work.

Aptamer	Sequences (5'-3')
CD63 aptamer	CACCCCACCTCGCTCCCGTGACACTAATGCTA
MUC1 aptamer	TTGA TCCT TTGG ATA CC
EpCAM aptamer	CACTACAGAGGTTGCGTCTGTCCCACGTTGTCATGGGGGGTTGGCCTG

Table S2. Comparison of the Michaelis-Menten Constant (K_m) and Maximum Reaction Rate (V_{max}) of the Reactions catalyzed by HRP and hemin/EpCAM aptamer DNAzyme.

Catalyst	Substrate	Km (mM)	Vmax (M/s)
HRP	H2O2	4.48	4.920×10^{-8}
HRP	TMB	0.72	6.224×10^{-8}
hemin/EpCAM aptamer	H2O2	6.31	19.21×10^{-8}
hemin/EpCAM aptamer	TMB	0.12	7.56×10^{-8}

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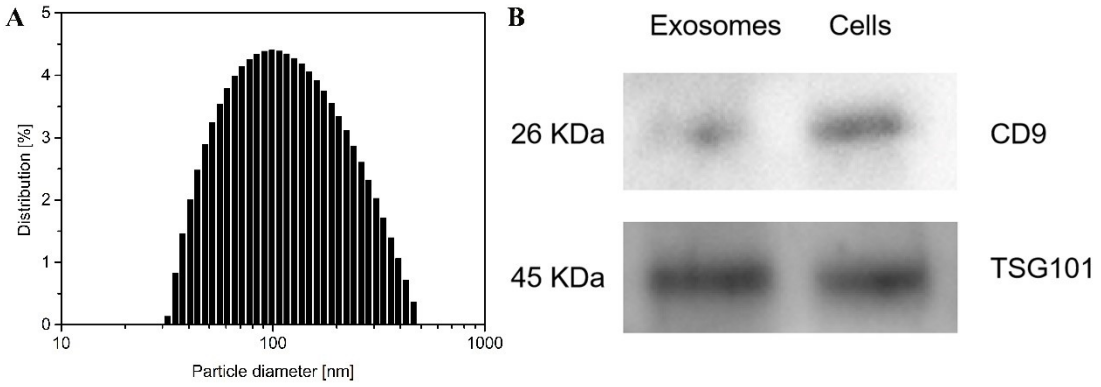

Fig. S1 (A) DLS image of exosomes. (B) Western blot analysis of CD9 and TSG101 in MCF-7 cells and exosomes.

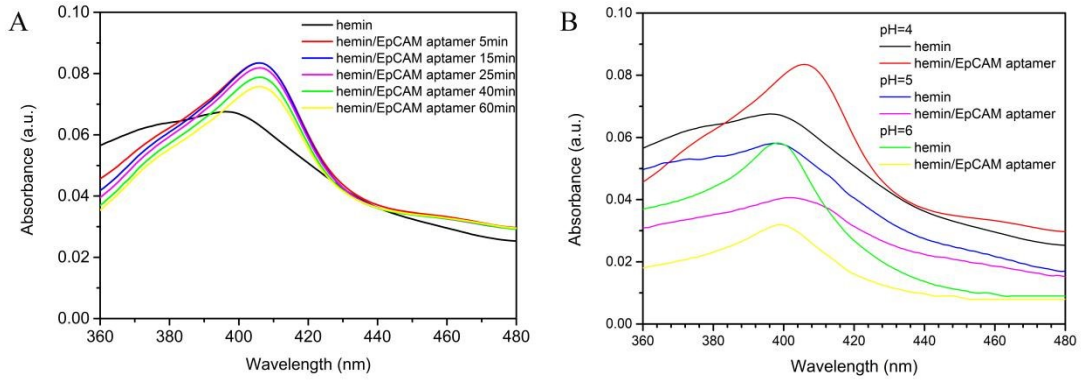

Fig. S2 (A) The time-dependent UV spectra of hemin/EpCAM aptamer. (B) The UV-vis spectra of hemin/EpCAM aptamer at pH 4-6.

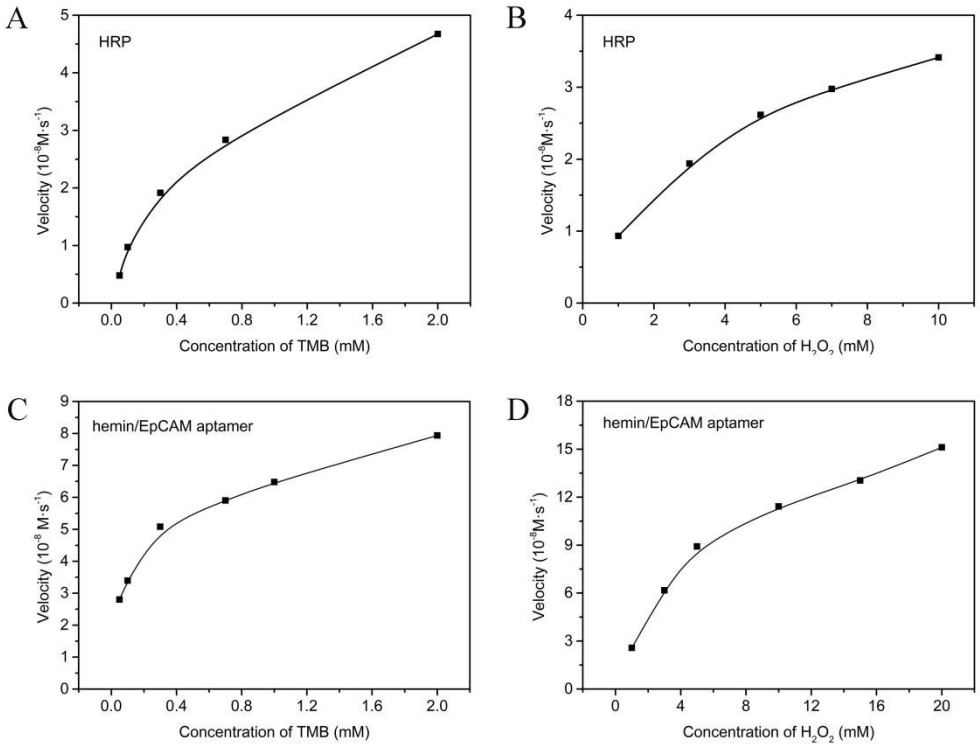

Fig. S3 Steady-state kinetic assay of HRP and hemin/EpCAM aptamer DNAzyme. (A)

Reaction velocity catalyzed by HRP with a fixed H_2O_2 concentration (5 mM) and various TMB concentrations. (B) Reaction velocity catalyzed by HRP with a fixed TMB concentration (2 mM) and various H_2O_2 concentrations. (C) Reaction velocity catalyzed by hemin/EpCAM aptamer with a fixed H_2O_2 concentration (5 mM) and various TMB concentrations. (D) Reaction velocity catalyzed by hemin/EpCAM aptamer with a fixed TMB concentration (2 mM) and various H_2O_2 concentrations.

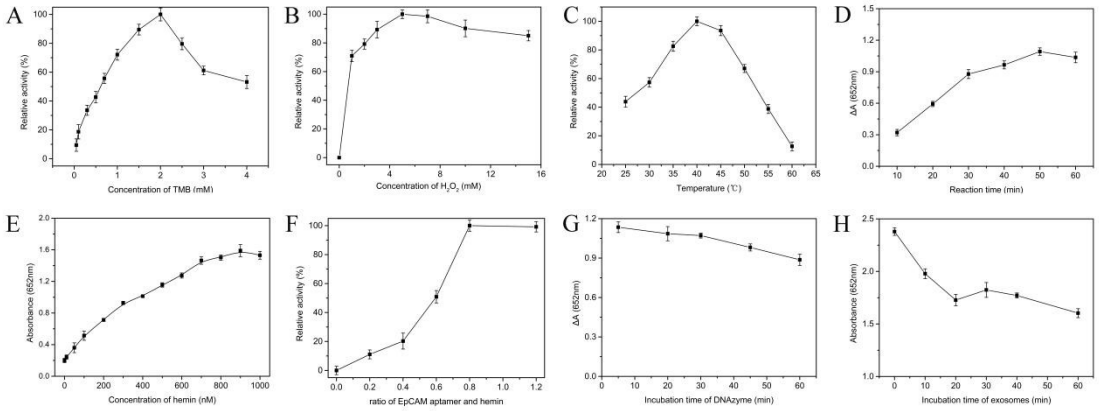

Fig. S4 Experimental parameter optimization of (A) Concentration of TMB; (B) Concentration of H_2O_2; (C) Reaction temperature; (D) Reaction time; (E) Concentration of hemin; (F) The ratio of EpCAM aptamer to hemin; (G) Incubation time of hemin/EpCAM aptamer; (H) Incubation time of exosomes. Error bars indicated standard deviations across three independent replicates. A_0 and A were the absorbance recorded in the absence and presence of exosomes at 652 nm. $\Delta A=A_0-A$.