Supplementary Information

Cobalt doped iron oxide nanozyme as a highly active peroxidase for renal tumor catalytic therapy

Yixuan Wang[1], Hongjun Li[2*], Lihua Guo[1], Qi Jiang[1], Feng Liu[1]

1. Department of Nephrology, China-Japan Union Hospital of Jilin University, Changchun, 130033, China.

2. The Examination Center, China-Japan Union Hospital of Jilin University, Changchun, 130033, China.

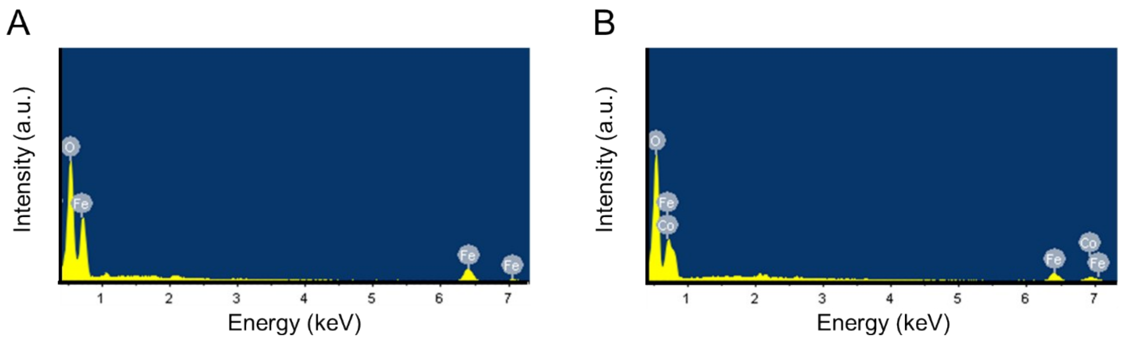

Figure S1 EDX spectrum of the Fe_3O_4 (A) and Co@ Fe_3O_4 (B) nanozymes.

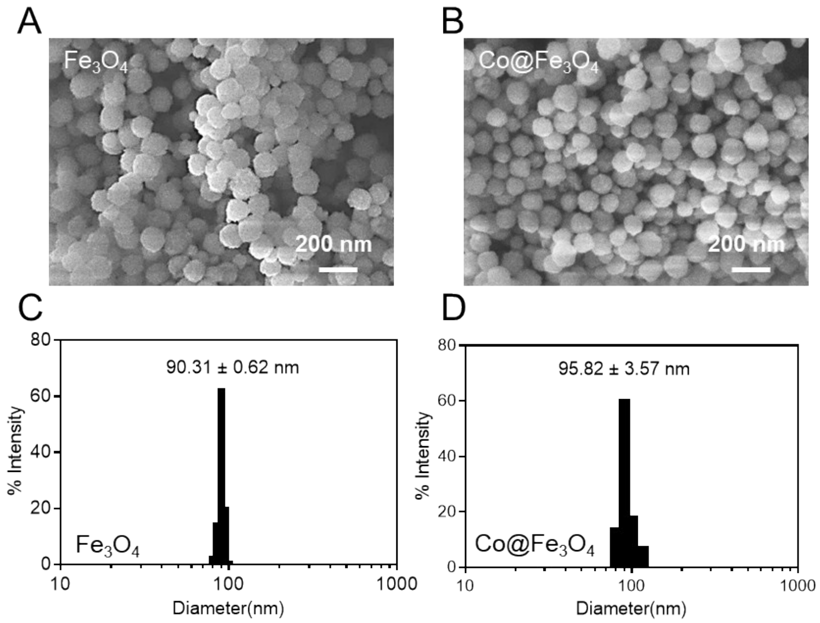

Figure S2 Scanning electron microscope (SEM) and Dynamic light scattering (DLS) analysis of Fe_3O_4 (A, C) and Co@Fe_3O_4 (B, D) nanozymes.

Table S1 Elemental quantification of Co@ Fe_3O_4 by XPS spectra.

Element	Wt %	At %
O	23.26	50.29
Fe	49.07	33.48
Co	27.67	16.23

Table S2 Comparison of the apparent Michaelis-Menton constant (K_M) and maximum initial reaction rate (V_{max}) of the Co@Fe_3O_4 nanozyme with other Fe_3O_4 based nanozymes.

Fe_3O_4 based nanozyme and size (diameter)	Substrate	K_M (mM)	Vmax (M s^{-1})	References
Fe_3O_4, 300 nm	H_2O_2	154	9.78×10-^{8}	1
	TMB	0.098	3.44x10^{-8}	
Fe_3O_4, 13 ± 3.5 nm	H_2O_2	54.6	1.8 × 10^{-8}	2
	TMB	0.374	2.6 × 10^{-8}	
GO-Fe_3O_4	H_2O_2	0.71	5.31×10^{-8}	3
	TMB	0.43	13.08×10^{-8}	
Fe_3O_4@Pt	H_2O_2	702.6	7.136×10^{-7}	4

	TMB	0.147	0.711×10^{-7}	
Fe_3O_4@Carbon, 120 nm	H_2O_2	0.38	73.99×10^{-8}	5
	TMB	0.072	17.99×10^{-8}	
Magnetosome	H_2O_2	170.65	9.33×10^{-9}	6
	TMB	0.90	4.45×10^{-9}	
Fe_3O_4@Cu@Cu_2O, 50 nm	H_2O_2	2.3	11.9×10^{-8}	7
	OPDA	0.85	13.2×10^{-8}	
$Mn_{0.5}Fe_{0.5}Fe_2O_4$, 10-11nm	H_2O_2	310	3.63×10^{-6}	8
	TMB	0.139	4.5×10^{-6}	
PB-γ-Fe_2O_3, 9.8 nm	H_2O_2	323.6	1.17×0^{-6}	9
	TMB	0.307	1.06×10^{-6}	
PB-Fe_2O_3, 46 nm	H_2O_2	0.015×10^{-3}	2.28×10^{-7}	10
	TMB	9.95×10^{-3}	1.23×10^{-7}	
PB-Fe_2O_3	H_2O_2	91.54	8.308×0^{-8}	11
	3,5-DTBC	1.22	4.431×0^{-8}	
γ-Fe_2O_3, 122.4 nm	H_2O_2	21.14	1.319×10^{-9}	12
	TMB	0.1709	2.647×10^{-9}	
γ-Fe_2O_3, 20-50 nm	H_2O_2	157.19	1.284×10^{-8}	13
	TMB	0.0887	0.97×10^{-8}	
GO-Fe_2O_3	H_2O_2	305	1.01×10^{-7}	14
	TMB	0.118	5.38×10^{-8}	
Pd@γ-Fe_2O_3	H_2O_2	0.254	1.28×10^{-7}	15
	ABTS	0.049	1.02×10^{-8}	
Co@Fe_3O_4, 95 nm	H_2O_2	0.19	71.5×10^{-8}	This study
	TMB	1.17	37.9×10^{-8}	

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