Supporting Information

Colorimetric Sensor Array for Antioxidant Recognition based on Co_3O_4 Dual Enzyme Activity

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Preparation

A solution containing cobalt nitrate hexahydrate ($Co(NO_3)_2$•$6H_2O$, 2.0 mmol), glycerol (16 mL) and isopropanol (60 mL) was placed in a Teflon-lined stainless-steel autoclave. The autoclave was then treated at 180 °C for 6 h. After cooling to room temperature naturally, the solution was centrifuged to recover the solid precipitate, which was washed several times with ethanol and dried in an oven at 80 °C to afford the precursor of Co.

A mixture containing the precursor (0.1 g) and deionized water (20 mL) was placed in a Teflon-lined stainless steel autoclave, and then treated at 160 °C for 3 h. After cooling to room temperature naturally, the solution was centrifuged to recover the solid precipitate. The finally obtained solid product is denoted as h-CoOH. The Co_3O_4 samples were prepared by calcining h-CoOH in air at 400 °C for 2 h, respectively.

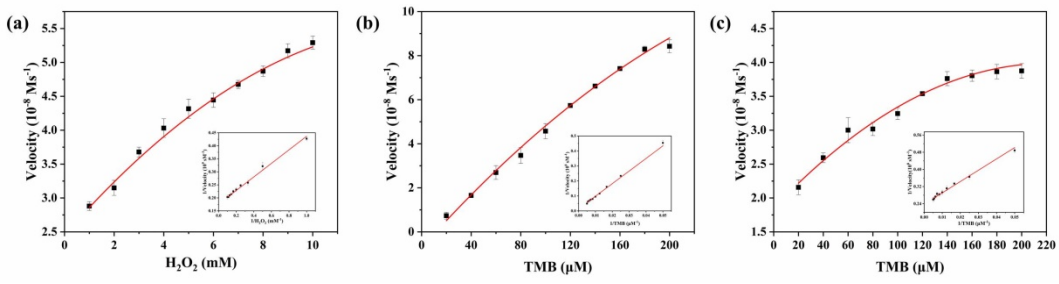

Fig. S1 Kinetic analysis of the as-prepared Co_3O_4 by the Michaelis–Menten model and double reciprocal plots, respectively.

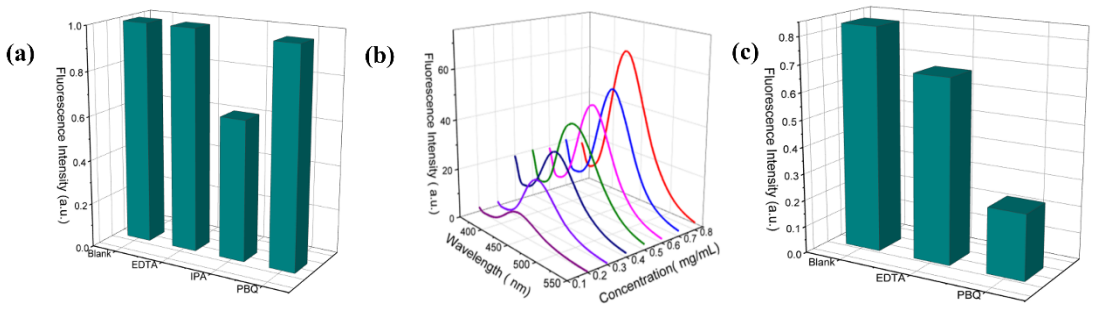

Fig. S2 (a), (c) Effects of various active scavengers during the catalysis of TMB with the aid of Co_3O_4 and (b) Fluorescence intensity varies with the concentration of Co_3O_4 at different wavelengths.

Table S1 Comparison of peroxidase-like and oxidase-like kinetic parameters.

	K_m (mM)		V_{max} (10^{-8} Ms^{-1})		
Catalyst	**H_2O_2**	**TMB**	**H_2O_2**	**TMB**	**Ref.**
HRP	3.7	0.434	8.71	10	1
CeO_2/C	2.61	0.12	3.31	2.08	2
CoFe-LDH/CeO_2	10.82	0.419	\	\	3
CeO_2 NPs(OXD)	\	0.80	\	30.00	4
Co_3O_4(POD)	1.3	0.221	5.62	71.22	**This work**
Co_3O_4(OXD)	\	0.598	\	4.199	**This work**

Table S2 Other methods used to detect DA.

Linear range	LOD	Method	Ref.
1-200 μM	0.07 μM	Fluorescence	5
0.5-25 μM	0.18 μM	Electrochemical	6
0-1000 nM	**8.26 nM**	**Colorimetric sensor array**	**This work**

Table S3 Other methods used to detect AA.

Linear range	LOD	Method	Ref.
0-80 μM	0.026 μM	Colorimetric	7
10-250 μM	1.3 μM	Fluorescence	8
0-1000 nM	**5.42 nM**	**Colorimetric sensor array**	**This work**

Table S4 Other methods used to detect GSH.

Linear range	LOD	Method	Ref.
1-10 μM	0.658 μM	Colorimetric	9
12.5-800 μM	0.7 μM	Fluorescence	10
0-1000 nM	**2.89 nM**	**Colorimetric sensor array**	**This work**

Table S5 Other methods used to detect Cys.

Linear range	LOD	Method	Ref.
0-140 μM	11.1 nM	Fluorescence	11
0.05 -14.0 μM	20 nM	Colorimetric	12
0-1000 nM	**6.24 nM**	**Colorimetric sensor array**	**This work**

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