Supplementary data

A Nanozyme-Based Colorimetric Platform for Total Antioxidant Capacity Evaluation: Optimizing Vine Tea Brewing with Fe_3O_4@Ag@Pt

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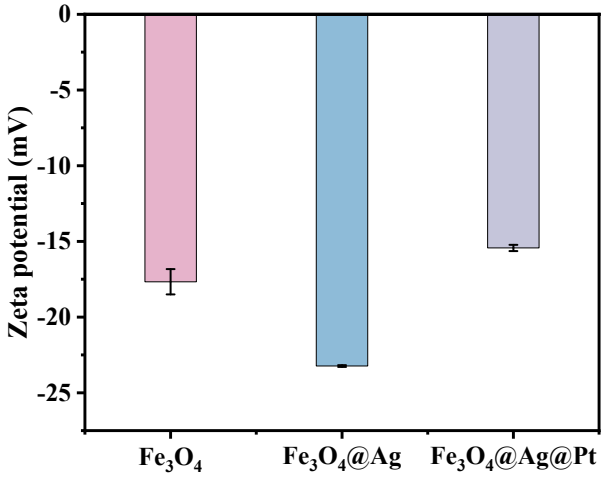

Fig. S1 ζ potentials of Fe_3O_4, Fe_3O_4@Ag and Fe_3O_4@Ag@Pt.

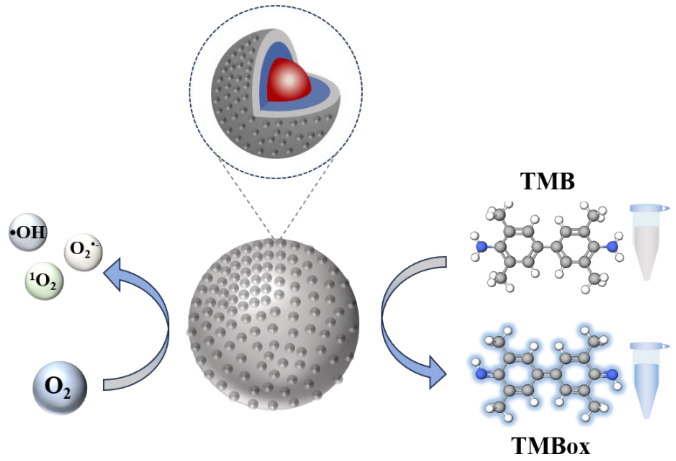

Fig. S2 Schematic diagram catalytic mechanism of oxidase-like activity of Fe_3O_4@Ag@Pt nanoparticle.

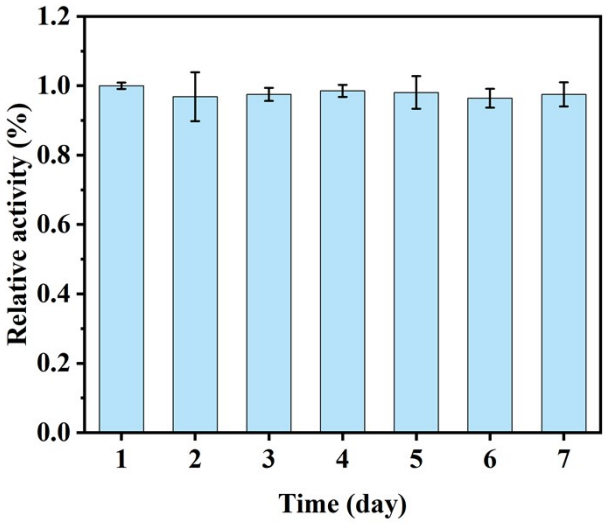

Fig. S3 Room-temperature storage stability of Fe_3O_4@Ag@Pt.

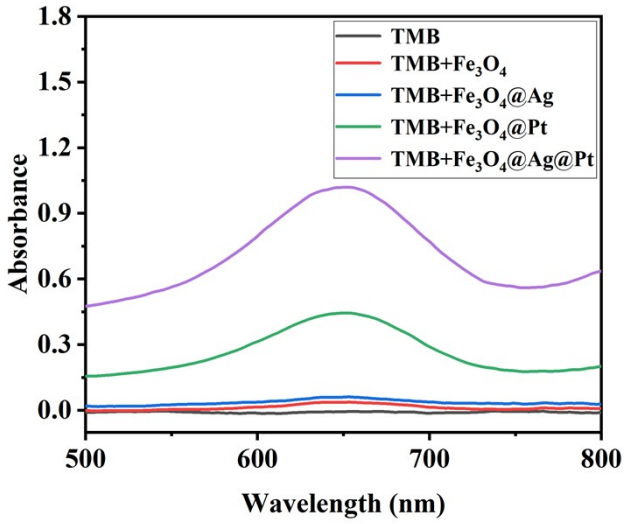

Fig. S4 Comparative OXD-like activity of Fe_3O_4, Fe_3O_4@Ag, Fe_3O_4@Pt, and Fe_3O_4@Ag@Pt.

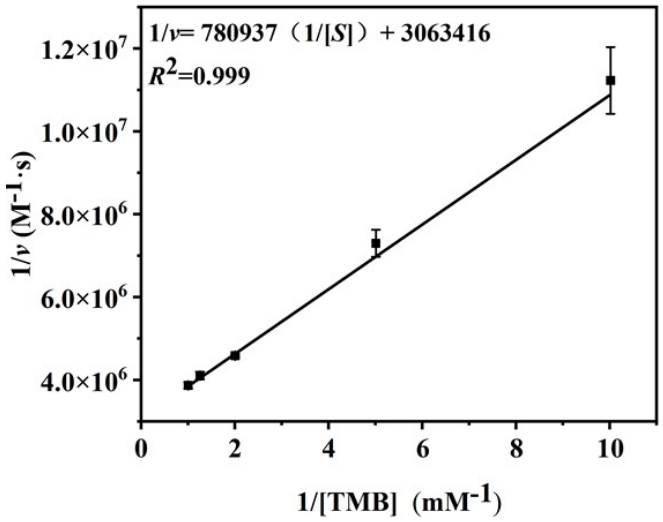

Fig. S5 Lineweaver-Burk plot for the OXD-like activity of Fe_3O_4@Pt using TMB as the substrate.

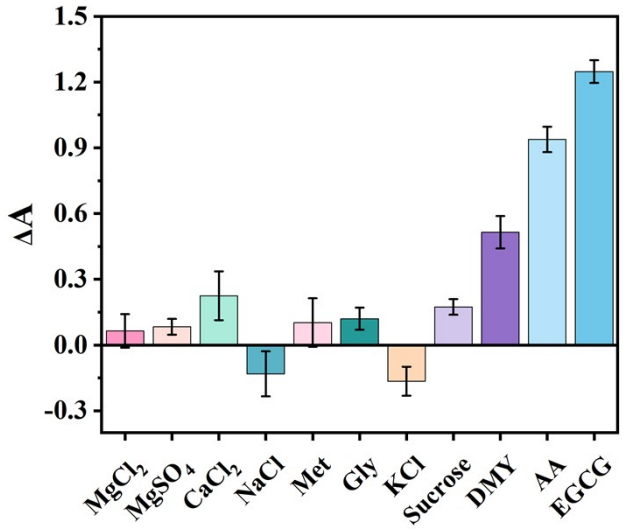

Fig. S6 Absorbance changes induced by different interferents, each at a concentration of 0.1 mM.

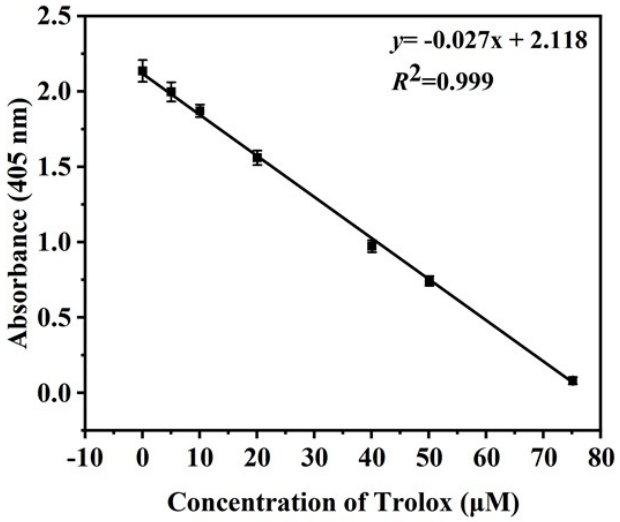

Fig. S7 Calibration curve for TAC determination based on commercial TAC kit.

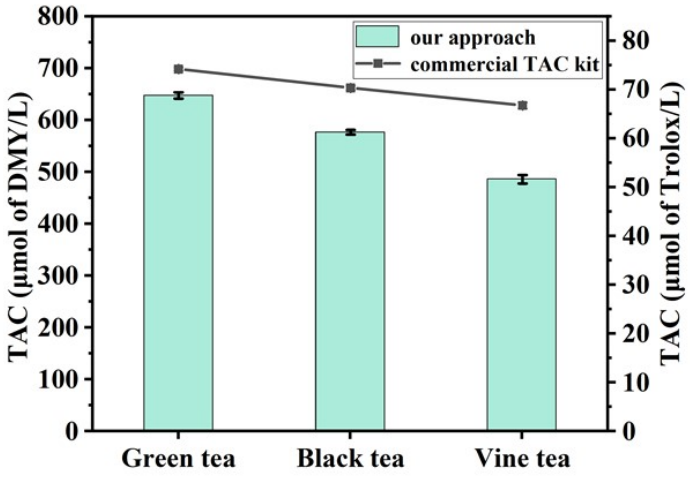

Fig. S8 Comparative analysis of the total antioxidant capacity (TAC) in different tea samples.

Table S1 Steady-state kinetic parameters (K_m and v_{max}) for the OXD-like activity of Fe_3O_4@Pt and Fe_3O_4@Ag@Pt nanozymes.

Catalyst	Substance	K_m (mM)	v_{max} (M/s)	Ref
Fe_3O_4@Pt (OXD-like)	TMB	0.255	3.26×10^{-7}	This work
Fe_3O_4@Ag@Pt (OXD-like)	TMB	0.226	6.45×10^{-7}	1

Table S2 Comparison of the analytical performance of our Fe_3O_3@Ag@Pt nanozyme with other reported nanozymes for TAC detection.

Nanozyme	Target	LOD	Linear range	Sample	Time	Ref
Fe_3O_4@Ag@Pt	DMY	1 μM	1-900 μM	Vine tea	5 min	This work
HPW-CuBTC	Catechin	1.67 μM	4-14 μM	Huangjiu	20 min	2
MnCo@C NCs	AA	0.29 μM	0-25 μM	Beverage	3 min	3
Cu-N/C	AA	0.3 μM	10−100 μM	Beverage, VC tablet	10 min	4
Fe-NMPs	AA	12.61 μM	5-250 μM	Fruits	15 min	5
COOH-Co_3O_4	AA	0.78 μM	3.33-26.67 μM	*Cordyceps militaris* (L.) Fr	10 min	6
Mn/Co-MOF	AA	3 nM	0.01-120 μM	Chinese teas	10 min	7
Pt/C nanozyme	AA	0.93μM	3-50 μM	Beverage	10 min	8
MnO_2@Ag	EGCG	1 μM	1-10 μM	Chinese teas	5 min	9

Reference

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