foods

MDPI

SUPPLEMENTARY FILE

A multi-enzyme cascade response for the colorimetric recognition of organophosphorus pesticides utilizing core-shell Pd@Pt nanoparticles with high peroxidase-like activity

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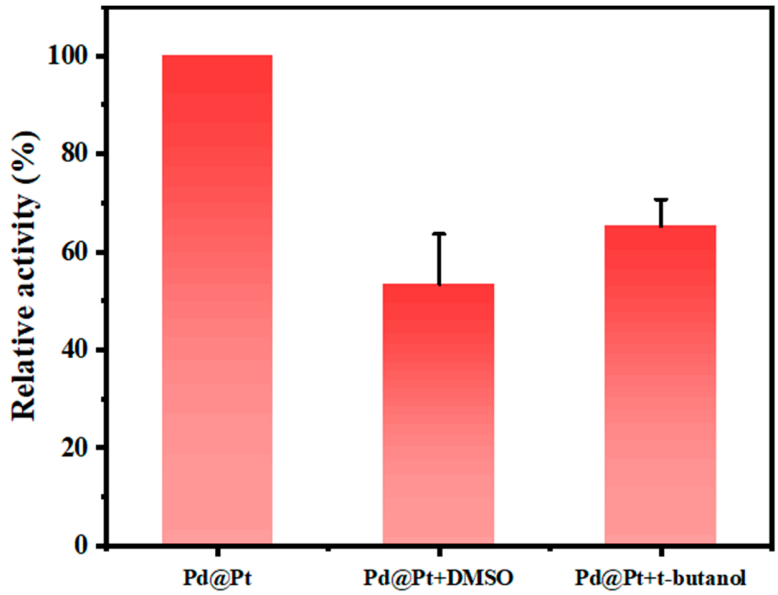

Figure S1. Effect of ·OH scavengers on the peroxidase activity of Pd@Pt. Effect of dimethyl sulfoxide (DMSO) and t-butynol on POD-like activity of Pd@Pt nanoparticles. The standard error (s.e.) was revealed as error bars after three independent experiments.

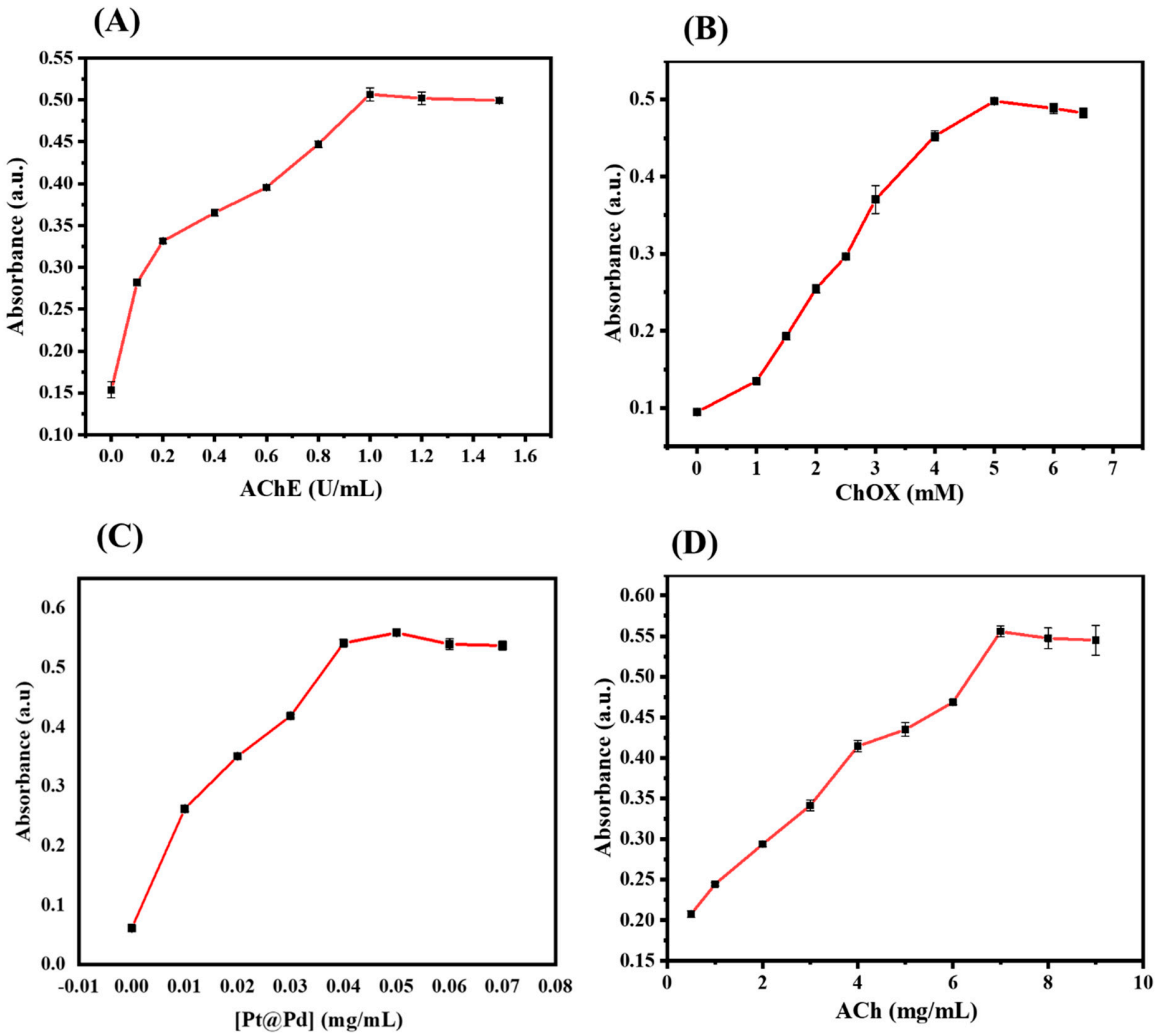

Figure S2. The condition optimization of a multi-enzyme cascade reaction. The effect of **(A)** AChE; **(B)** ChOx; **(C)** Pd@Pt nanozyme; and **(D)** ACh concentrations on different reaction system, respectively. Error bars indicate the standard error (s.e) of three independent experiments.

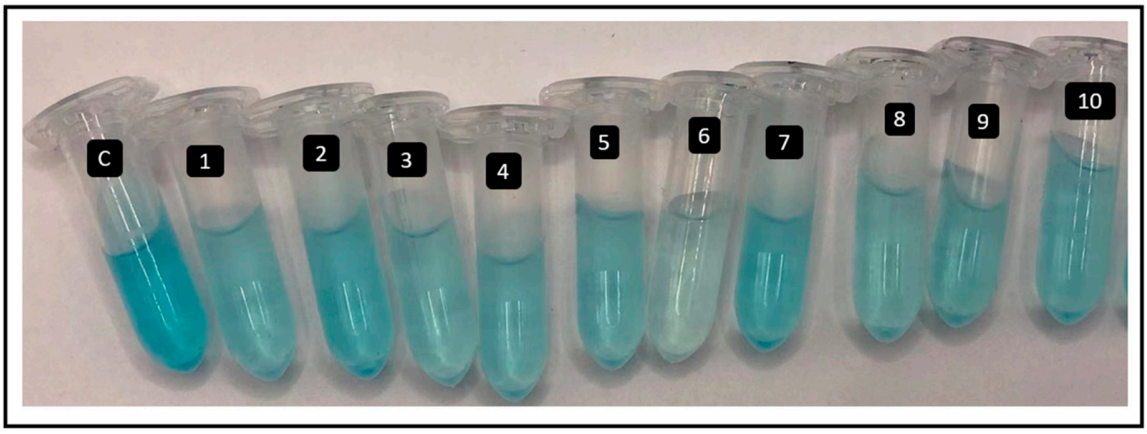

Figure S3. The representative images of real samples sprayed with Parathion. Inside are different tested samples of C-Control sample (no OP); 1-spinach; 2-apple; 3-banana; 4-cabbage; 5-brocolli; 6-tomato; 7-eggplant; 8-ginger; 9-Potatoes and 10-Mango samples. This section may be divided by subheadings. It should provide a concise and precise description of the experimental results, their interpretation, as well as the experimental conclusions that can be drawn.

POD-like activity parameters and comparison of noble metal-based nanoparticles

Table S1 POD-like activity parameters and comparison of noble metal-based nanoparticles

Category	Catalysts	K_m（mM）	V_{max}（M s^{-1}）	References
Noble metal-based nanoparticles	Tyrosine-capped Ag-NPs	0.053	3.7 x 10^{-8}	[1]
	PtNP@UiO-66-NH2	0.127	1.36 x 10^{-8}	[2]
	BSA-stabilized Pt NPs	0.119	29 x 10^{-8}	[2]
	citrate-capped Pt NPs	0.121	6.51 x 10^{-8}	[2]
	Pt/cube-CeO2	0.26	1.47 x 10^{-7}	[3]
	Pd NCs	0.063	7.64 x 10^{-8}	[4]
	Au-Pt NCs	0.362	11.366	[5]
	HRP	0.4376	1.38 x 10^{-6}	[50]
	Pd@Pt	0.26417	0.36002	This work

K_m is the Michaelis-Menten constant, v_{max} is the maximal reaction rate

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