Electronic supplementary information

Novel chemiluminescent immunochromatographic assay using dual-readout signal probe for multiplexed detection of pesticide residues

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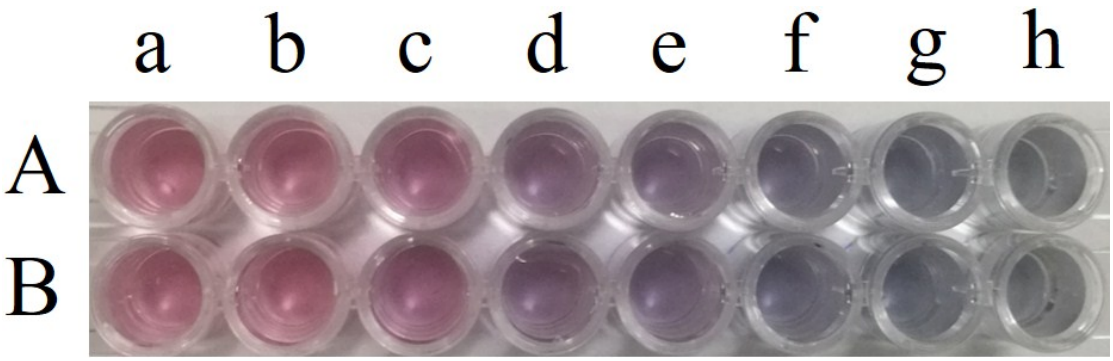
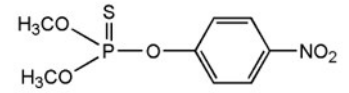
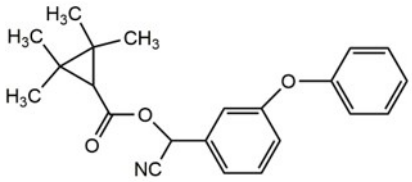


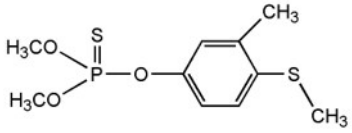
Fig. S1. (A) Photograph showing the color of the mixed solutions of 200 μL of LRAuNPs, 70 μL of 10% NaCl and 30 μL of methyl parathion antibody at (a) 1.0, (b) 10, (c) 25, (d) 75, (e) 150, (f) 300 (g) 600 and (h) 1000 μg/mL. (B) Photograph showing the color of the mixed solutions of 200 μL of LRAuNPs, 70 μL of 10% NaCl and 30 μL of fenpropathrin antibody at (a) 1.0, (b) 10, (c) 25, (d) 75, (e) 150, (f) 300, (g) 500 and (h) 1000 μg/mL.



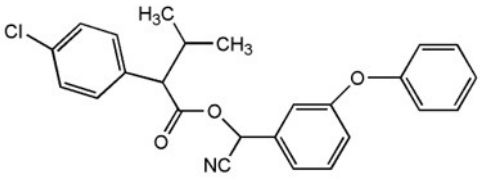
Methyl parathion



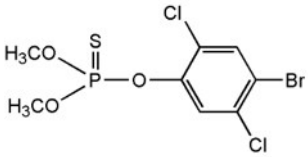
Fenpropathrin



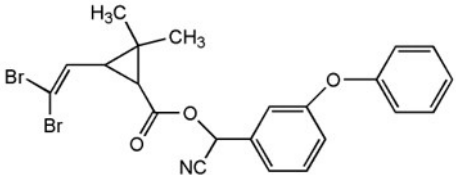
Fenthion



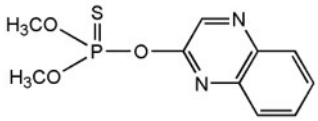
Fenvalerate



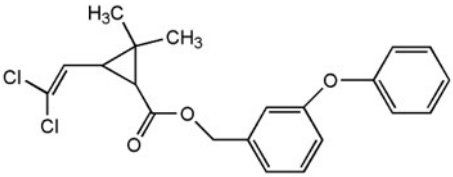
Methyl bromophos



Deltamethrin



Quinalphos



Permethrin

Fig. S2. The chemical structures of 8 pesticides.

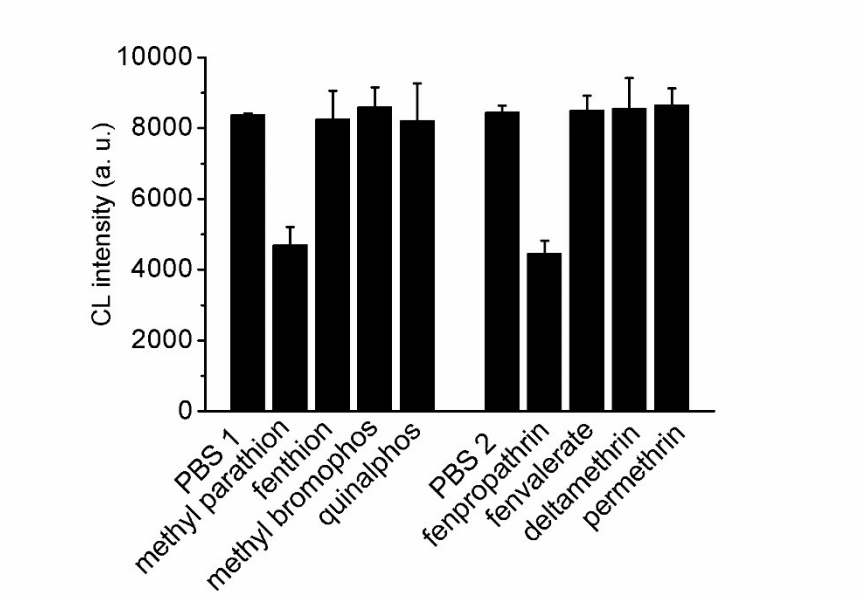


Fig. S3. CL signals of the proposed ICA protocol from PBS 1 and PBS 2 (as the blanks for methyl parathion and fenpropathrin, respectively), methyl parathion, fenthion, methyl bromophos, quinalphos, fenpropathrin, fenvalerate, deltamethrin and permethrin. The concentrations of all these pesticides were 100 ng/mL, $n = 3$.

Table S1. Comparison of analytical parameters of different methods for methyl parathion and fenpropathrin detections.

Method	Analyte	Detection range	LOD	Reference
Chemiluminescent ICA	methyl parathion	0.1–250 ng/mL	0.058 ng/mL	S1
Nonenzymatic electrochemical sensor	methyl parathion	10–500 ng/mL	1.21 ng/mL	S2
Tapered-fiber optic biosensor	methyl parathion	55.1–1.23×10^6 ng/mL	6.3 ng/mL	S3
Imprinted polymers-based sensor	methyl parathion	263–2.29×10^4 ng/mL	17.9 ng/mL	S4
Liquid–liquid microextraction−HPLC	methyl parathion	58–500 ng/mL	17 ng/mL	S5
Solid-phase microextraction−HPLC	fenpropathrin	1.5–1.25×10^3 ng/g	0.5 ng/g	S6
Gas chromatography	fenpropathrin	1.0–100 ng/g	0.3 ng/g	S7
Colorimetric immunochip assay	methyl parathion	2.63–108.68 ng/mL	0.82 ng/mL	S8
	fenpropathrin	0.24–12.92 ng/mL	0.13 ng/mL	
Liquid–liquid microextraction−HPLC	fenpropathrin	2–500 ng/mL	1.54 ng/mL	S9
Gas chromatography−mass Spectrometry	fenpropathrin	10–1000 ng/g	3 ng/g	S10
Dual-response ICA strategy	methyl parathion	0.50–200 ng/mL	0.17 ng/mL	The proposed method
	fenpropathrin	0.30–200 ng/mL	0.10 ng/mL	

References

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