Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

A novel electrochemical sensing platform based on the esterase extracted from kidney bean for high-sensitivity determination of organophosphorus pesticide

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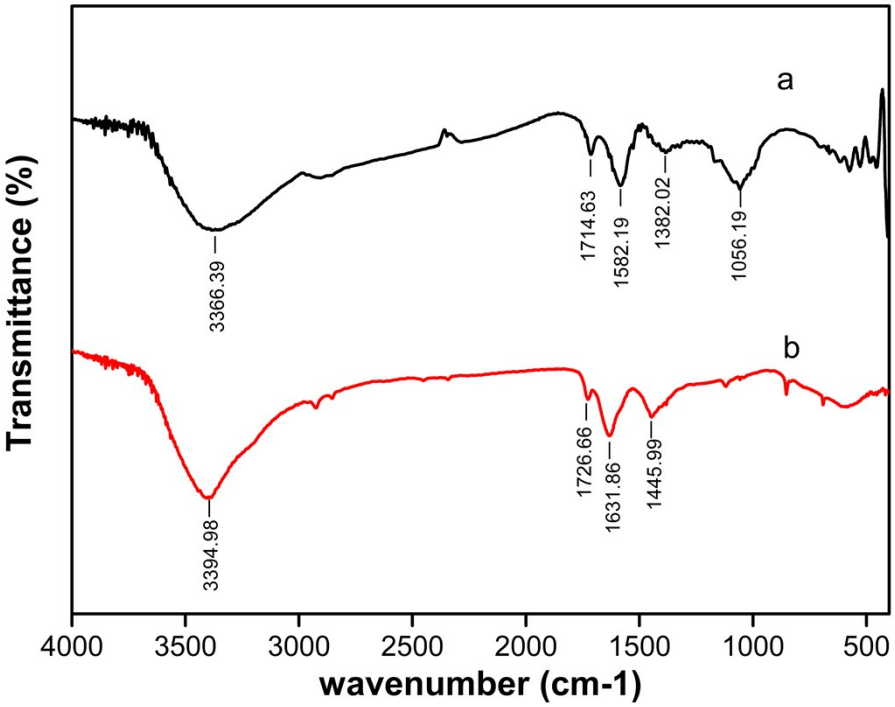

Figure S1. FTIR spectra of (a) cGR, and (b) cCNTs

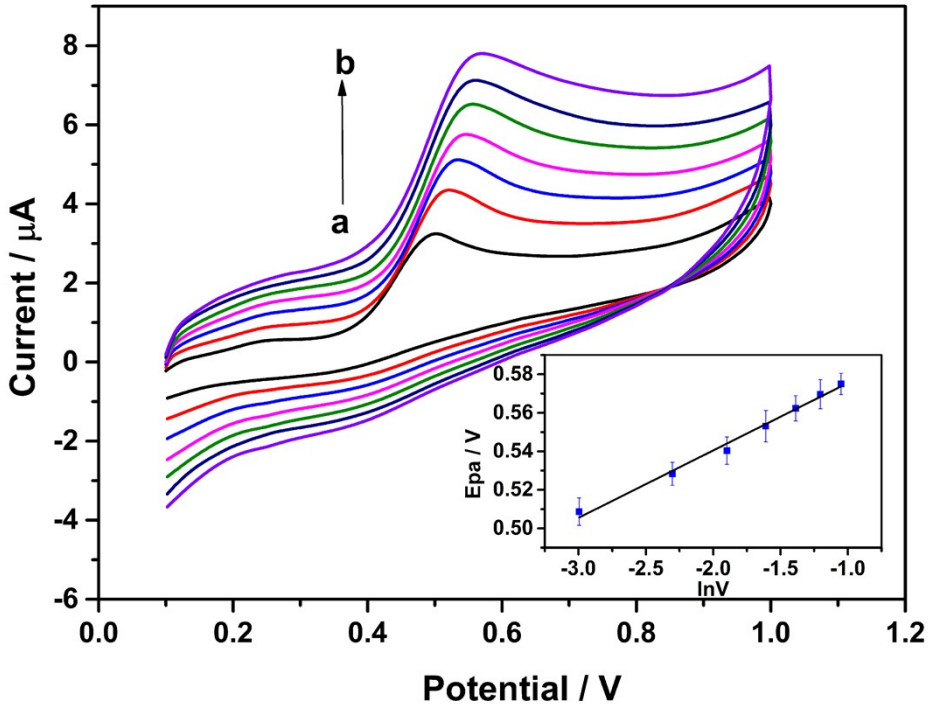

Figure S2. CV curves of CS/KbE/PDDA-Au/cCNTs-cGR /GCE at different scan rates in PBS buffer containing 0.8mM α-NA (a-f: 0.05, 0.1, 0.15, 0.2, 0.25, 0.3, 0.35V/s). Inset: the linear relationship between E_{pa} and *lnv*

Table S1 Comparison of the KbE biosensor for trichlorfon detection with other electrochemical

sensors

Electrode[a]	Linear range (μg/ L)	LOD (ng/ L)	Ref
graphite rods/poly(FBThF)/f-MNPs/AChE	0.05~4.1, 4.1~9.0	37	1
GCE/MWCNTs@Au-*g*-PMAEFc	12.87~25.74	7000	2
GCE/CS/Fe_3O_4@MWNT-COOH/MIP	2.57×10^{-3}~2.57×10^{3}	2.3	3
NECFE/Cu-hemin MOFs/AChE	0.25~20.00	82.0	4
GCE/AChE//Ag-rGO-NH_2/poly (FBThF)	0.0206~2.06	1.0	5
GCE/3D-KSC/COF-LZU1/AChE	0.20~19.00	67.0	6
GCE/MIL-53(Al)@CdS-PEI/CS/ SiO_2@AuNPs-aptamer	2.57×10^{-3}~2.57×10^{4}	1.3	7
GCE/nanogold/mercaptomethamidophos /mercaptohexanol/AChE	0.10~1500	21.0	8
GCE/cCNTs-cGR/PDDA-Au/KbE/CS	5×10^{-3}~1.50×10^{-1}, 1.50×10^{-1}~7.0×10^{-1}	3.0	This work

[a] FBThF, 4,7-di(furan-2-yl)benzo[c][1,2,5]- thiadiazole; f-MNPs, carboxyl group modified magnetic nanoparticles; MWCNTs@Au-*g*-PMAEFc, multi-walled carbon nanotubes decorated with gold nanoparticles-grafted poly(2-methacryloyloxyethyl ferrocenecarboxylate); CS, chitosan; MWNT-COOH, carboxyl-functionalized multiwalled carbon nanotubes; MIP, molecularly imprinted polymer; NECF, nitrogen-containing melamine carbon foam; FBThF, 4, 7-di (furan-2-yl) benzo thiadiazole ; COF-LZU1, covalent-organic framework with high carbon and nitrogen content microstructures;3D-KSCs, 3D nitrogen-containing kenaf stem composites; PEI, polyethylenimine; AuNPs, gold nanoparticles.

Table S2 Comparison of the KbE biosensor for trichlorfon detection with other analytical

methods

Method[b]	Linear range (μg/ L)	LOD (ng/ L)	Ref
Fluorescence assay	0.01~ 32.00	4.7	[9]
Photonic crystal biosensor	2.57×10^{-6}~2.57×10^{4}	0.002	[10]
Quartz crystal microbalance	0.00~250.00	4630	[11]
Fluorescence assay	1×10^{-1}~1×10^{4}	72.2	[12]
GC-MS	2.00~500.00	580.0	[13]
UHPLC- MS	--	2.0	[14]
electrochemistry	5×10^{-3}~1.50×10^{-1}, 1.50×10^{-1}~7.0×10^{-1}	3.0	This work

[b] GC-MS, gas chromatography/mass spectrometry; UHPLC-MS, Ultra-High-Performance Liquid Chromatography-Q/Orbitrap Mass Spectrometry.

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