Fluorescence detection of three types of pollutants based on fluorescence resonance energy transfer and its comparison with colorimetric detection

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Supplementary date:

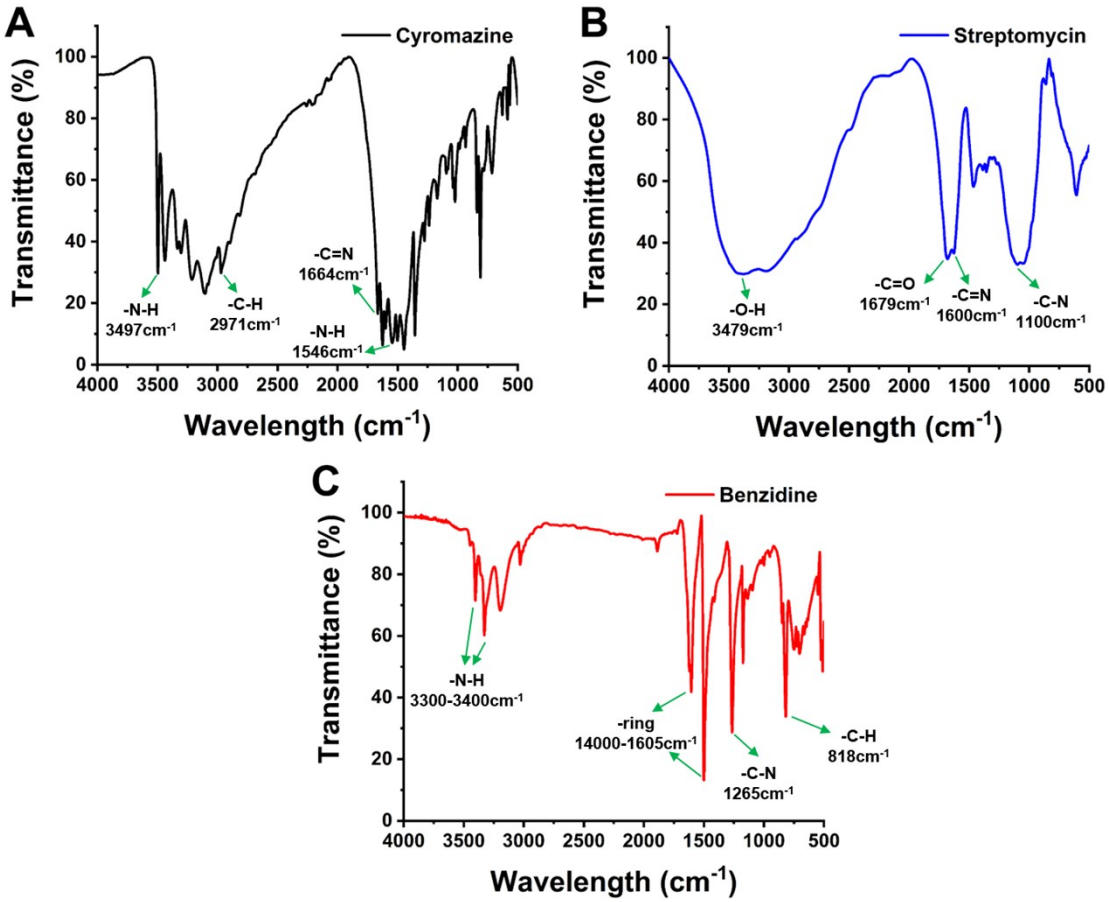

Figure S1. The FTIR characterization of three types of pollutants.

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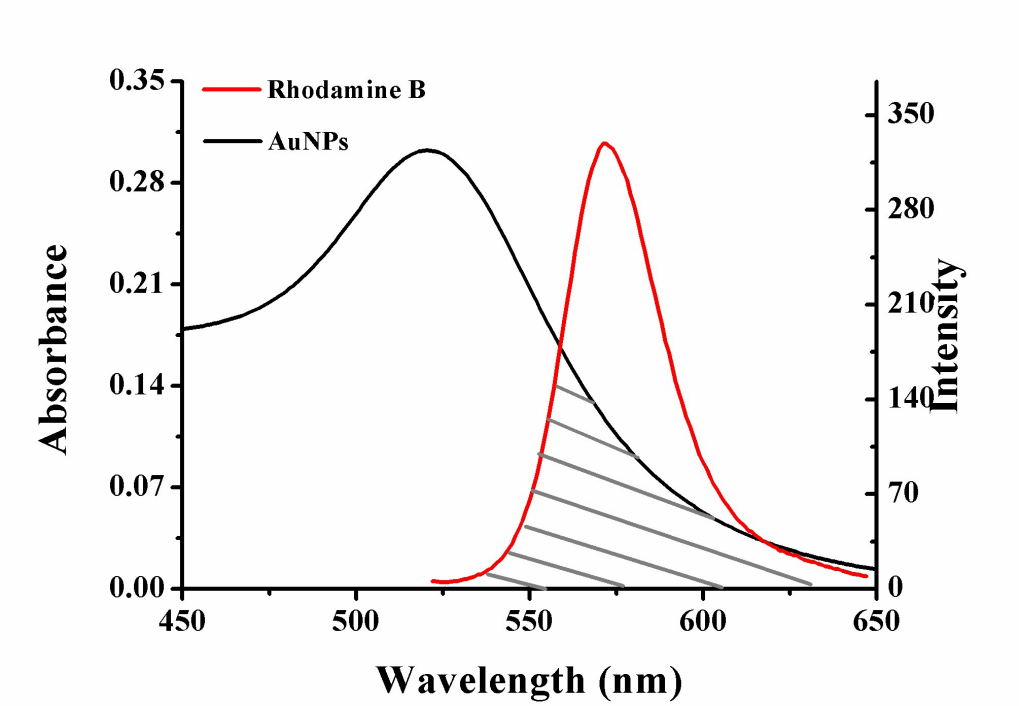


Figure S2. Fluorescence spectra of Rhodamine B solution and UV–Vis absorption spectra of AuNPs.

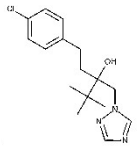
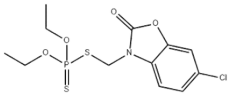
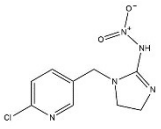
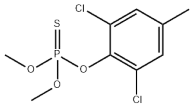
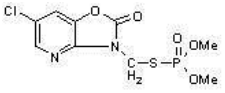
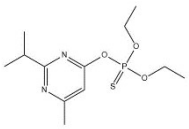
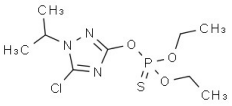
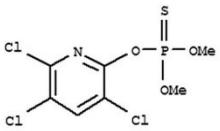
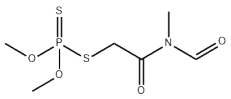
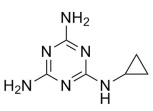
Table S1. Comparison of different detection methods of streptomycin.

Various detection methods	Linear range	LOD	Ref.
Peroxidase-mimicking catalytic activity of gold nanoparticles	0.1-0.5 μM	86 nM	2017 [23]
Streptomycin-specific single-stranded DNA aptamers	0.2-1.2 μM	200 nM	2013 [48]
Colorimetric and fluorescence quenching aptasensors	0-4 μM	73.1 nM 47.6 nM	2016 [21]
An electrochemical aptasensor	30-1.5 μM	11.4 nM	2015 [22]
Label-free fluorescent aptasensor	0-2 μM	54.5 nM	2016 [17]
Self-Assembled Microgels	0.05-100 ng/ml	1.7 pg/ml	2019 [19]
An electrochemical aptasensor	0.05-200 ng/ml	0.028 ng/ml	2017 [49]
Photoelectrochemical aptasensor based on CdTe quantum dots-single walled carbon nanohorns	0.1-50 nM	0.033 nM	2017 [26]
An electrochemical aptasensor	0.1-700 pg/ml	0.033 pg/ml	2018 [16]
A photoelectrochemical aptasensor	0.05-150 nM	0.04 nM	2020 [50]
Fluorescence colorimetric sensor	5 nM-1.25 μM	1.12 nM	This work

Table S2. Comparison of different detection methods of benzidine.

Various detection methods	Linear range	LOD	Ref.
Thin-layer chromatography combined with surface-enhanced raman scattering	1-15 μg/L	0.23 μg/L	2020 [1]
Durian-like multi-functional Fe_3O_4–Au nanoparticles	-	1 μM	2013 [4]
Platinum-Based and carbon-based screen-Printed Electrodes	60 nM-250 μM	1.2 nM	2012 [3]
Fluorescence colorimetric sensor	2.5-15 μM	56.52 nM	This work

Table S3. A series of pesticides which were commonly used in most of crops to investigate the selectivity of cyromazine.

Pesticides				
1	propiconazole	$C_{16}H_{22}ClN_3O$		triazole bactericidal pesticides
2	phosalone	$C_{12}H_{15}ClNO_4PS_2$		phosphate dithioesters pesticides
3	imidacloprid	$C_9H_{10}ClN_5O_2$		nitro methylene systemic pesticides
4	tolclofos-methyl	$C_9H_{11}Cl_2O_3PS$		organophosphorus pesticides
5	azamethiphos	$C_9H_{10}ClN_2O_5PS$		organophosphorus pesticides
6	diazinon	$C_{12}H_{21}N_2O_3PS$		organophosphorus pesticides
7	isazofos	$C_9H_{17}ClN_3O_3PS$		organophosphorus pesticides
8	chlorpyrifos-methyo	$C_7H_7Cl_3NO_3PS$		organophosphorus pesticides
9	formothion	$C_6H_{12}NO_4PS_2$		organophosphorus pesticides
10	cyromazine	$C_6H_{10}N_6$		triazine insect growth regulator

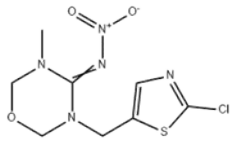
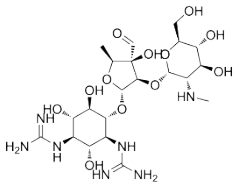
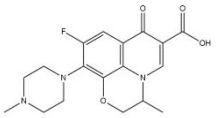
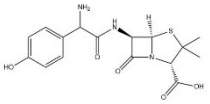
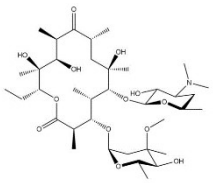
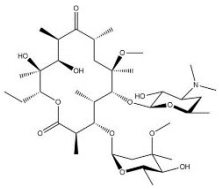
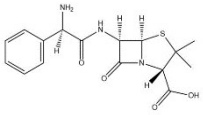
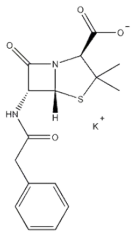
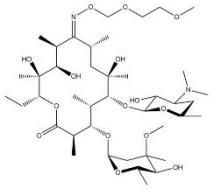
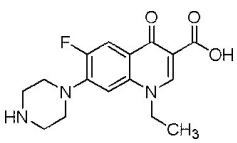
11	thiamethoxam	$C_8H_{10}ClN_5O_3S$		organophosphorus pesticides

Table S4. Various antibiotics which were common broad-spectrum antimicrobials to investigate the selectivity of streptomycin.

Antibiotics				
1	streptomycin	$C_{21}H_{39}N_7O_{12}$		aminoglycoside antibiotics
2	ofloxacin	$C_{18}H_{20}FN_3O_4$		fluoroquinolone antimicrobials
3	amoxicillin	$C_{16}H_{19}N_3O_5S$		β-lactam antibiotics
4	erythrocin	$C_{37}H_{67}NO_{13}$		macrolide antibiotics
5	clarithromycin	$C_{38}H_{69}NO_{13}$		macrolide antibiotics
6	ampicillin	$C_{16}H_{19}N_3O_4S$		β-lactam antibiotics
7	benzylpenicillin potassium	$C_{16}H_{17}KN_2O_4S$		β-lactam antibiotics
8	roxithromycin	$C_{41}H_{76}N_2O_{15}$		macrolide antibiotics
9	norfloxacin	$C_{16}H_{18}FN_3O_3$		third-generation quinolone antimicrobials

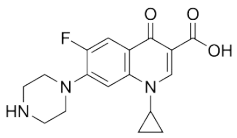
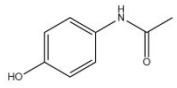
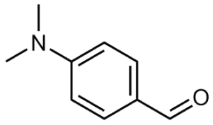
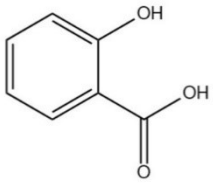
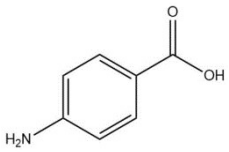
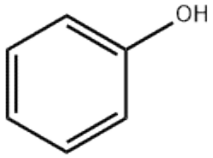
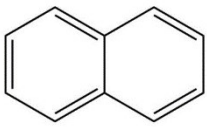
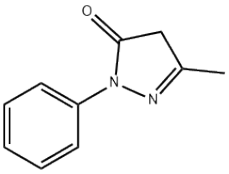
10	ciprofloxacin	$C_{17}H_{18}FN_3O$		third-generation quinolone antimicrobials

Table S5. A series of chemical reagents with similar structure to investigate the selectivity of benzidine.

Chemical agents				
1	acetaminophen	$C_8H_9NO_2$		acetanilide compounds
2	dimethylaminobenzaldehyde	$C_9H_{11}NO$		amino benzaldehyde compounds
3	salicylic acid	$C_7H_6O_3$		benzoic acid compounds
4	para aminobenzoic acid	$C_7H_7NO_2$		aminobenzoic acid compounds
5	phenol	C_6H_6O		phenolic compounds
6	naphthalene	$C_{10}H_8$		polycyclic aromatic hydrocarbon compounds
7	5-methyl-2-phenyl-1,2-dihydropyrazol-3-one	$C_{10}H_{10}N_2O$		phenylpyrroles
8	benzidine	$C_{12}H_{12}N_2$		aromatic diamine compounds