Electronic supplementary information

Green synthesis of CQDs for determination of iron and isoniazid in pharmaceutical formulations

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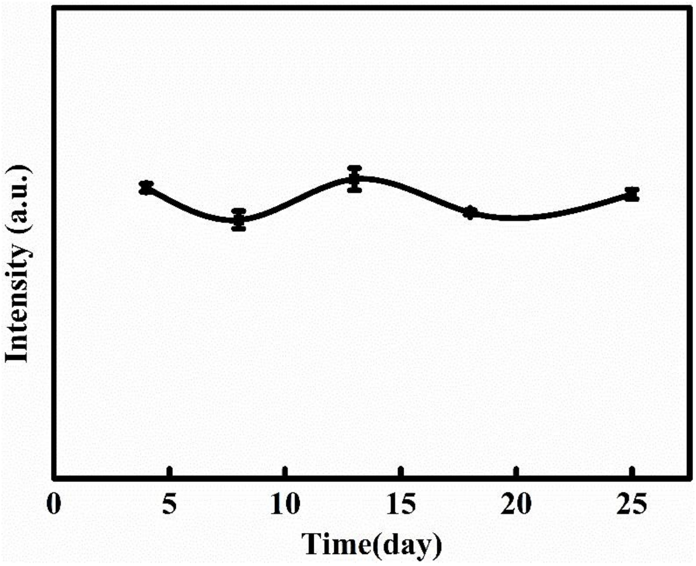

Fig. S1 Stability test of CQDs

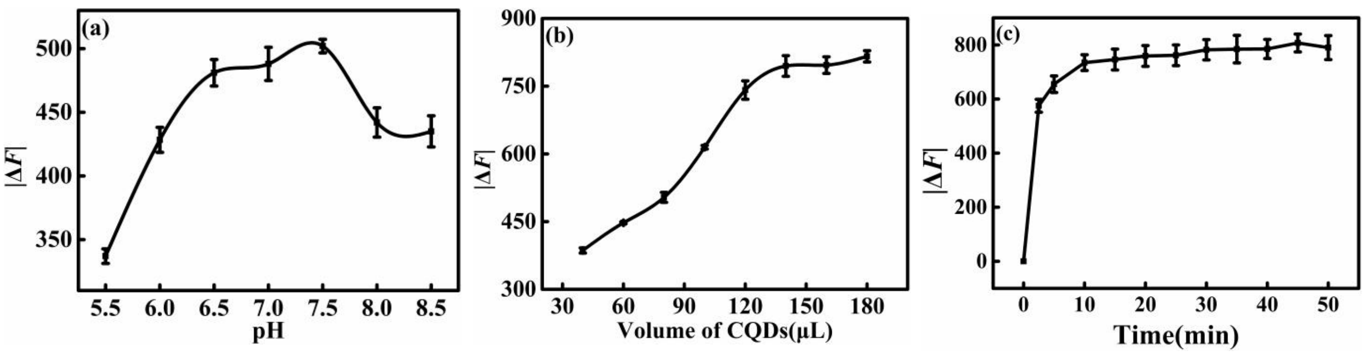

Fig. S2 Optimization of detection conditions for Fe^{3+} detection. (a) pH. (b) Volume of CQDs. (c) Reaction time.

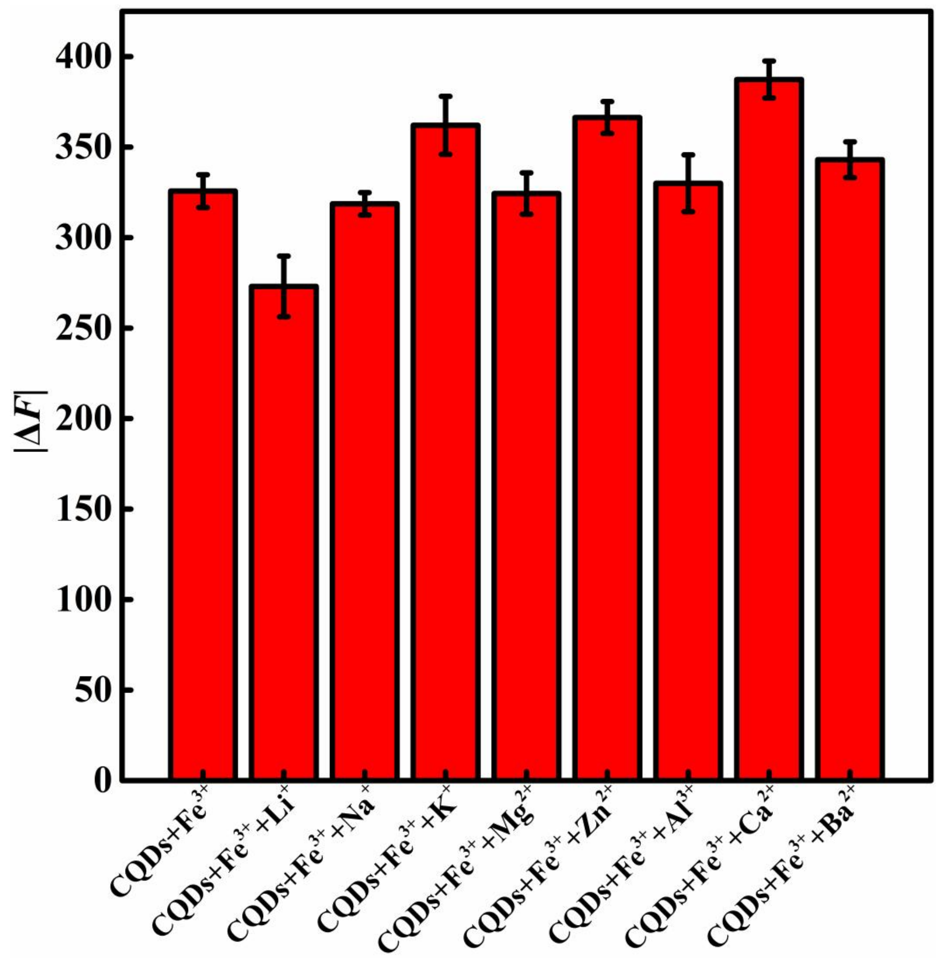

Fig. S3 Selectivity of CQDs for Fe^{3+} detection.

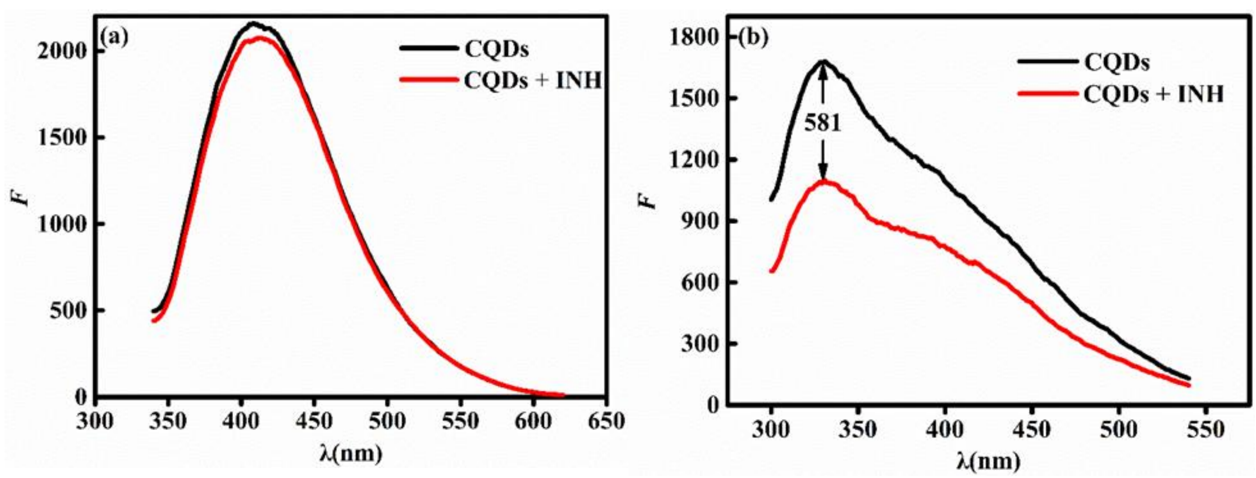

Fig. S4 Optimization of excitation wavelength for INH detection. (a) The fluorescence spectra (λ_{Ex} = 320 nm) of the CQDs solution and the mixed solution containing CQDs and INH. (b) The fluorescence spectra (λ_{Ex} = 280 nm) of the CQDs solution and the mixed solution containing CQDs and INH.

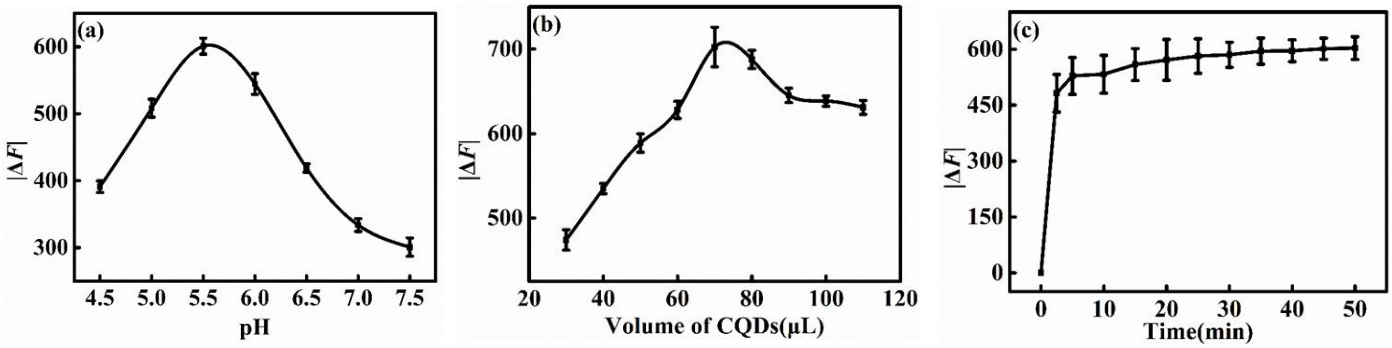

Fig. S5 Optimization of detection conditions for INH detection. (a) pH. (b) Volume of CQDs. (c) Reaction time.

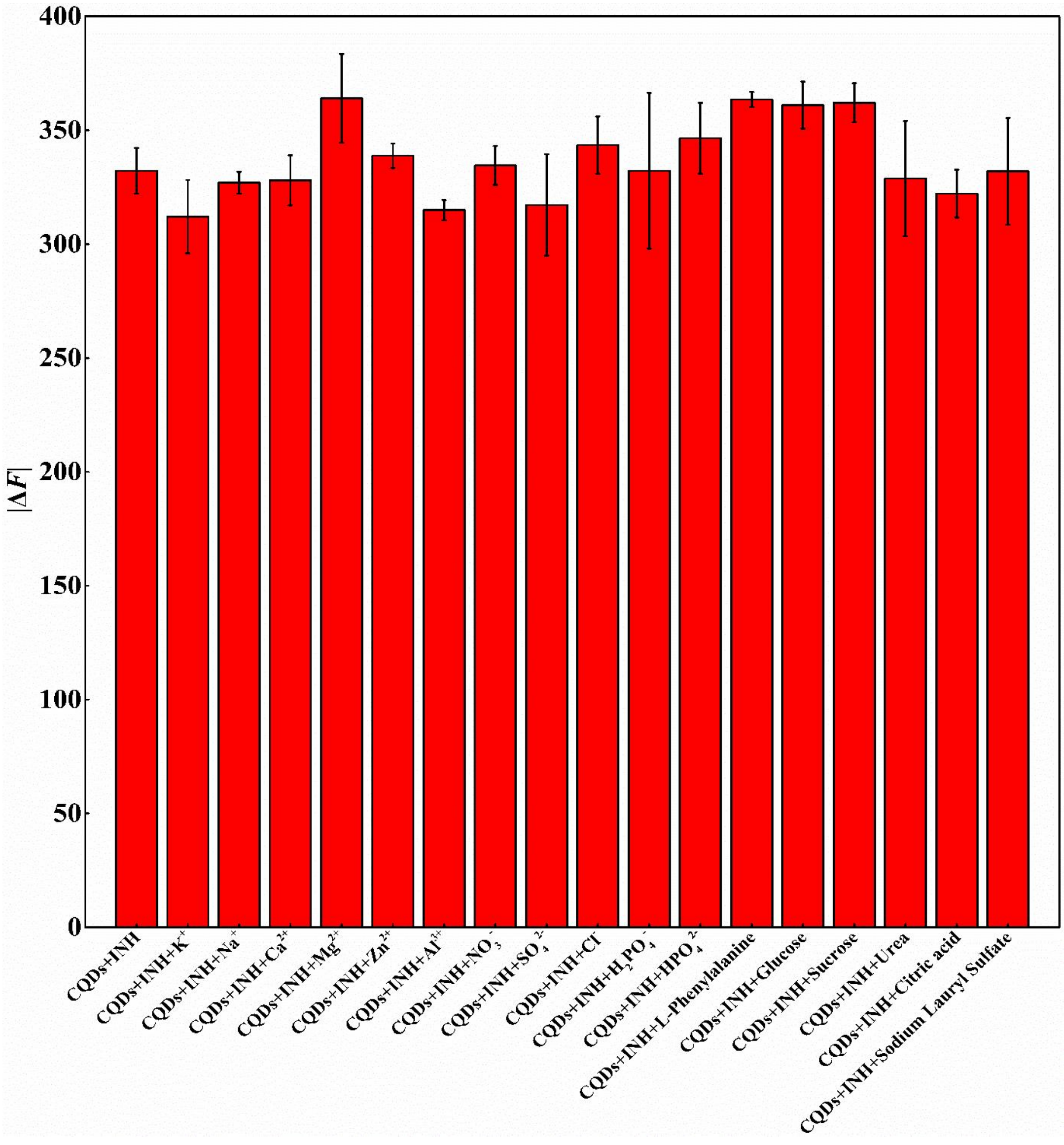

Fig. S6 Selectivity of CQDs for INH detection.

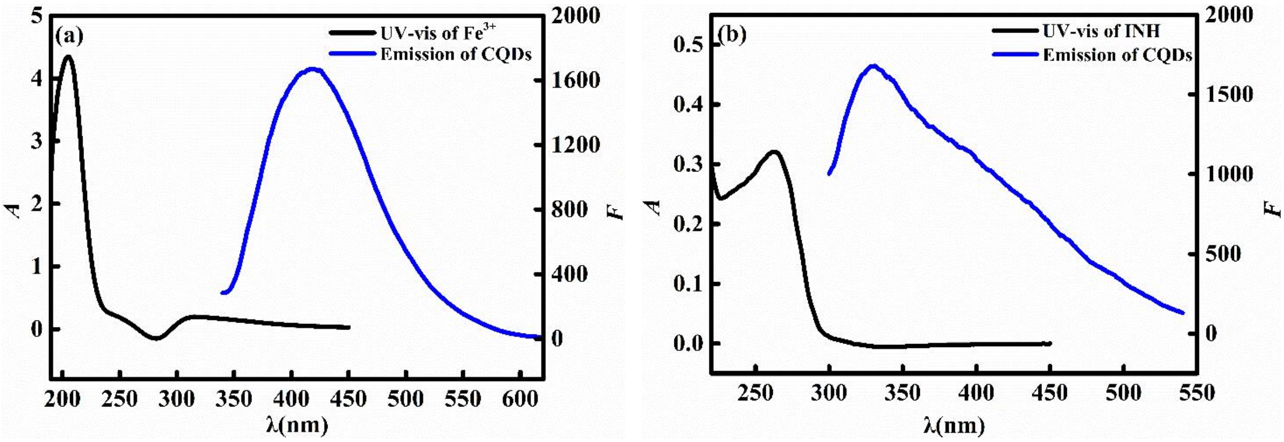

Fig. S7 The UV-vis absorption spectra of Fe^{3+}/ INH (black line) and the fluorescence emission spectra of CQDs (blue line).

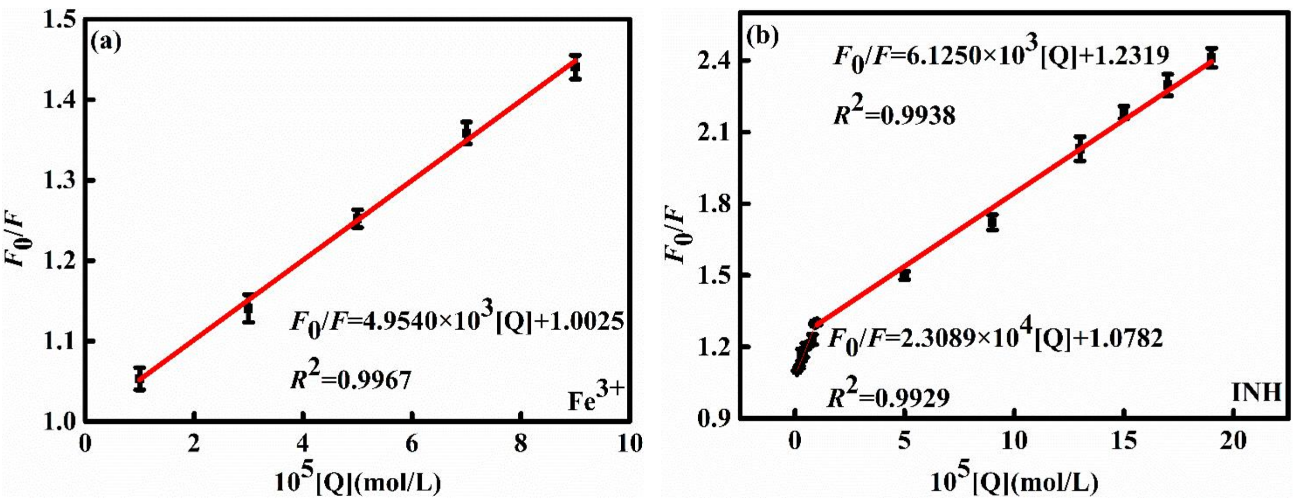

Fig. S8 Stern-Volmer plots for the solution systems of CQDs and Fe^{3+}/INH.

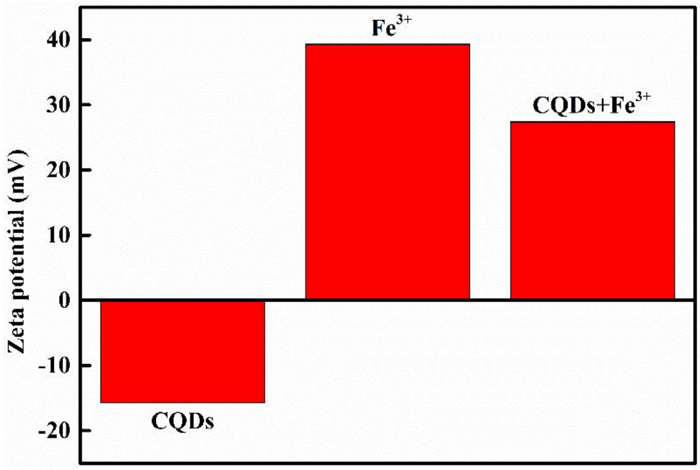

Fig.S9 Zeta potential values of CQDs, Fe^{3+} and CQDs + Fe^{3+}.

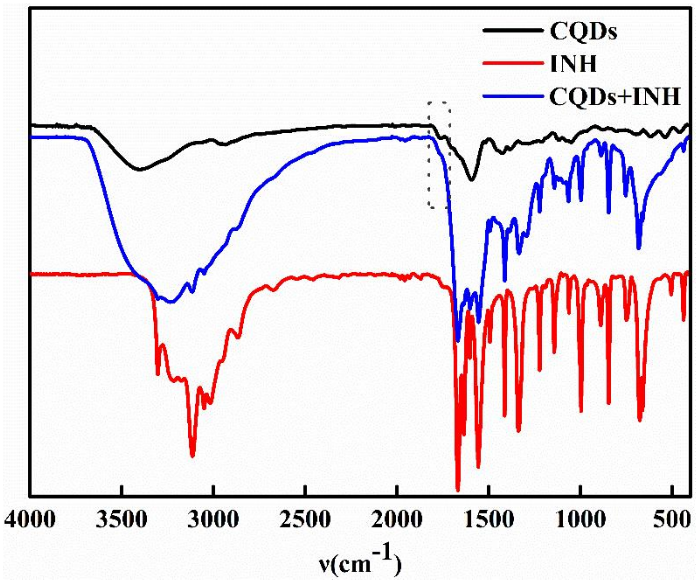

Fig. S10 FT-IR spectra of CQDs, INH and CQDs + INH.

Table S1 Performance comparison of different CQDs for detection of Fe^{3+} and INH.

Sensors	Detection	Carbon source	Synthesis Method	Post-modification/ functionalisation	LOD (μmol/L)	Ref
N-CQDs	Fe^{3+}	Wolfberry	Hydrothermal	No	3	1
CDs-4-MU	Fe^{3+}	D-arginine	Hydrothermal	Yes	0.68	2
CDs	Fe^{3+}	Asp, DABSA	Hydrothermal	No	1.51	3
N-CQDs	Fe^{3+}	Chitosan	Hydrothermal	No	0.15	4
CQDs	Fe^{3+}	Citric acid, 1-aminopropyl-3-methylimidazolium	Hydrothermal	No	13.68	5
CDs	Fe^{3+}	B. ovalifoliolata bark extract	Hydrothermal	No	0.41	6
N, P-CDs	Fe^{3+}	Citric acid, di-ammonium hydrogen phosphate	Hydrothermal	No	20	7
N-CDs	Fe^{3+}	Chionanthus retusus fruit extract	Hydrothermal	No	70	8
CQDs	Fe^{3+}	Camphor leaves	Hydrothermal	No	8.16	This work
Cu-doped CDs	INH	Chitosan, gum tragacanth	Hydrothermal	Yes	0.0084	9
N-CDs & MnO_2	INH	Liu-bao tea, ethylene diamine	Hydrothermal	No	0.7	10
Au@N-CD	INH	Citric acid, urea	Hydrothermal	Yes	0.06	11
FCDs	INH	Folic acid	Pyrolytic	No	1.15	12
CQDs	INH	Camphor leaves	Hydrothermal	No	1.14	This work

Asp: L-aspartic acid
DABSA: 2,5-diaminobenzenesulfonic acid

Table S2 Results for the detection of iron in spiked iron supplements (n=6).

Samples	Found ($\times 10^{-5}$ mol/L)	Added ($\times 10^{-5}$ mol/L)	Total Found ($\times 10^{-5}$ mol/L)	Recovery (%)
1	4.742±0.288	5.0	9.560±0.321	96.36±3.28
2	4.371±0.208	5.0	9.355±0.505	99.68±5.37

Table S3 Results for the detection of INH in spiked isoniazid tablets (n=6).

Samples	Found ($\times 10^{-5}$ mol/L)	Added ($\times 10^{-5}$ mol/L)	Total Found ($\times 10^{-5}$ mol/L)	Recovery (%)
1	0.4769±0.0222	0.35	0.8170±0.0362	97.16±4.67
	8.9583±0.3309	6.0	14.7525±0.1959	96.57±2.92
2	0.5011±0.0313	0.35	0.8530±0.0457	100.54±4.93
	8.6319±0.2609	6.0	14.7502±0.2664	101.97±2.24

References

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