Supplementary data

Green synthesis of multifunctional carbon dots from coriander leaves and their potential application as antioxidants, sensors and bioimaging agents

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Quantum yield measurement of CDs

Quantum yield was calculated as reported previously (my papers), using quinine sulphate as a standard, with a known quantum yield of 0.54 at 360 nm. Following equation was used:

$$Q = Q_R \times \frac{I}{I_R} \times \frac{A_R}{A} \times \frac{\eta^2}{\eta^2{}_R}$$

where Q and I is the quantum yield of desired sample and measured integrated emission intensity (area under the curve), respectively. η and A represent refractive index being and optical density. Subscript R designates the reference fluorophore of known quantum yield. Emission range used for calculation of integrated emission intensity was 375-700 nm.

Sample	Integrated emission intensity (I)	Absorbance at 360 nm (A)	Refractive index of solvent (η)	Quantum yield at 360 nm (Q)
Quinine sulphate	542308	0.1320	1.33	0.54 (known)
CD	85962	0.1742	1.33	0.0648

Table S1. Quantum yield calculation of CDs.
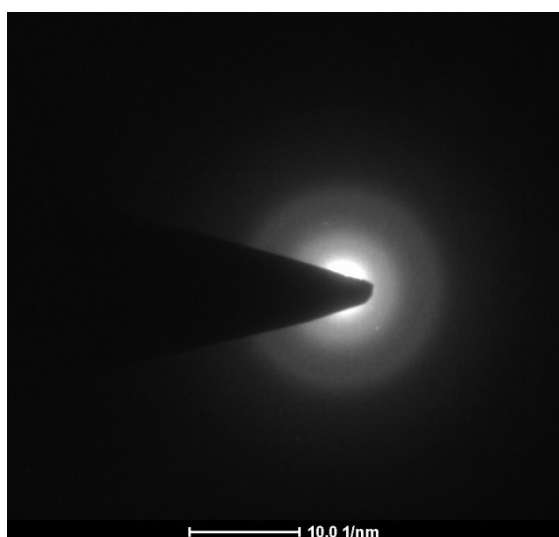
Fig. S1. SAED pattern of CDs.

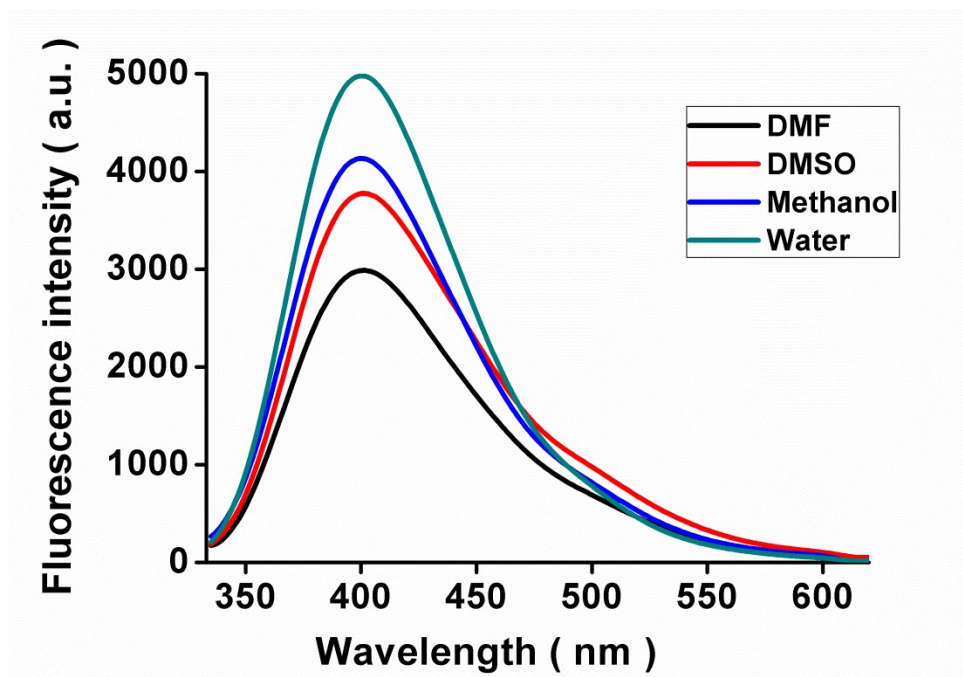|	C (%)	H (%)	N (%)	O (%) (Calculated)	Composition
CDs	50.8	5.3	4.07	39.83	$C_{4.0}H_{5.0}O_{2.5}N_{0.3}$

Table S2. Elemental analysis of as-prepared CDs.

Fig. S2. Effect of solvents on fluoresecence intensity of CDs (λ_{ex} = 320 nm).

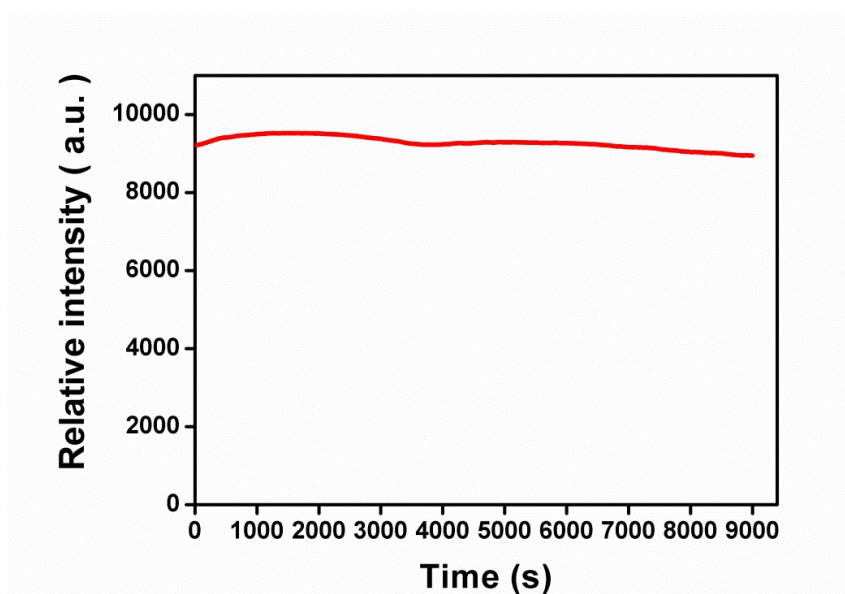**Fig. S3.** Dependence of fluorescence emission intensity against time depicting photostability of CDs. (λ_{ex} = 320 nm; λ_{em} = 400 nm).

Sample	a_1	τ_1(ns)	a_2	τ_2(ns)	a_3	τ_3(ns)	τ_{av}(ns)	χ^2
CDs	0.3677	3.211	0.1881	0.521	0.4442	10.503	5.943	1.121
CDs-Fe^{3+}	0.3579	3.071	0.1876	0.525	0.4545	10.360	5.906	1.149

Table S3. Fluorescence lifetime calculation of CDs in presence and absence of Fe^{3+}.

Average lifetime (τ_{av}) was estimated from the following equation:

$$\tau_{av} = a_1\tau_1 + a_2\tau_2 + a_3\tau_3$$

where τ_1, τ_2, τ_3 were the first, second and third component of the decay time of CDs and a_1, a_2, a_3 were the corresponding relative weightings (emission %) of these components, respectively.
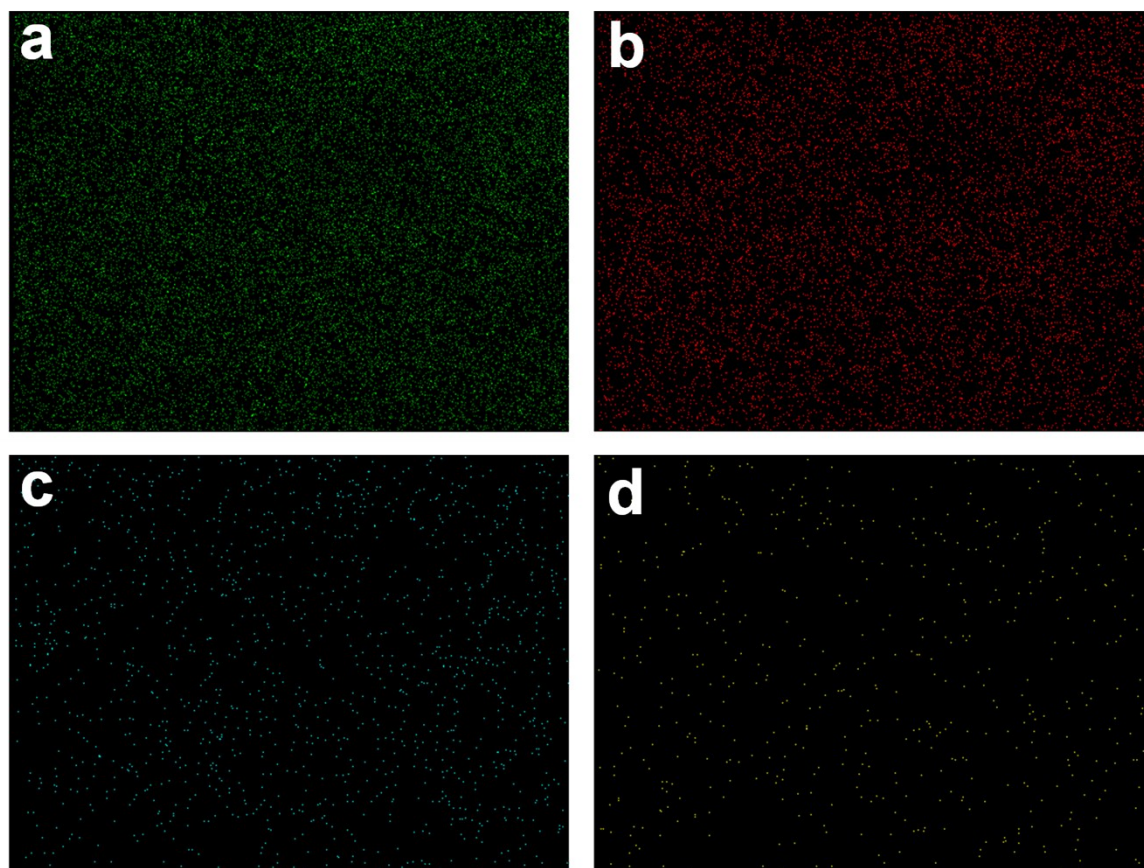

Fig. S4. EDS elemental mapping of CDs-Fe^{3+}. (a-d) Individual elemental distribution (red for carbon, green for oxygen, cyan for nitrogen and yellow for iron).
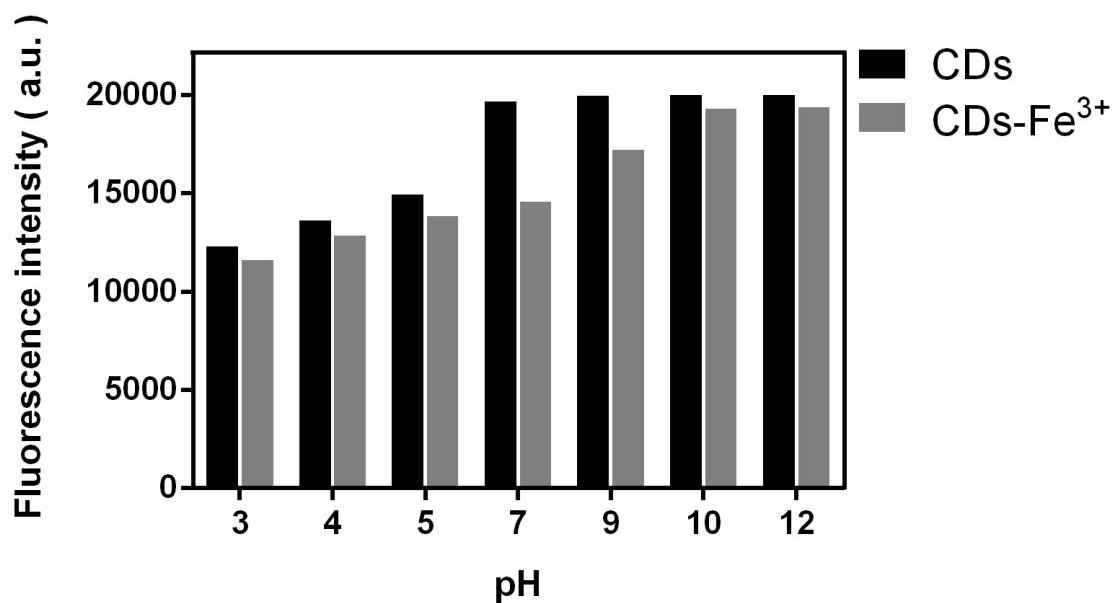
Fig. S5. Fluorescence response of CDs in the absence (black) and presence (grey) of 60 μM Fe^{3+} at different pH values. (λ_{ex} = 320 nm; λ_{em} = 400 nm).
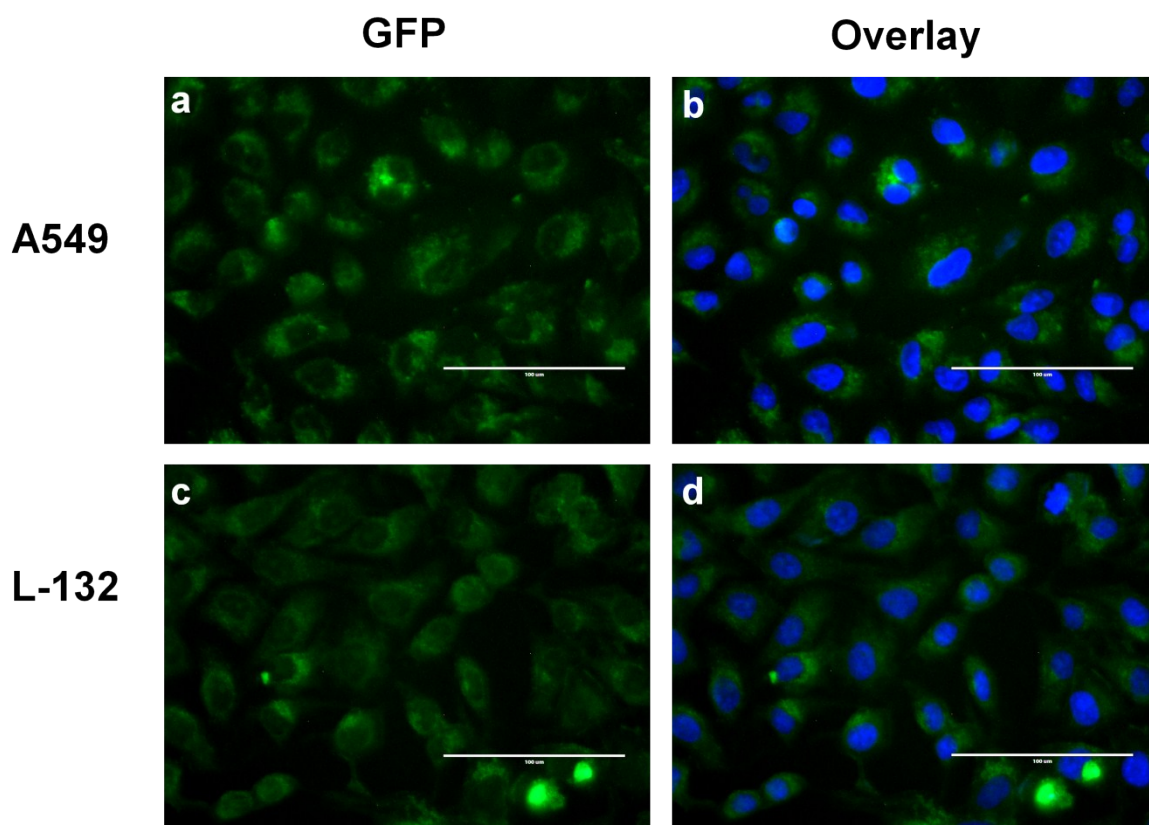

Fig. S6. Cellular distribution micrographs of A549 and L-132 cells treated with 0.5 mg/mL of CDs and stained with Hoechst 33342. The overlay images were acquired using a combination of DAPI (for Hoechst 33342) and GFP (for CDs) filters. Scale bar = 100 μm.