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Supporting Information

A dual organelle-targeting photosensitizer based on curcumin for enhanced photodynamic therapy

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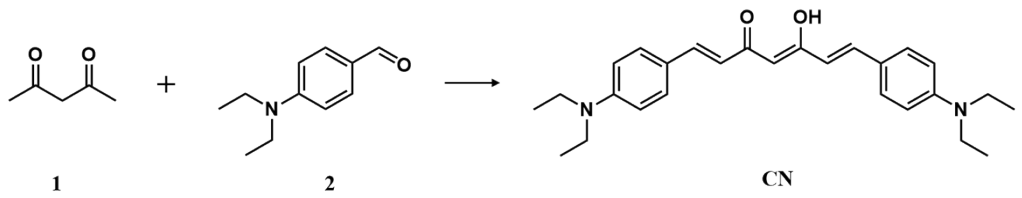

Fig. S1. Synthetic routes to CN.

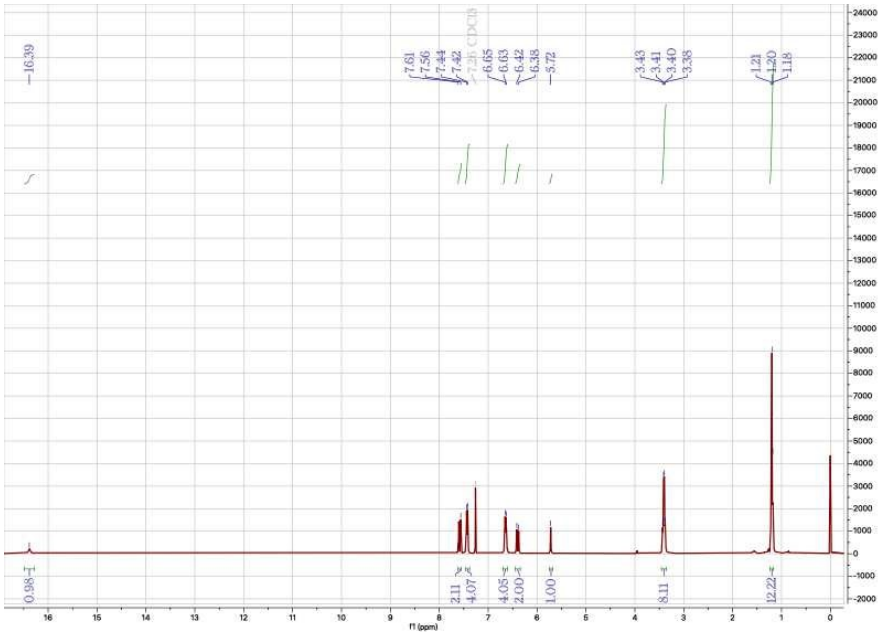

Fig. S2. ^{1}H NMR (400 MHz, $CDCl_3$) spectrum of CN.

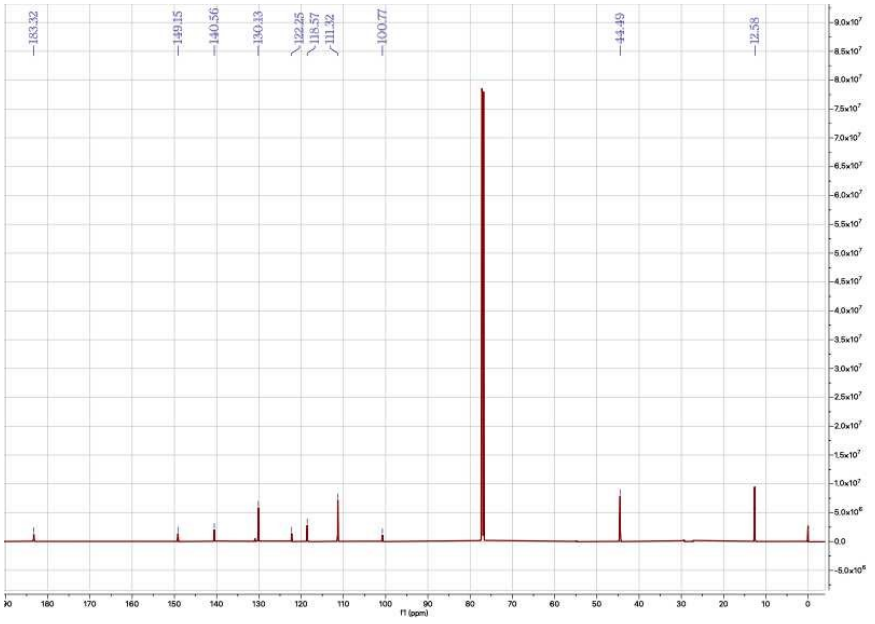

Fig. S3. ^{13}C NMR (151 MHz, $CDCl_3$) spectrum of CN.

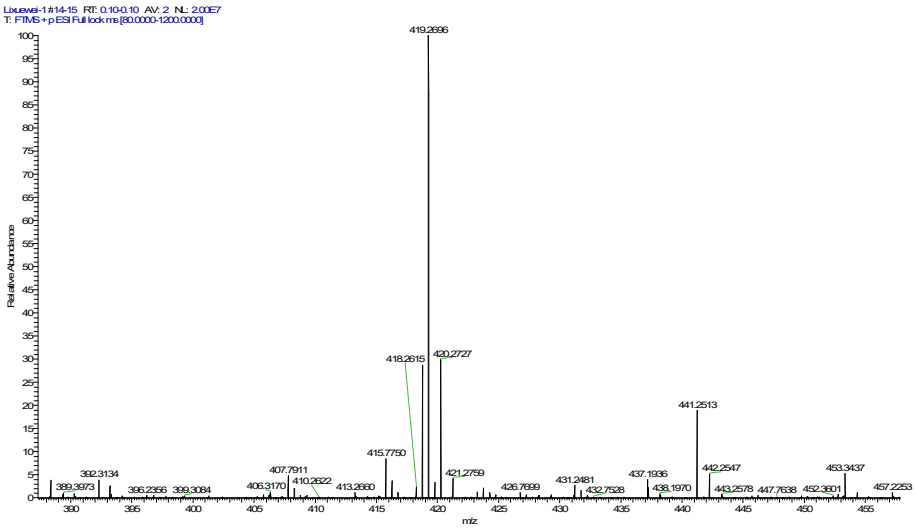

Fig. S4. High resolution mass spectrum of CN.

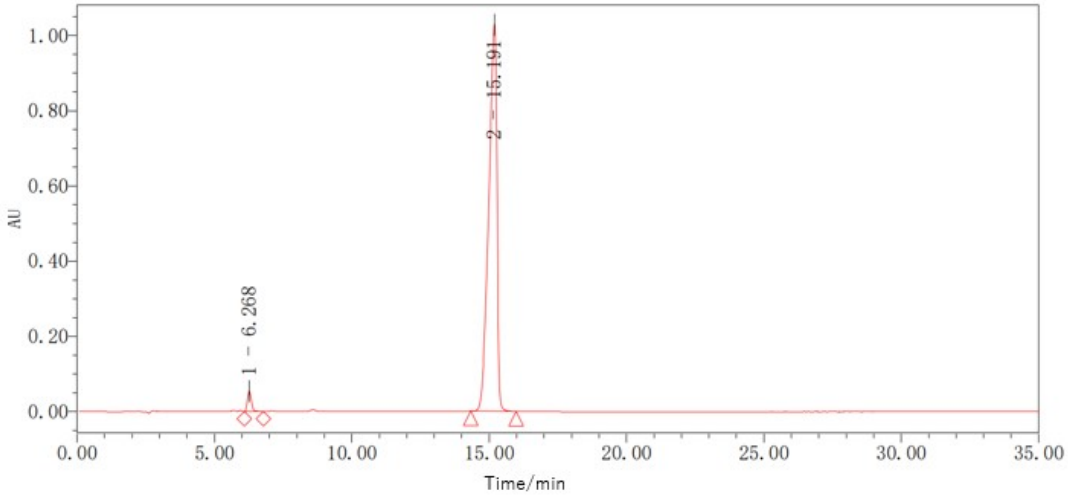

Fig. S5. HPLC chromatogram of CN.

Table S1. The photophysical properties of CN.

Solvent	ET (30) (kcal/mol)	λ_{abs}[a] (nm)	λ_{em}[b] (nm)	stoke shift (nm)	ε $M^{-1}cm^{-1}$	Φ_F[c] (%)
Toluene	**33.9**	**469**	**527**	**58**	**5.8×10^4**	**36.3**
THF	**37.4**	**477**	**550**	**73**	**7.2×10^4**	**50.2**
DCM	**40.7**	**498**	**580**	**82**	**7.7×10^4**	**64.3**
DMF	**43.2**	**504**	**587**	**83**	**7.8×10^4**	**38.3**
DMSO	**45.1**	**511**	**606**	**95**	**9.6×10^4**	**38.1**

a: absorption maximum. b: fluorescence maximum. c: Absolute fluorescence quantum yield determined using a calibrated integrating sphere. Concentration = 10 μM. ET (30) of each solvent were collected from reference.

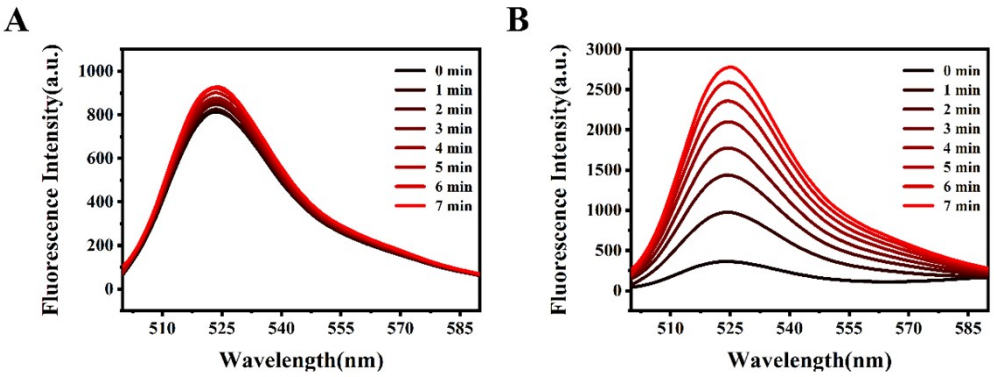

Fig. S6. PL spectra of DCFH-DA in the presence of (A) pure DCFH-DA and (B) CN+ DCFH-DA under 532 nm laser irradiation (10 mW cm^{-2}). Concentration = 10 μM; λex = 488 nm.

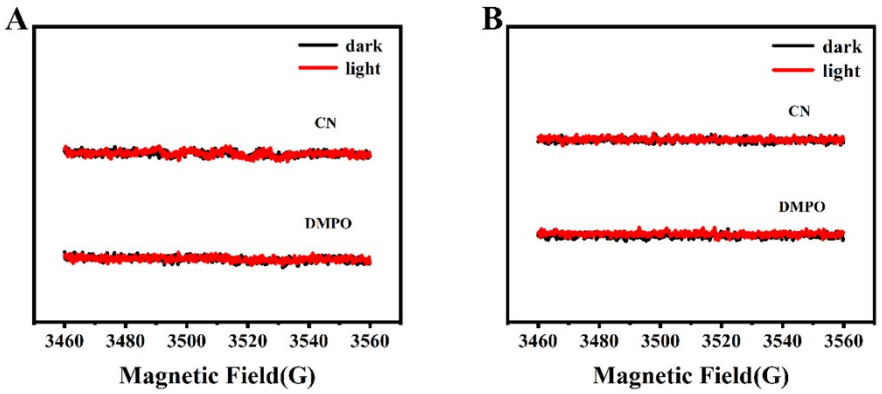

Fig. S7. (A) $O_2^{-\bullet}$ and (B) •OH generation of CN under 532nm laser irradiation (10 mW cm^{-2}, 10 min).

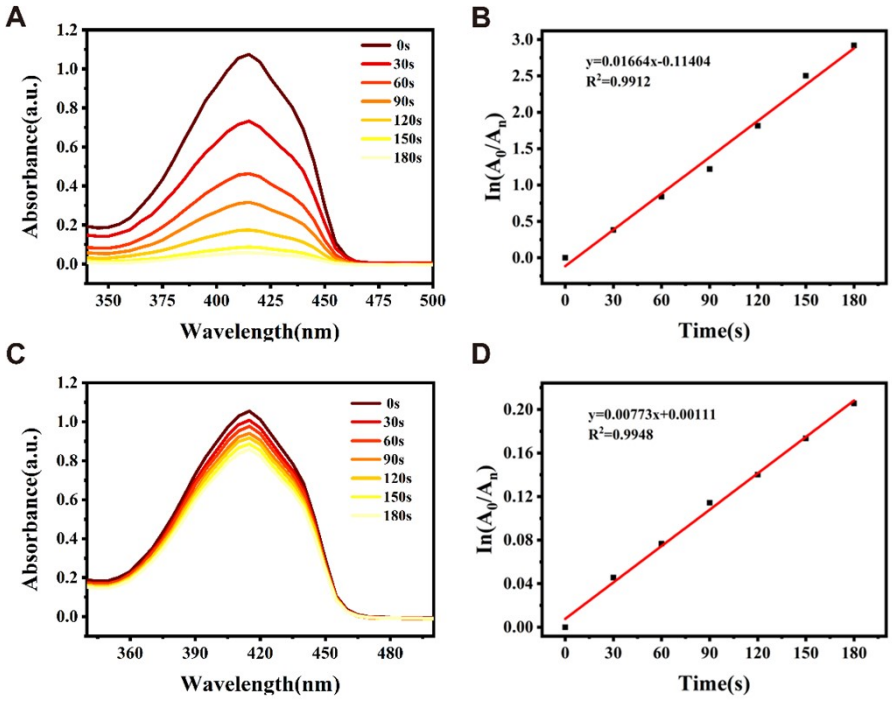

Fig. S8. UV-Vis spectra of DPBF (20 μM) in DMF solutions under 532nm laser irradiation (10 mW cm^{-2}) in the presence of (A) RB and (C) CN. The absorbance decay of the DPBF at 415 nm under 532 nm laser irradiation (10 mW cm^{-2}) in the presence of (B) RB and (D) CN.

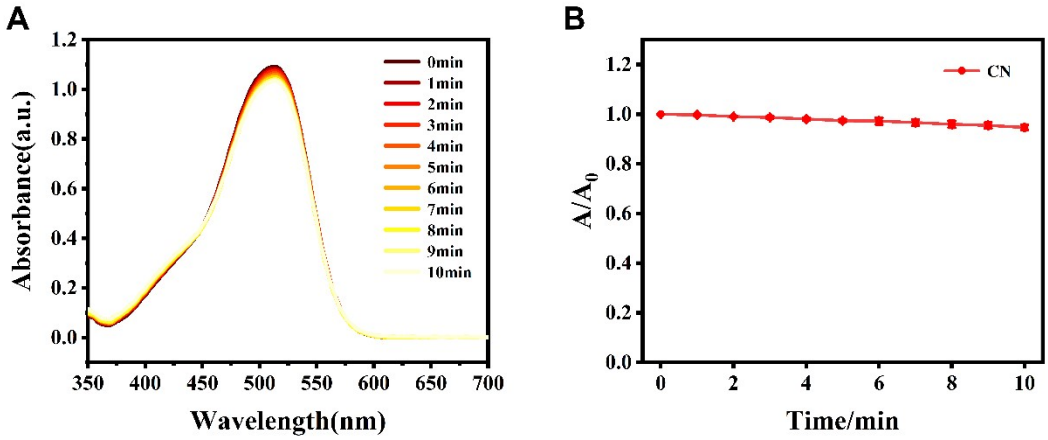

Fig. S9. (A) Absorption spectra and (B) Photostability (A/A_0) of CN under laser irradiation (532 nm, 0.1 W cm^{-2}).

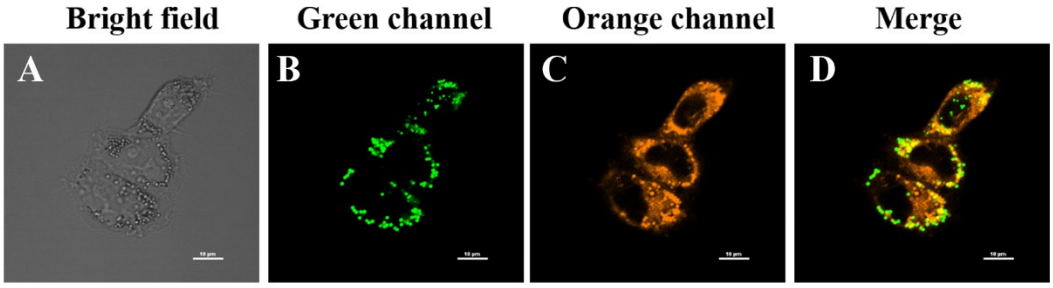

Fig. S10. Fluorescent images of HeLa cells stained with 1 μM CN in (A) bright field, (B) green channel (λex =488 nm, λem = 500-550 nm), (C) orange channel (λex =561 nm, λem = 570-620 nm), and (D) merged image for image B and C. Scale bar = 10μm.

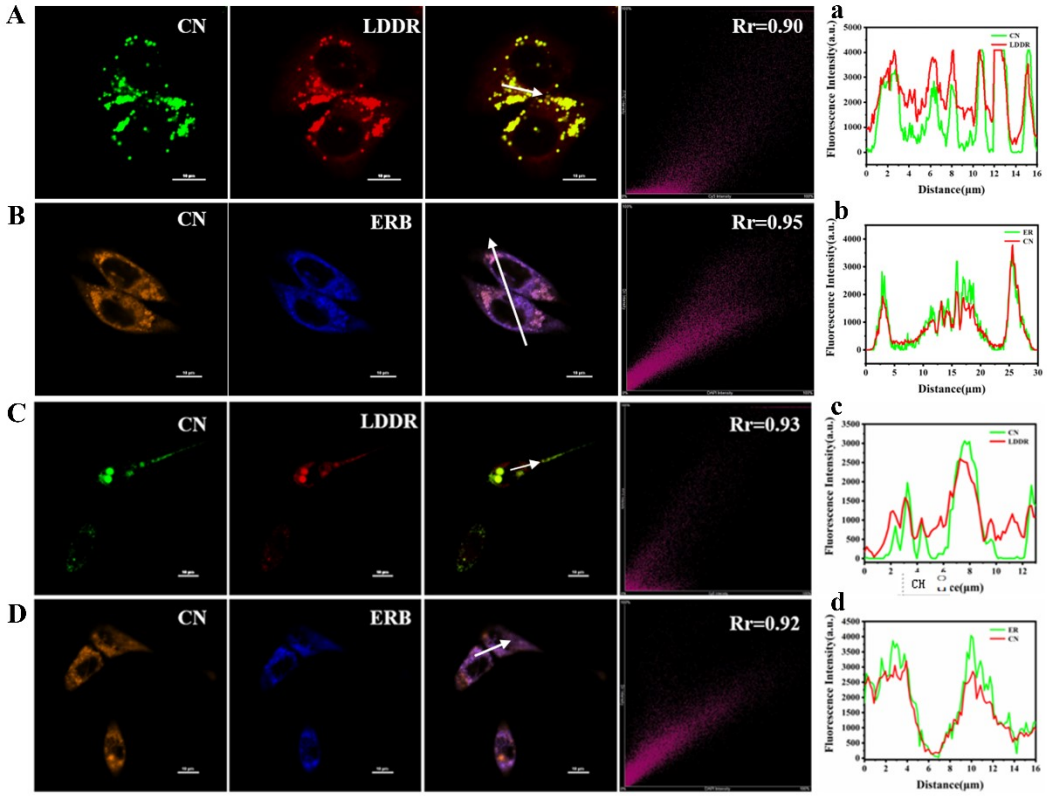

Fig. S11. Fluorescent images of (A, B) HepG-2 cells and (C, D) A549 cells stained with CN (1 μM) in green channel (λex =488 nm, λem = 500-550 nm), orange channel (λex =561 nm, λem = 570-620 nm), LDDR (0.2 μm) (λex =638 nm, λem = 663-738 nm) and ERB (0.5 μm) (λex =405 nm, λem = 425-475 nm); (a-d) The profile plot of two channels along the arrow in merge channel. Scale bar = 10 μm.

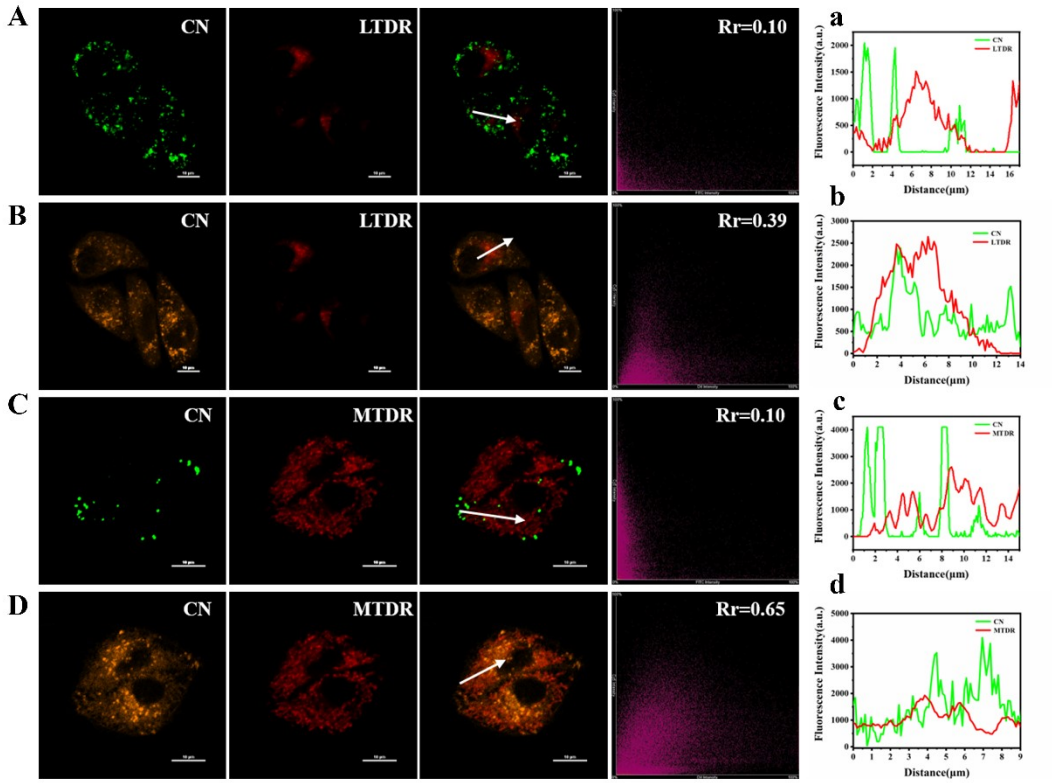

Fig. S12. Fluorescent images of HeLa cells stained with CN (1 μM) in green channel (λex = 488 nm, λem = 500-550 nm), orange channel (λex = 561 nm, λem = 570-620 nm), (A, B) LTDR (0.2 μm) (λex = 638 nm, λem = 663-738 nm) and (C, D) MTDR (0.2 μm) (λex =638 nm, λem = 663-738 nm); (a-d) profile plot of two channels along the arrow in merge channel. Scale bar = 10 μm.

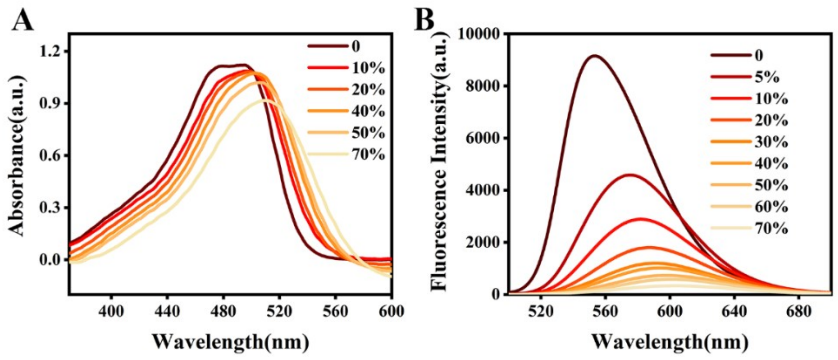

Fig. S13. (A) Absorption spectra and (B) FL spectra of CN (15 μM) in a THF/water mixed solution with different water fractions (λex = 480 nm).

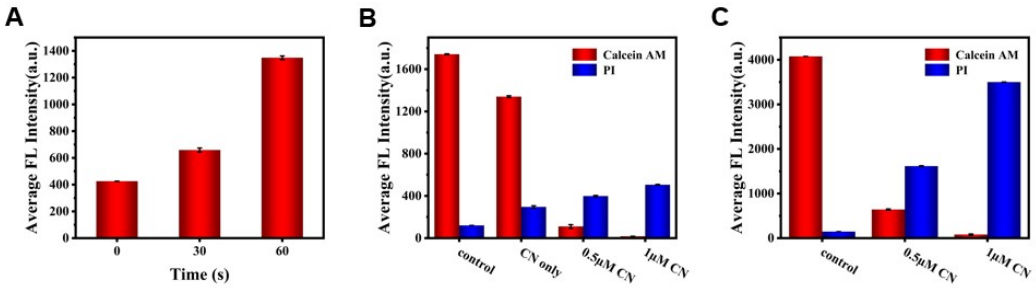

Fig. S14. (A) Fluorescence intensity of HeLa cells after being incubated with CN (1 μM) and loaded with DCFH-DA (10 μM) under laser irradiation (532 nm, 20 mW cm^{-2}); Fluorescence intensity of (B) HeLa cells and (C) MCSs with different treatments (L: laser irradiation with 532 nm, 0.1 W cm^{-2}).

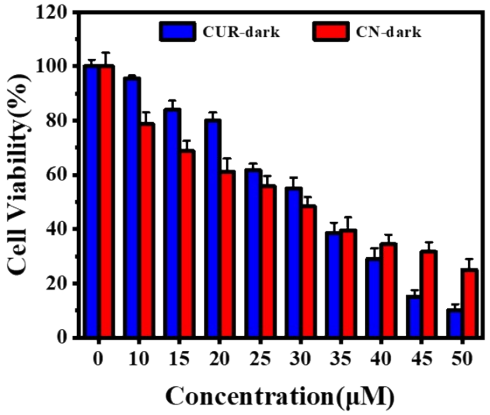

Fig. S15. Cell viability of HeLa cells after being incubated with different concentrations of CN and CUR after 72h.

Table S2 The calculated IC50 of CUR and CCN for HeLa cells.

	532 nm laser (μM)	**dark (μM)**
CUR	/	29.66
CN	0.45	26.68