

Supplementary material

Carbon dots prepared from ginger exhibiting efficient inhibition of human hepatocellular carcinoma cells

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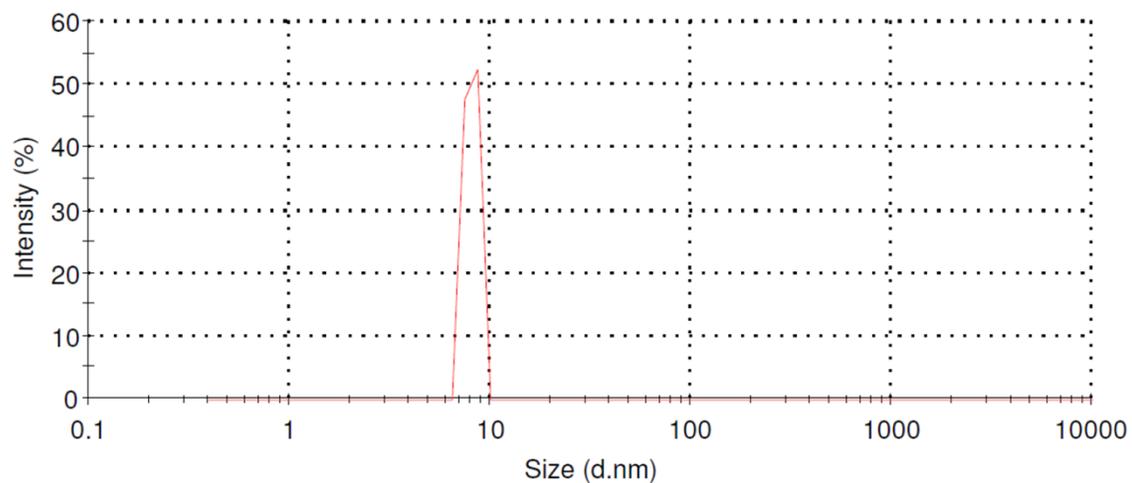


Fig. S1. DLS sizes of C-dots (0.22 mg/mL) in 1X PBS solution. Other conditions were the same as those described in Fig. 1.

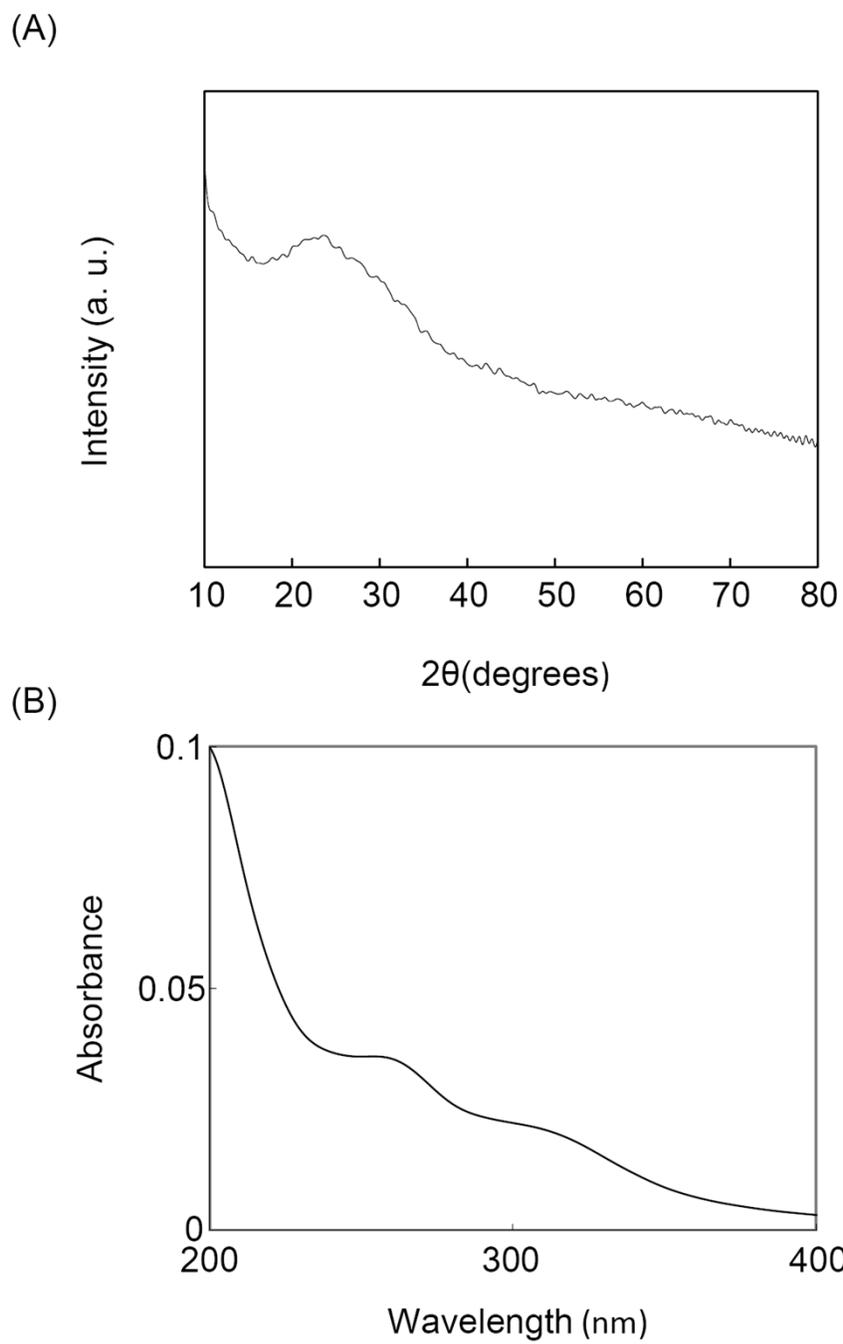


Fig. S2. (A) XRD pattern, and (B) UV-Vis absorption spectrum of as-prepared C-dots.

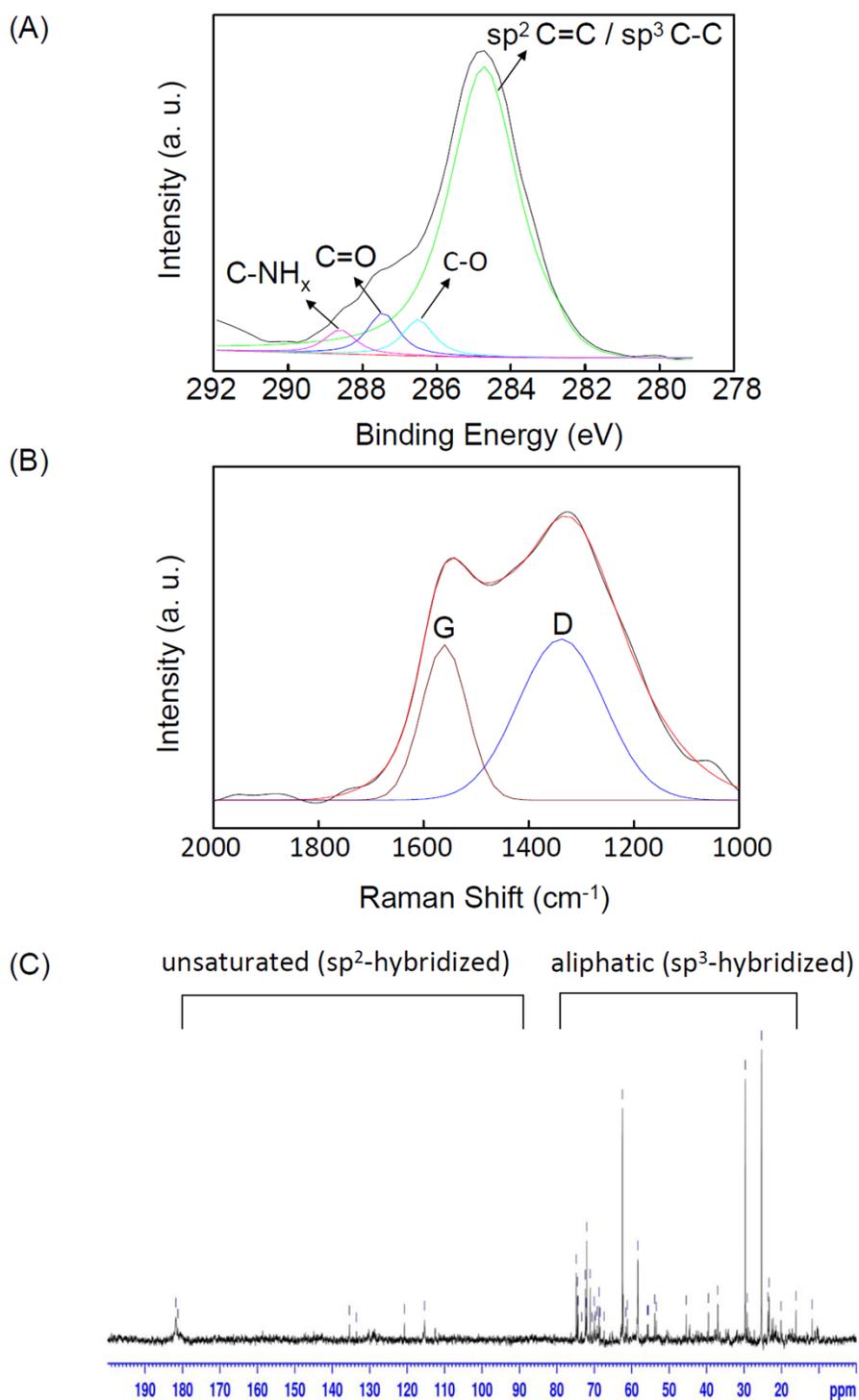


Fig. S3. (A) C1s XPS spectrum, (B) Raman spectrum, and (C) ¹³C NMR spectrum of the C-dots. The XPS and Raman spectra were further deconvoluted to those for detailed characterization.

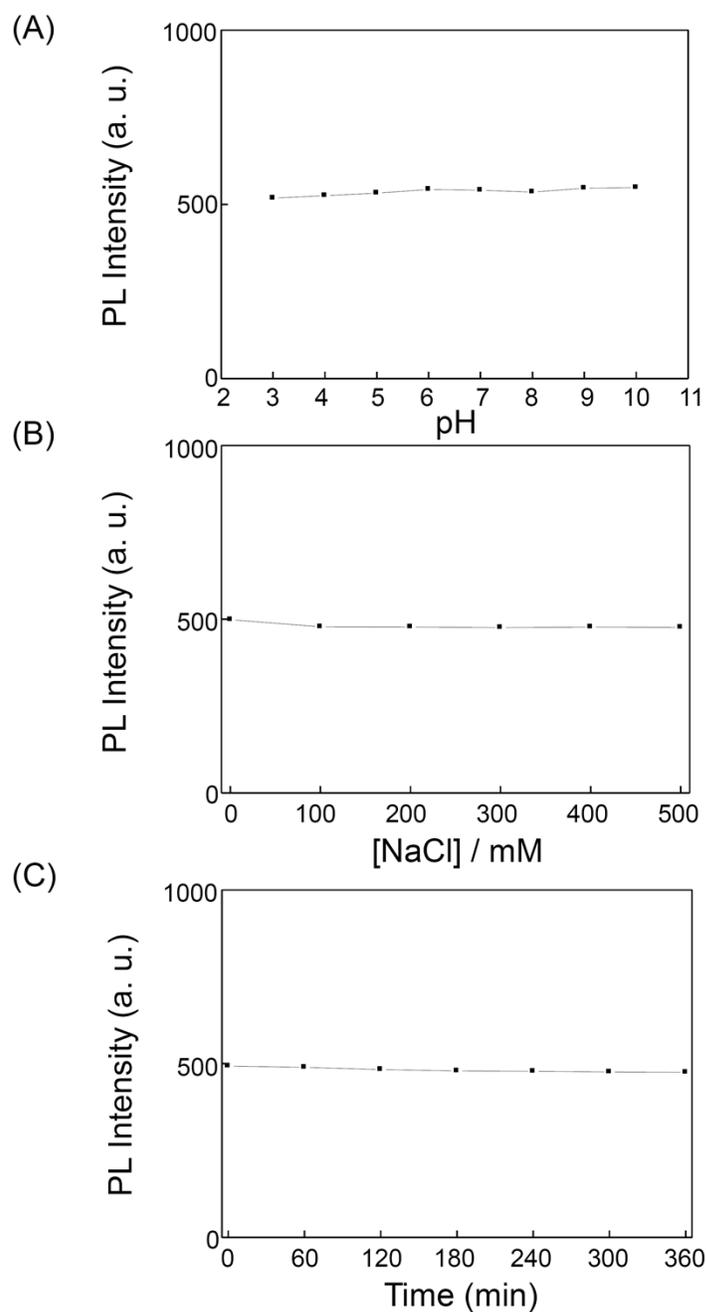
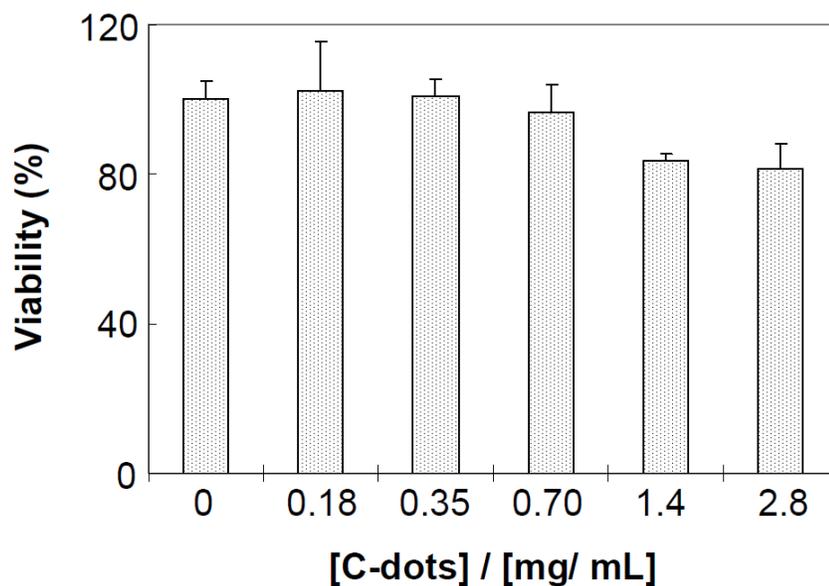


Fig. S4. Effect of (A) pH, (B) NaCl concentration, and (C) irradiation time on the PL intensity of C-dots. Excitation and emission wavelengths were set at 325 and 400 nm, respectively. (A) C-dots were prepared in phosphate solutions (5 mM, pH 3.0–11.0). (B) C-dots were prepared in phosphate buffers (5 mM, pH 7.4) containing various concentrations of NaCl. (C) C-dots were prepared in phosphate buffer (5 mM, pH 7.4).

(A)



(B)

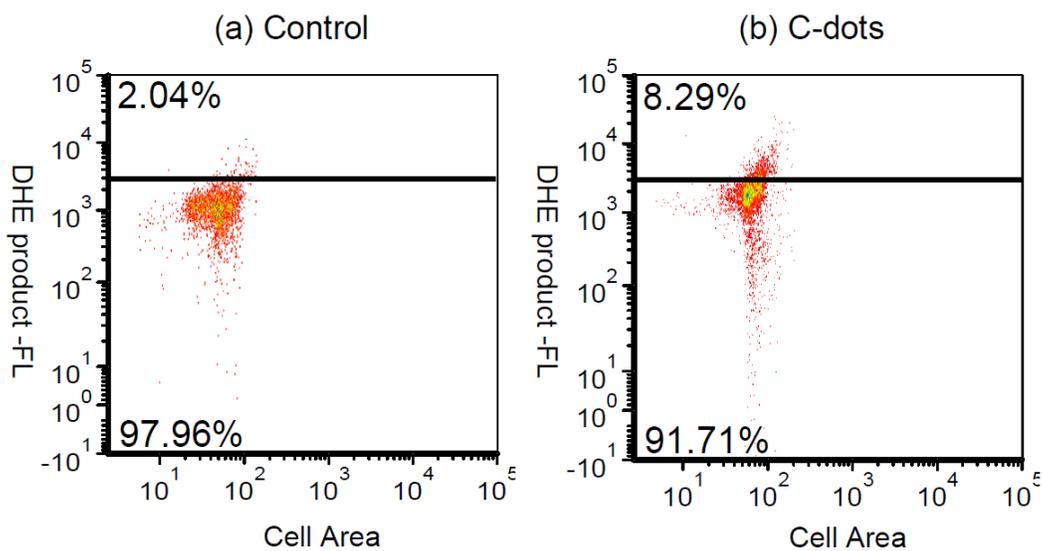


Fig. S5. (A) Viability of FL83B cells after C-dots (0–2.8 mg/mL) treatment for 24 h. (B) Image cytometry analysis of ROS generation of FL83B cells (a) without (control) and (b) with 1.11 mg/mL C-dots treatment for 4 h. The numbers in cell area represents the percentage of the corresponding cells counted for 10,000 cells.

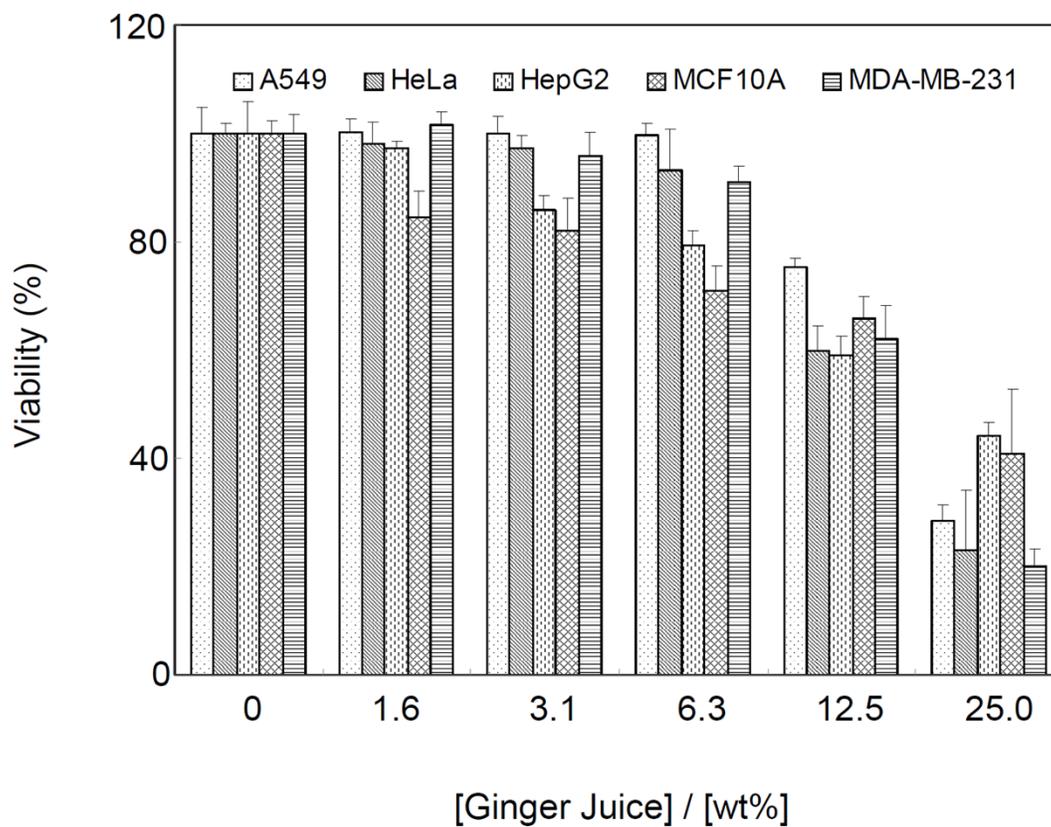


Fig. S6. Viability of five cell lines (A549, HeLa, Hep G2, MCF10A, and MDA-MB-231) after treatment of extracted fresh tender ginger juice (0–25.0 wt%) for 24 h.

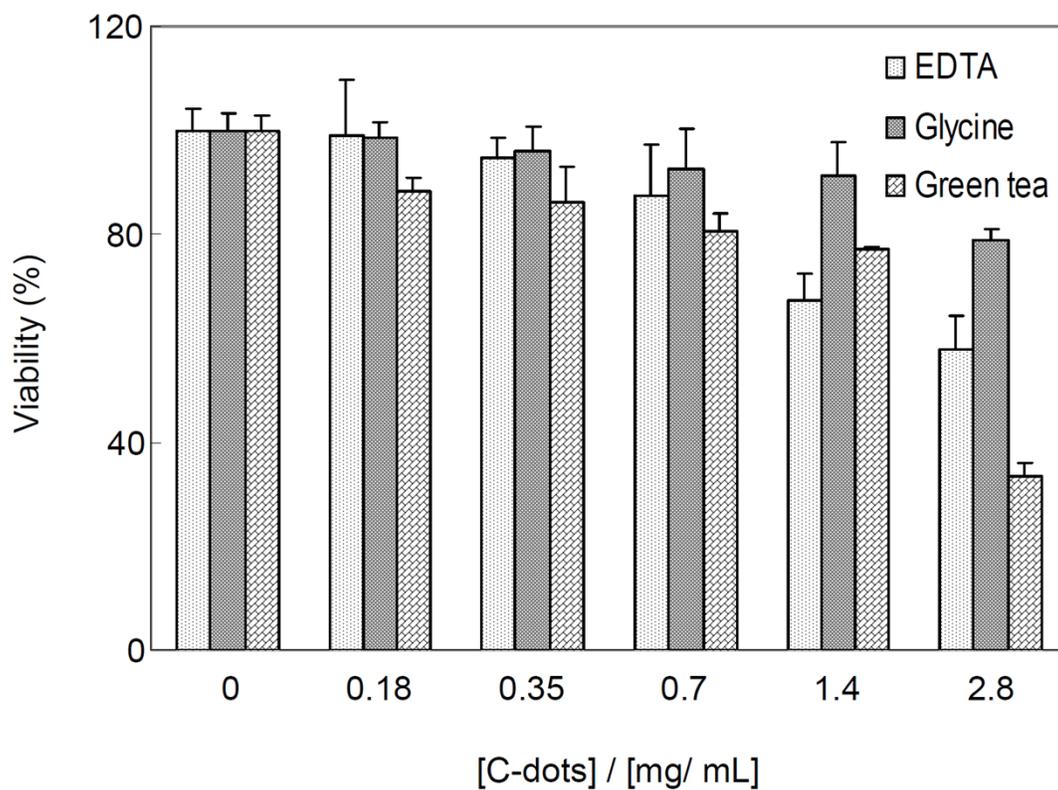


Fig. S7. Viability of Hep G2 cells treated with C-dots prepared from EDTA, glycine, and green tea for 24 h. The Alamar Blue assay was conducted to estimate the viability of cells.

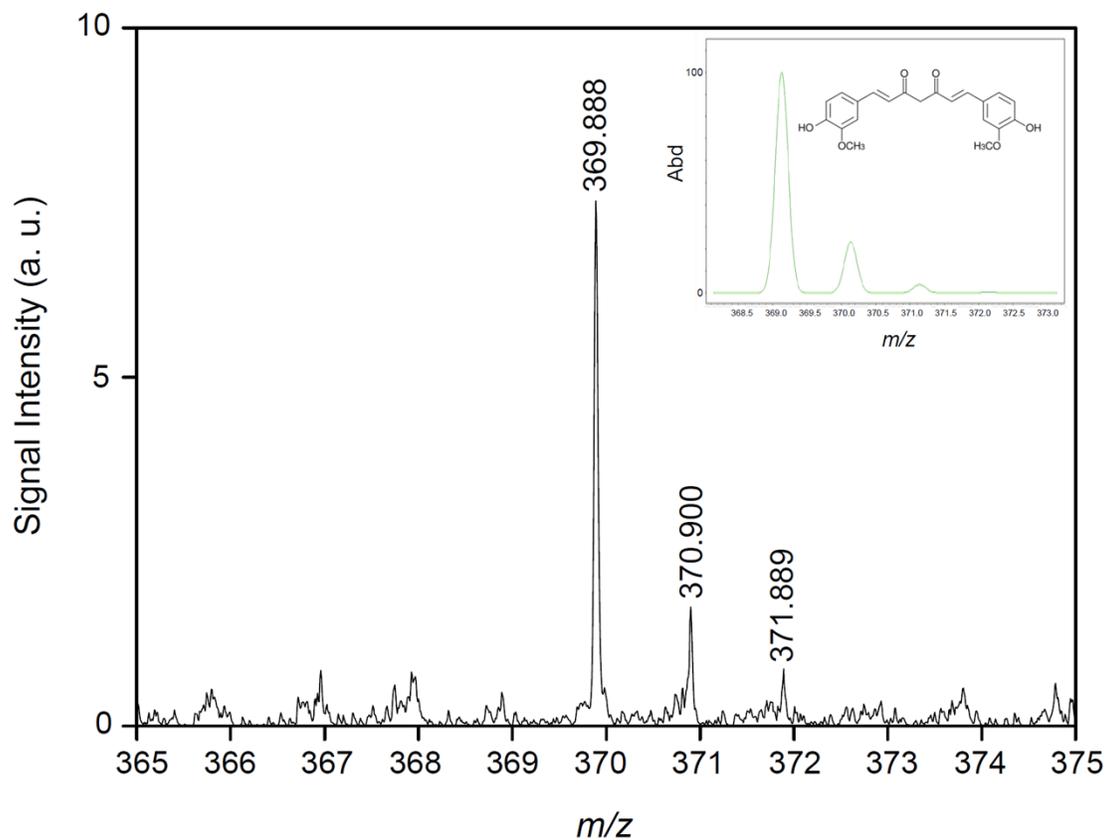


Fig. S8. SALDI-MS of C-dots (0.011 mg/mL) using Au NPs (7.5 nm) as the matrix in ammonium citrate buffer (0.5 mM, pH 7.0). The peaks at m/z of 369.89, 370.90, and 371.89 represent the isotopes of $[\text{curcumin} + \text{H}]^+$. Inset: the predicted isotopic distributions of the $[\text{curcumin} + \text{H}]^+$ in MS.