

Electronic Supplementary Material

Construction of AuHQ nano-sensitizer for enhanced radiotherapy efficacy through remodeling tumor vasculature

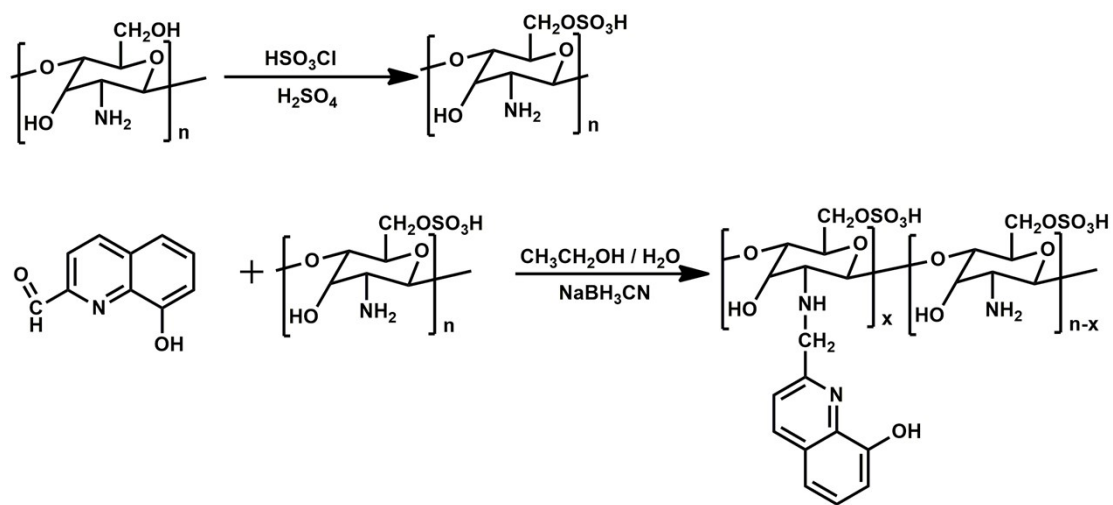
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Scheme of synthesis process



Scheme S1 Synthesis process of NPs.

Supporting Figures

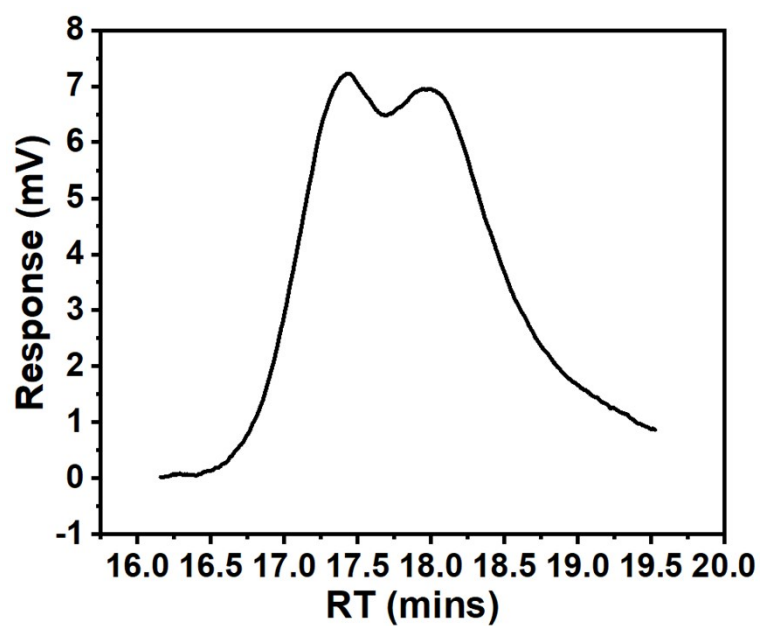


Fig. S1 GPC chromatogram of the SCTS.

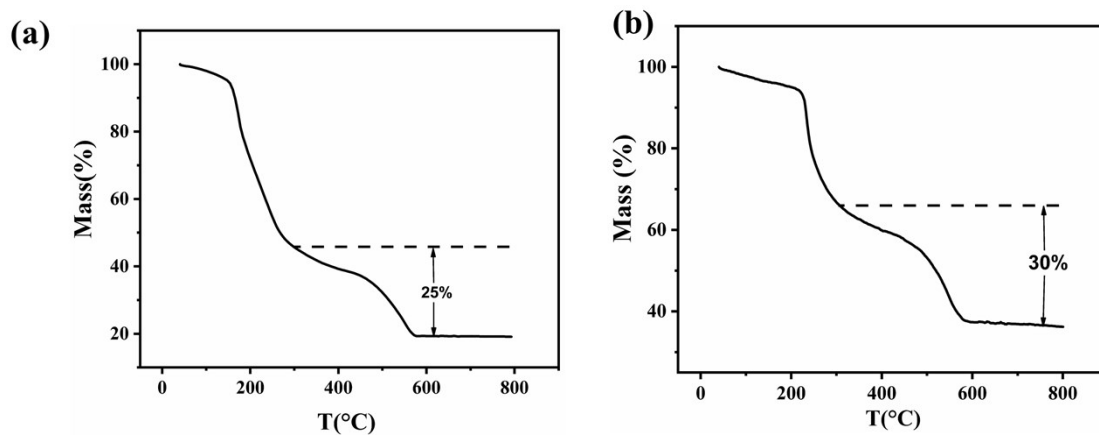


Fig. S2 TGA curve of Au NPs and AuHQ.

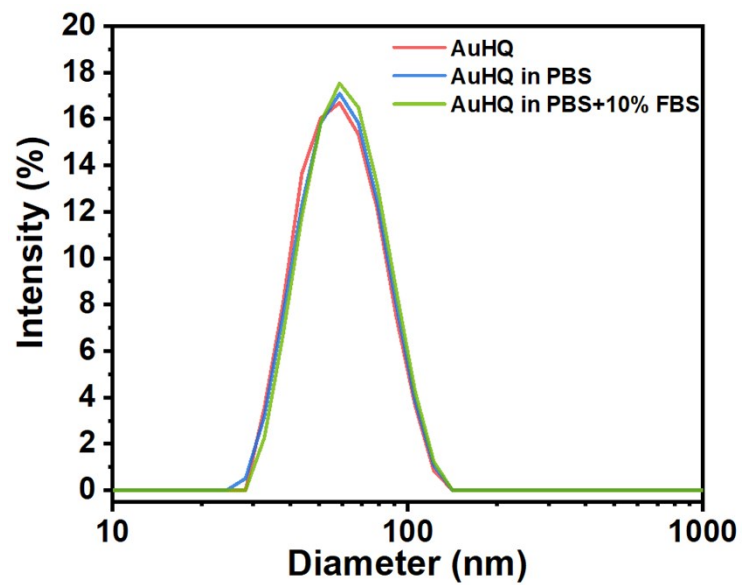


Fig. S3 Hydrodynamic diameter of AuHQ incubated in water, PBS and PBS with 10% FBS.

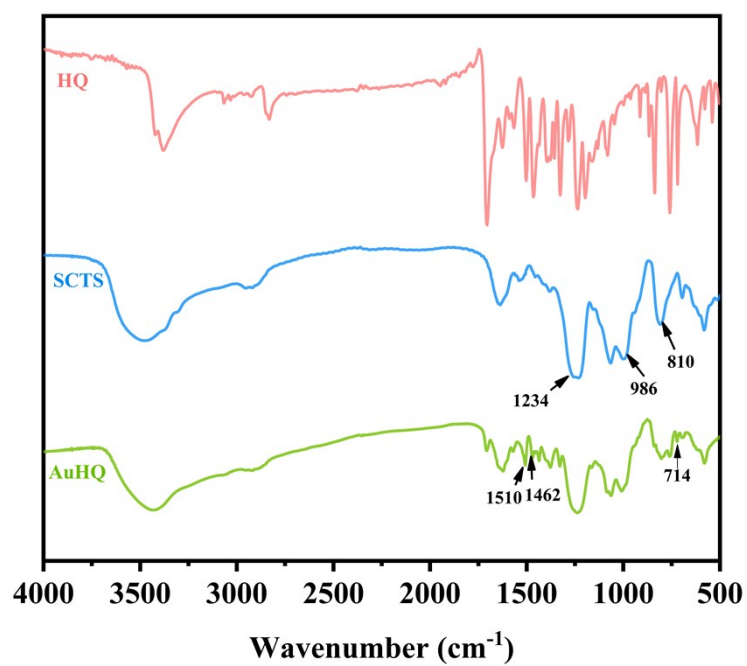


Fig. S4 FTIR spectra of HQ, SCTS and AuHQ.

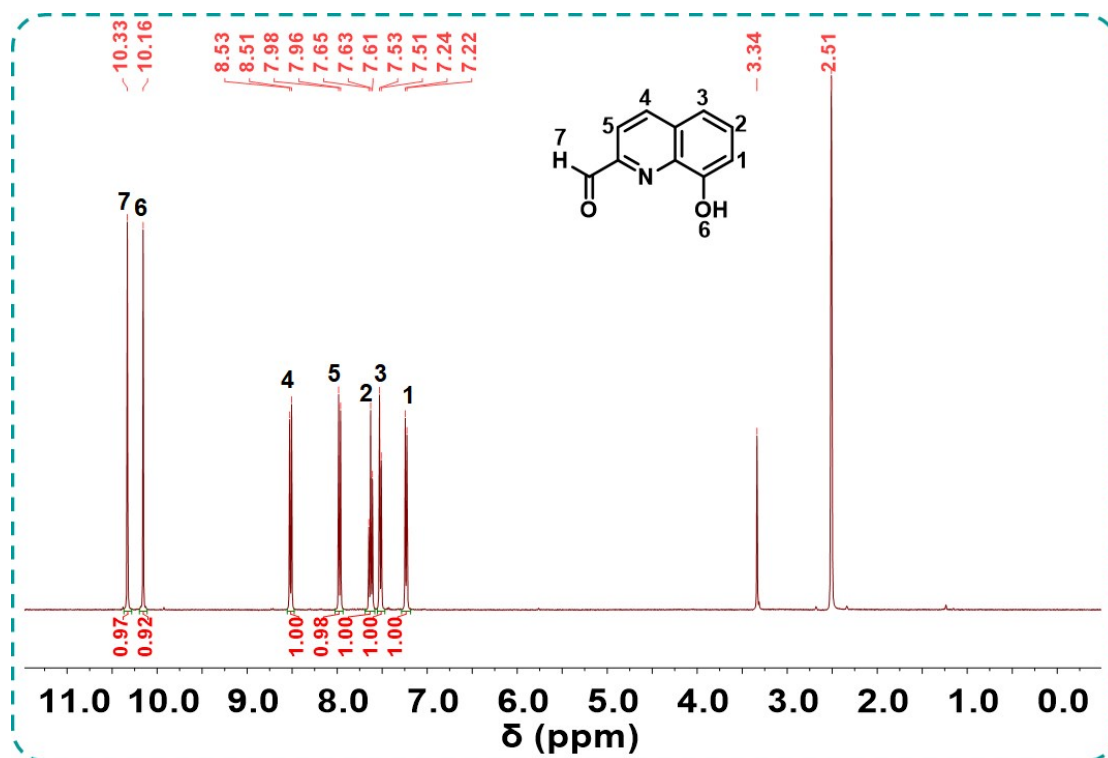


Fig. S5 ¹H NMR spectrum of 8-hydroxyquinoline-2-formaldehyde in DMSO-d₆ solvent (400 MHz).

¹H NMR spectrum of 8-hydroxyquinoline-2-formaldehyde (400 MHz, DMSO-d₆) δ
 10.33 (s, 1H), 10.16 (s, 1H), 8.55-8.48 (m, 1H), 8.02-7.93 (m, 1H), 7.69-7.58 (m, 1H),
 7.50-7.54 (d, J = 8.1 Hz, 1H), 7.21-7.25 (d, J = 7.6 Hz, 1H).

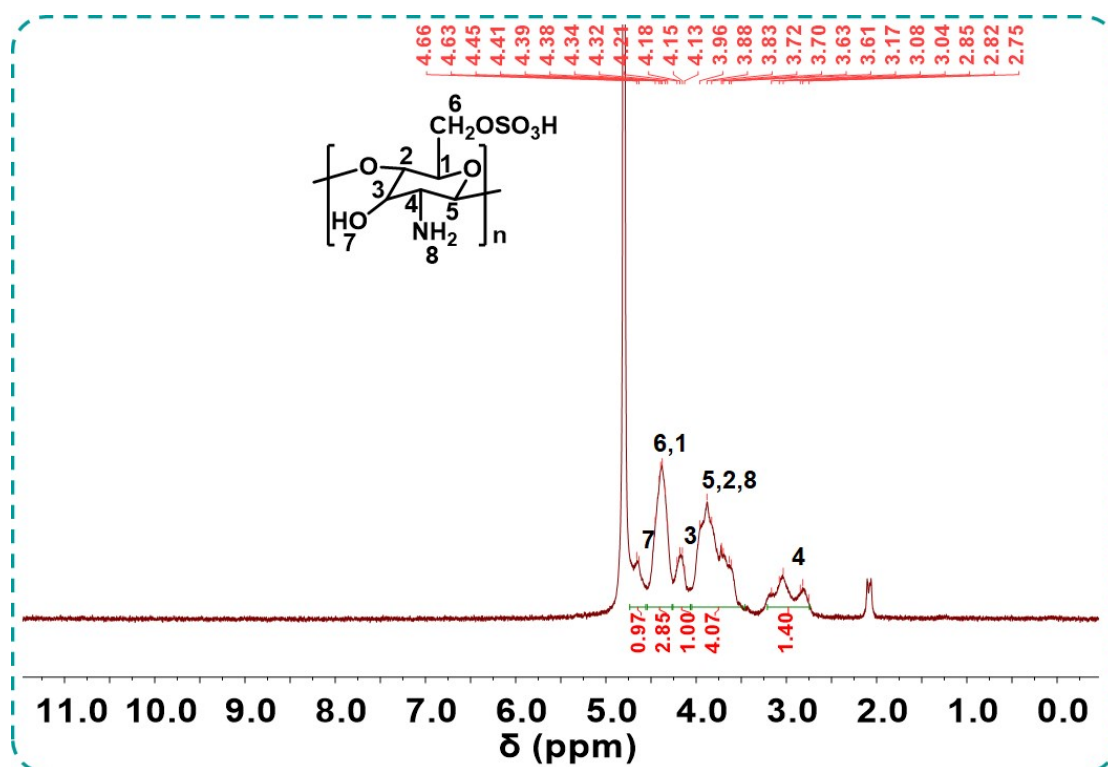


Fig. S6 ^1H NMR spectrum of SCTS in D_2O solvent (400 MHz).

^1H NMR spectrum of SCTS (400 MHz, D_2O) δ 4.62-4.67 (d, $J = 10.2$ Hz, 1H), 4.31-4.46 (dq, $J = 23.8, 13.9, 10.2$ Hz, 3H), 4.26-4.06 (m, 1H), 4.05-3.46 (m, 4H), 3.21-2.75 (m, 1H).

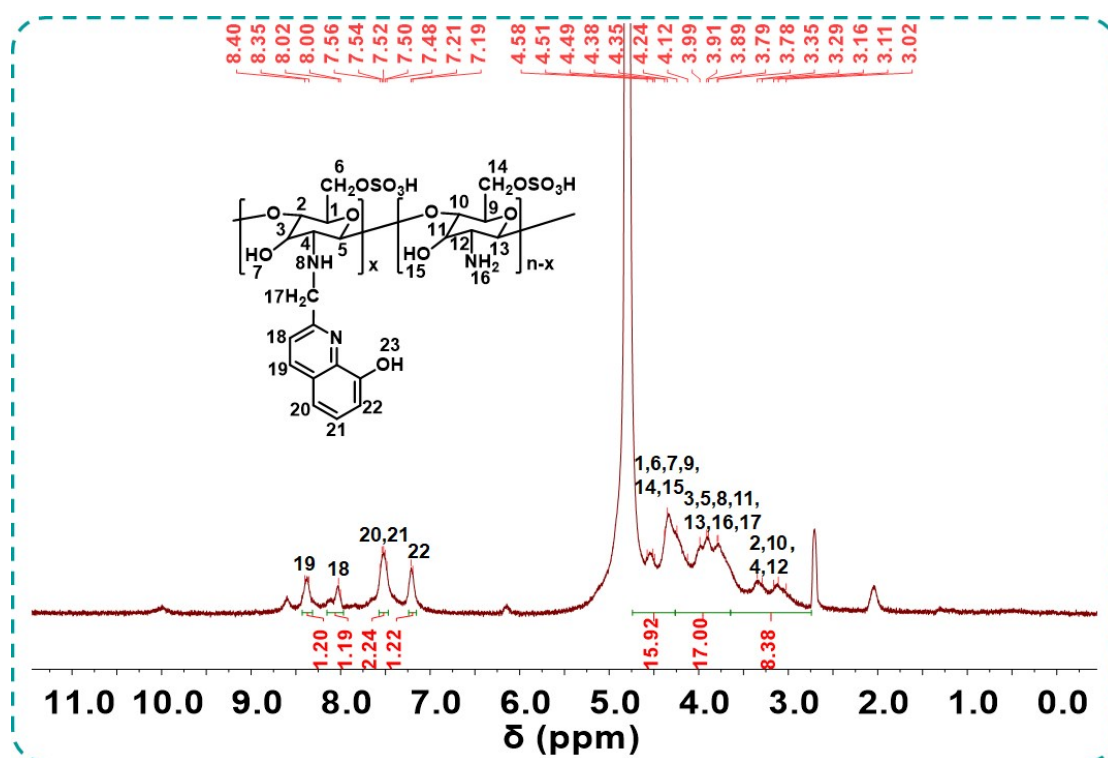


Fig. S7 ¹H NMR spectrum of AuHQ in D₂O solvent (400 MHz).

¹H NMR spectrum of AuHQ (400 MHz, D₂O) δ 8.42-8.33 (s, 1H), 8.03-7.98 (s, 1H), 7.58-7.45 (m, 2H), 7.25-7.18 (s, 1H), 4.74-4.24 (m, 16H), 4.24-3.64 (m, 17H), 3.64-2.74 (m, 8H).

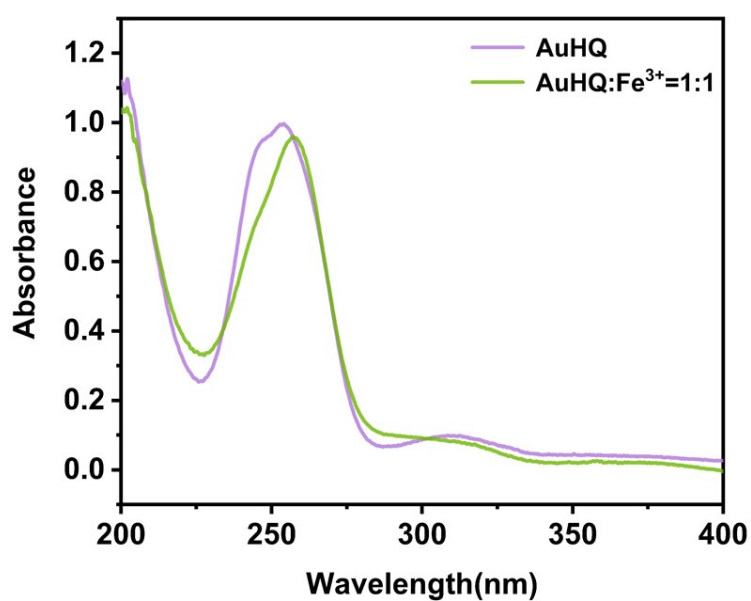


Fig. S8 UV-vis spectra of AuHQ NPs and Fe³⁺-AuHQ 1:1 solution.

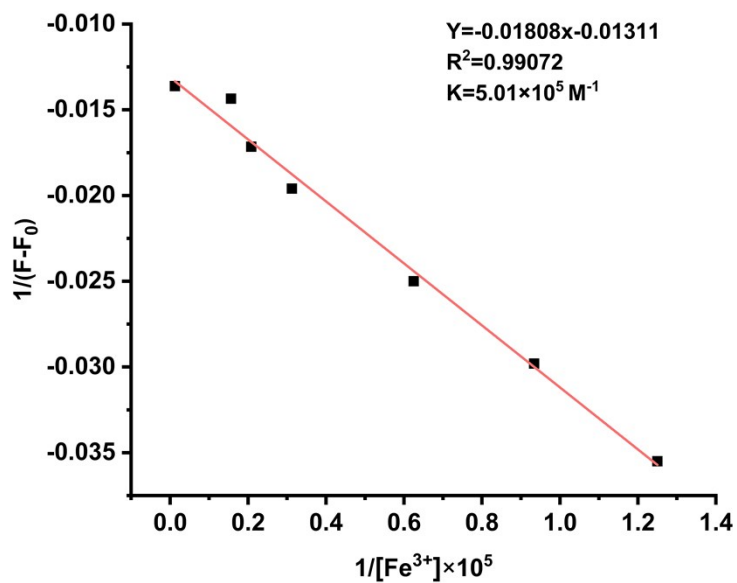


Fig. S9 Benesi-Hildebrand plot of HQ with Fe^{3+} for the determination of stability constant.

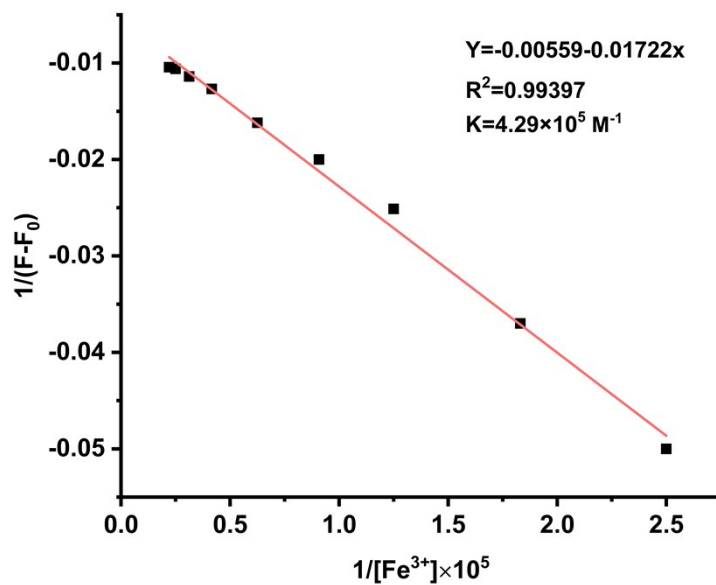


Fig. S10 Benesi-Hildebrand plot of AuHQ with Fe^{3+} for the determination of stability constant.

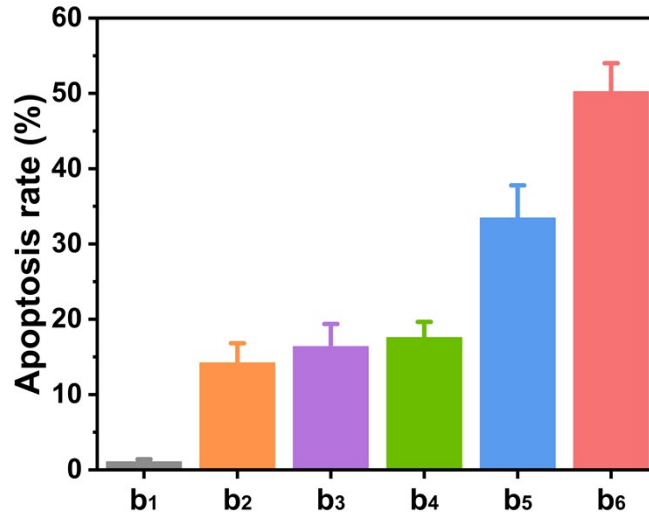


Fig. S11 Apoptosis rate of HepG2 cells after treatment with AuHQ at concentrations of 0 µg/mL (b1), 12.5 µg/mL (b2), 25 µg/mL (b3), 50 µg/mL (b4), 100 µg/mL (b5) and 200 µg/mL (b6) for 24 h with X-ray irradiation at a dose of 4 Gy.

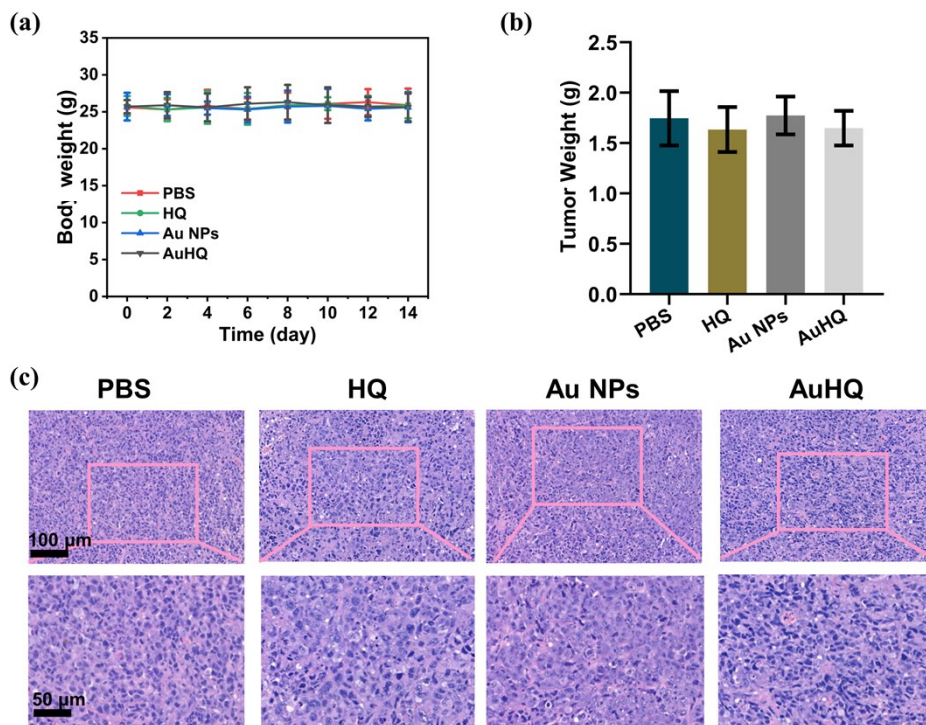


Fig. S12 *In vivo* antitumor studies without X-ray irradiation. (a) The body weight curve, (b) tumor weight of mice after various treatments; n=5; *P < 0.05 and **P < 0.01. (c) H&E staining images of tumor sections after different treatments.

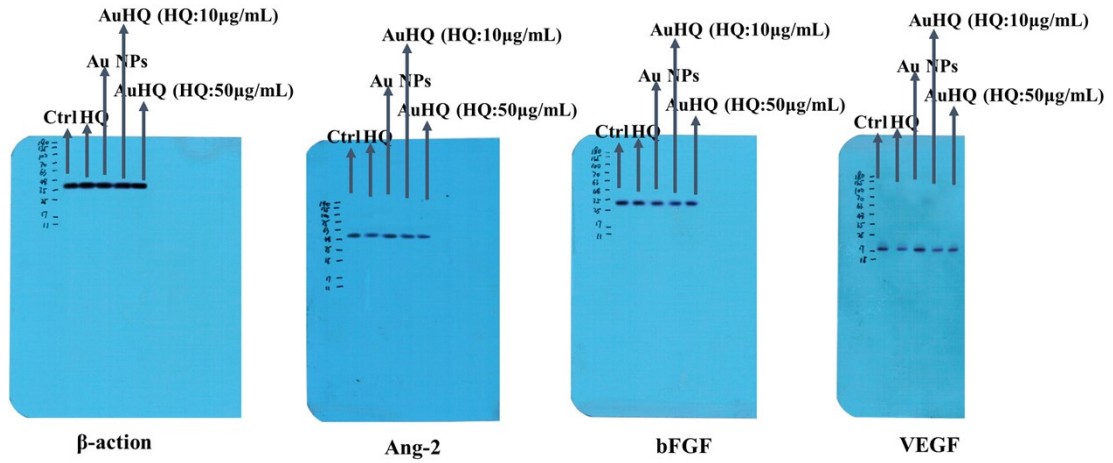


Fig. S13 Original western blot images of Ang-2, bFGF and VEGF expressions in HUVEC and HepG2 co-culture system after different treatment.

Supporting Tables

Table S1 Elemental analysis results of AuHQ and Au NPs.

	N	C	H	S	S/N	S/C	Graft ratio
	(%)	(%)	(%)	(%)	(mol/mol)	(mol/mol)	(%)
AuNPs	3.93	20.31	4.968	13.994	1.558	0.258	
AuHQ	4.29	26.67	4.712	12.423	1.267	0.175	20.35