Supporting Information

For the Article

Hybrid Nanoparticles Coated with Hyaluronic Acid Lipoid for Targeted Co-delivery of Paclitaxel and Curcumin to Synergistically Eliminate Breast Cancer Stem Cells

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Figure S1

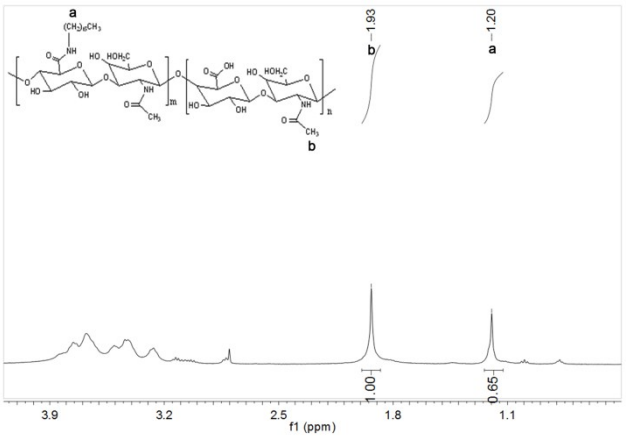

Figure S1. Characterization of the structure of the HA-HDA using ^{1}H-NMR (D_2O).

Figure S2

Figure S2. The CD44 expression of the MCF7 adherent cells and MCF7 mammosphere cells.

Table S1. The inhibitory efficiency of HA-Hybrid NPs/PTX+CUR with different weight ratios of CUR *vs.* PTX against MCF7 mammosphere cells. Data are given as mean ± SD (n = 3).

Concentration Ratio (CUR : PTX)	Inhibitory Efficiency (%)
[a] 750 : 1	78.9 ± 5.5
[b] 500 : 1	72.9 ± 2.5
[c] 250 : 1	57.9 ± 4.1
[d] 100 : 1	35.8 ± 7.5

[a] Concentration of PTX: 0.005 μg/mL, concentration of CUR: 3.79 μg/mL;
[b] Concentration of PTX: 0.005 μg/mL, concentration of CUR: 2.57 μg/mL;
[c] Concentration of PTX: 0.005 μg/mL, concentration of CUR: 1.18 μg/mL;
[d] Concentration of PTX: 0.005 μg/mL, concentration of CUR: 0.52 μg/mL.

Table S2. Characterization of the PTX- or CUR-loaded NPs with different formulations. Data are given as mean ± SD (n = 3).

Sample	Size (nm)	PDI	Zeta Potential (mV)	Drug Loading (μg/mg)		Entrapment Efficiency (%)	
				PTX	CUR	PTX	CUR
HA-Hybrid NPs/PTX	365.9± 5.9	0.23±0.06	-22.4±2.5	1.94 ± 0.51	/	47.8±5.4	/
HA-Hybrid NPs/CUR	347.9±10.3	0.26±0.02	-22.9±3.4	/	967.6 ± 16.8	/	35.7±4.3
HA-Hybrid NPs/PTX+CUR	334.1±12.9	0.18±0.03	-22.5±4.5	1.75± 0.46	886.7 ± 23.4	44.6±3.7	32.0±4.6

Figure S3

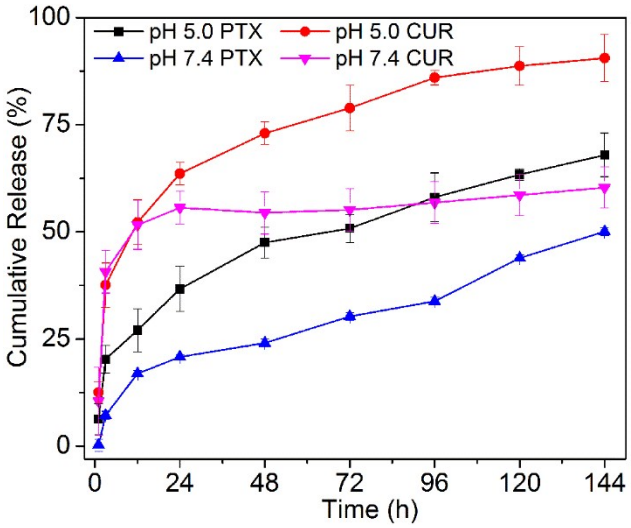

Figure S3. The *in vitro* PTX and CUR release profiles of PTX- and CUR-loaded NPs in PBS (pH 7.4) and acetate buffer solution (pH 5.0) at 37 °C. Data are given as mean ± SD (n = 3).

Figure S4

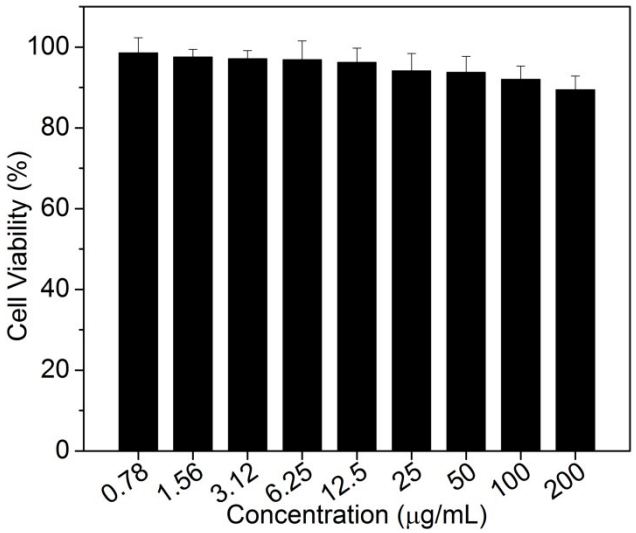

Figure S4. The cell viability of MCF7 mammosphere cells after treated with blank HA-Hybrid NPs at varying concentration for 48 h. Data are given as mean ± SD (n = 5).

Figure S5

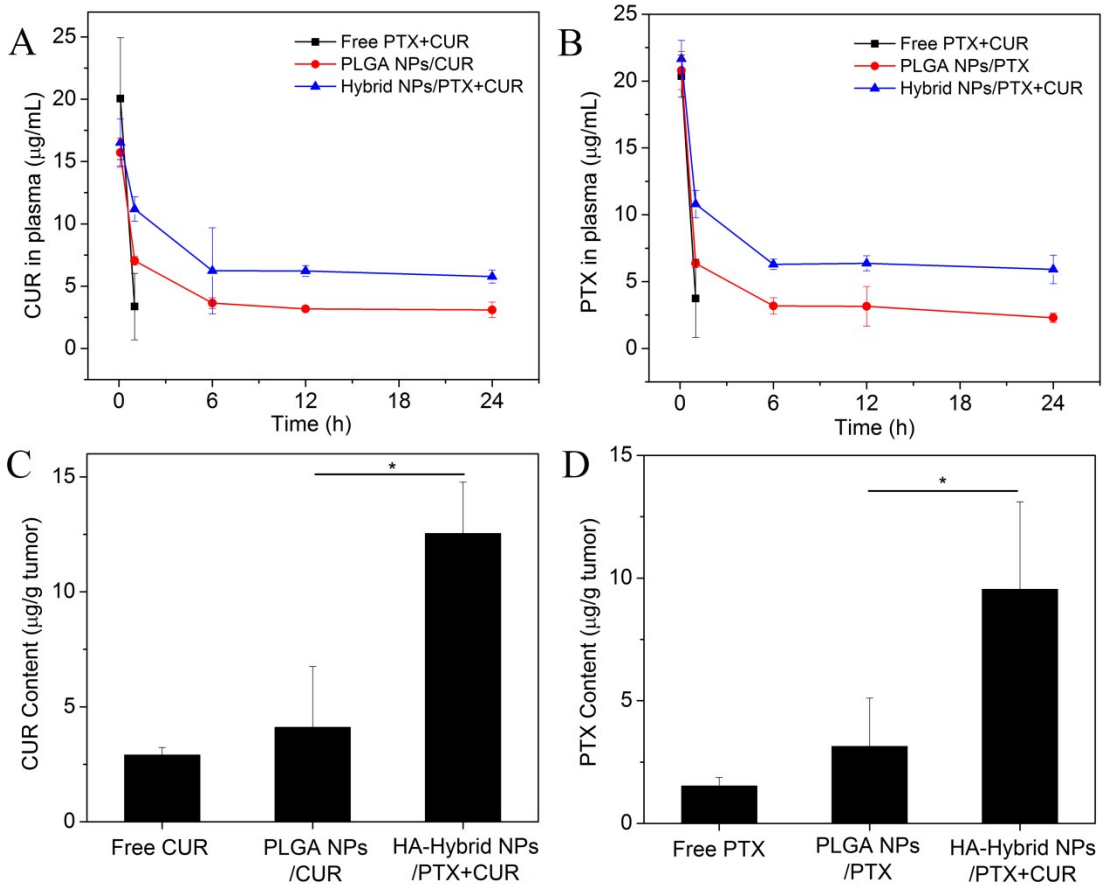

Figure S5. Plasma CUR (A) and PTX (B) concentration versus time after intravenous administration of Free PTX+CUR, PLGA NPs/PTX, PLGA NPs/CUR and HA-Hybrid NPs/PTX+CUR for 24 h at an equivalent dose of 10 mg CUR and 10 mg PTX per kg of mice body (n=4). HPLC analysis of the CUR (C) and PTX (D) concentrations in MCF7 xenograft tumors after 24 h i.v. administration of different drug formulations (n=4). Data are given as mean ± SD. * represents $p<0.05$.