Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Supporting information

A hybrid membrane coating nanodrug system against gastric cancer via VEGFR2/STAT3 signaling pathway

Ying Long[a,1], Zhou Wang[a], Jialong Fan[a], Liqin Yuan[b], Chunyi Tong[a], Yanzhong Zhao[c*], Bin Liu[a*]

[a] *College of Biology, Hunan University, Changsha, 410082, China*

[b] *Department of General Surgery, The Second Xiangya Hospital, Central South University, Changsha, 410011, China*

[c] *Department of Health Management, The Third Xiangya Hospital, Central South University, Changsha, 410011,China*

** To whom correspondence should be addressed. Tel: +86-731-89720939; Fax: +86-731-89720939.*

E-mail: binliu2001@hotmail.com (B Liu); yanzhongzhao@163.com

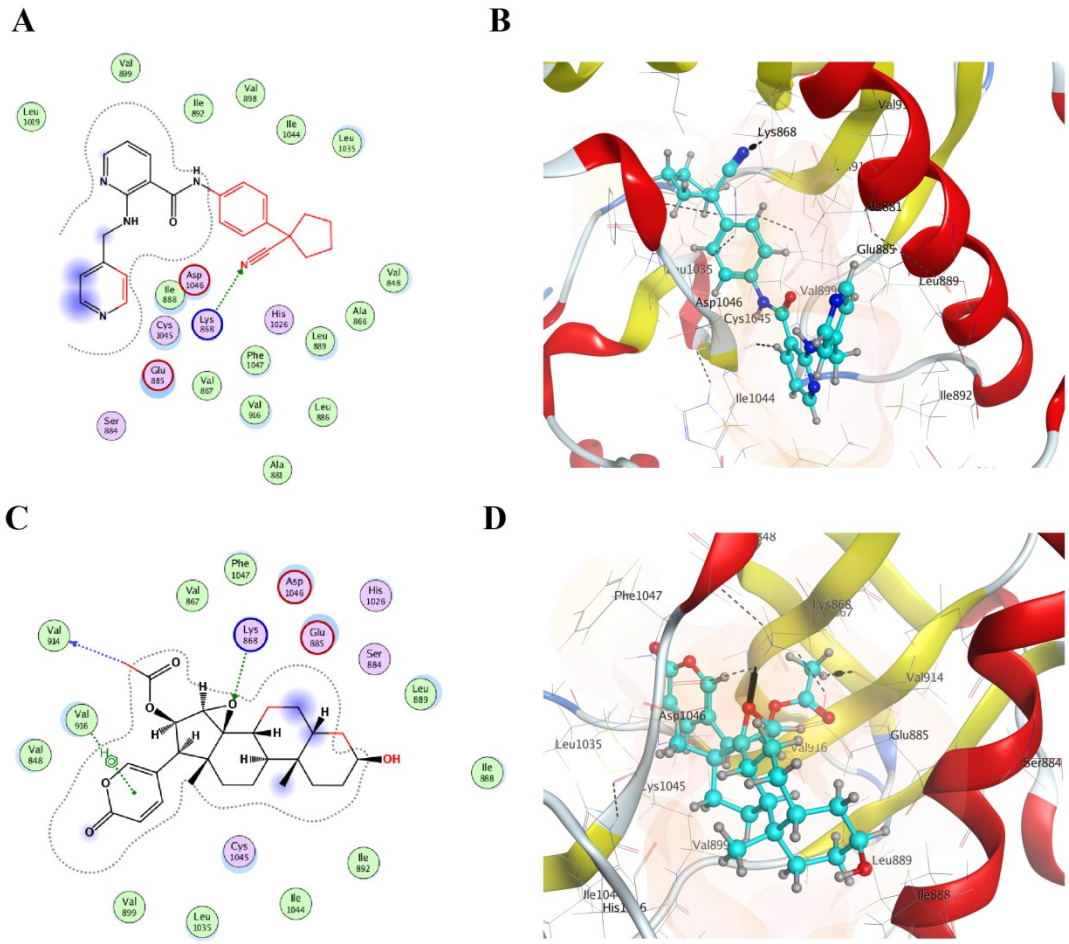

Fig. S1 The virtual binding poses and ligand-interaction diagrams of AP and CS-1 with active sites of VEGFR2 (PDB 3vhk). A & B. The 2D and 3D molecular modeling results of interaction between AP and VEGFR2 (3vhk). C & D. The 2D and 3D molecular modeling results of interaction between CS-1 and VEGFR2 (3vhk).

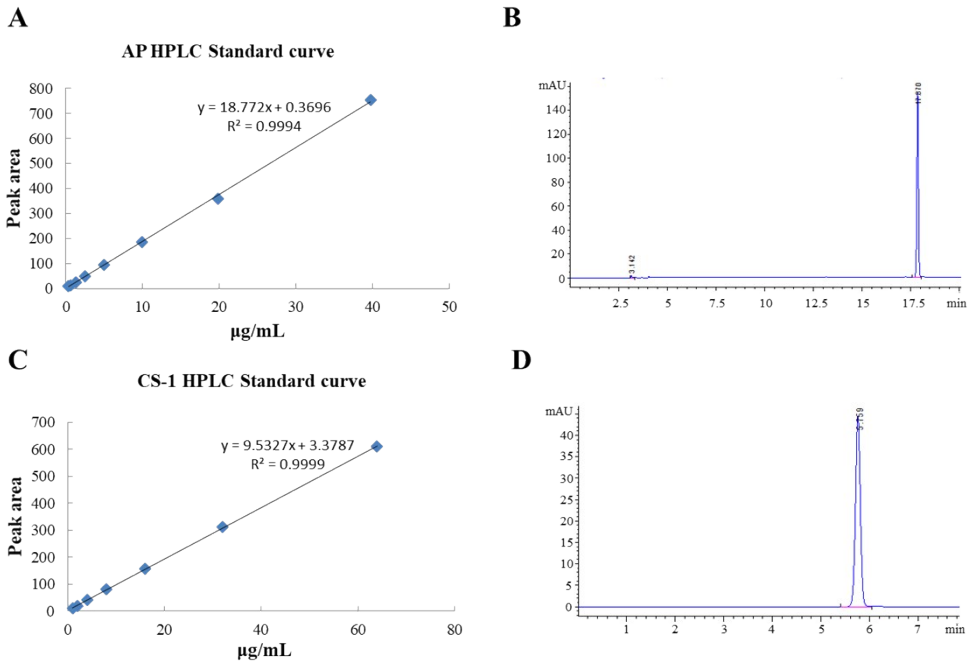

Fig. S2 A, C: The standard curves of AP and CS-1; B, D: The characteristic peak assay of AP and CS-1 using HPLC method. By combining with standard curve, the entrapment efficiency of AP and CS-1 in LPAC-R/C NPs were calculated to be 94.2% and 99.9%, respectively.

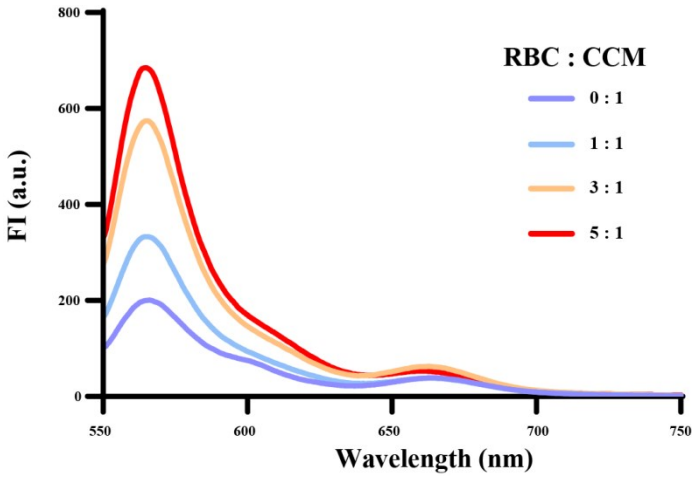

Fig. S3 Förster resonance energy transfer (FRET) investigation of membranes fusion. HGC-27 cell membrane simultaneously labeled with DiD (λex/em = 644/663 nm) and DiI (λex/em = 549/565 nm) was fused with different amounts of RBC membrane. The recovery of fluorescence intensity of DiI at 565 nm was used to monitor the extent of membranes fusion (RBC: CCM represents the amount ratio of RBC membrane to HGC-27 membrane).

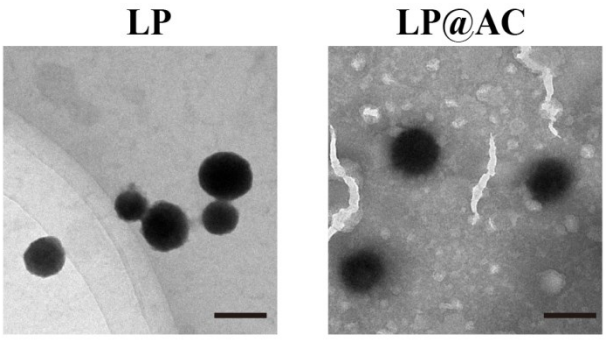

Fig. S4 TEM images of LP and LP@AC, scale bar=100nm.

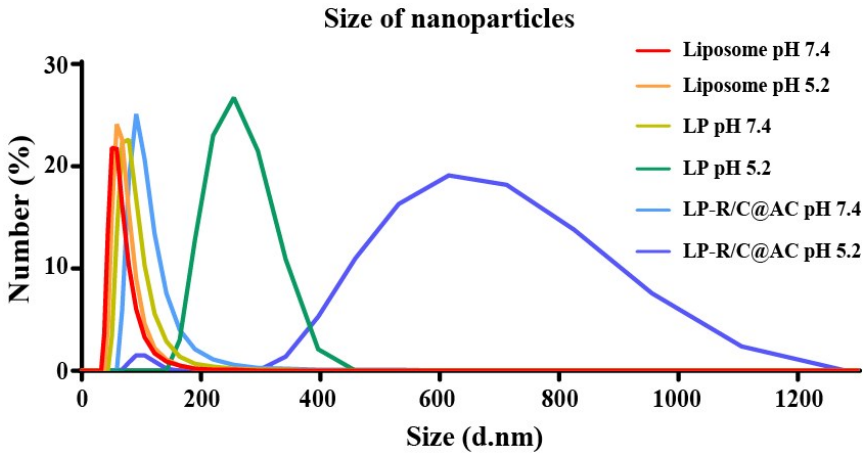

Fig. S5 Size distribution of Liposome, LP and LP-R/C@AC NPs at different pH condition for 48h. Liposome pH 7.4 (66.58 nm, PDI: 0.276), Liposome pH 5.2 (70.90 nm, PDI: 0.371), LP pH 7.4 (79.43 nm, PDI: 0.355), LP pH 5.2 (256.70 nm, PDI: 0.263), LP-R/C@AC pH 7.4 (110.42 nm, PDI: 0.322), LP-R/C@AC pH 5.2 (654.90 nm, PDI: 0.476).

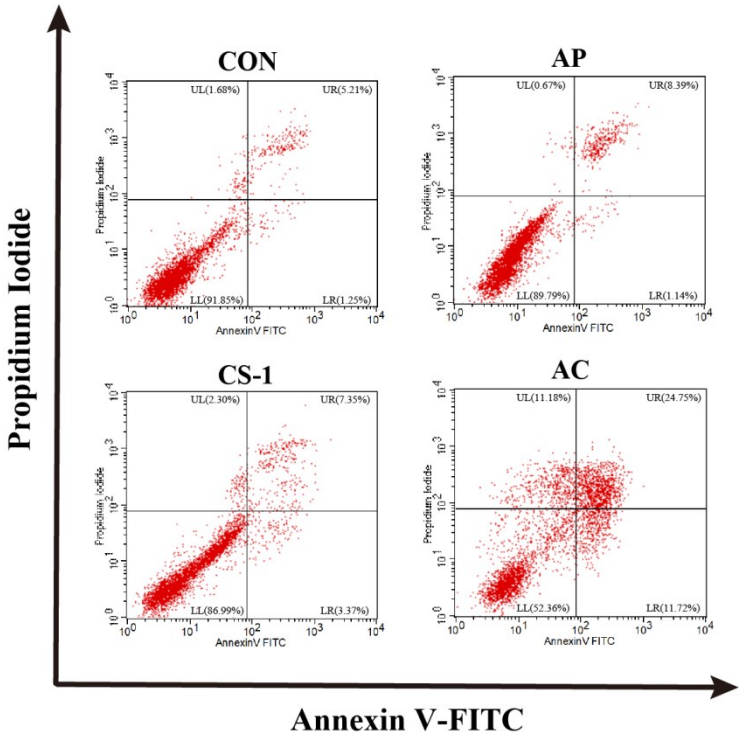

Fig. S6 Flow cytometry analysis of HGC-27 cells after treated with various formulations for 16 h. The apoptosis rates of HGC-27 cells were 9.53 %, 10.72%, 36.47%, respectively, after treating with AP, CS-1 and AC, respectively.

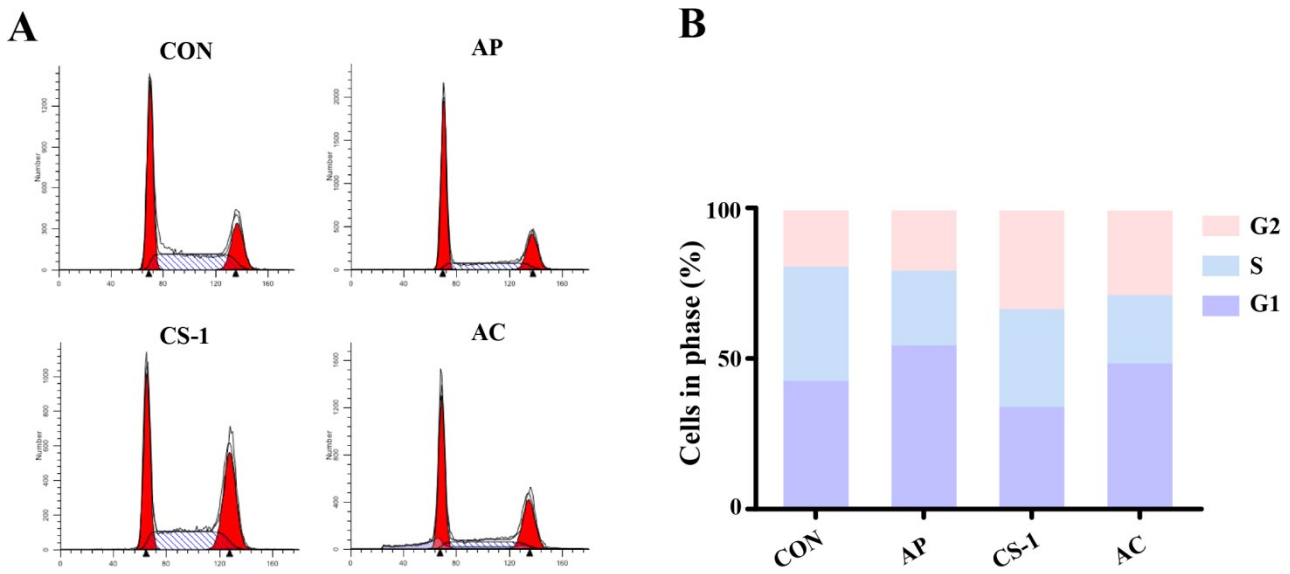

Fig. S7 A: FAC assay of HGC-27 cells after incubating with various formulations for 16 h; B: The quantitative diagram of cell cycle of HGC-27 cells.

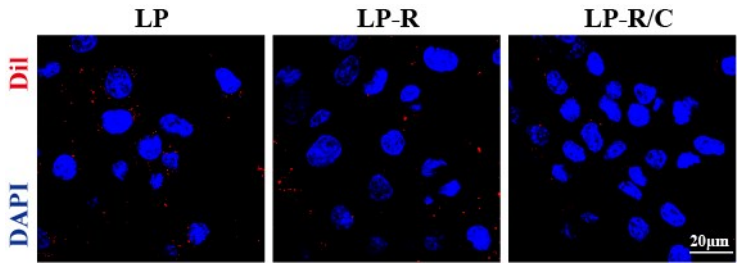

Fig. S8 Uptake investigation of SMC cells to LP, LP-R and LP-R/C NPs IN SMC.

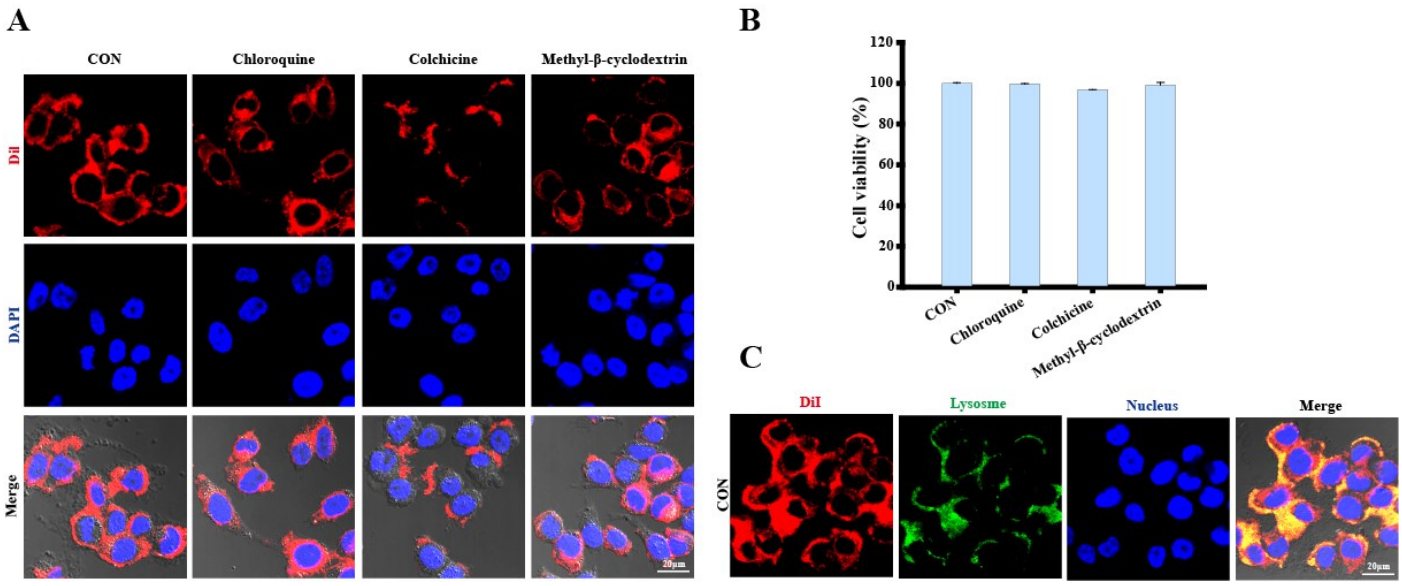

Fig. S9 A: Laser confocal scanning microscope images of internalization of LP-R/C NPs in the presence of three kinds of small-molecule inhibitors. B: The effect of inhibitors on HGC-27 cells. Chloroquine (10 μM), colchicine (10 μM), and methyl-β-cyclodextrin (20 μM) treated HGC-27 cells for 4h. C: Co-localization of LP-R/C NPs with lysosomes.

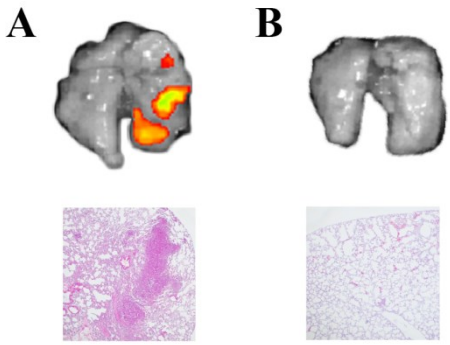

Fig. S10 The fluorescence images and H&E staining of lung with (A) or without (B) tumor metastasis. The fluorescence signal produced due to the accumulation of LP-R/C-Cy5.5 at tumor tissue of lung.