Supplementary information

A new approach based on CXCR4-targeted combination liposomes for the treatment of liver fibrosis

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1. Effect of Free Drugs on Hepatic Functions

Figure S1. (A-D) Effect of free drugs on serum biomarker levels and liver hydroxyproline content in CCl₄-induced liver fibrotic mice. AST, ALT, TBIL, and HYP *p<0.05

Table S1 Characteristics of different formulations

Name	Drug/lipid Ratio (PC:Chol:Drug)	Particle size (nm)	Zeta Potential (mV)	PDI	DL (%)	EE (%)
Blank lipo	60:7.5:0	102.5	-40.11	0.196		-
AMD lipo	60:7.5:1.5	105.4	-20.45	0.201	4.59	54.67
PF lipo	60:7.5:1.5	120.4	-32.78	0.215	6.5	69
CTC lipo	60:7.5:1.5	101.45	-19.35	0.211	AMD3100=3.8 PF=6.9	AMD3100=55 PF=70

Groups	AST (UI/L)	ALT	TBIL (µmol/L)	Hydroxyproline (µg/g)
		(UI/L)		
Sham	42.02±3.63	30.46±0.72	2.82±0.35	158.46±1.64
PBS	203.89±3.63	78.66±1.16	6.53±0.22	299.0 ±2.89
PF lipo	139.20±5.02	55.30±1.25	4.68±0.25	215.59 ±5.68
AMD Lipo	123.63±4.46	56.91±2.67	3.21±0.44	239.33±7.77
PF:AMD lipo	91.24±5.87	54.72±3.24	3.65±0.57	199.95±2.24
CTC lipo	49.78±4.0	36.89±2.26	2.76 ± 0.25	167.35±3.0

Table S3

Groups	AST (UI/L)	ALT (UI/L)	TBIL (μmol/L)	Hydroxyproline (µg/g)
Sham	44.83±1.74	32.46±0.72	3.16±0.20	157.42±1.24
PBS	211.56±8.69	79.83±1.90	5.87±0.62	298.83 ±3.33
PF	177.29.59 ±2.33	62.53±1.46	4.92±0.40	245.60 ±6.16
AMD	167.21±4.0	69.26±4.23	4.17±0.23	248.0±6.16
PF:AMD	158.61 ± 1.0	58.32±2.24	3.93±0.03	236.29±3.83



2. Effect of Free Drugs on Inflammation

Figure S2. Effect of free drugs on inflammation and collagen deposition in CCl_4 -induced fibrotic mice. (A) H&E stainingMasson (B) Masson Trichrome staining (C) Sirius red staining (Magnification × 200) The black arrows show tissue damage.



3. Effect of Free Drugs on IHC

Figure S3. Effect of free drugs on protein expressions in CCl₄-induced fibrotic mice. (A) TGF β expression (B) α -SMA expression (C) Col-I expression (Scale bar 200 μ m) (D-F) Stained areas TGF β , α -SMA, and Col-I. Stained areas were analyzed with Image J software. The black arrows show protein expression. *p<0.05



Figure S4. Macroscopic comparison in Sham, PBS and CTC group. PBS treated group displayed fibrosis while CTC lipo restored the fibrotic liver to normalization.



4. Effect of Free Drugs on Fibrotic Proteins

Figure S5. Western blot analysis of expression of TGF β , α -SMA, and P-p38 in CCl₄-induced liver fibrosis. (A) Representative western blot image of the qualitative expression of TGF β , α -SMA, and P-p38 (B) The quantitative expression of TGF β (C) The quantitative expression of α -SMA (D) The quantitative expression of P-p38 The target protein expression was measured relative to the total β -Actin level. *p<0.05, **p<0.01