

Supporting Information:

Table S1. Physicochemical properties of blank copolymer micelles.

| Sample | DS ^a (%) | | | Mean diameter (nm) ^b | PI ^c | Zeta potential (mV) |
|--------|---------------------|-----|-----|------------------------------------|-----------------|------------------------|
| | Cholesterol | FA | NLS | | | |
| CHGC | 6.1 | - | - | 228 ± 20.4 | 0.212 | 13.28 |
| FCHGC | 6.1 | 1.7 | - | 237 ± 25.4 | 0.245 | 10.57 |
| NCHGC | 6.1 | - | 3.9 | 215 ± 22.1 | 0.218 | 12.17 |
| NFCHGC | 6.1 | 1.7 | 3.7 | 218 ± 23.7 | 0.231 | 14.85 |

^a Degree of substitution which means the amount of conjugated groups per 100 sugar residues in the copolymer sample. ^b Measured by dynamic light scattering. ^c Polydispersity index.

Table S2 Serum chemistry counts after intravenous treatment in Kunming mice (n=4)

| Groups | | AST (U/L) | ALT (U/L) | Total bilirubin (μmol/L) | BUN (mmol/L) | Creatinine (μmol/L) |
|---------------|----------|--------------|--------------|-----------------------------|-----------------|------------------------|
| Normal saline | | 212.0 ± 21.7 | 37.3 ± 4.51 | 1.25 ± 0.66 | 8.78 ± 1.45 | 17.3 ± 7.82 |
| CHGC | 30 mg/kg | 226.8 ± 17.5 | 38.2 ± 5.43 | 1.03 ± 0.25 | 8.94 ± 0.63 | 19.8 ± 5.93 |
| FCHGC | 30 mg/kg | 202.5 ± 15.0 | 39.5 ± 4.62 | 1.20 ± 0.34 | 8.83 ± 0.20 | 17.8 ± 4.15 |
| NCHGC | 30 mg/kg | 223.5 ± 14.1 | 37.2 ± 7.02 | 0.95 ± 0.28 | 9.08 ± 1.81 | 17.5 ± 2.18 |
| NFCHGC | 30 mg/kg | 211.7 ± 22.3 | 38.7 ± 4.18 | 1.12 ± 0.41 | 9.12 ± 1.92 | 18.2 ± 4.40 |

Table S3 Blood cell counts after intravenous treatment in Kunming mice (n=4)

| Groups | | WBC ($10^9/L$) | RBC ($10^{12}/L$) | Platelet ($10^9/L$) |
|---------------|----------|------------------|---------------------|-----------------------|
| Normal saline | | 5.47 ± 1.12 | 7.38 ± 0.42 | 1032.7 ± 167.5 |
| CHGC | 30 mg/kg | 5.60 ± 2.58 | 6.97 ± 1.52 | 1061.0 ± 136.1 |
| FCHGC | 30 mg/kg | 5.08 ± 1.69 | 7.54 ± 1.21 | 1051.1 ± 178.1 |
| NCHGC | 30 mg/kg | 5.23 ± 1.48 | 7.84 ± 0.38 | 1099.3 ± 161.7 |
| NFCHGC | 30 mg/kg | 5.32 ± 0.95 | 7.55 ± 0.54 | 1118.0 ± 154.1 |

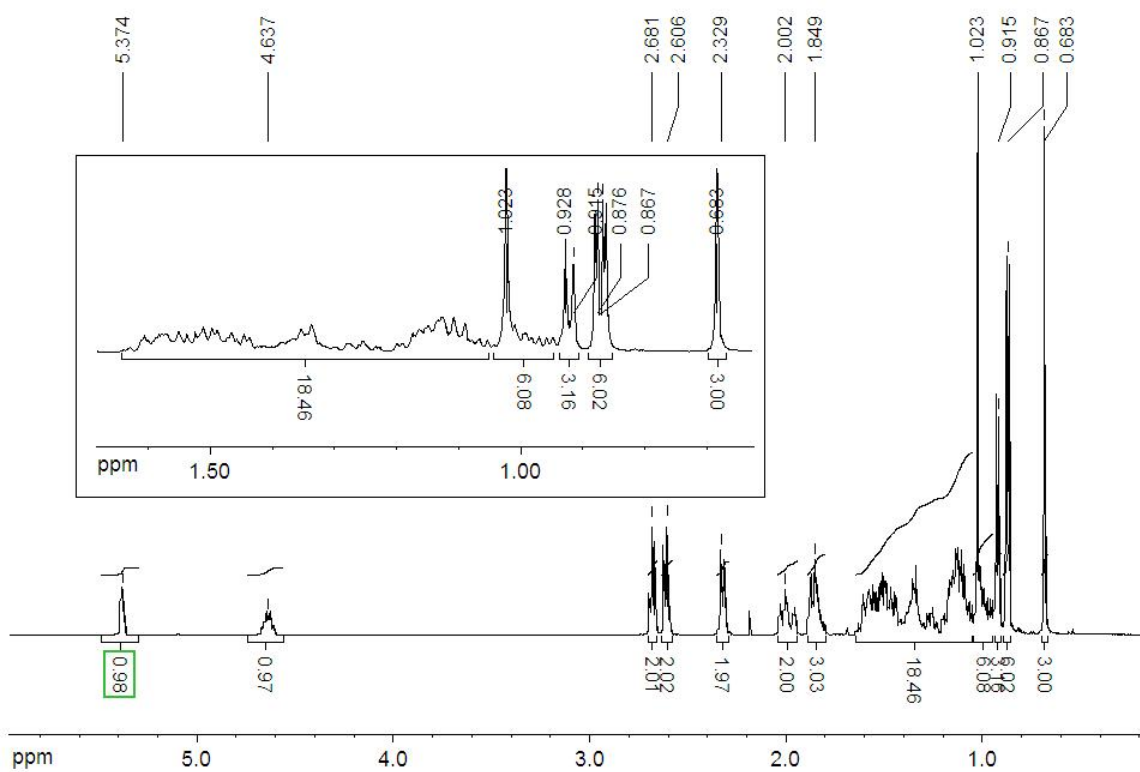


Fig. S1. ^1H NMR spectrum of cholesterol succinate

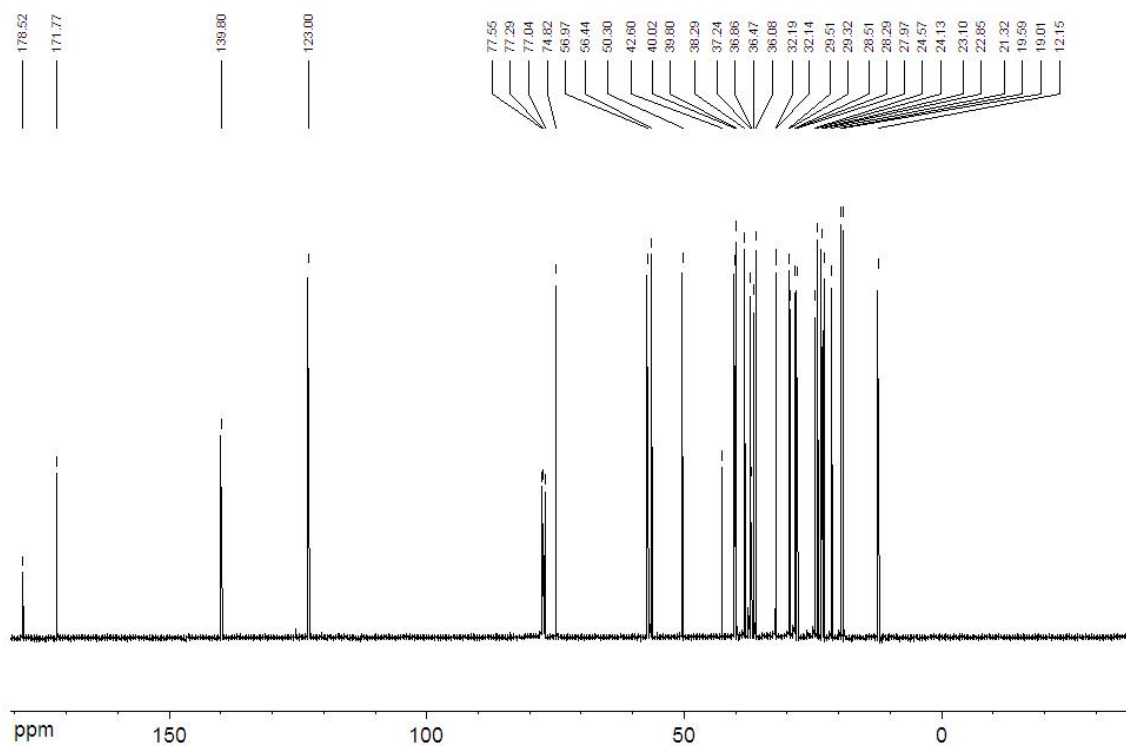


Fig. S2. ^{13}C NMR spectrum of cholesterol succinate

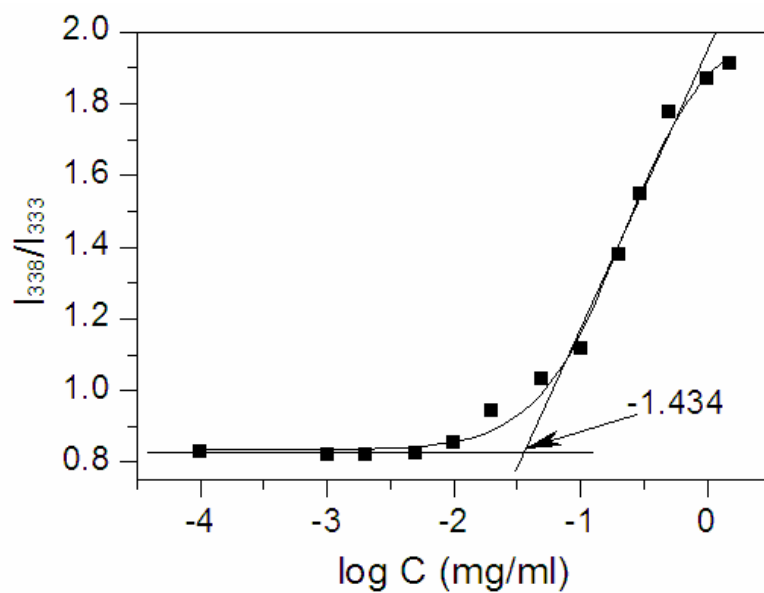


Fig. S3. Plot of the intensity ratio I_{338}/I_{333} (from pyrene excitation spectra of NFCHGC micelles) as a function of $\log C$.

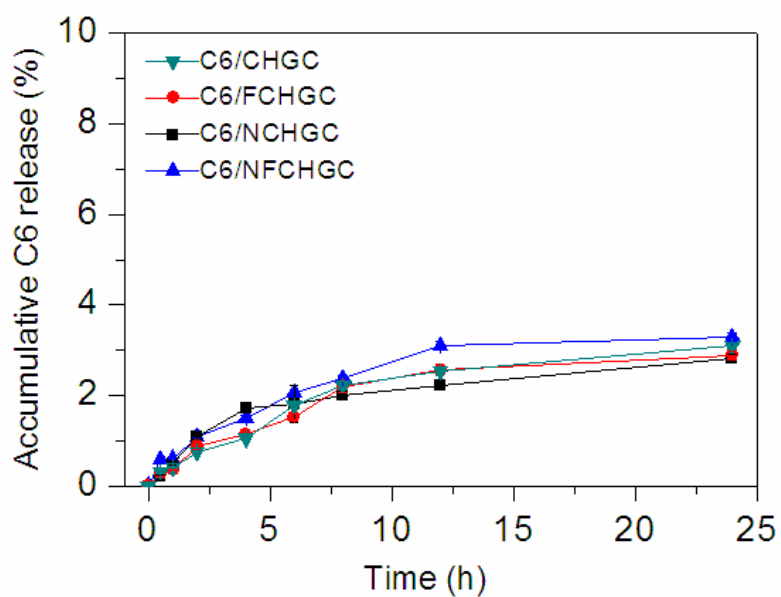


Fig. S4. Release profiles of C6 from C6/CHGC, C6/FCHGC, C6/NCHGC and C6/NFCHGC micelles at 37 °C in PBS at pH 7.4.

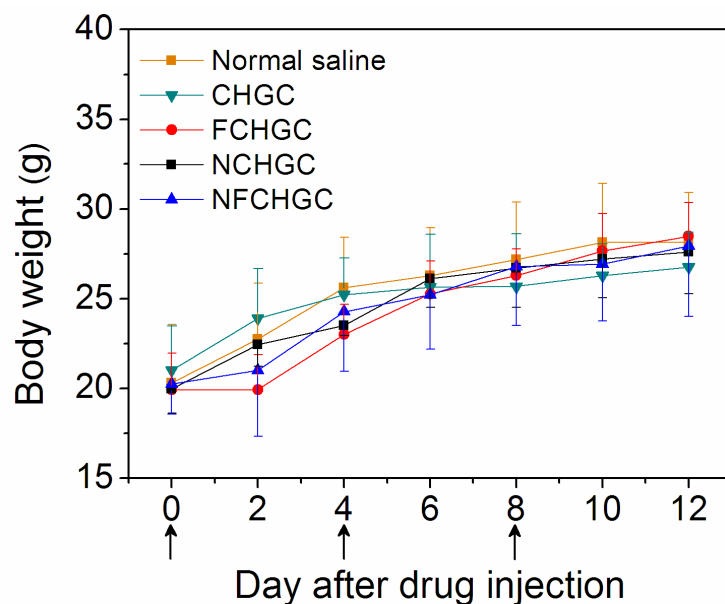


Fig. S5. Body weight change of Kunming mice after intravenous injection of normal saline solution, CHGC, FCHGC, NCHGC or NFCHGC micelles ($n=8$).