Supporting information

β-Cyclodextrin-based supramolecular nanoparticles: a pH-sensitive nanocarrier for the sustained release of the anti-tumor drug

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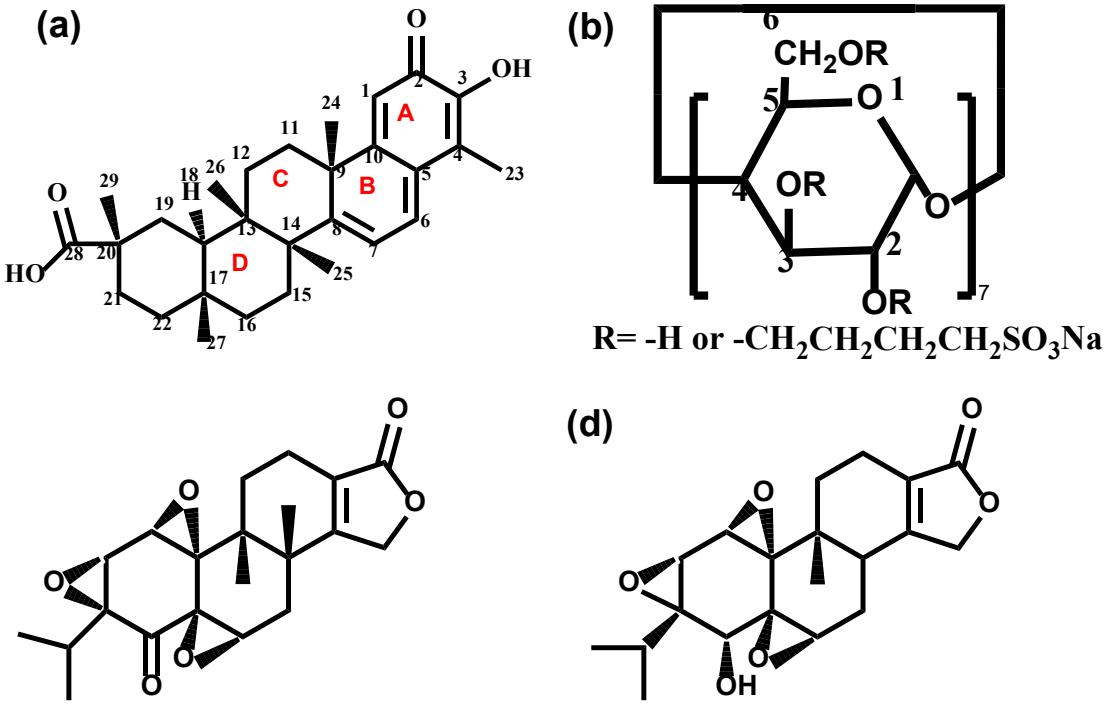

Figure S1. Molecular Structures of CSL (a), SBE_7-β-CD (b), TN(c) and TPL(d).

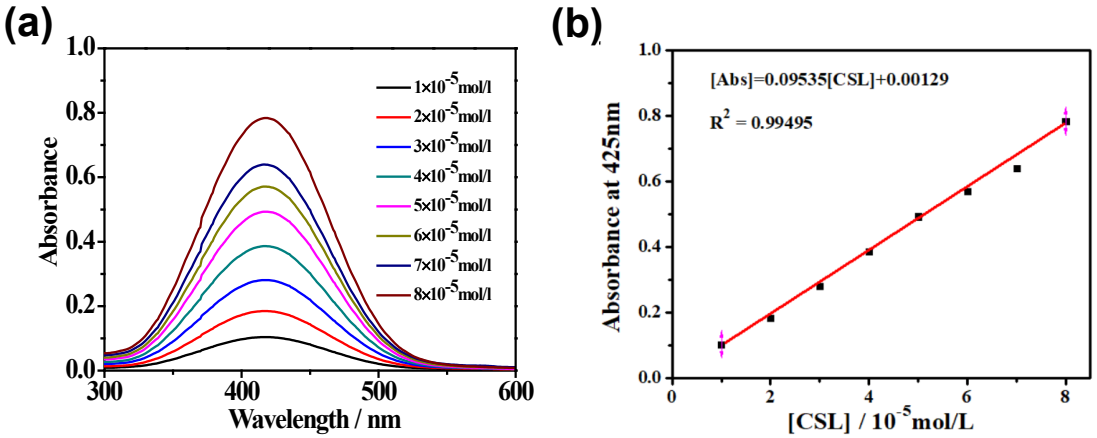

Figure S2. (a) UV-vis spectra of CSL. (b) Standard curve of CSL obtained according to (a).

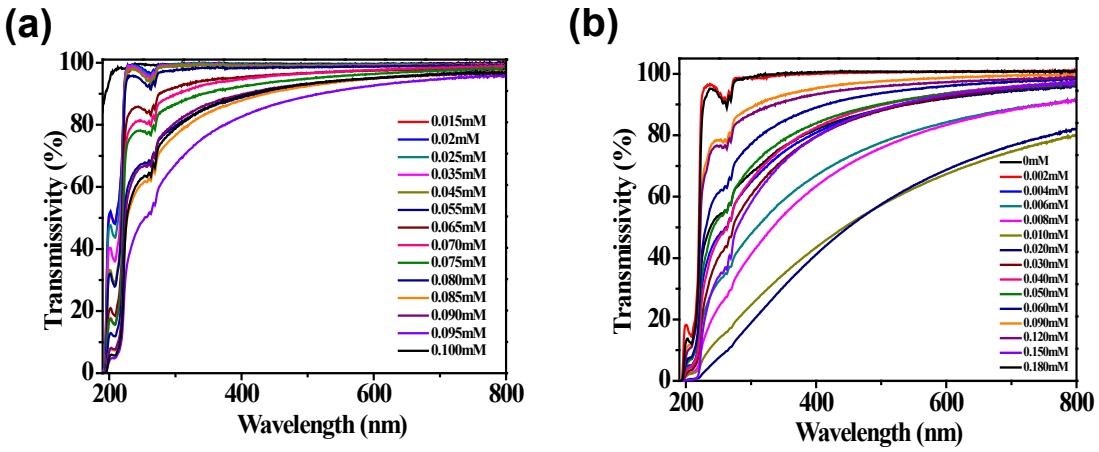

Figure S3. (a) The optical transmittance of the mixture containing SBE_7-β-CD (0.05 mmol/L) and various concentration of HDBAC. (b) The optical transmittance of the mixture containing HDBAC (0.08 mmol/L) and various concentration of SBE_7-β-CD.

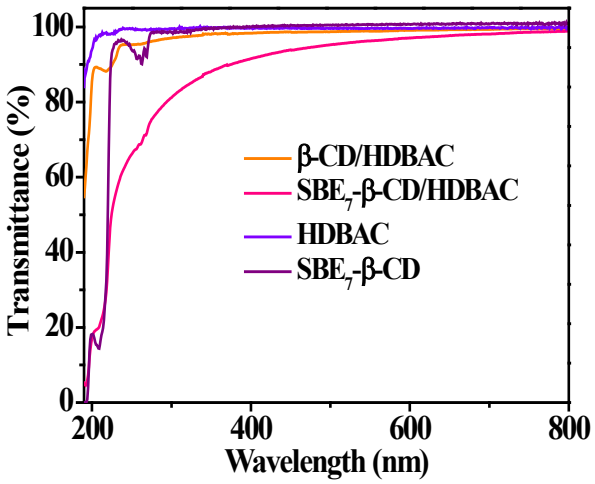

Figure S4. The optical transmittance of β-CD/HDBAC, SBE_7-β-CD/HDBAC, HDBA, and SBE_7-β-CD.

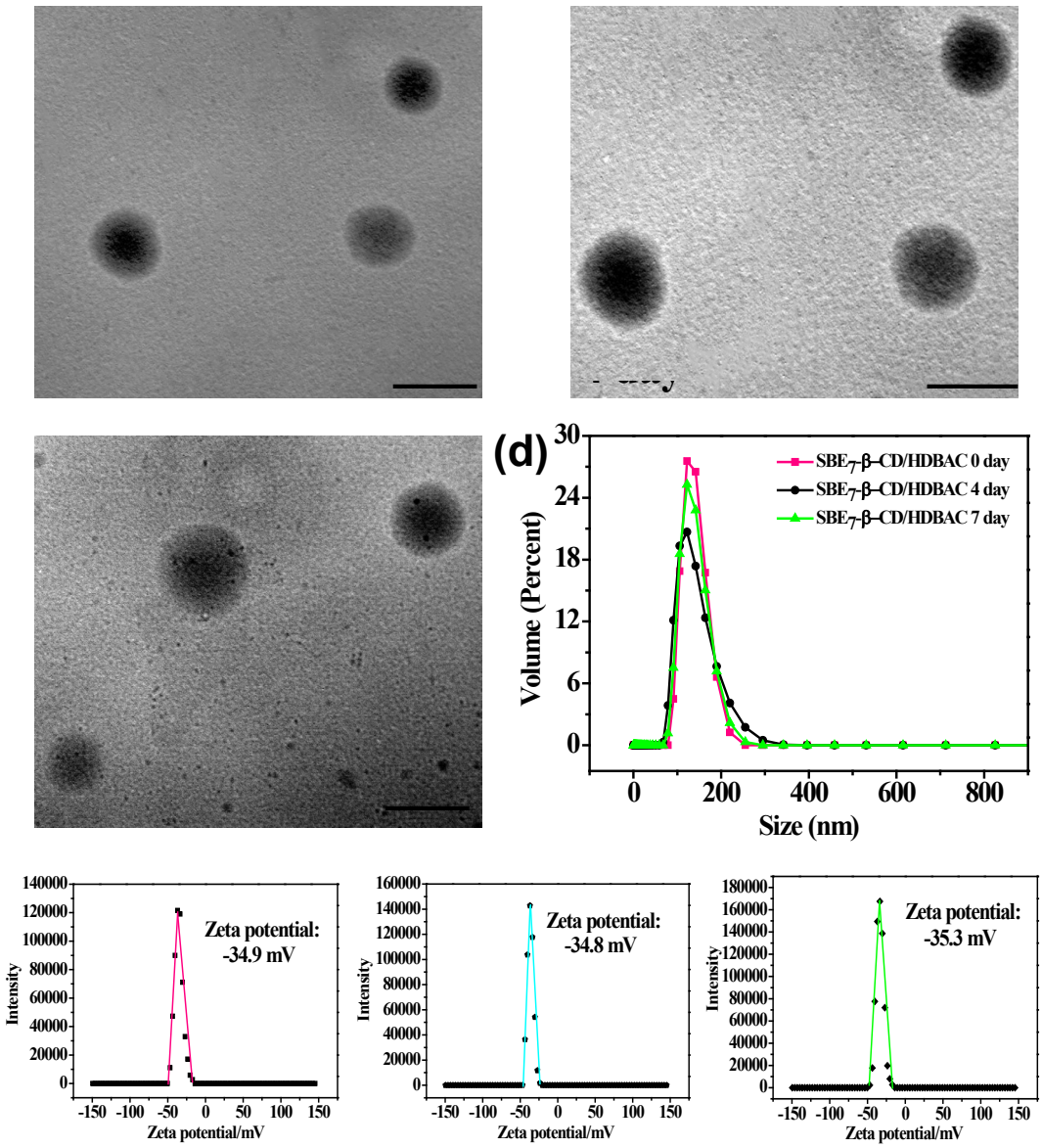

Figure S5. TEM images (a)(b)(c), DLS (d) and Zeta potential (e) of SBE_7-β-CD/HDBAC nanoparticles kept standing for 0, 4, and 7 days.

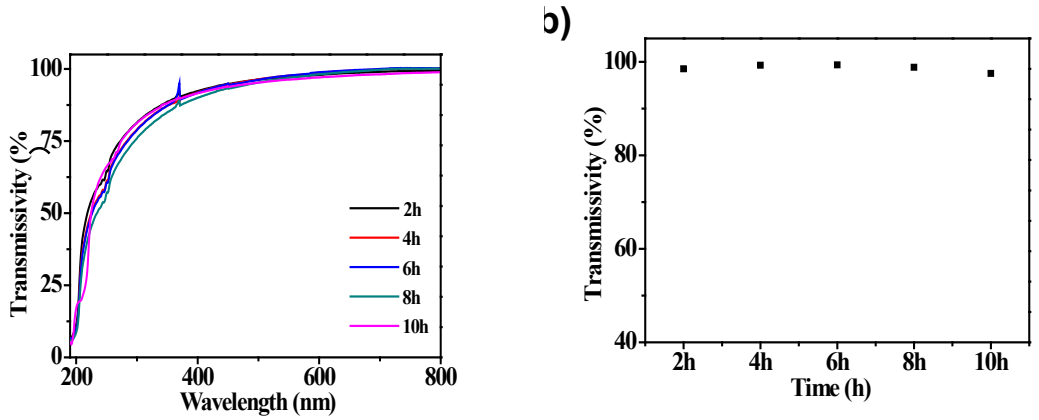

Figure S6. (a) The optical transmittance of SBE_7-β-CD/HDBAC nanoparticles measured at different time in aqueous solution at 25 °C. (b) The dependence of optical transmittance at 450 nm.

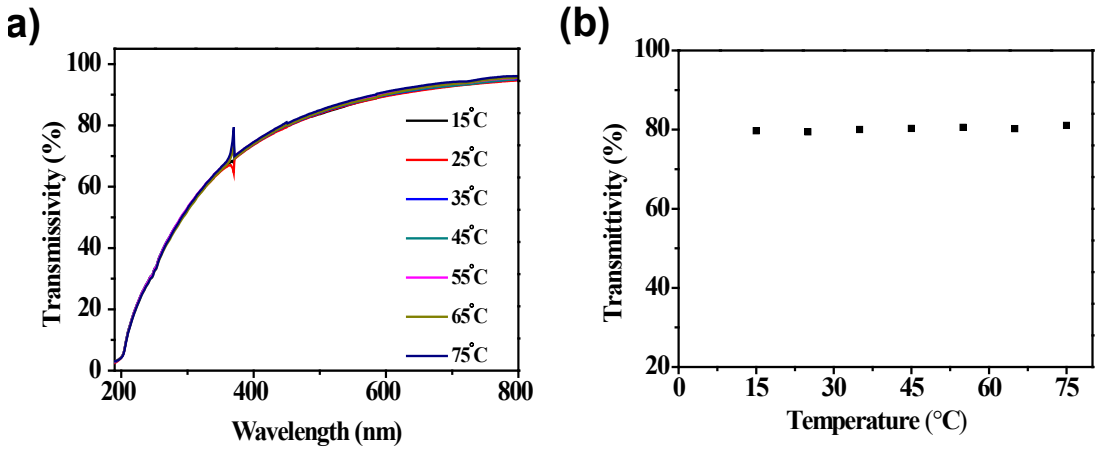

Figure S7. (a) The optical transmittance of SBE_7-β-CD/HDBAC nanoparticles measured by alternating temperature from 15 °C to 75°C. (b) The dependence of optical transmittance at 450 nm versus temperature.

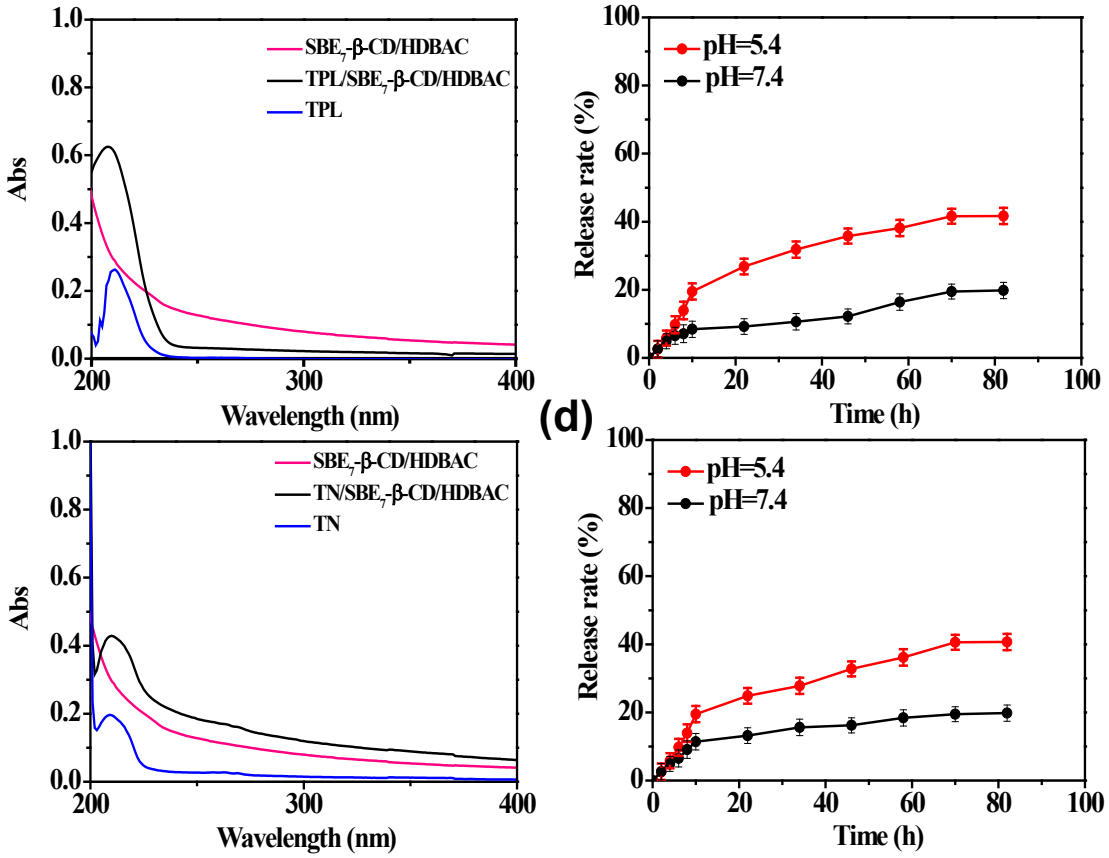

Figure S8. (a. c) UV-vis spectra of TPL/TN/SBE_7-β-CD/HDBAC, SBE_7-β-CD/HDBAC and free TPL/TN. (b. d) The release rate of TPL/TN/SBE_7-β-CD/HDBAC in phosphate buffer solution with pH = 5.4 and 7.4.

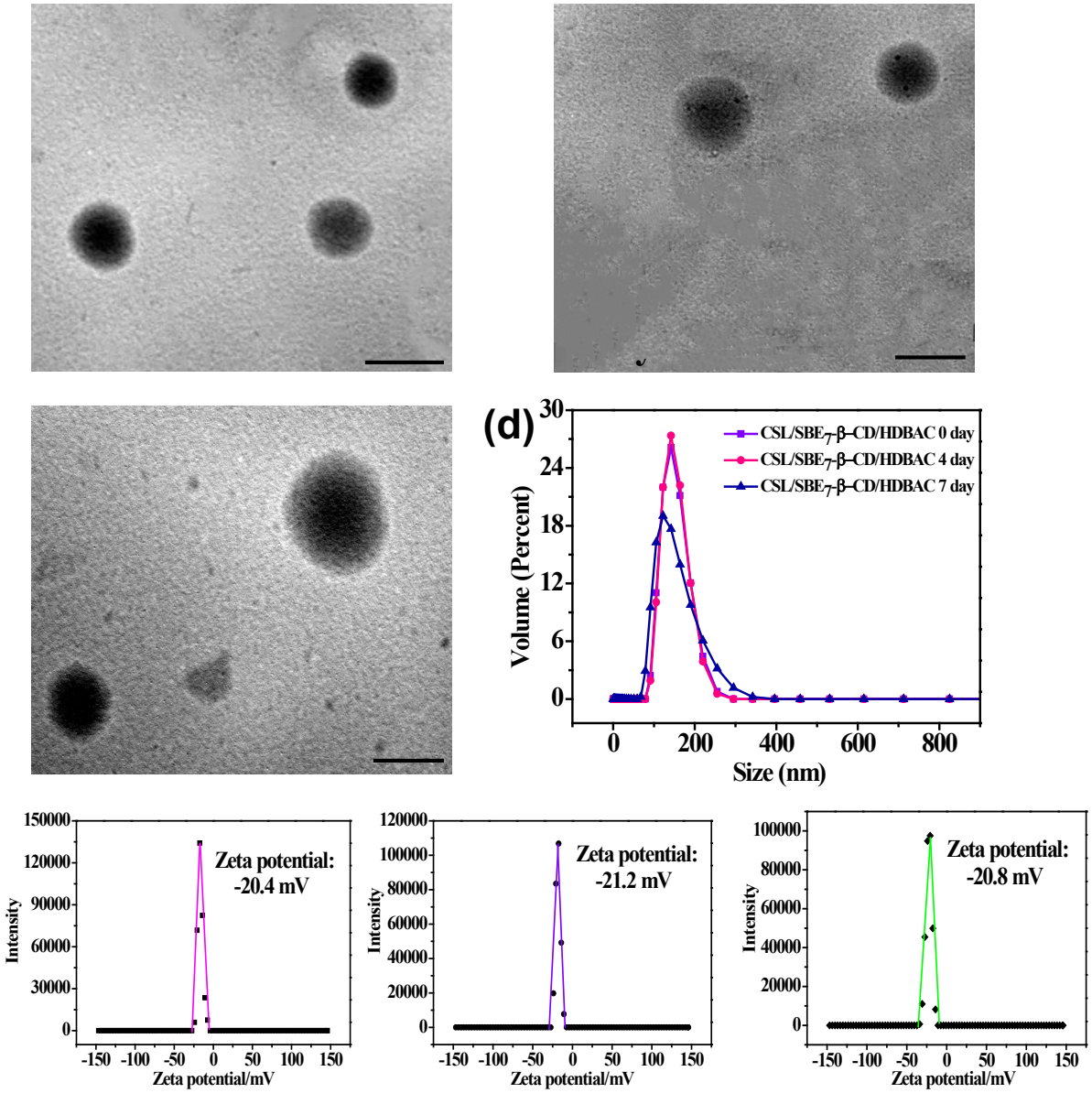

Figure S9. The TEM image (a)(b)(c), DLS (d) and Zeta potential (e) of CSL/SBE$_7$-β-CD/HDBAC nanoparticles kept standing for 0, 4, and 7 days.

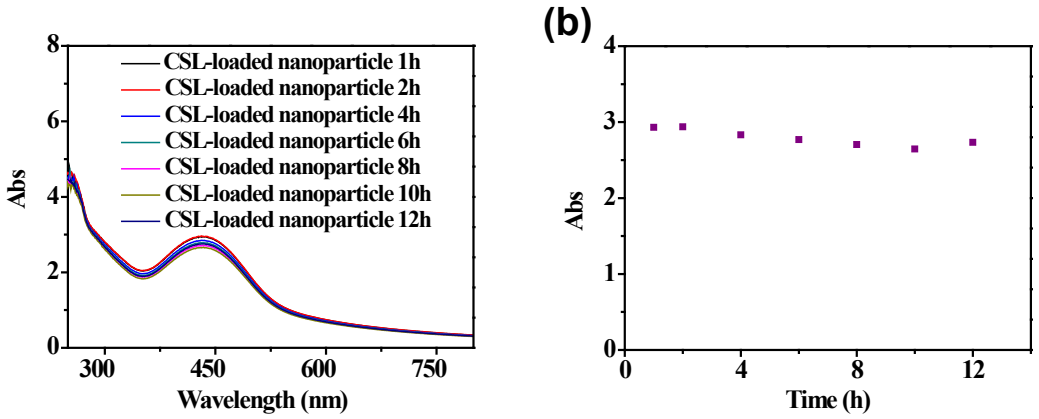

Figure S10. (a) UV-vis spectra of CSL/SBE_7-β-CD/HDBAC nanoparticles kept standing from 1 to 12 h. (b) The dependence of absorbance at 425 nm according to (a) versus time.

Table 1. The DLC%, EE% and release rate of a part of the drug delivery systems using CSL as a drug model.

Nanocarrier	Drug model	drug-loading content (DLC%)	encapsulation efficiency (EE%)	Release rate	Method	Reference
SBE7-β-CD/HDBAC NPs	CSL	26.90%	89.40%	86.90%	UV-Vis	This work
PLGA5k-TK-PEG2k-FA NPs	CSL	11.20%	56.00%%	62.30%	UV-Vis	33
CMSN-PEG NPs	CSL	21.00%	99.90%	16.50%	HPLC	34
PC-PL NPs	CSL	2.83%	94.83%	—	HPLC	37
PEHA-β-CD/SDBS NPs	CSL	20.60%	57.00%	80.50%	UV-Vis	20
HMSNs-CS NPs	CSL	24.30%	—	68.90%	UV-Vis	7
Lipo/Cs/FA NPs	CSL	28.50%	90.00%	29.80%	UV-Vis	36
(SBE)7m-β-CD ⊃ PS NPs	CSL	28.78%	73.15%	76.00%	UV-Vis	35