Supporting information of

A tumor extracellular pH-sensitive PD-L1 binding peptide nanoparticle for chemo-immunotherapy of cancer

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Characterization

CDM-SA and DCS were dissolved in $CDCl_3$ and DMSO-*d6*, respectively, and then both were detected using proton nuclear magnetic resonance (^1H NMR) on a Bruker Avance II NMR spectrometer at 400 MHz. The mass spectrum of CDM-SA was also analyzed by LCMS-IT-TOF (Shimadzu, Japan). The size, distribution (PDI) and Zeta potential of DCS NPs were investigated using dynamic light scattering (DLS) at different pH buffer conditions (Malvern Zetasizer Nano ZS, UK). The morphology of DCS in different pH buffers was observed by Transmission electron microscopy (TEM) after staining with phosphotungstic acid for 5 min (Tecnai G2 F20 S-TWIN, FEI, USA). The critical micelle concentration (CMC) of DCS nanoparticles was determined by pyrene fluorescence probe method, and fluorescence spectra were obtained on a spectrophotometer (F-7000, Hitachi, Japan). The pH responsiveness of the DCS was evaluated by titrating the DCS with 0.01 M HCl solution and checking the pH value with a pH meter (SevenMulti, Mettler Toledo, Switzerland).

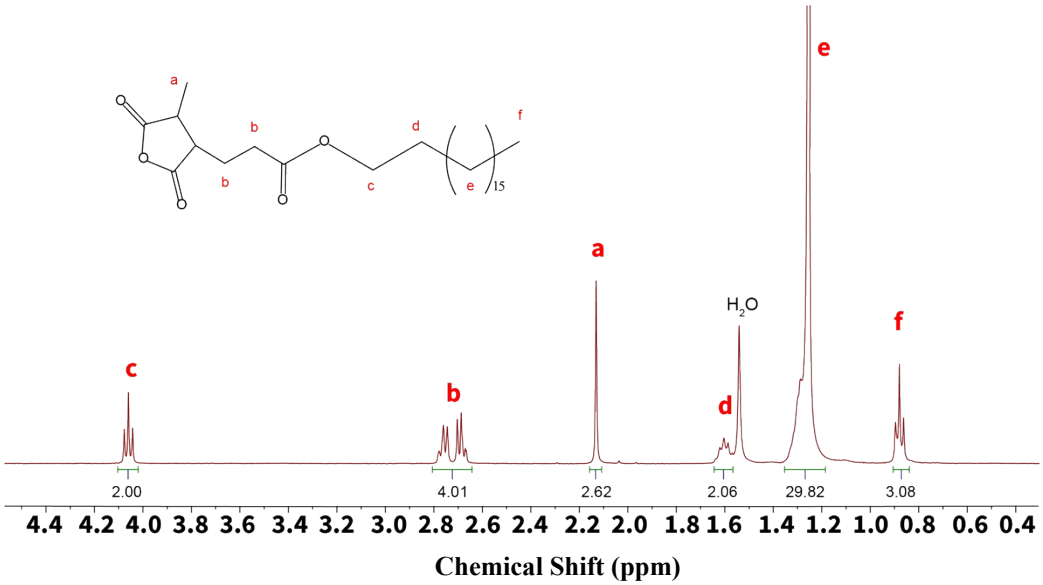

Figure S1. ^1H NMR spectrum of CDM-SA in $CDCl_3$.

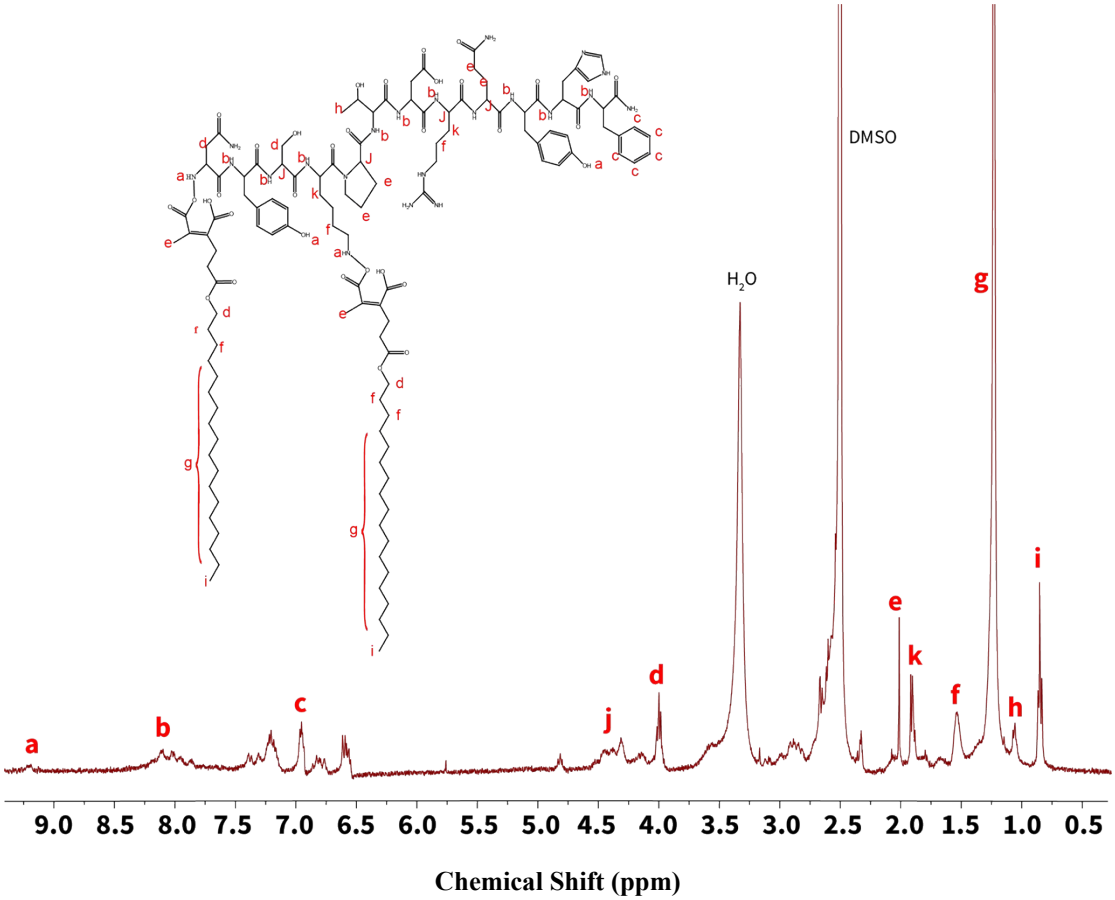

Figure S2. ^{1}H NMR spectrum of DCS in DMSO-d_6.

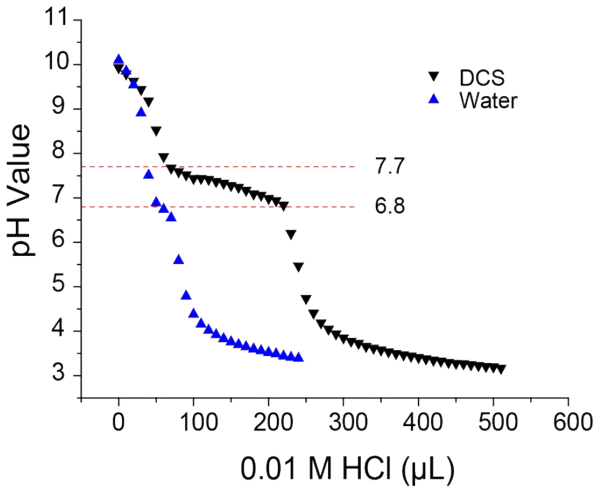

Figure S3. Acid-base titration results of DCS.

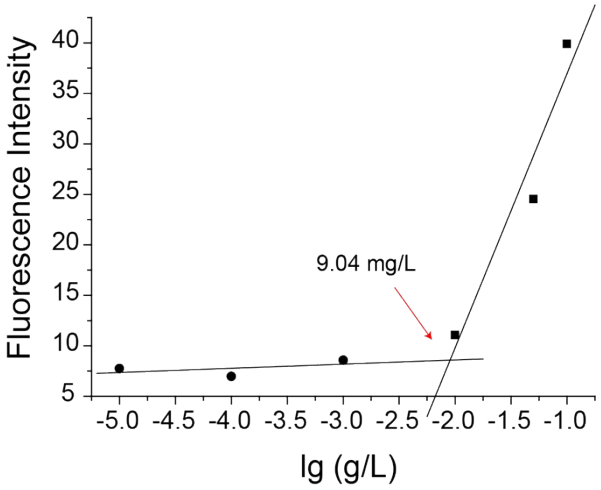

Figure S4. Critical aggregation concentration of DCS.

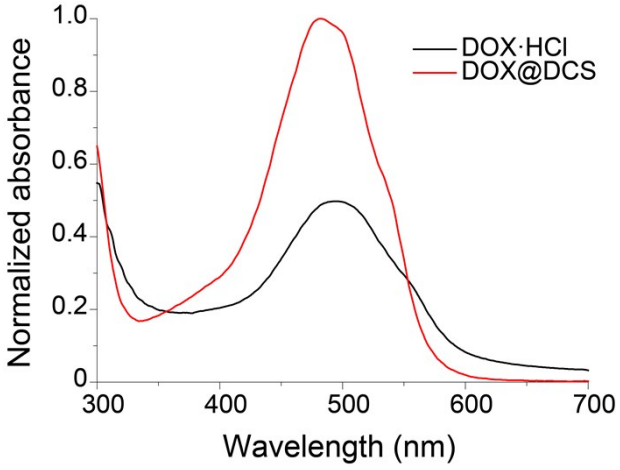

Figure S5. UV-vis spectra of DOX·HCl and DOX@DCS.

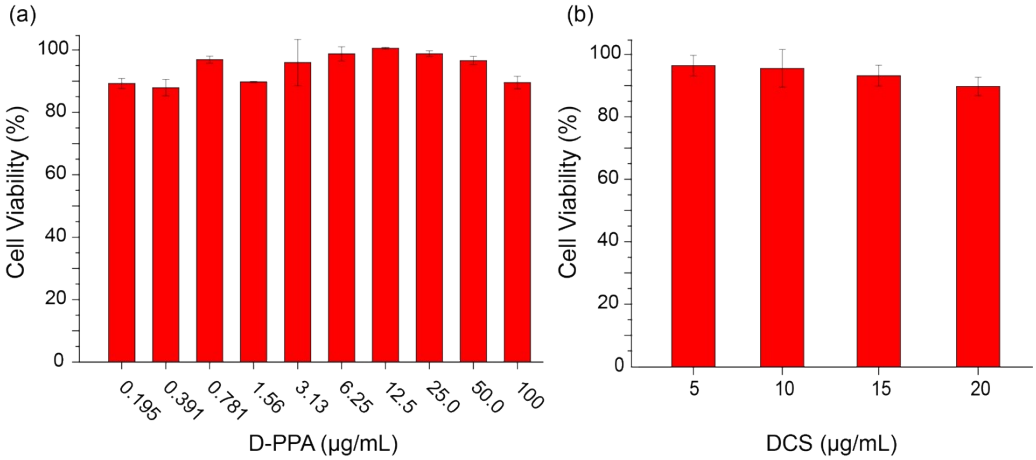

Figure S6. Cytotoxicity of L929 cells after co-incubation with D-PPA (a) and DCS (b) for 48 h.

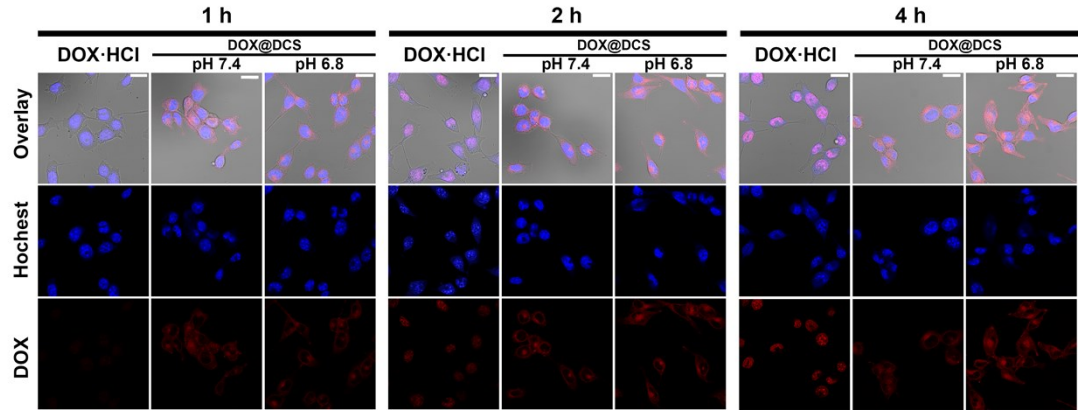

Figure S7. CLSM images of 4T1 cells treated with DOX·HCl and DOX@DCS; scale bars represent 20 μm.

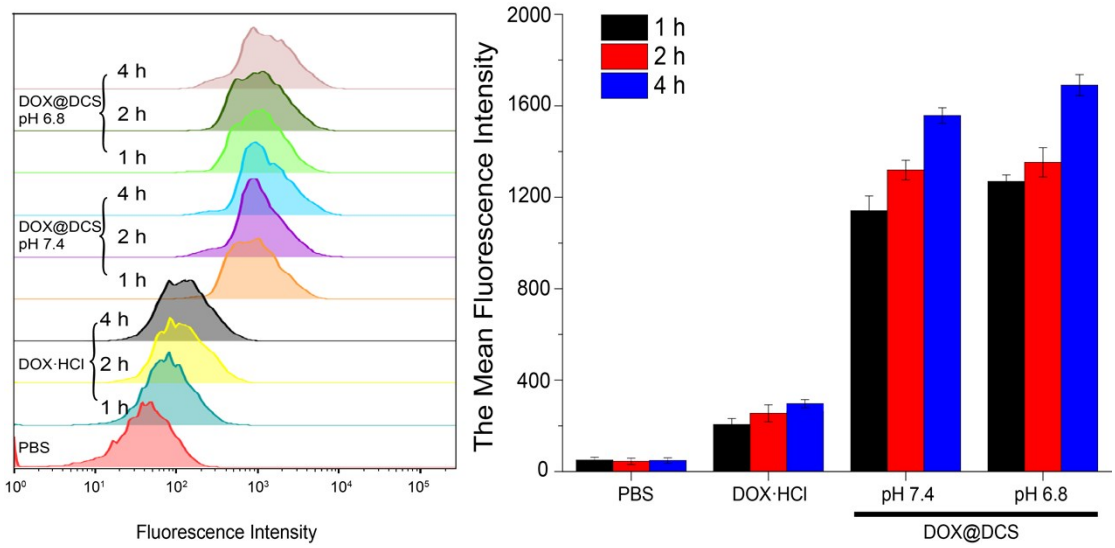

Figure S8. Cellular uptake of DOX by 4T1 cells determined by flow cytometry.

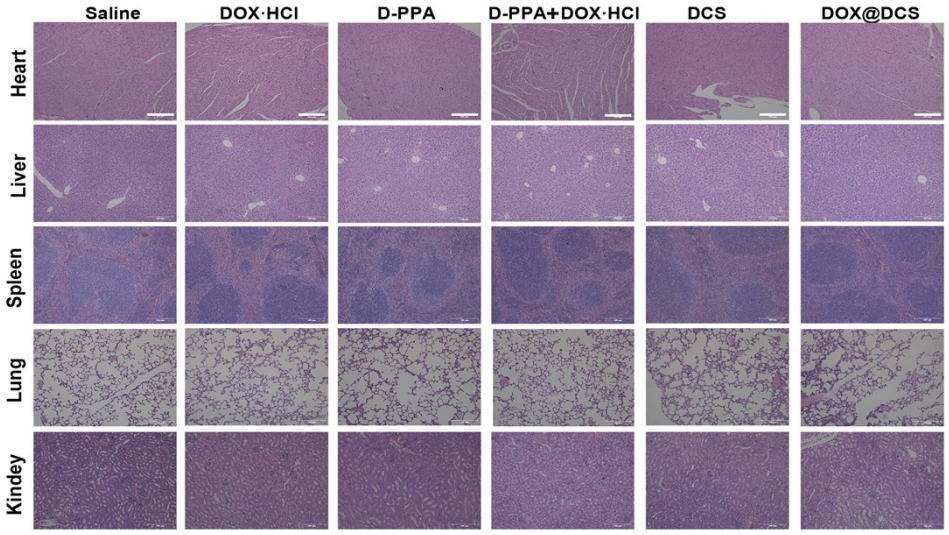

Figure S9. H&E staining images of major organs from tumor-bearing mice at day 8; scale bar

represents 200 μm.