Supporting information

Photoresponsive micelle-incorporated doxorubicin for chemo-photodynamic therapy to achieve synergistic antitumor effects

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Supporting figures

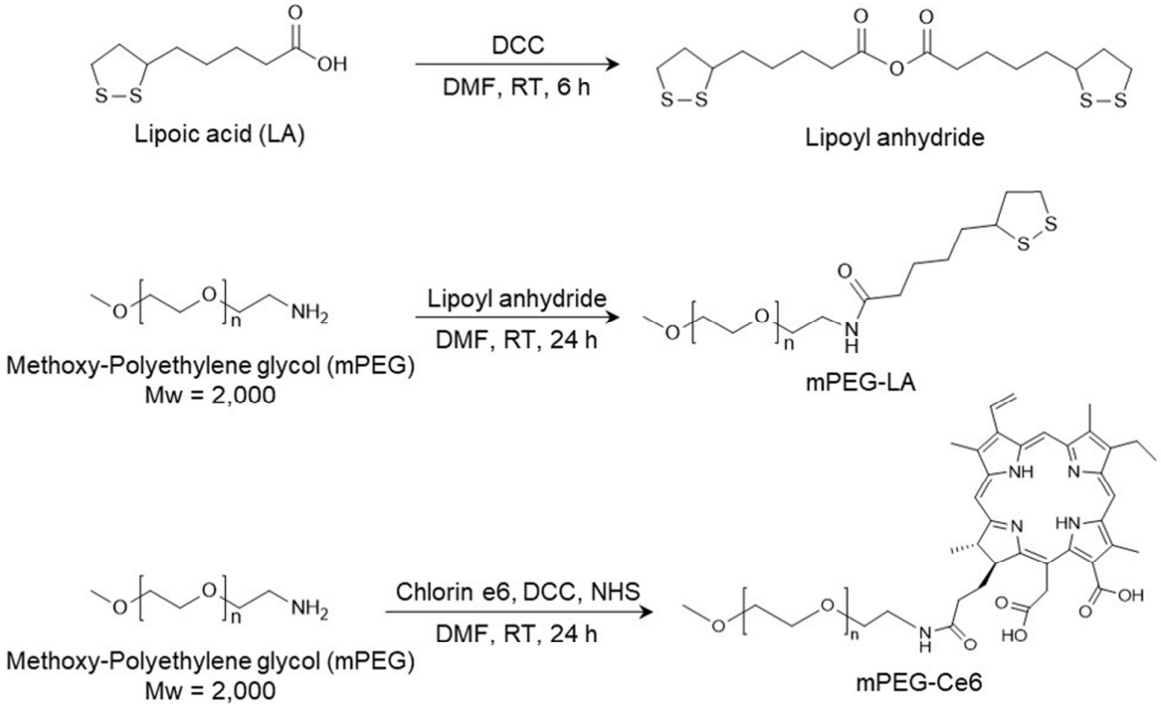

Figure S1. Synthesis method of mPEG-LA and mPEG-Ce6. DCC, Dicyclohexylcarbodiimide; DMF, N,N-Dimethyl formamide; NHS, N-hydroxysuccinimide; RT, Room temperature.

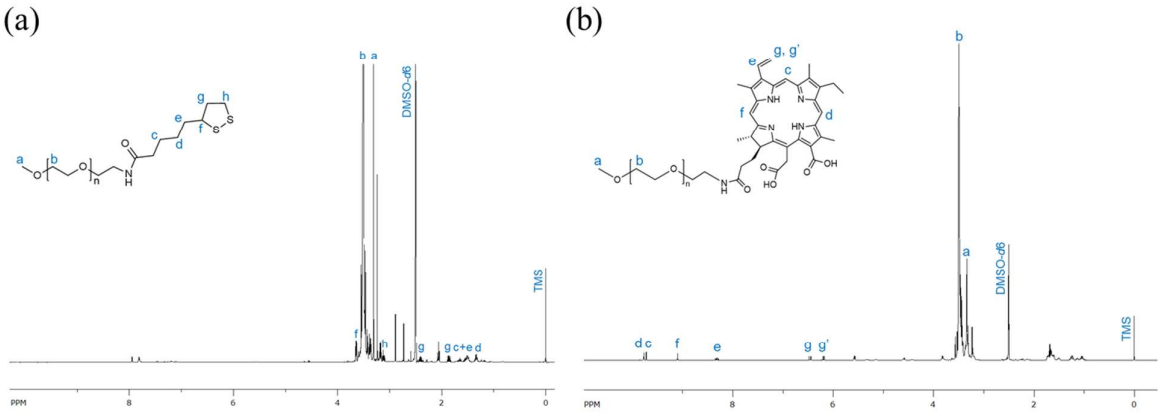

Figure S2. ^{1}H-NMR analysis of (a) mPEG-LA and (b) mPEG-Ce6.

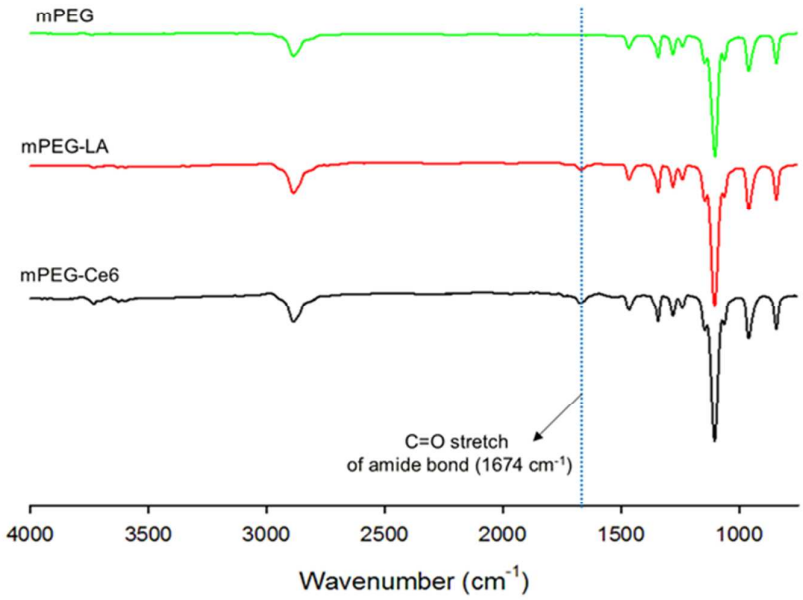

Figure S3. FT-IR spectra of mPEG, mPEG-LA and mPEG-Ce6. The blue lane indicates C=O stretch of amide bond at 1674 cm^{-1}.

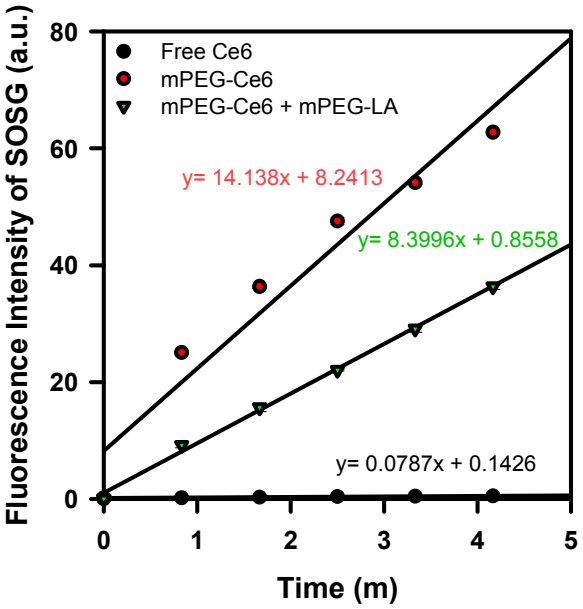

Figure S4. Comparison of the slope of singlet oxygen generation efficacy between mPEG-Ce6 and mixture of mPEG-Ce6 and mPEG-LA.

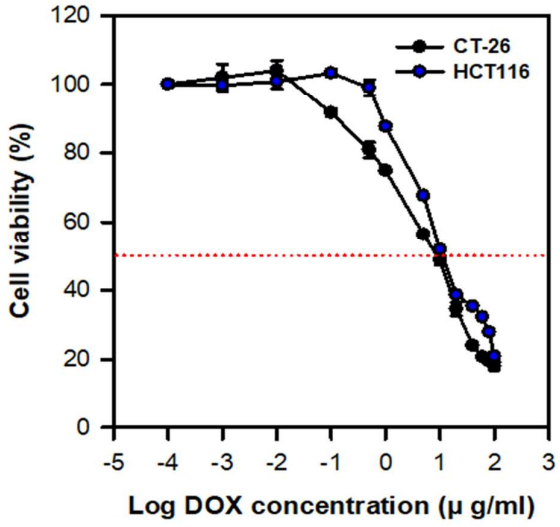

Figure S5. IC_{50} of Doxorubincin against CT-26 and HCT-116 cells for 48 h.

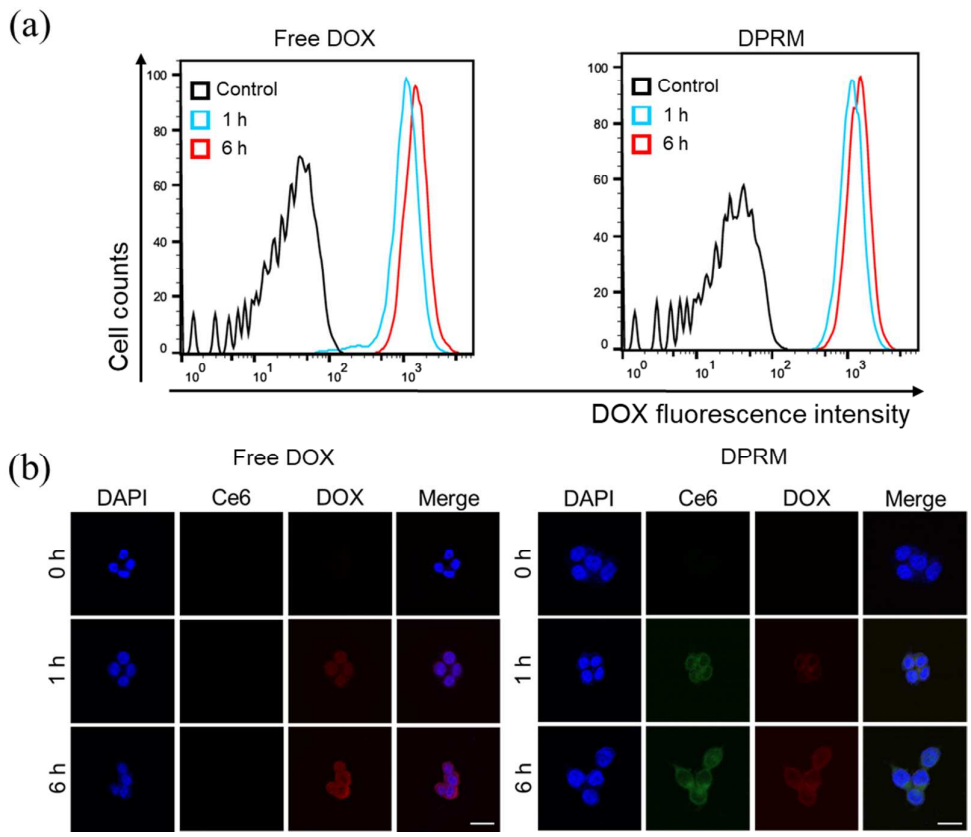

Figure S6. *In vitro* cellular uptake efficacy in HCT-116 cells. (a) Flow cytometry analysis after incubation with free DOX (left) and DPRMs (right) for 1 h or 6 h (Dose of DOX, Dose of Ce6). (b) Confocal laser scanning microscopy images after free DOX (left) and DPRMs (right) incubation for 1 h or 6 h. For each panel, images show DOX fluorescence (red), Ce6 fluorescence (green) in cells, cell nuclei are stained by DAPI (blue), and overlays of three images. The scale bar is 20 μm.

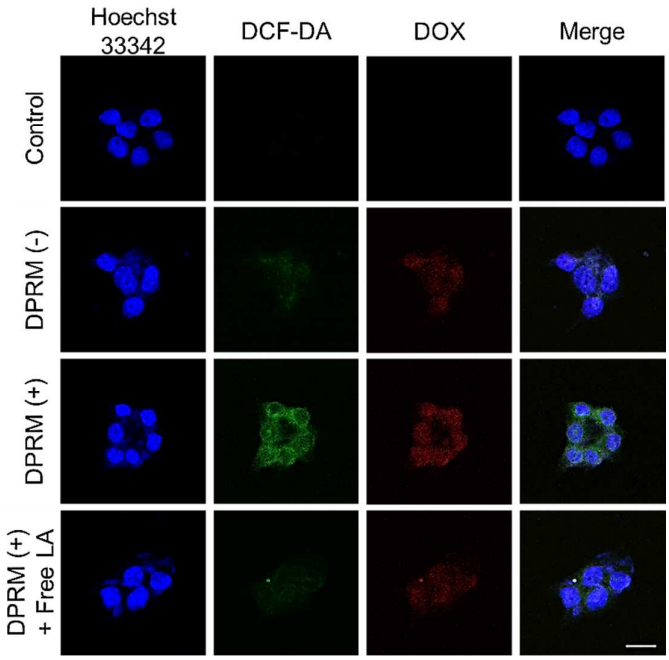

Figure S7. *In vitro* reactive oxygen species (ROS) generation efficacy and DOX release behavior of DPRMs in HCT-116 cells using DCF-DA staining. Confocal laser scanning microscopy images after 4 h incubation of DPRMs (1 μg/mL DOX, 1.5 μg/mL Ce6) with or without laser irradiation of 0.2 J/cm^2. The irradiation power of the 671 nm light was 20 mW/cm^2. The scale bar is 20 μm. Concentration of free lipoic acid was 5×10^{-3} M in medium.

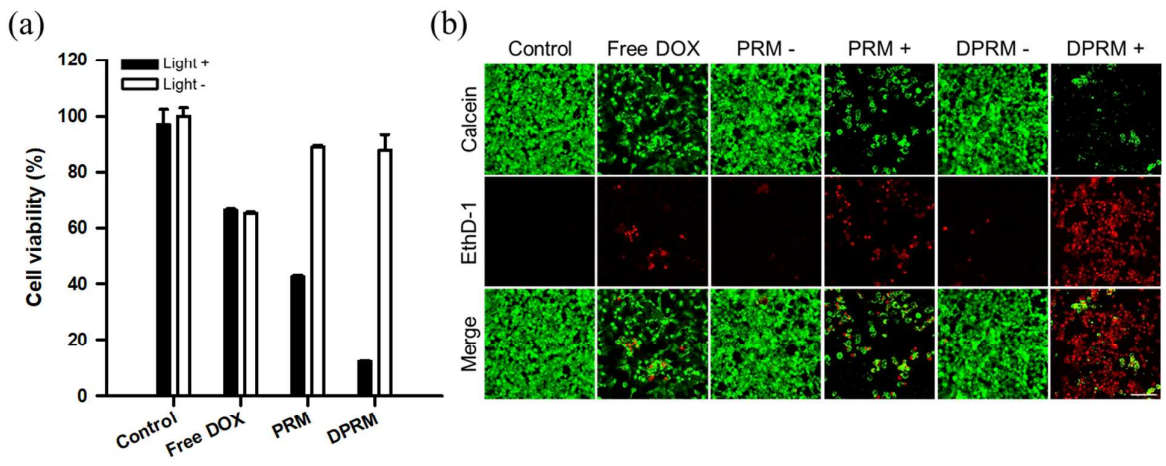

Figure S8. *In vitro* cytotoxicity assay of HCT-116 cells. (a) MTT assay after treatment free DOX, PRMs and DPRMs (5 μg/mL DOX, 7.5 μg/mL Ce6) in the absence and presence of laser irradiation of 0.6 J/cm^2 (6.0 mW/cm^2, 100 sec). Data are expressed as mean ± standard deviation (SD) (n = 3). (b) Live & Dead assay after treatment free DOX, PRMs and DPRMs (5 μg/mL DOX, 7.5 μg/mL Ce6) in the absence and presence of laser irradiation of 0.6 J/cm^2. In each panel, the green and red fluorescence indicate live and dead cells, respectively. The scale bar is 100 μm.