Supporting Information

Fucoidan-Coated Coral-Like Pt Nanoparticles for Computed Tomography-Guided Highly Enhanced Synergistic Anticancer Effect Against Drug-Resistant Breast Cancer Cells

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Supporting data.

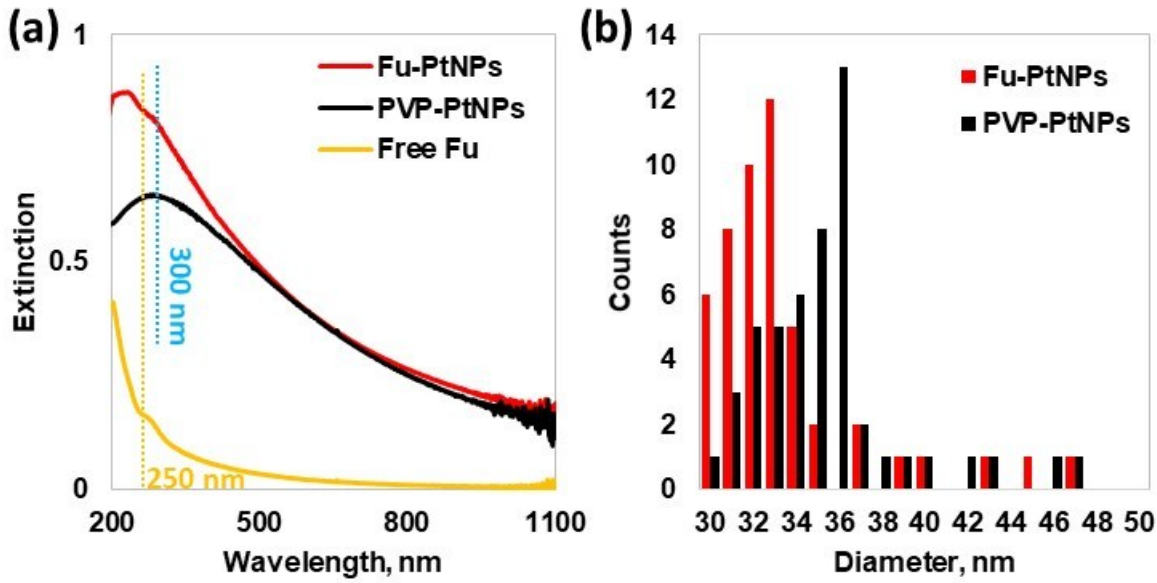

Figure S1. UV-Vis-NIR spectra of pristine Fu, Fu-PtNPs, and PVP-PtNPs. Existence of Fu was verified by 250 nm inflection point, and Pt composition was observed by UV LSPR peak of Pt around 300 nm wavelength. (b) Histogram of size distribution calculated from TEM images in Figure 1. Total count# for Fu-PtNPs and PVP-PtNPs were 50.

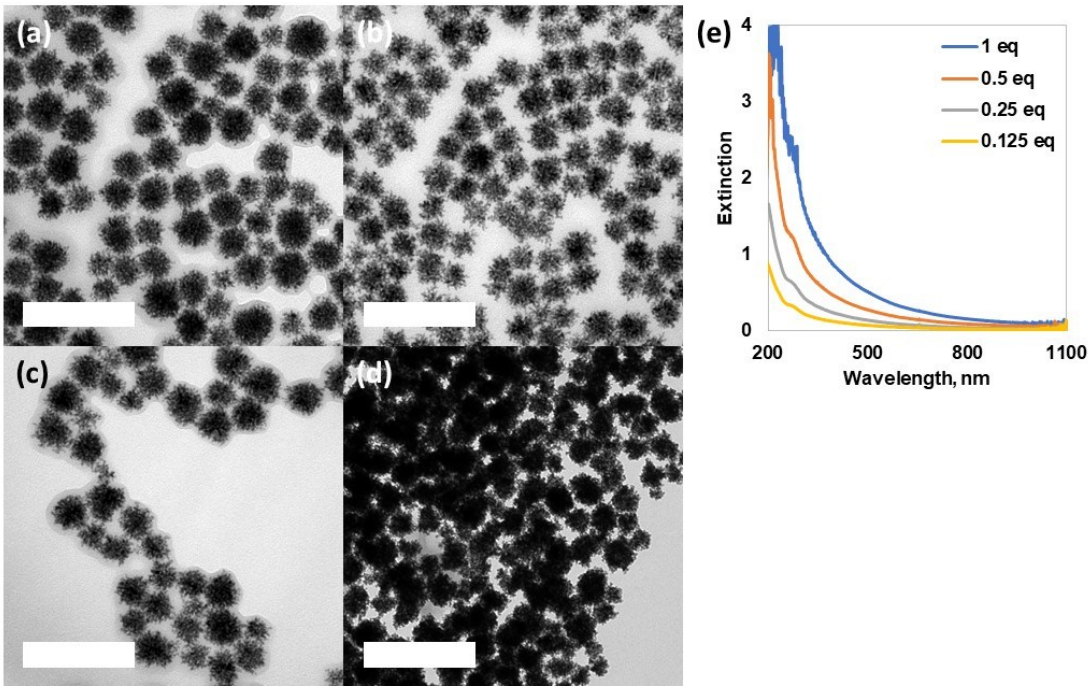

Figure S2. Characterization of synthesized Fu-PtNPs against the concentration of fucoidan. (a-d) TEM images exhibited the similar size distribution with coral-like morphology. (e) UV-Vis spectra without normalization after the purification and re-dispersion in the same volume of DI water suggested that yield of Fu-PtNPs was determined by fucoidan concentration during the reaction. The scale bar is 100 nm.

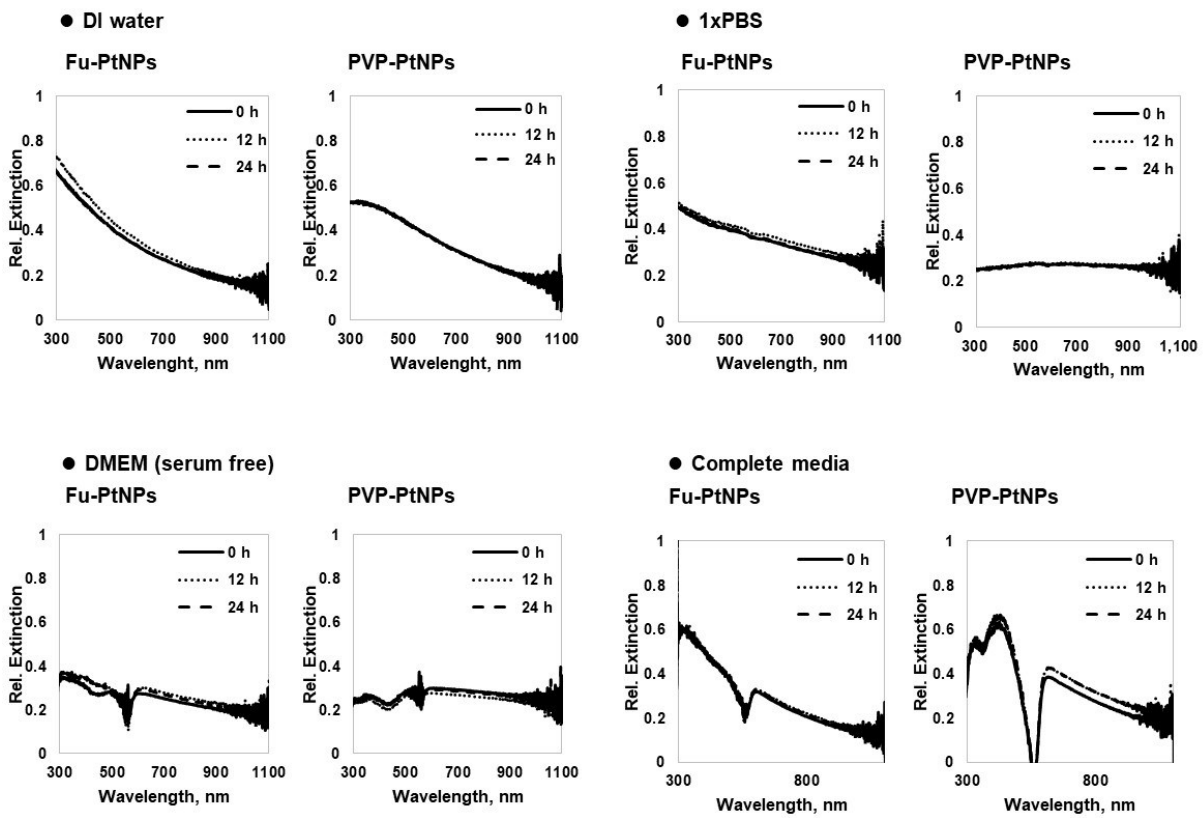

Figure S3. Colloidal stability of Fu-PtNPs and PVP-PtNPs were measured against DI water, 1x PBS, serum free DMEM and complete cell culture media up to 24 h of incubation at room temperature. All tested nanoparticles exhibited sufficient colloidal stability against all tested conditions.

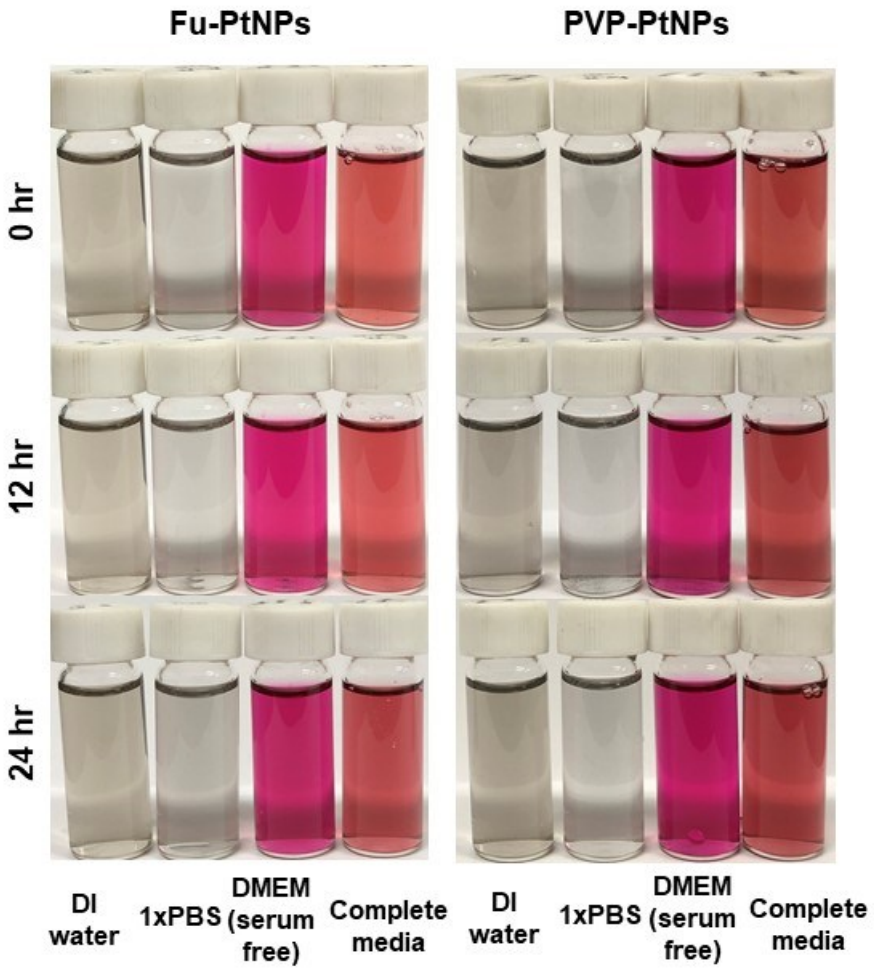

Figure S4. Digital photograph image of colloidal stability test.

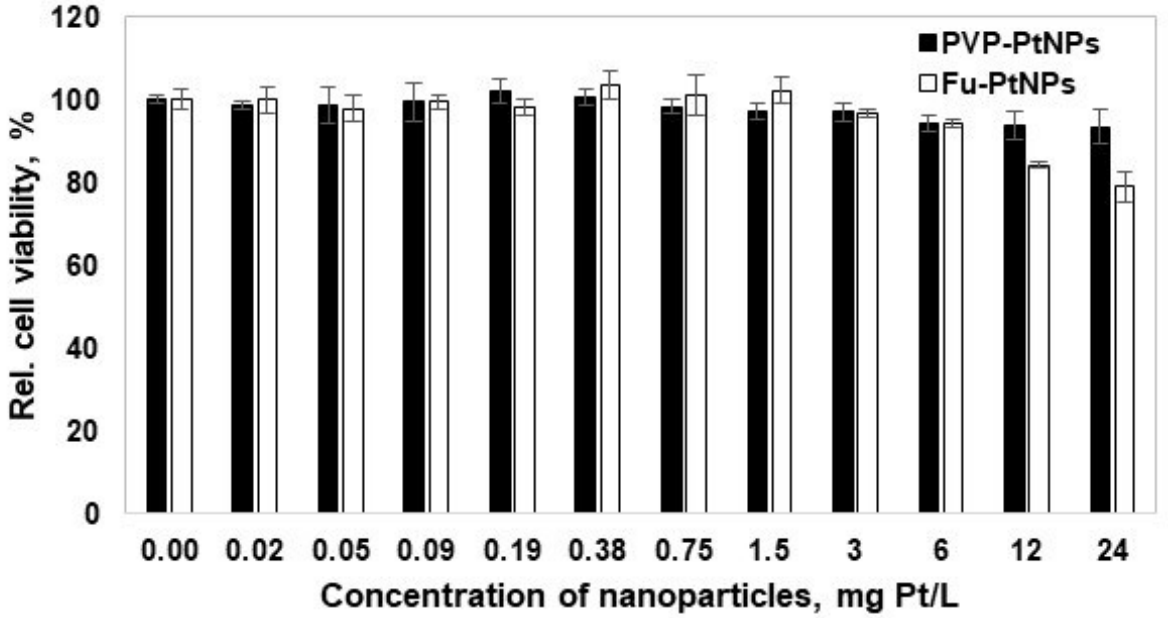

Figure S5. Relative cell viability against PVP-PtNPs and Fu-PtNPs treatment. Both particles have no significant toxicity difference was observed from MCF-10A.

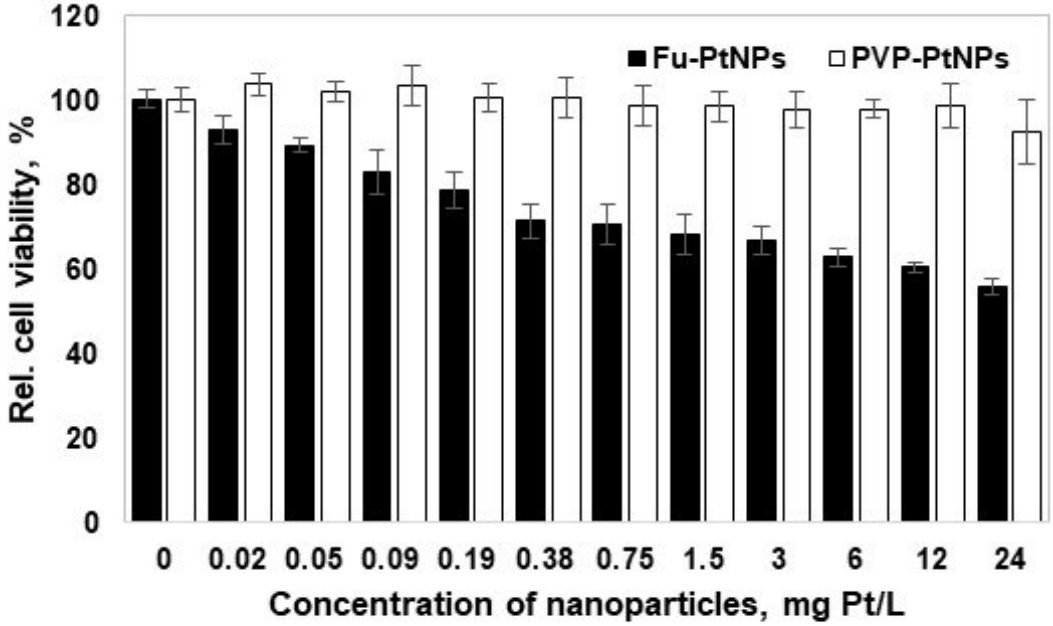

Figure S6. Relative cell viability against PVP-PtNPs and Fu-PtNPs treatment. Both particles have no significant toxicity difference was observed from MCF-7/ADR with serum.

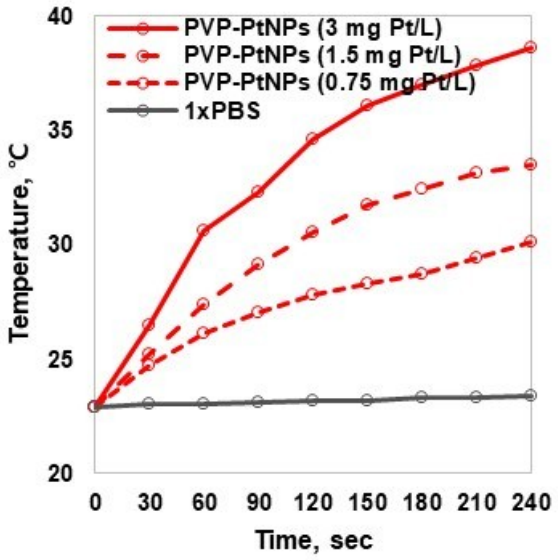

Figure S7. Temperature elevation by photothermal conversion effect of PVP-PtNPs under the irradiation of 808 nm laser (4 W cm^{-2}).

	Fu-PtNPs	Dox-Fu-PtNPs
Hydrodynamic diameter (nm)	210.5±4.2	177.0±7.3
Zeta potential (mV)	-31.3±0.5	-27.8±1.3

Figure S8. Hydrodynamic diameter and zeta potential measurement of Fu-PtNPs and Dox-Fu-PtNPs.

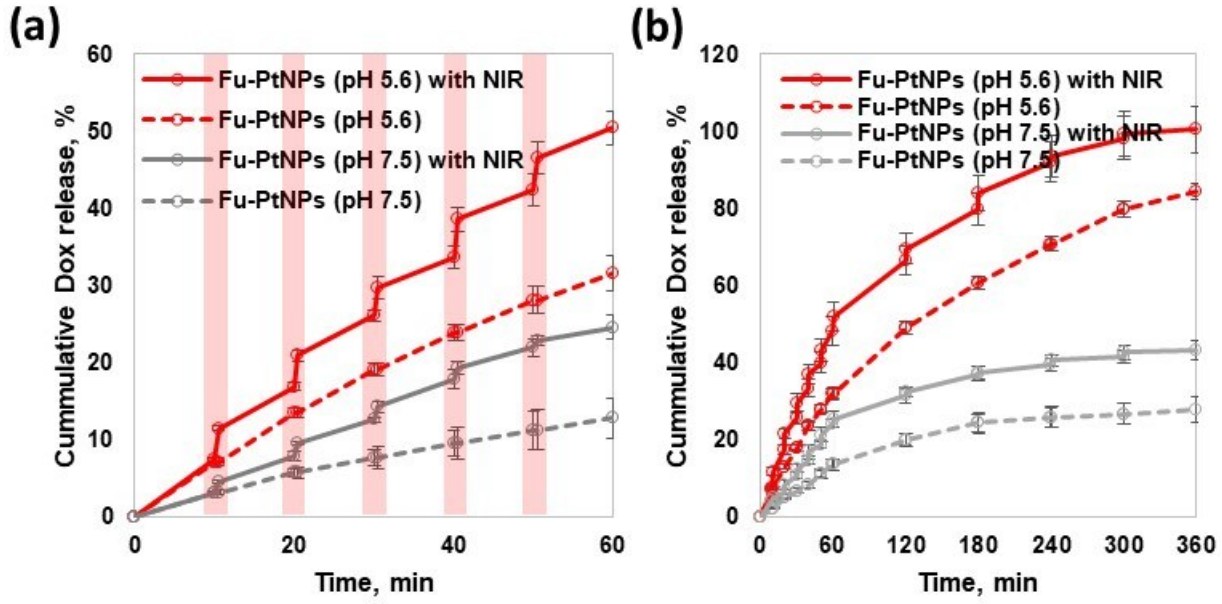

Figure S9. Dox releasing against the existence of photothermal conversion mediated local temperature elevation effect by the irradiation of 808 nm laser (4 W cm^{-2}) for (a) short-term and (b) long-term observation. Red rectangular regions imply the 30 sec of laser irradiation.

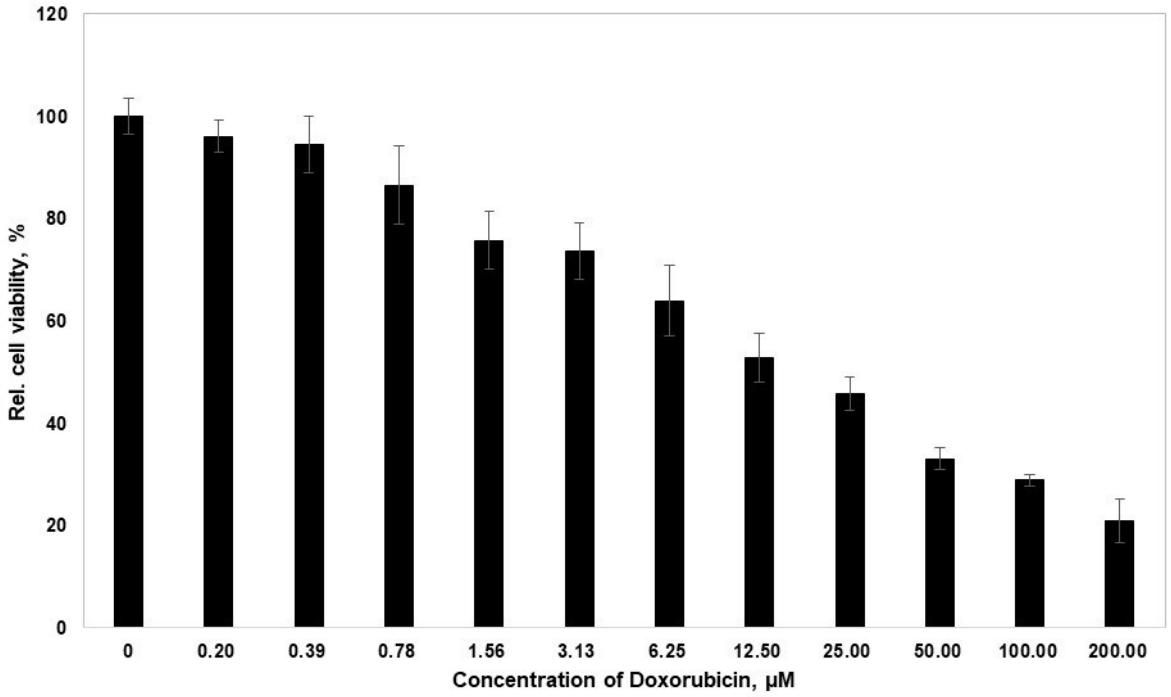

Figure S10. Relative cell viability against free Dox treatment. Dose-dependent chemotherapeutic cytotoxicity was clearly observed from MCF-7 ADR.

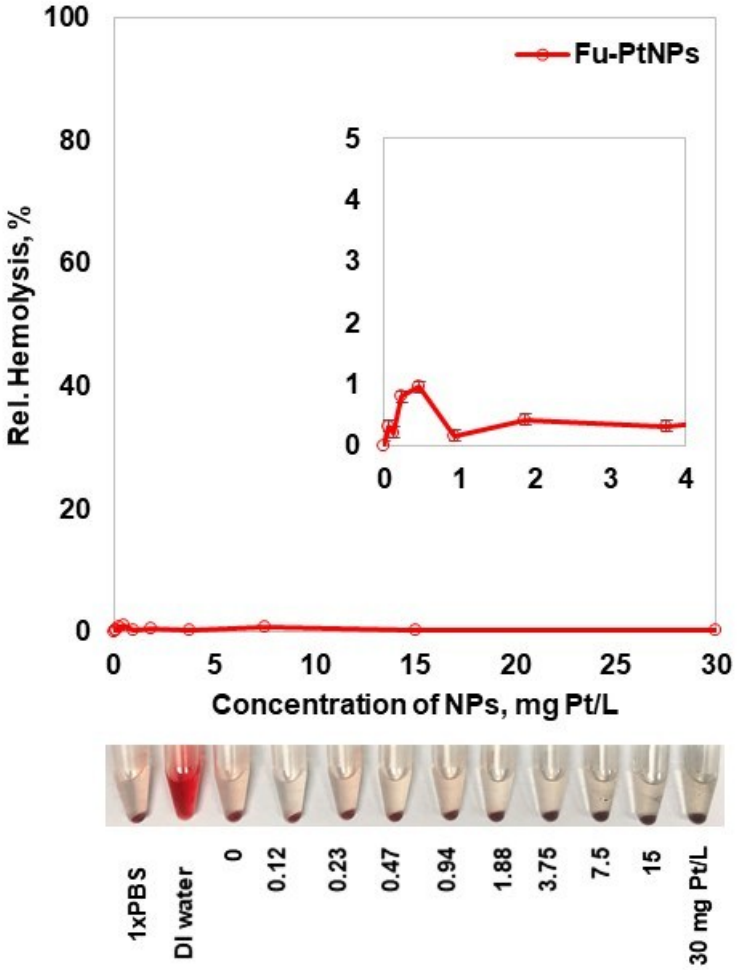

Figure S11. Hemolysis test of Fu-PtNPs against BALB/c mice red blood cells. Inset implied magnified plot of relative hemolysis data. Digital photograph image supported the hemoglobin release by hemolysis. 1x PBS and DI water were used for negative and positive control, respectively.

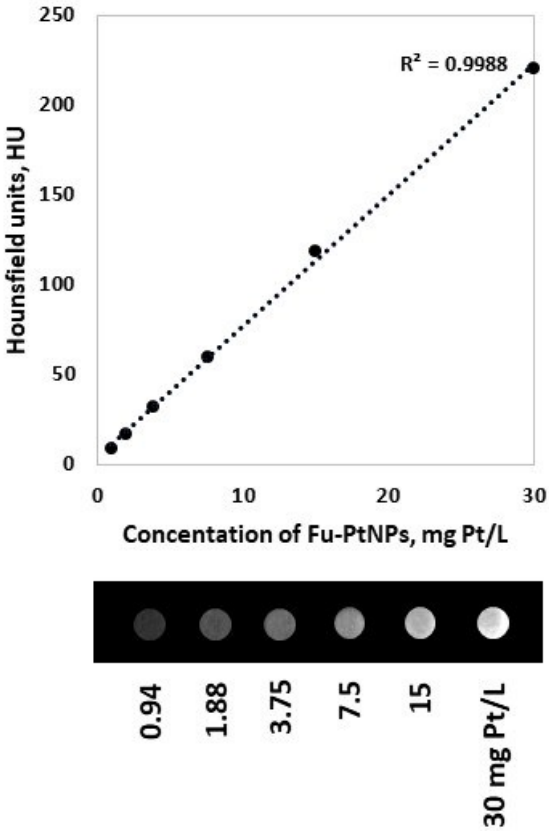

Figure S12. Hounsfield units plot of various concentrations of Fu-PtNPs in test tube.

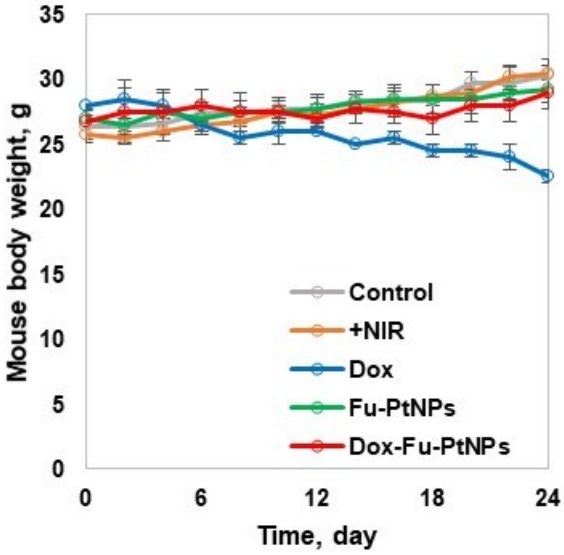

Figure S13. Body weight change with time for treatment groups. Only Dox group exhibited weight decrease tendency during 24 days of observation.

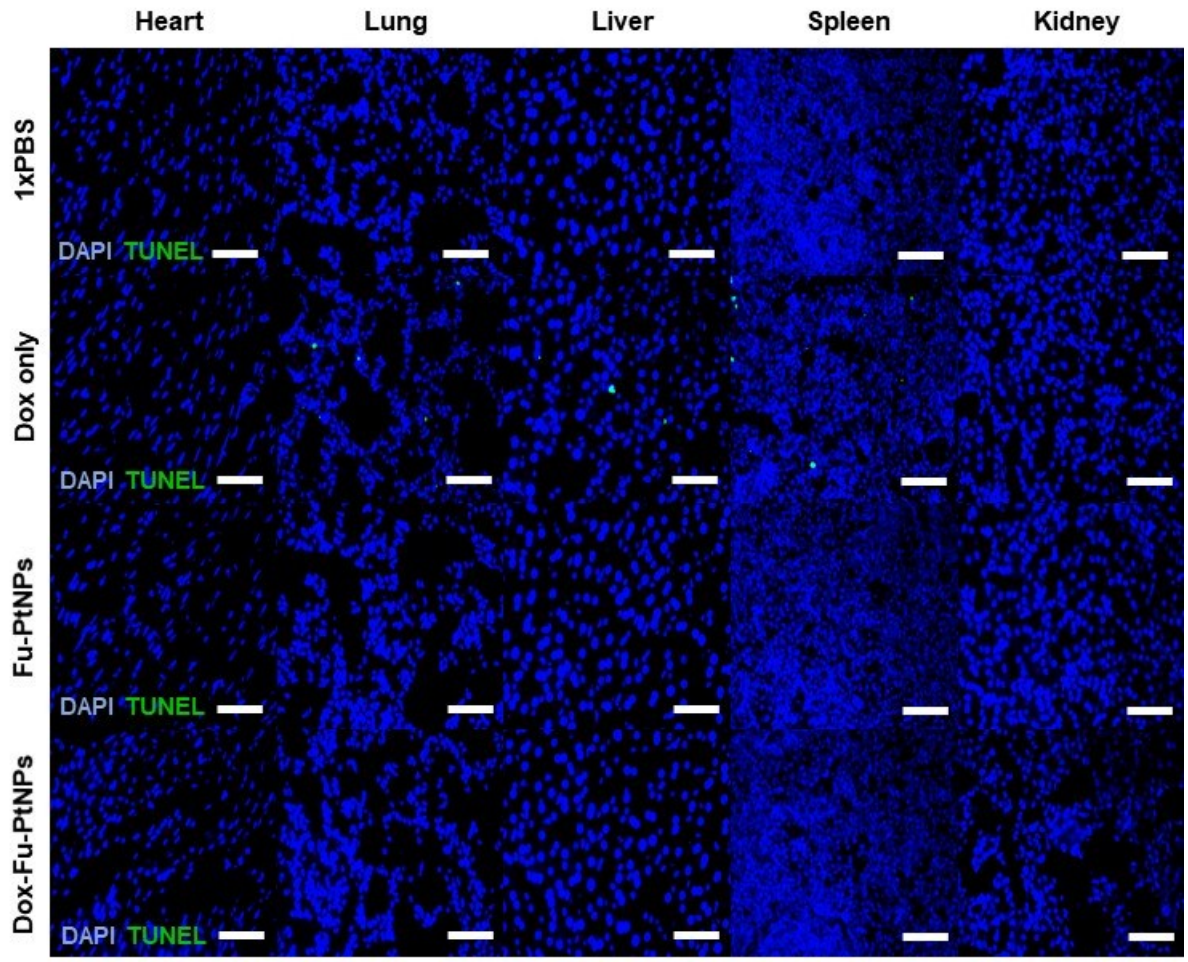

Figure S14. TUNEL assay for major organs. The scale bar is 50 μm.

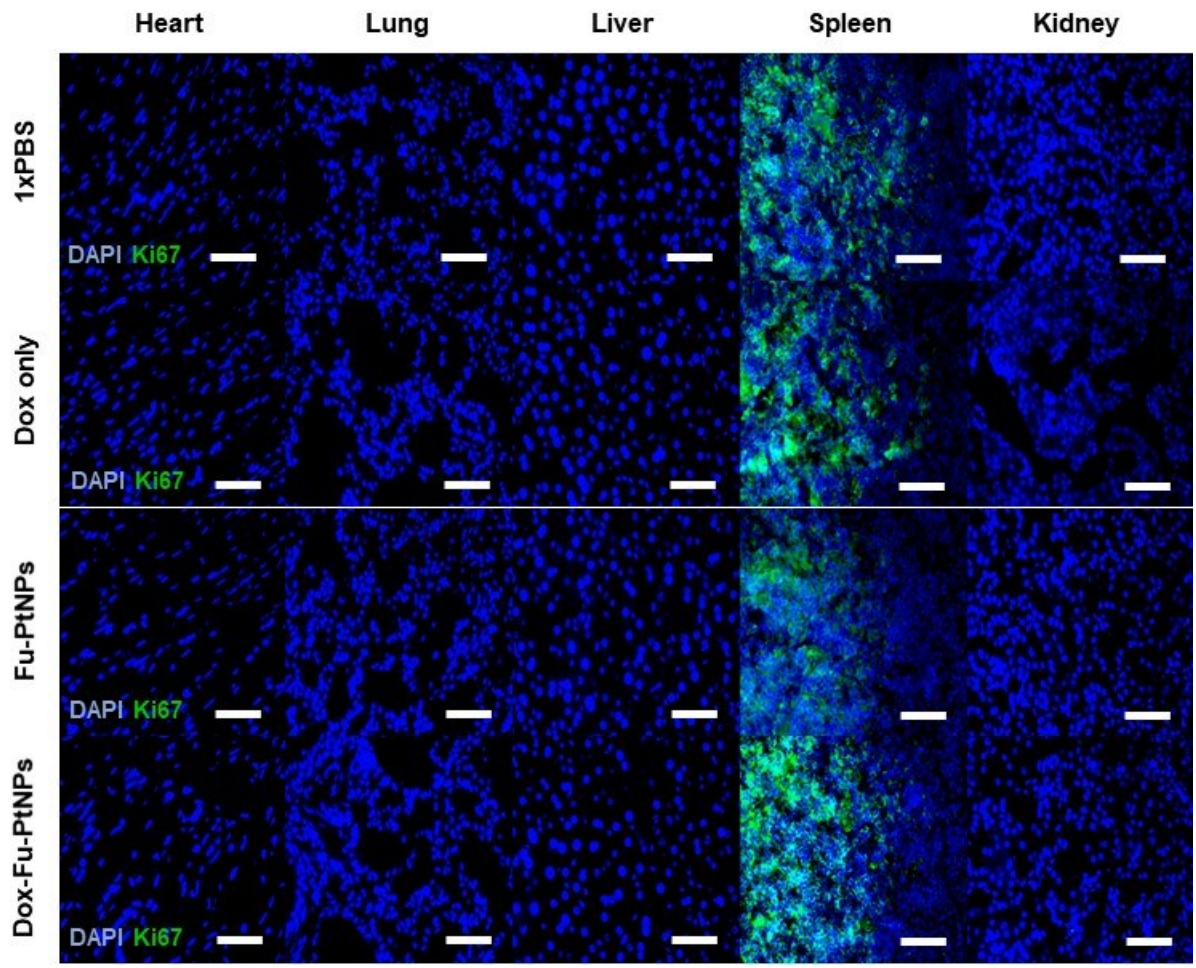

Figure S15. Ki-67 IHC assay for major organs. The scale bar is 50 μm.

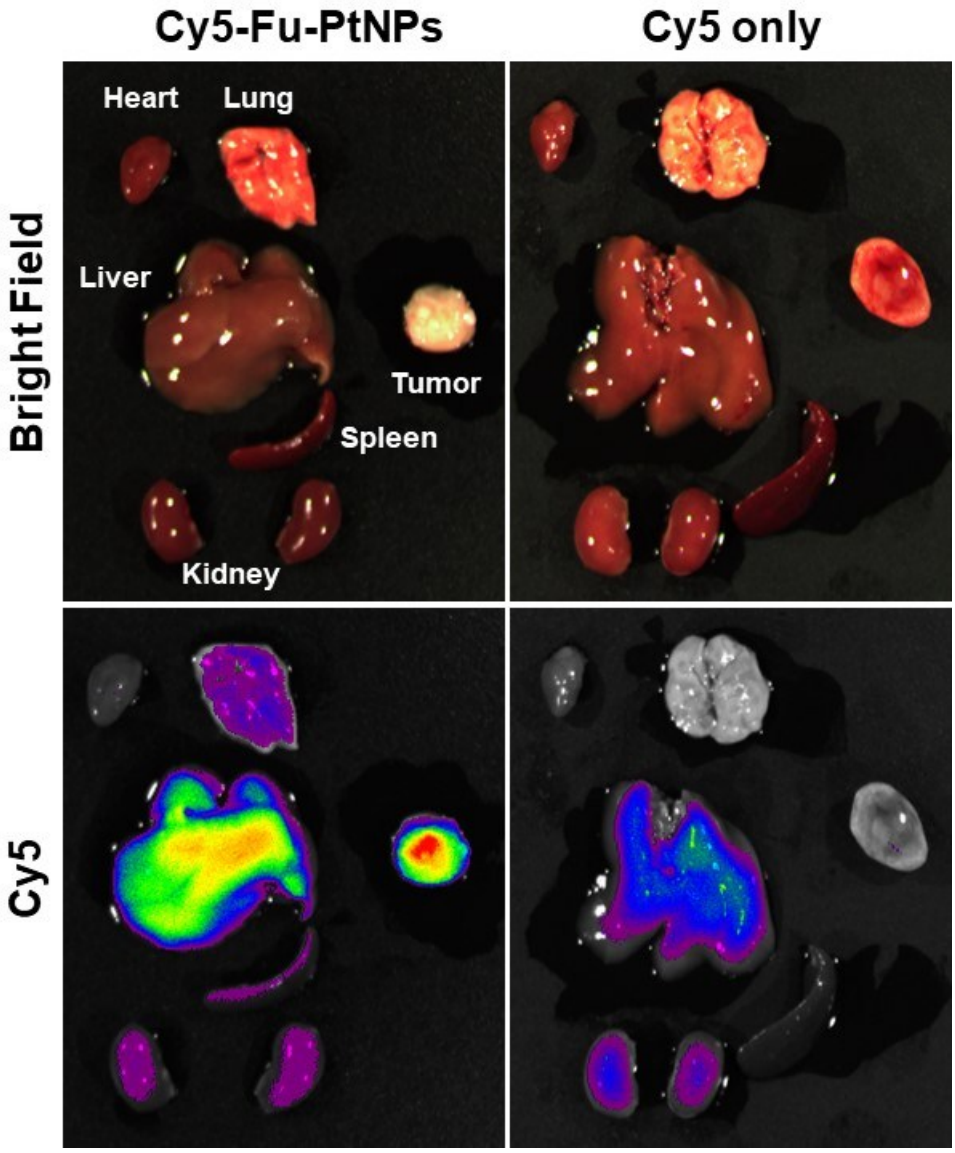

Figure S16. *Ex vivo* fluorescence images of Cy5-Fu-PtNPs (experimental; left) and Cy5 only (control; right) IV injected mouse after extraction at 24 h.

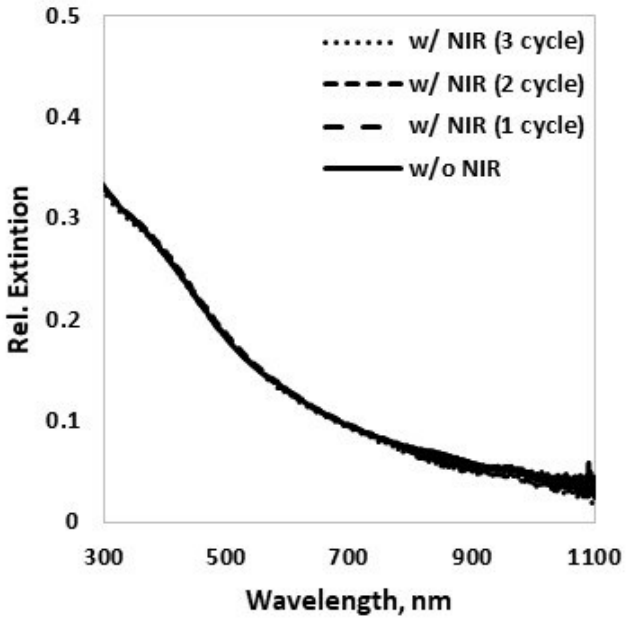

Figure S17. Photothermal stability of Fu-PtNPs against 808 nm diode laser irradiation mediated heat dissipation (4 W/cm^2 for 5 min, each cycle).

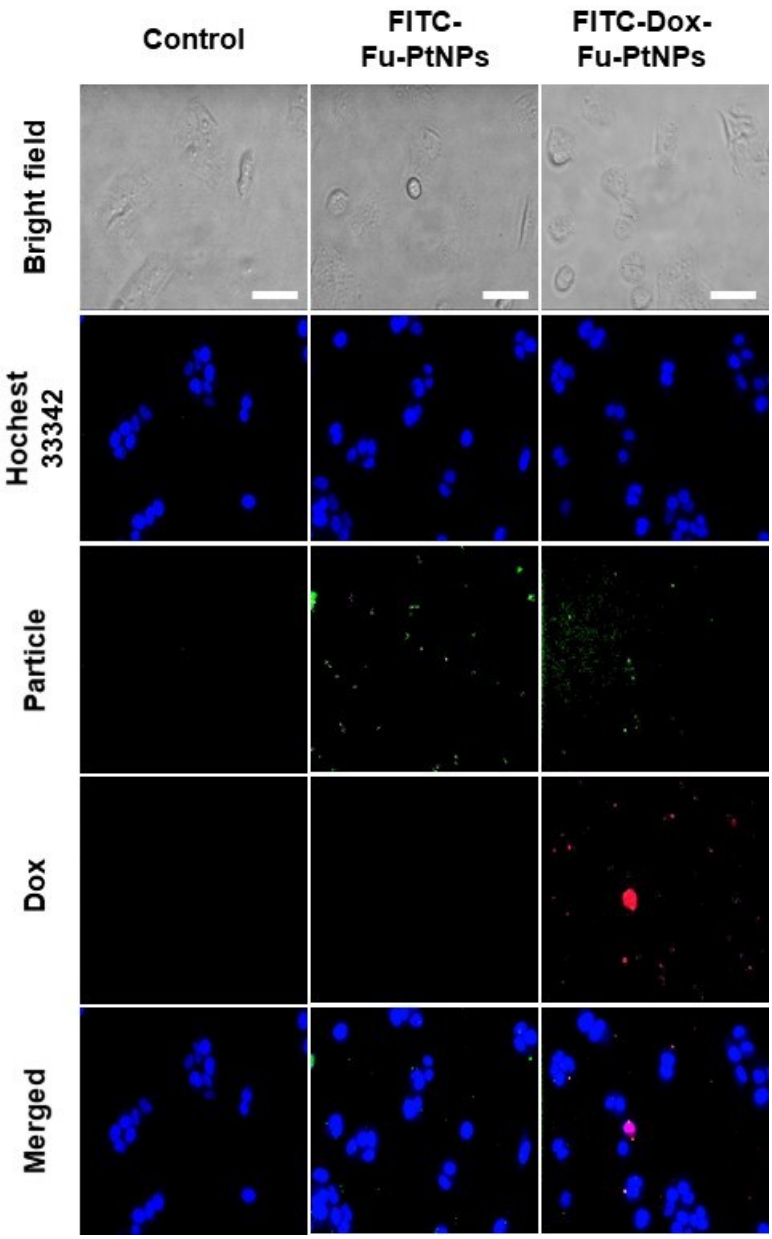

Figure S18. Cellular uptake of FITC-Fu-PtNPs and FITC-Dox-Fu-PtNPs against MCF-7/ADR cells. The scale bar is 25 μm.