Electronic Supplementary Material (ESI) for Nanoscale.

Supplementary Information

Polymeric Iron Oxide Nanocomplex Loaded with Sulfasalazine: An Approach for Inducing Ferritinophagy-Assisted Ferroptosis for Anti-Cancer Therapy

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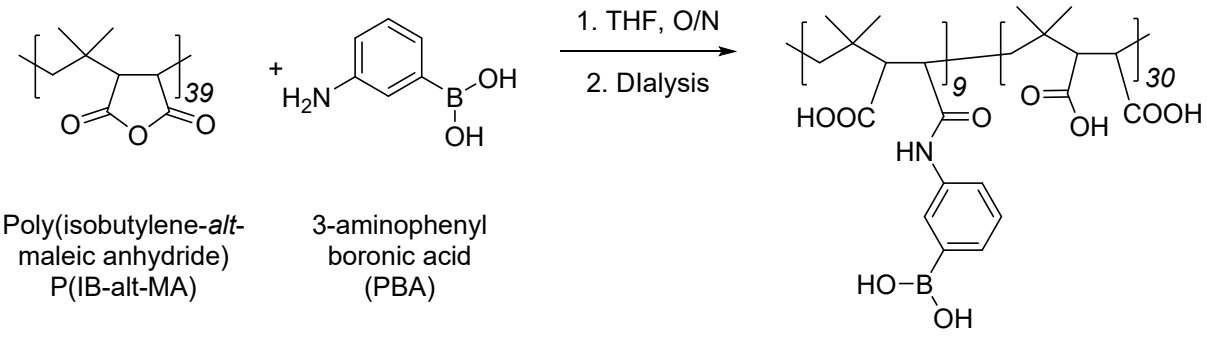

Poly(isobutylene-*alt*-maleic anhydride) P(IB-alt-MA)

3-aminophenyl boronic acid (PBA)

Scheme S1. Synthetic scheme of pPBA

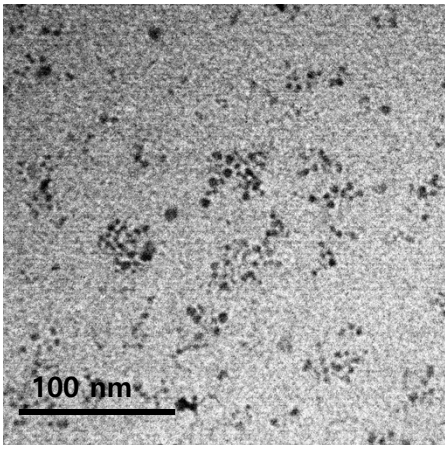

Figure S1. TEM image of USIO

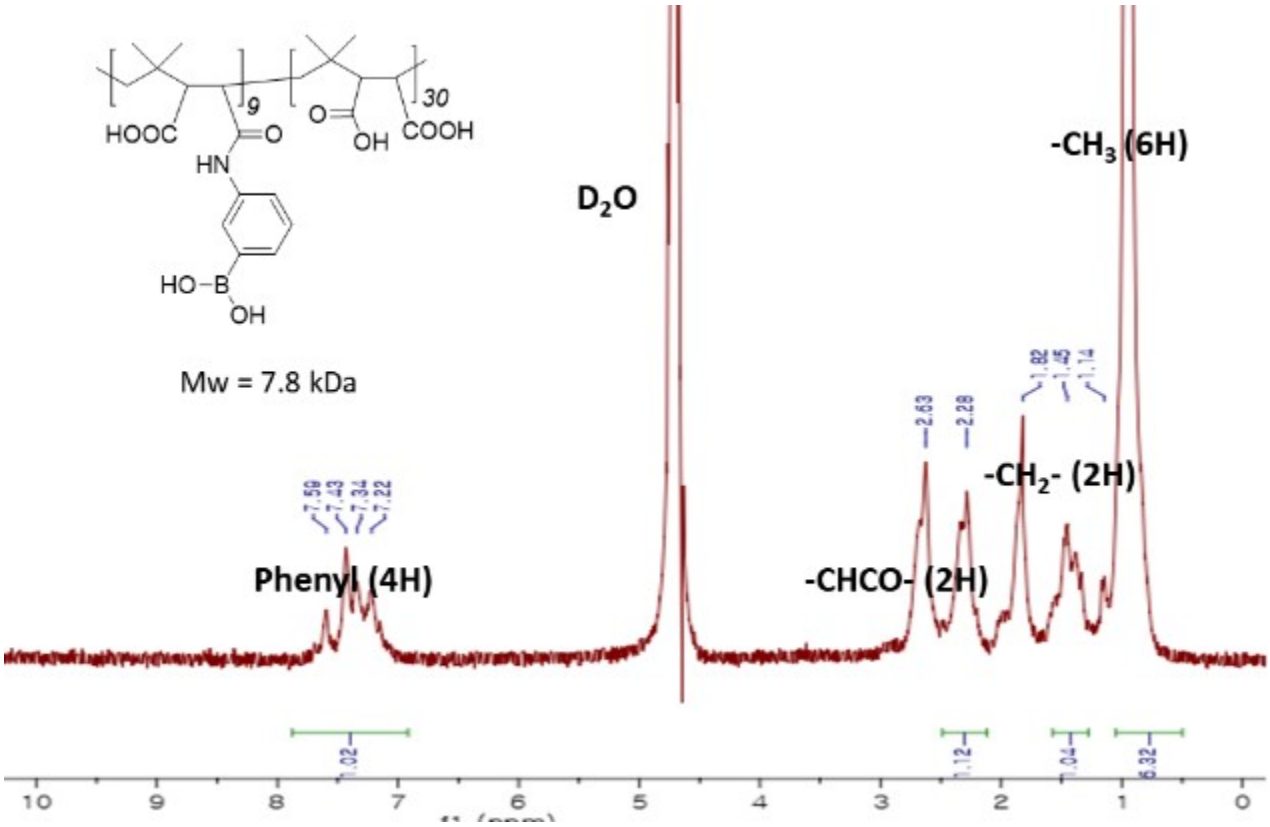

Figure S2. ^{1}H NMR spectrum of pPBA

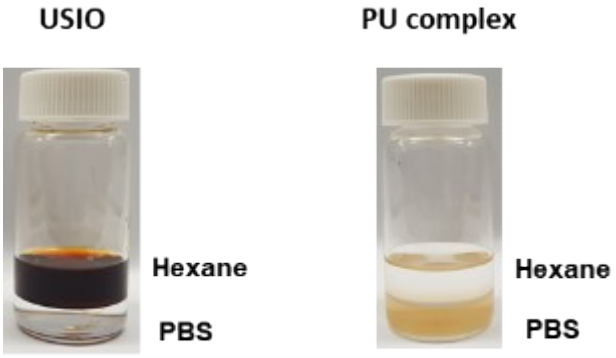

Figure S3. Solubility test of USIO and PU complex

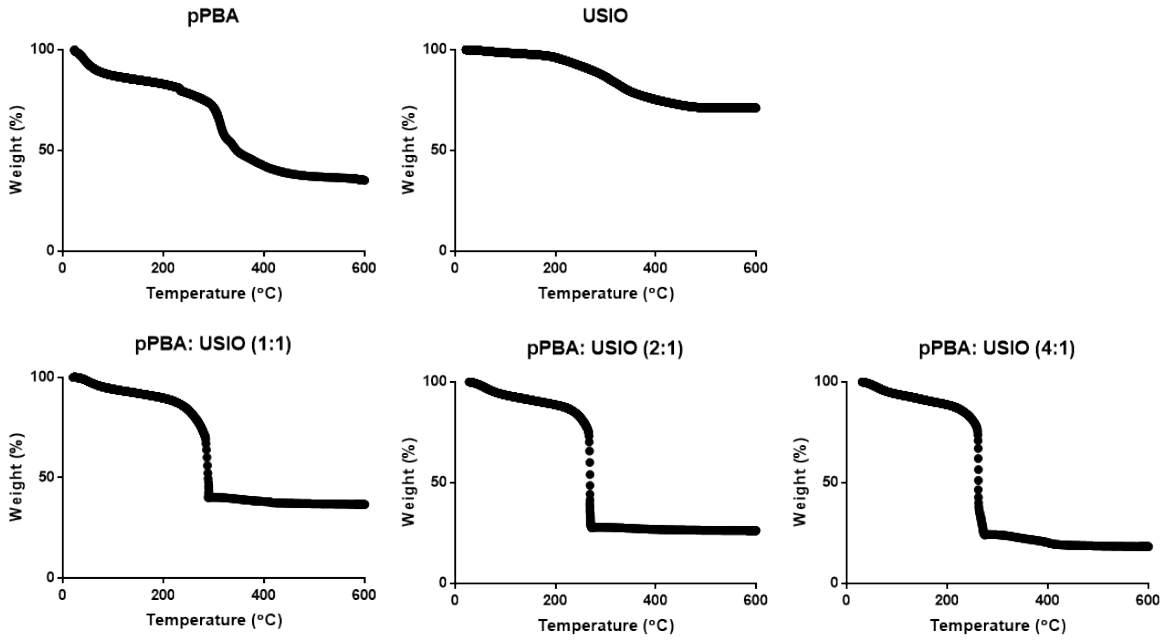

Figure S4. Thermogravimetric analysis of pPBA, USIO, pPBA-USIO(1:1), pPBA-USIO (2:1) and pPBA-USIO (4:1) complex

Material	% w/w
pPBA	79.2 %
USIO	20.8 %

Table S1. Quantification of pPBA and USIO on PU complex (2:1) by thermogravimetric analysis.

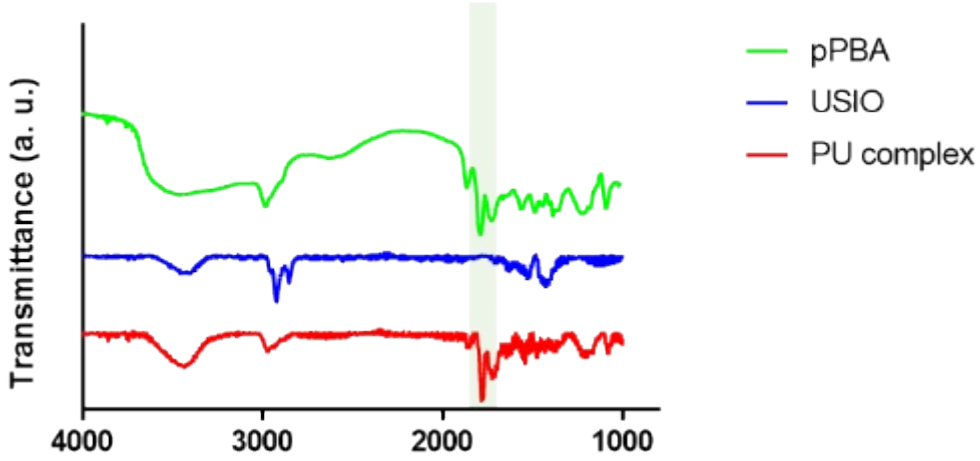

Figure S5. FT-IR spectrum of pPBA, USIO and PU complex

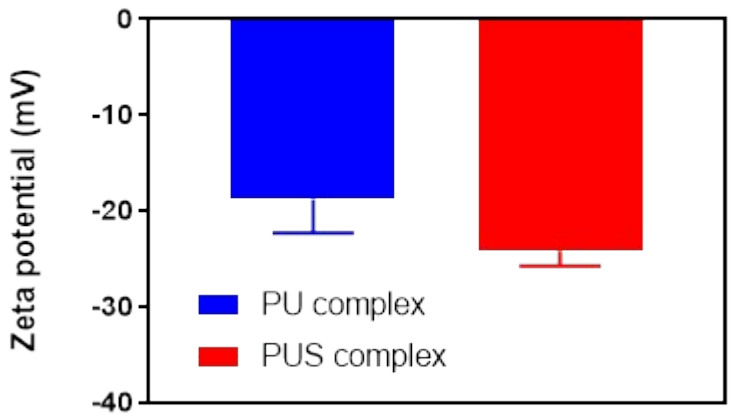

Figure S6. Zeta potential PU complex and PUS complex

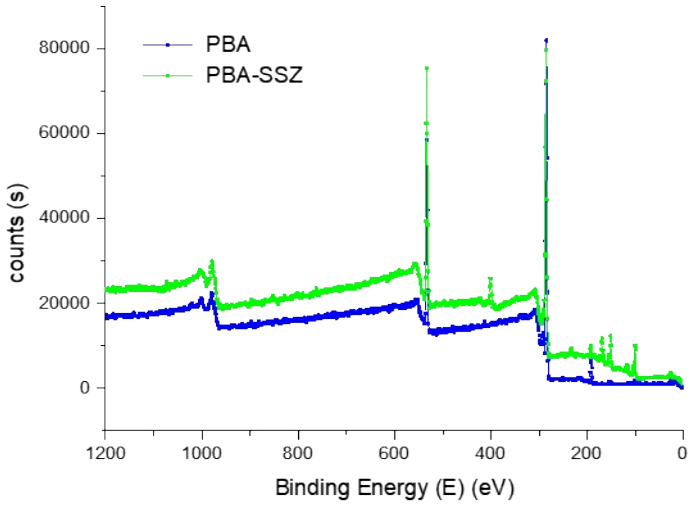

Figure S7. XPS total survey of PBA and PBA with SSZ

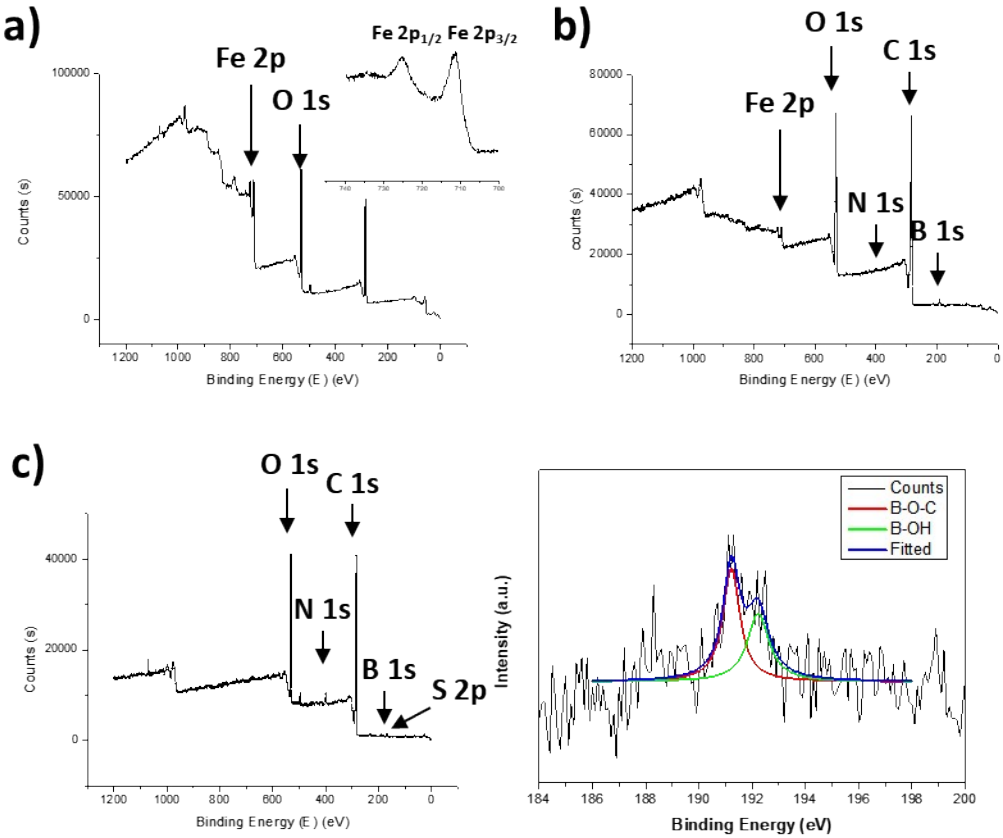

Figure S8. XPS spectrum of (a) USIO and (b) PU complex. (c) XPS spectra and B 1s XPS spectra for PUS complex.

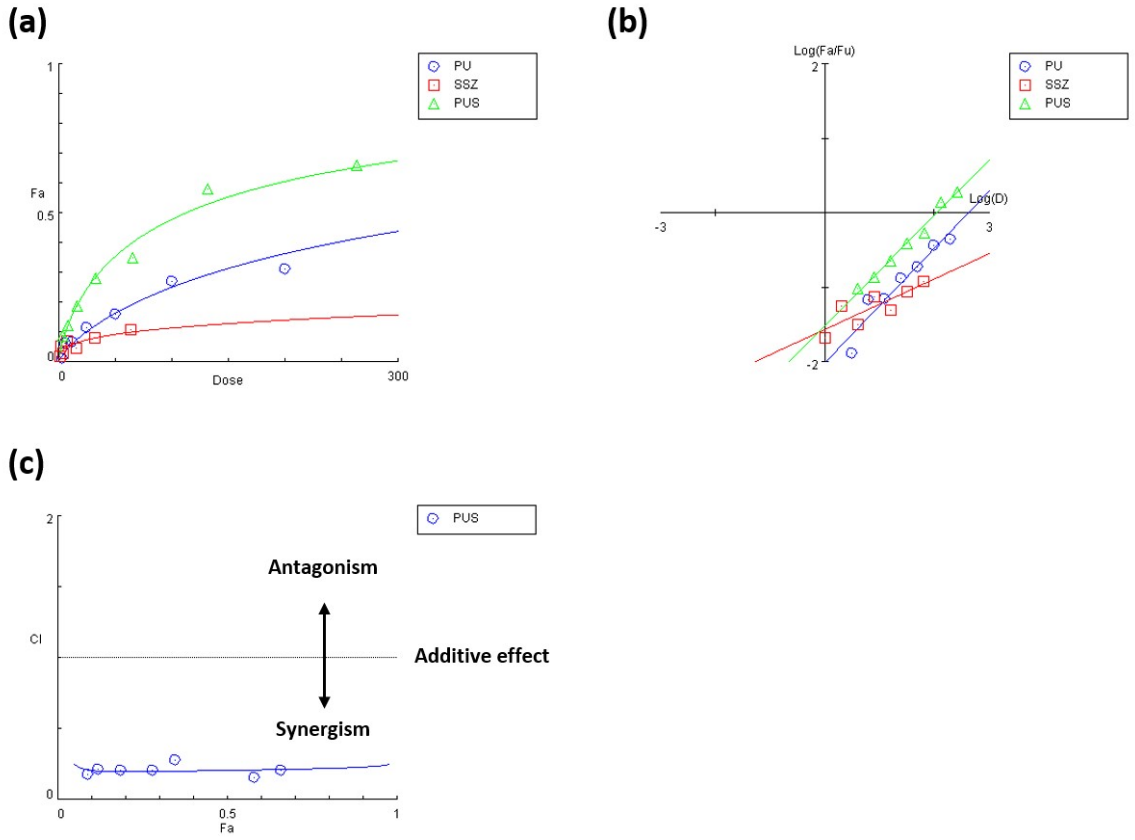

Figure S9. Estimation of synergy effects between PU and SSZ using CompuSyn analysis. (a) Dose-Effect Curve, (b) Median-Effect Plot of PU, SSZ and PUS complex. (c) Combination Index Plot indicating synergism between PU and SSZ.

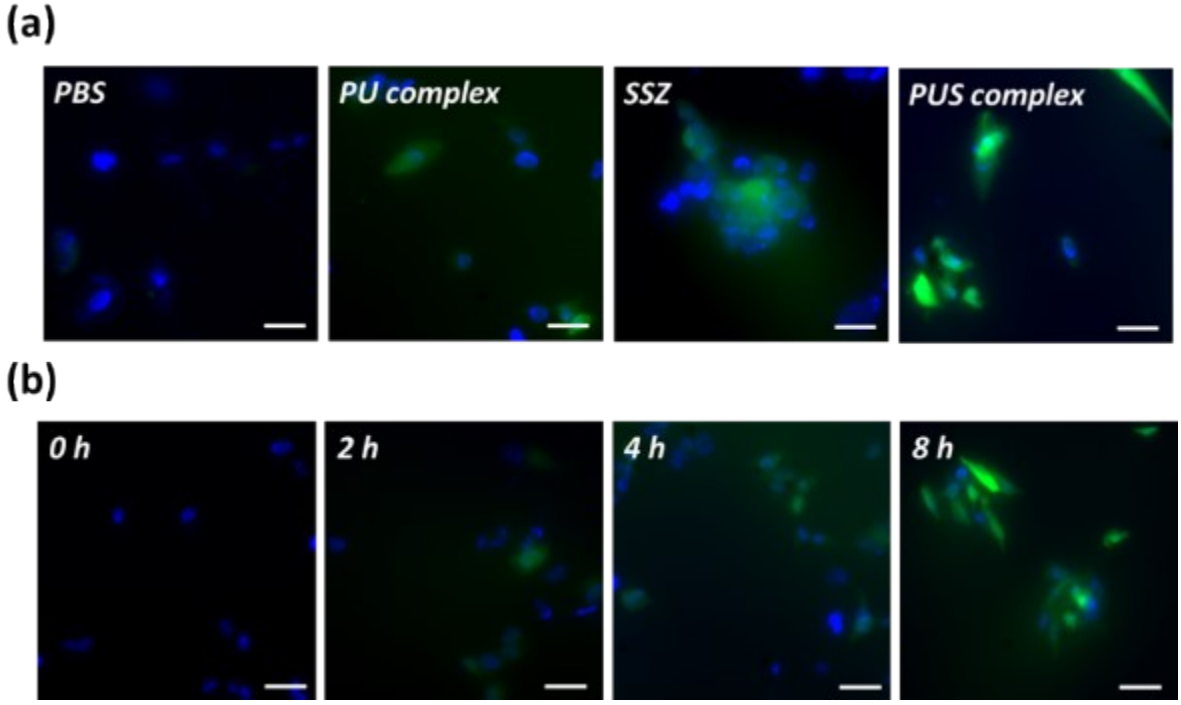

Figure S10. DCFH-DA assay in MCF-7 cells for ROS detection by fluorescence microscopy (a) Treatment of PUS complex and other samples. (b) Time dependent of ROS regeneration of PUS complex. Nuclei were stained with DAPI (blue), ROS were stained with DCFH-DA(green) (scale bar = 50 μm).

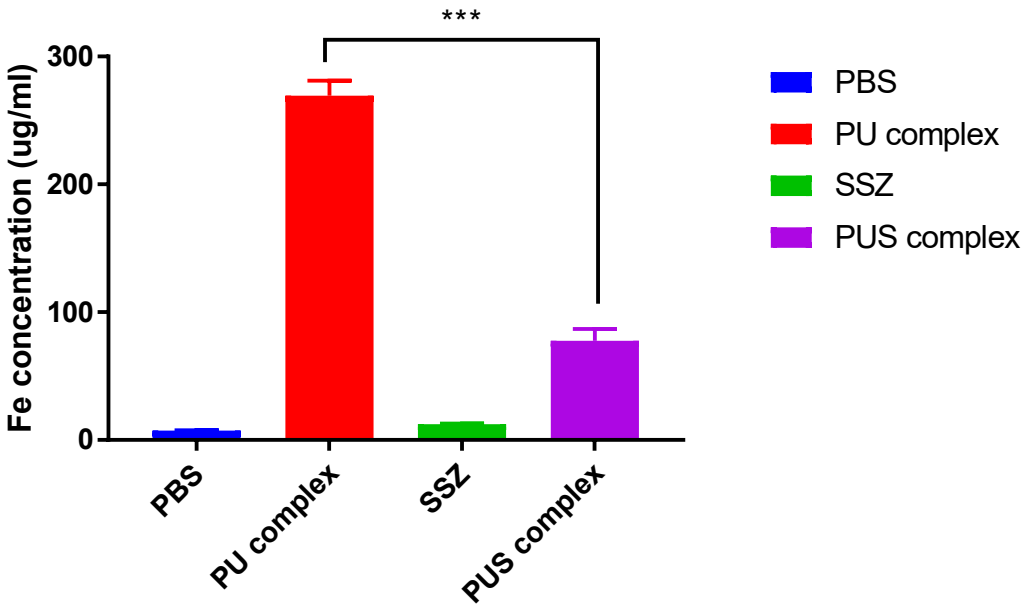

Figure S11. Ferene-S assay in MCF-7 cell culture media for iron quantification. Data are presented as ± SD (n = 4), and they were statistically analyzed using one-way ANOVA tests. (***$p < 0.001$).

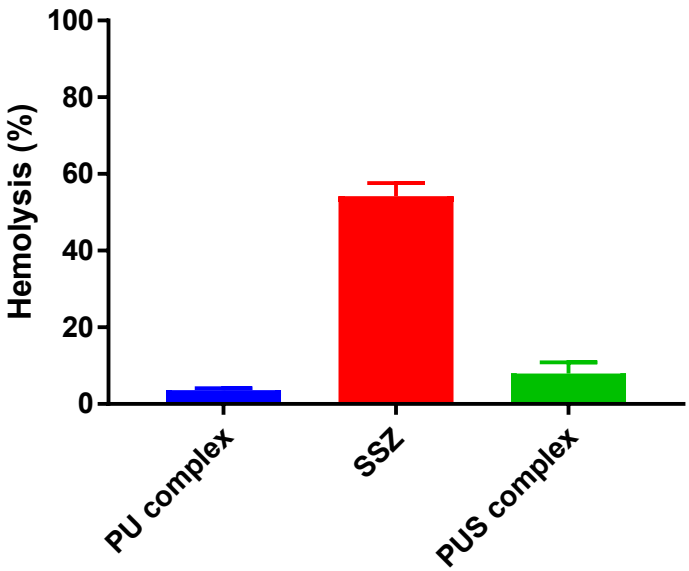

Figure S12. Hemolysis assay of samples

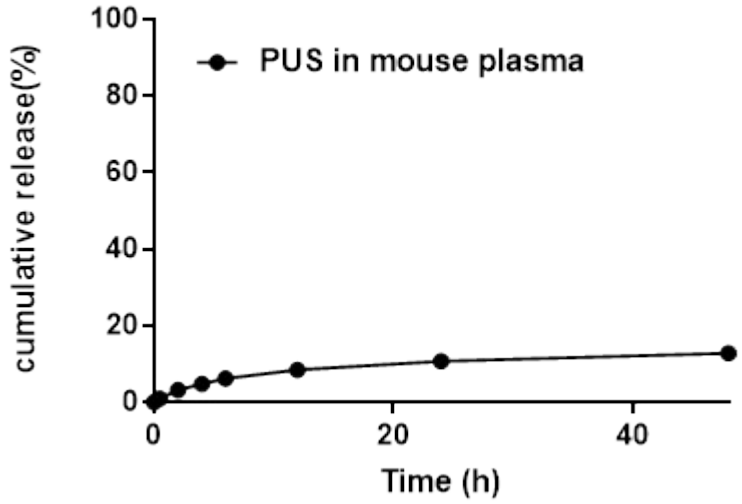

Figure S13. Release profile of sulfasalazine from PUS complex in mouse plasma.

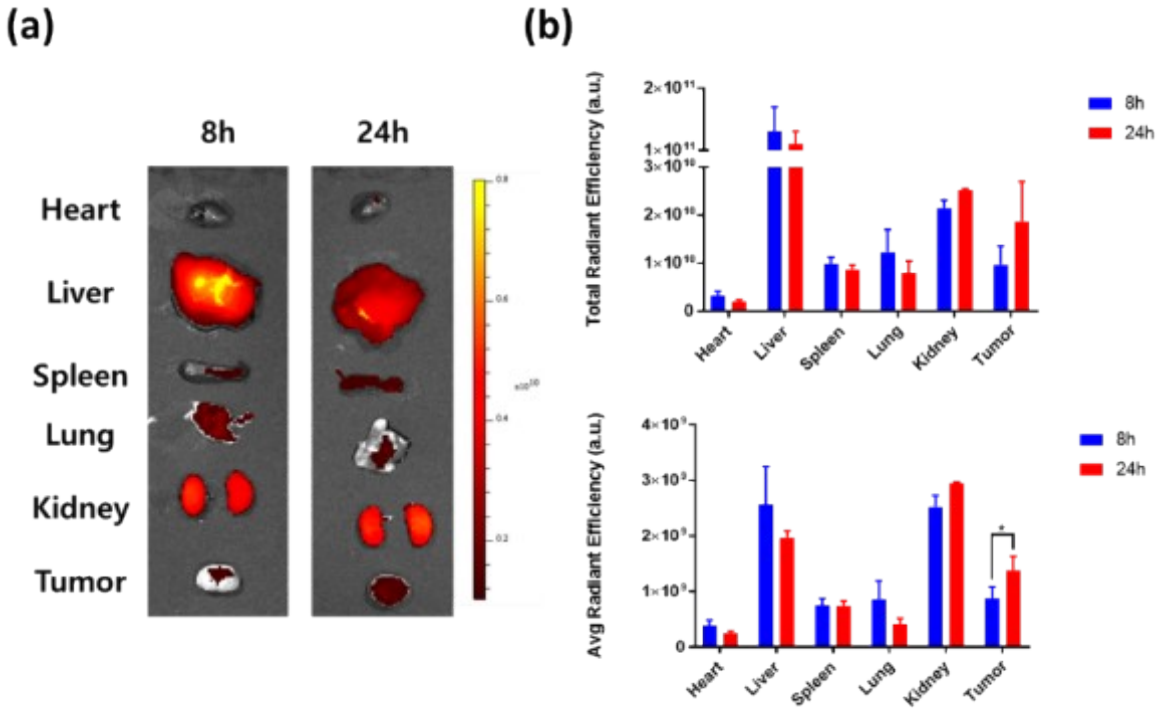

Figure S14. (a) Ex vivo biodisribution fluorescence image of major organ after administration of PUS complex. (b) Quantification of fluorescence intensity for PUS complex in major organ . Data are presented as ± SD (n = 3), and they were statistically analyzed using one-way ANOVA tests. *$p < 0.1$).

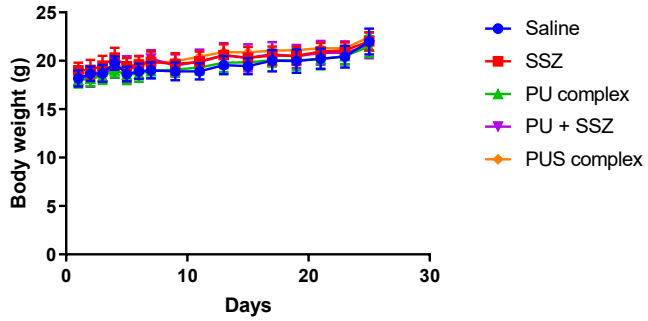

Figure S15. Body weight changes during 25 days after administration of samples

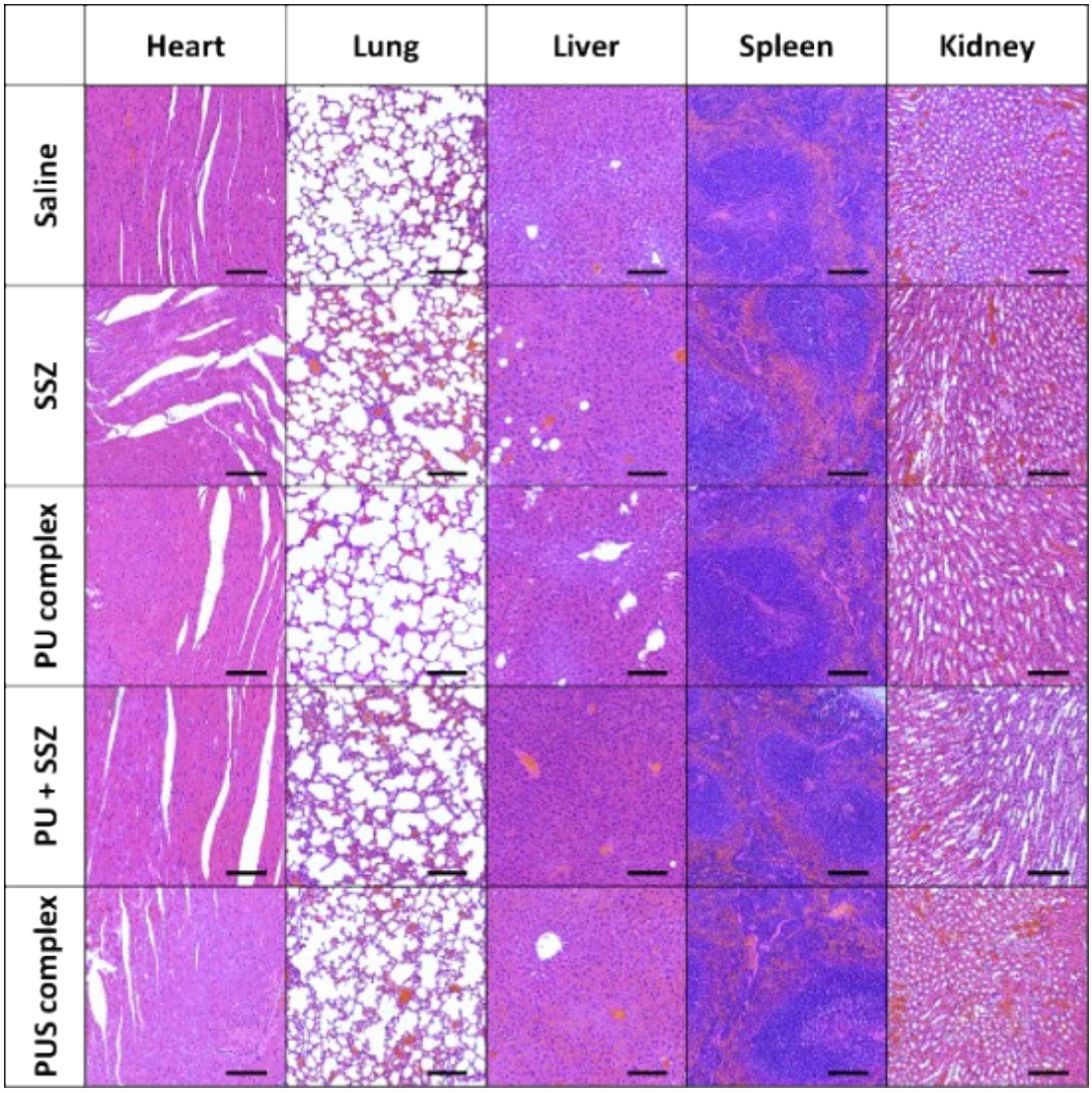

Figure S16. H&E staining of major organs. Scale bar = 200 μm for organs