

Supporting Information

Delivery of system x_c^- inhibitor by a redox-responsive levodopa prodrug nanoassembly for combination ferrotherapy

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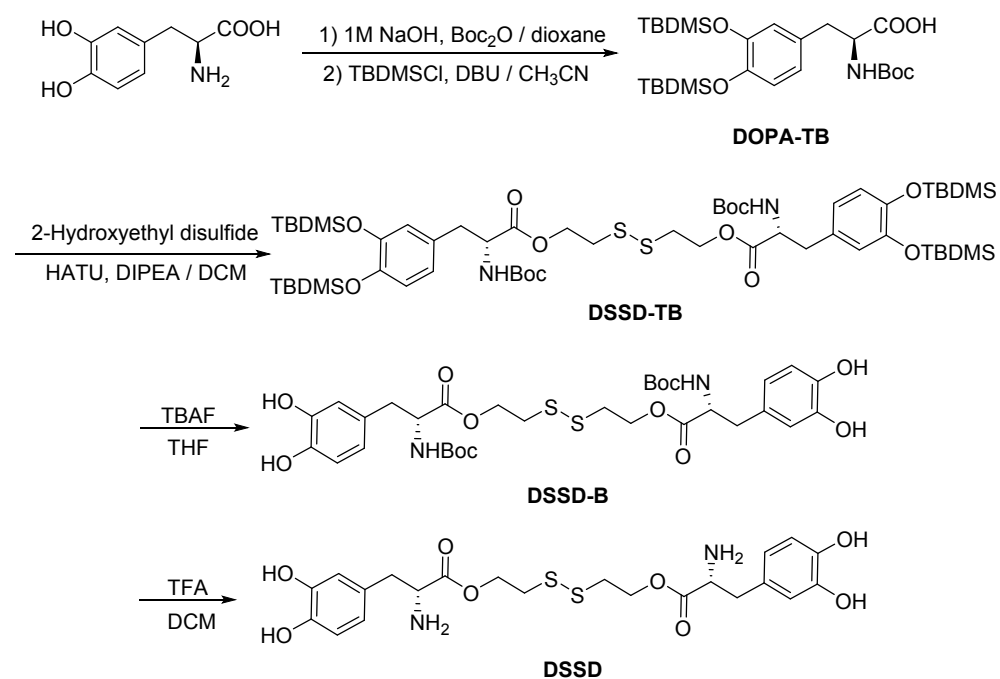
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Scheme S1. The synthesis route of **DSSD**.

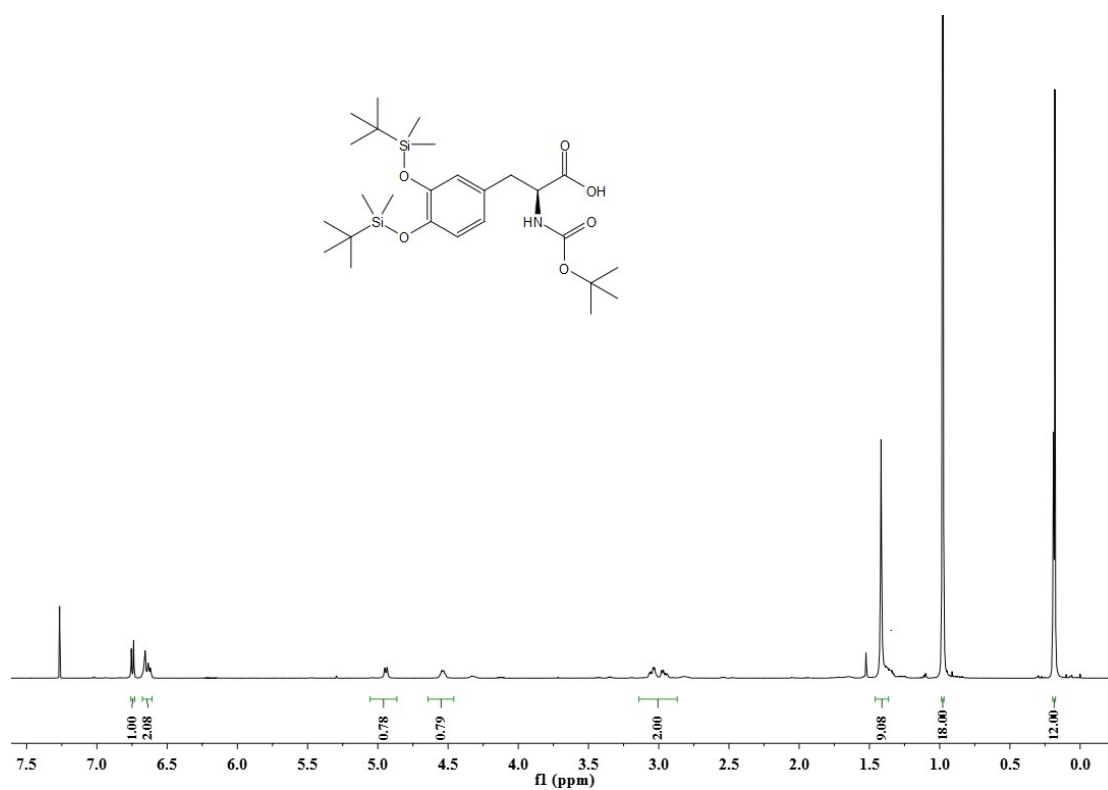


Fig. S1 ¹H-NMR spectrum of compound **DOPA-TB** (in CDCl₃).

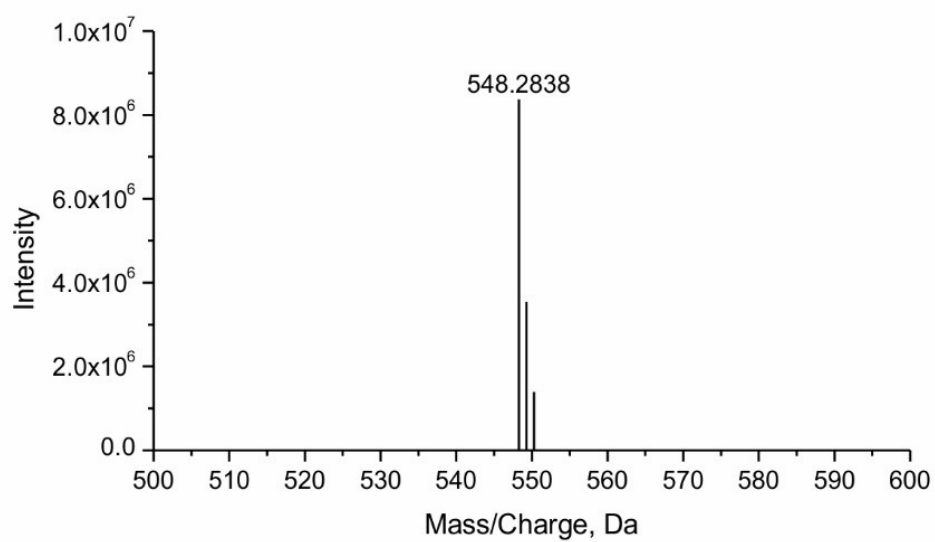


Fig. S2 HR-MS of compound **DOPA-TB**.

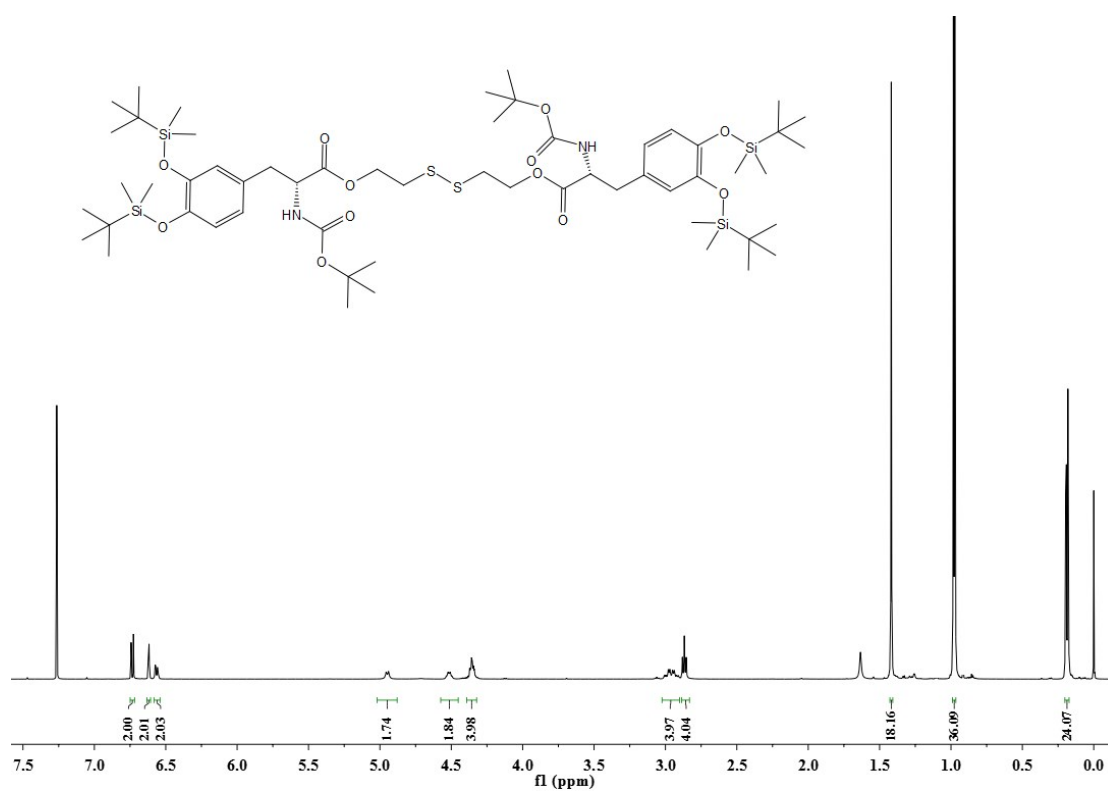


Fig. S3 ^1H -NMR spectrum of compound **DSSD-TB** (in CDCl_3).

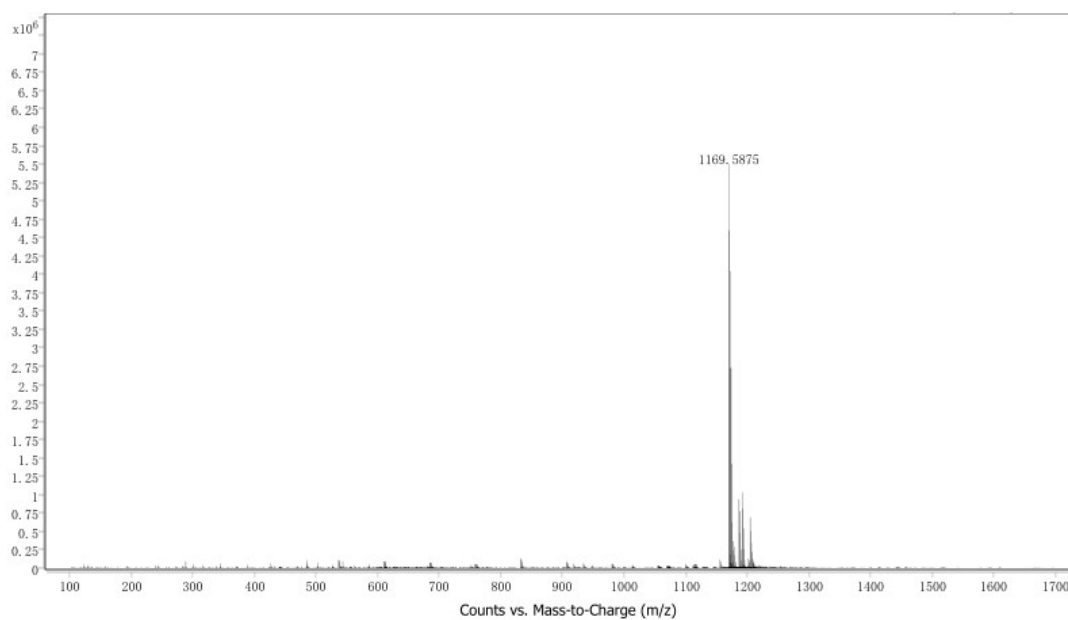


Fig. S4 HR-MS of compound **DSSD-TB**.

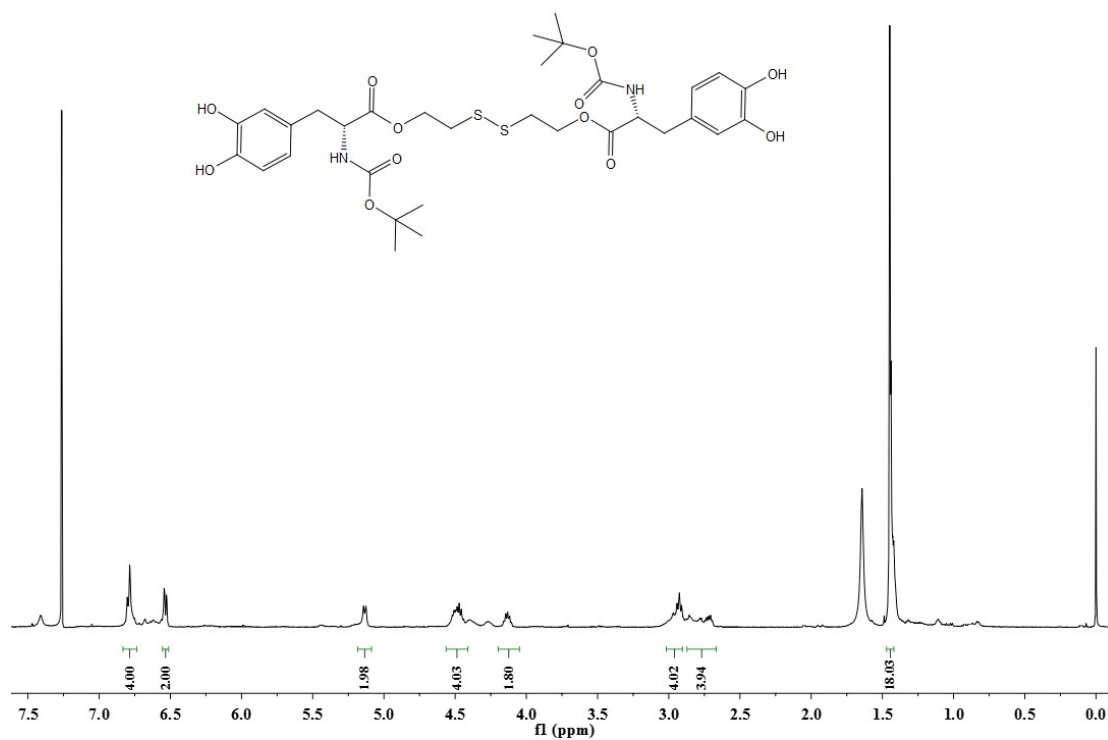


Fig. S5 ^1H -NMR spectrum of compound **DSSD-B** (in CDCl_3).

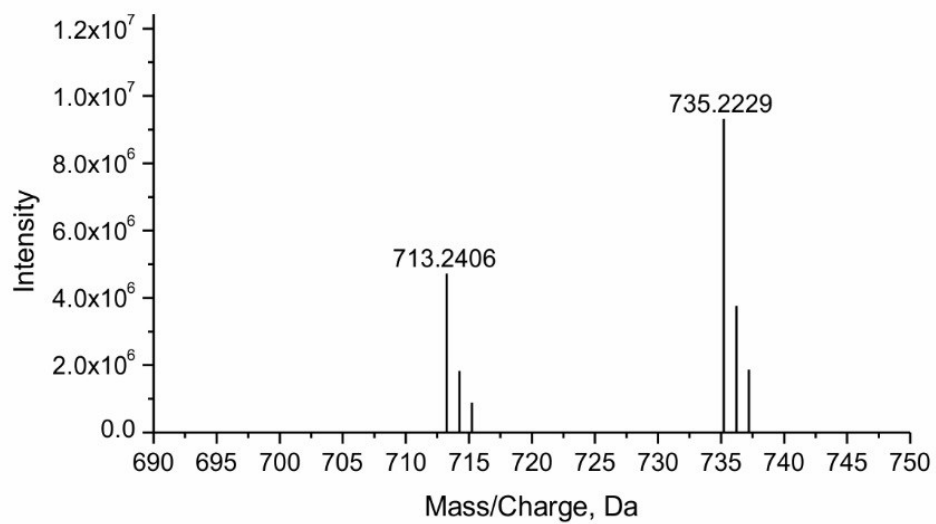


Fig. S6 HR-MS of compound **DSSD-B**.

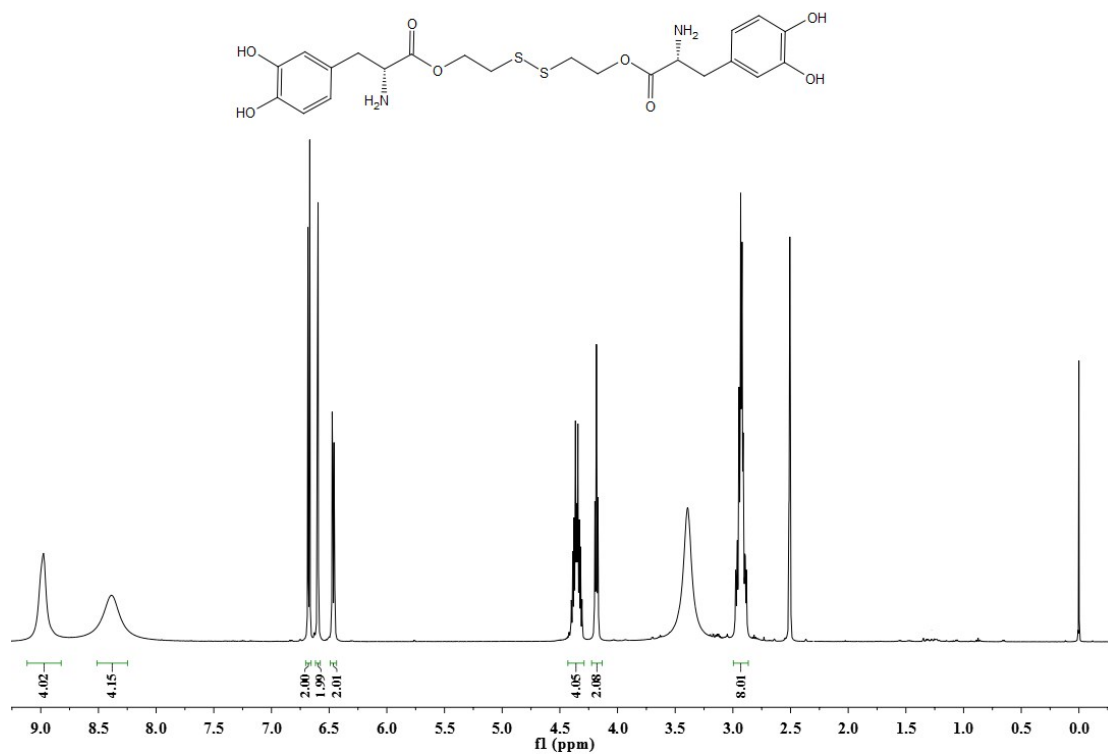


Fig. S7 ^1H -NMR spectrum of compound **DSSD** (in DMSO-d_6).

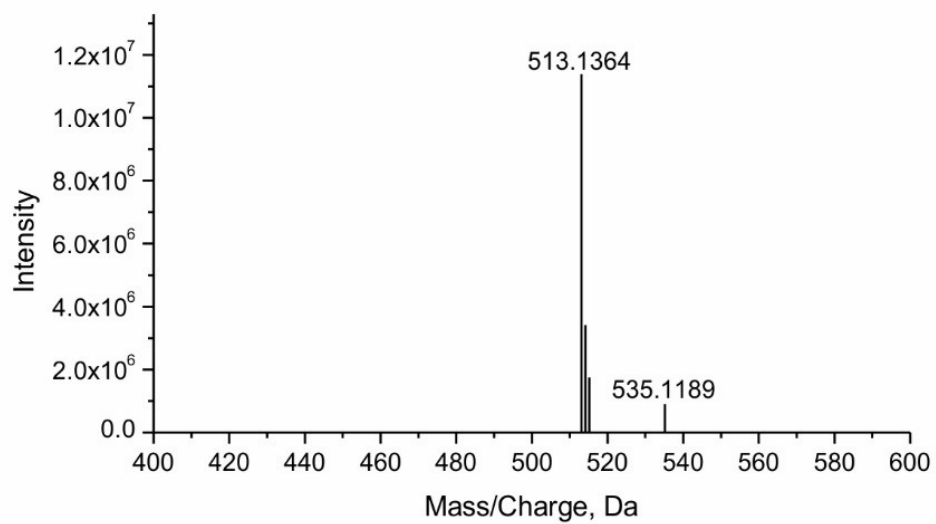


Fig. S8 HR-MS of compound **DSSD**.

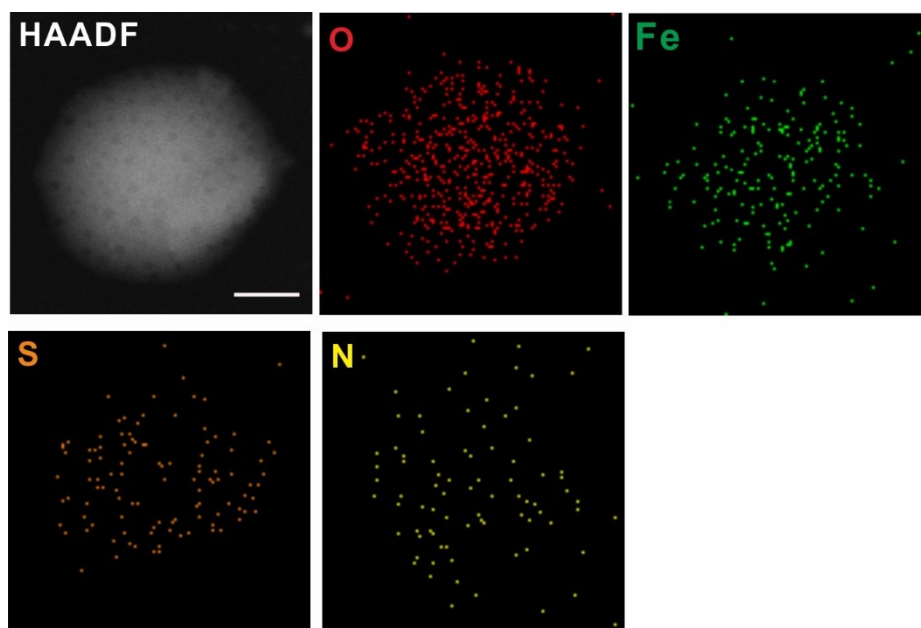


Fig. S9 HAADF-STEM and EDS mapping of SSZ-Fe²⁺@DSS (Scale bar: 50 nm).

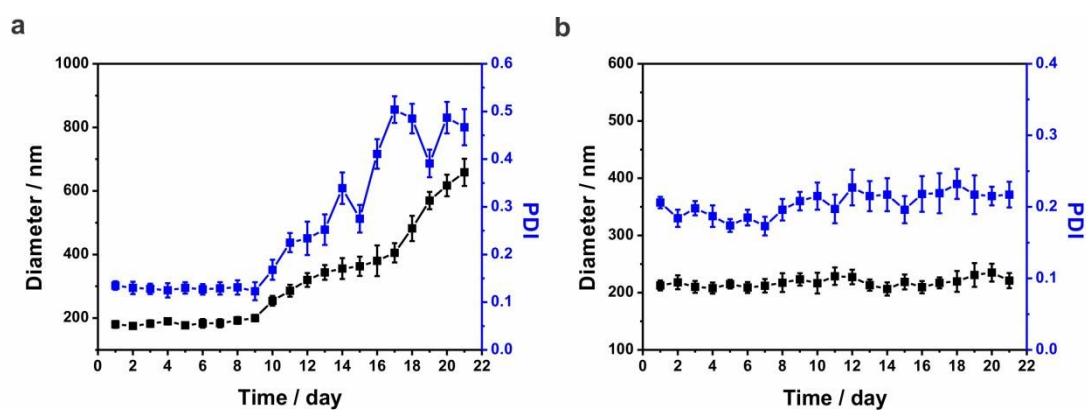


Fig. S10 Diameters for (a)SSZ@DSSD and (b)SSZ-Fe²⁺@DSSD (0.5 mg mL⁻¹) in pH 7.4 PBS buffer at 37 °C as determined by DLS for 21 days.

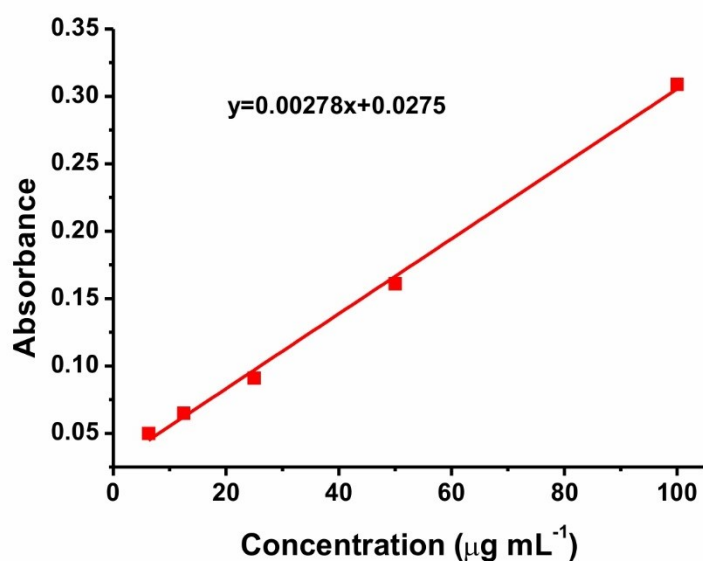


Fig. S11 Calibration curves for DSSD measured by absorption spectrometry. $\lambda_{\text{abs}} = 361 \text{ nm}$.

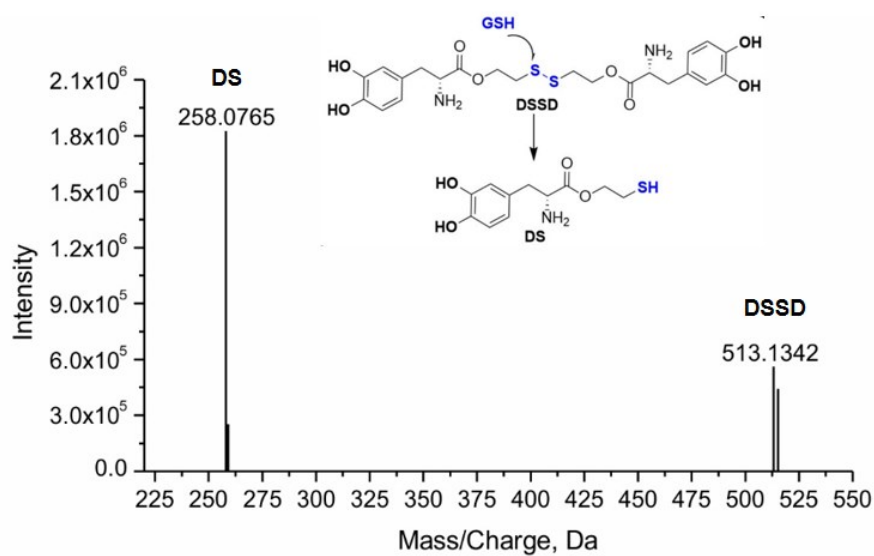


Fig. S12 High-resolution mass spectrum of the DSSD ($50 \mu\text{g mL}^{-1}$) treated with GSH (10 mM) for 20 min. The signals at m/z 258.0765 and 513.1342 represent DS and DSSD, respectively.

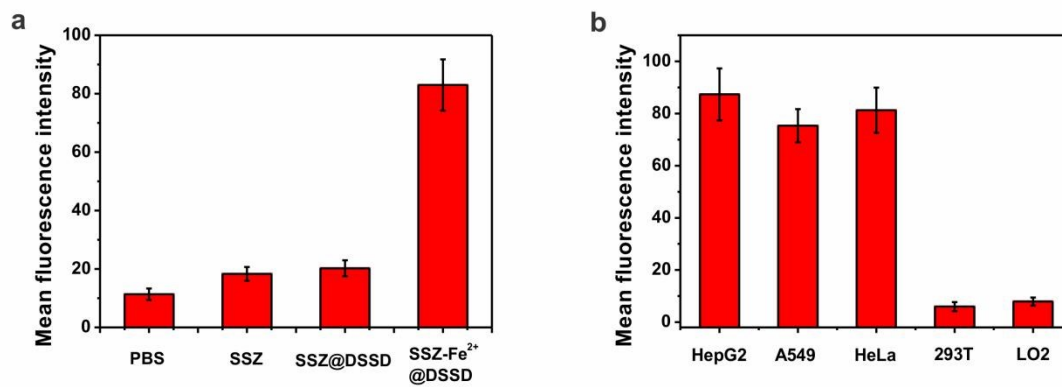


Fig. S13 Quantitative analysis of the fluorescence intensity of (a)Fig. 2d and (b)2e.

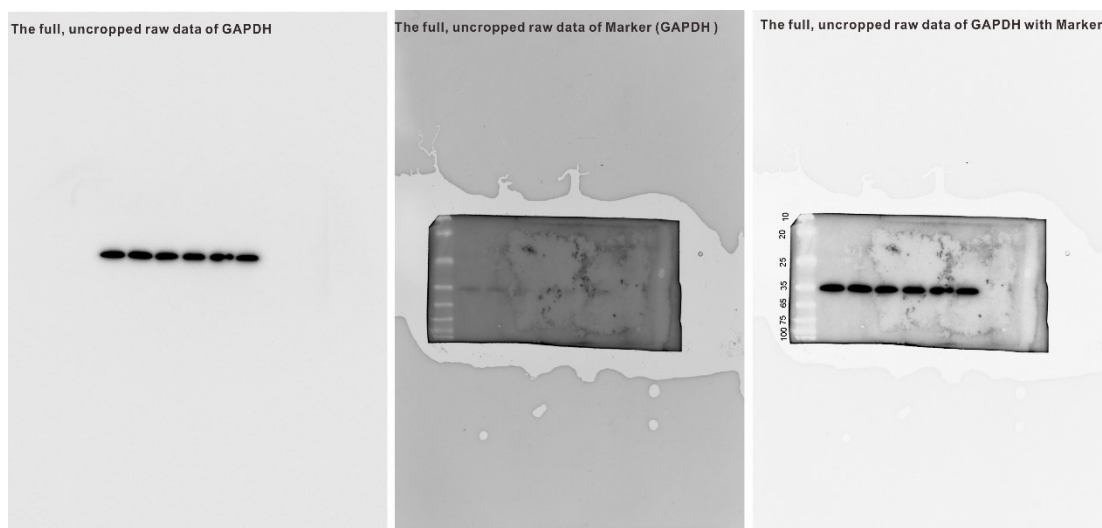


Fig. S14 The full, uncropped raw data of GAPDH with markers.

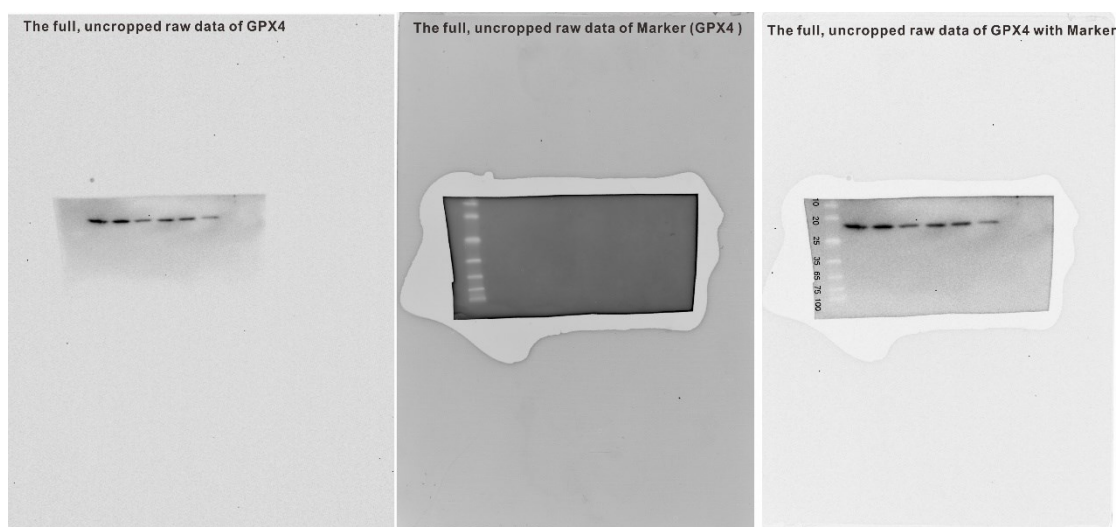


Fig. S15 The full, uncropped raw data of GPX4 with markers.

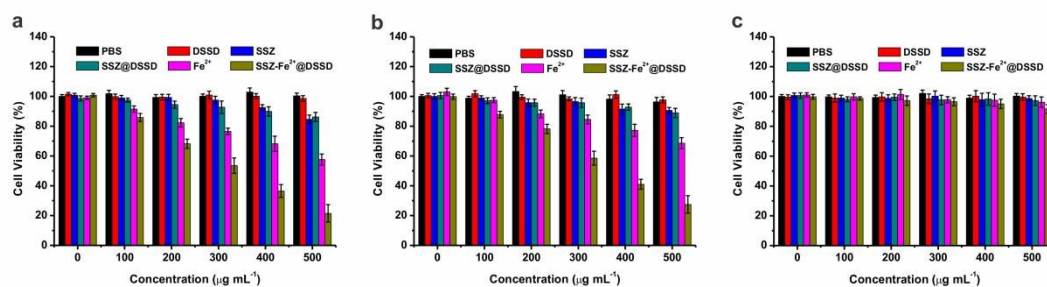


Fig. S16 The viability of (a)HepG2, (b)A549 and (c)LO2 cells after incubation with different formulations at various concentrations (0, 100, 200, 300, 400 and 500 µg mL⁻¹, respectively).

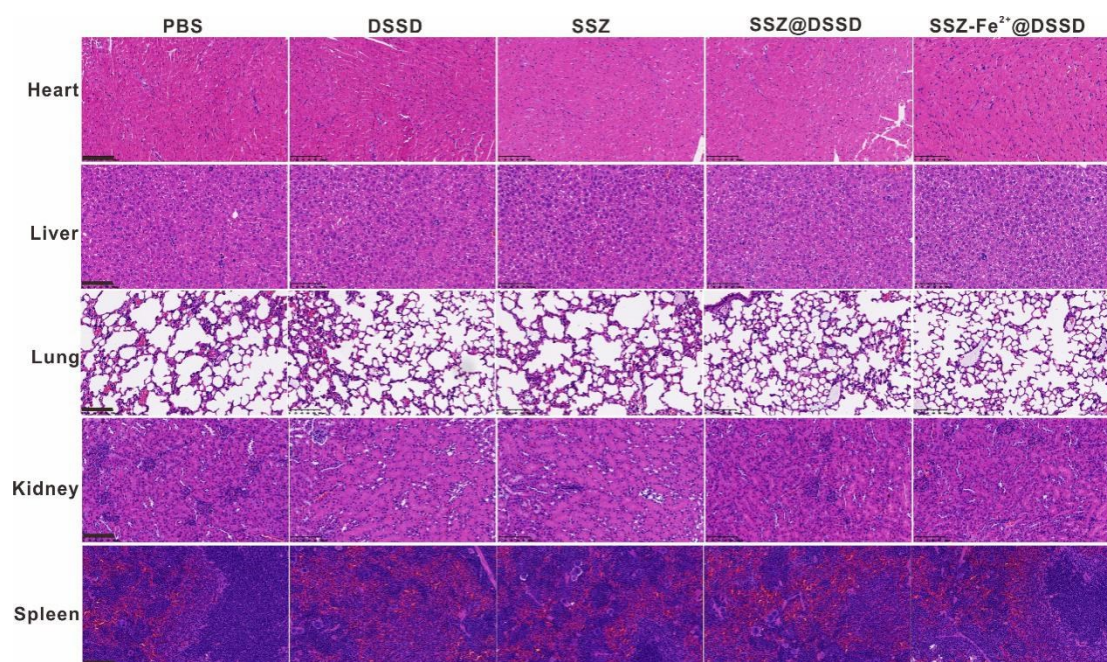


Fig. S17 H&E staining results of the major organs (heart, liver, spleen, lung and kidney) with different formulations. The scar bar: 100 µm.