

## Supporting Information

### **pH-responsive Pt-based nanoradiosensitizer for enhanced radiotherapy via oxidative stress amplification**

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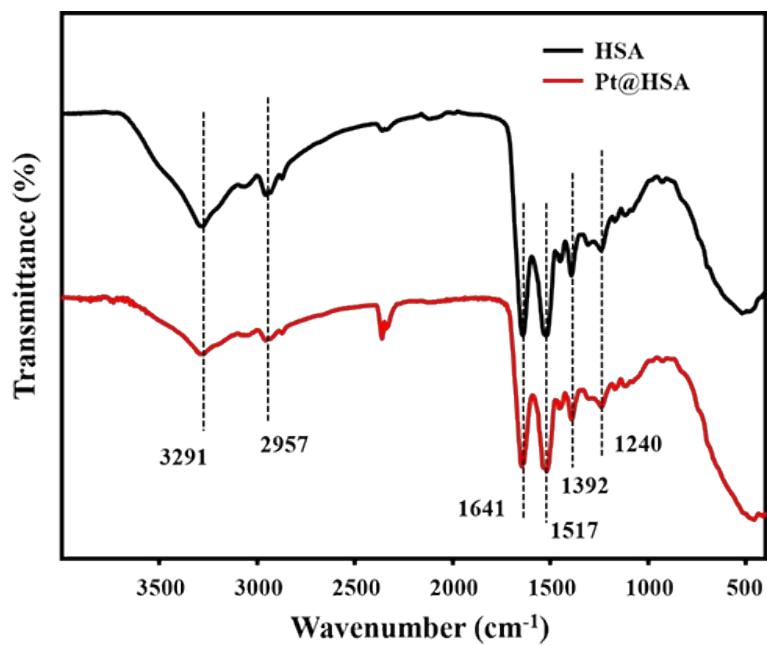


Figure S1. FTIR spectra of HSA and Pt@HSA NPs.

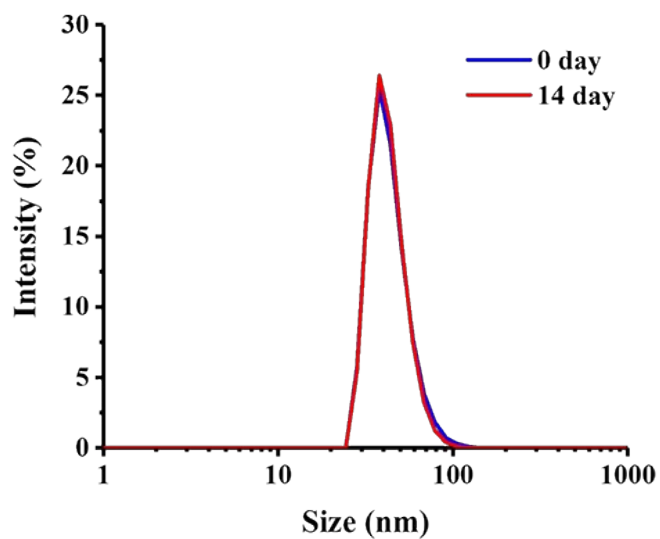


Figure S2. The hydrodynamic diameters of Pt@HSA/CA NPs in DMEM medium containing 10% serum at 0 day and 14 day.

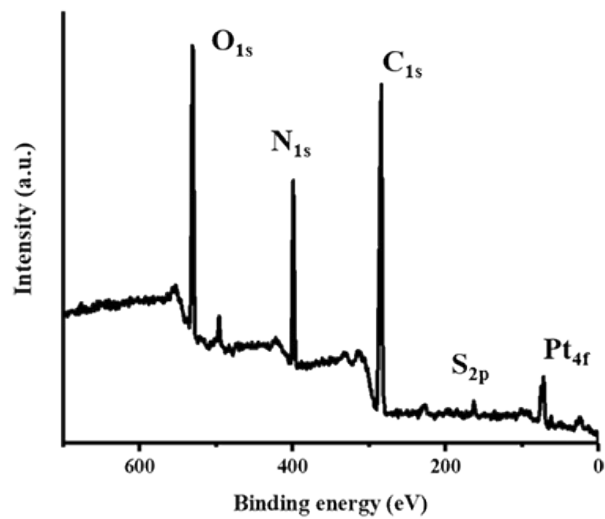


Figure S3. XPS of Pt@HSA/CA NPs.

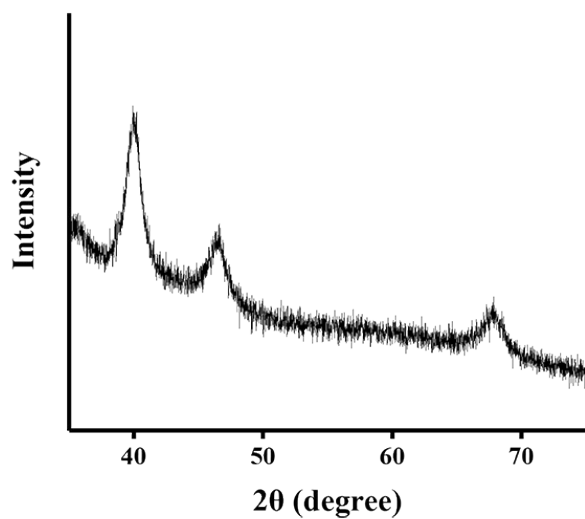


Figure S4. XRD spectrum of Pt@HSA/CA NPs.



Figure S5. Photographs of TMB+H<sub>2</sub>O<sub>2</sub>, TMB+H<sub>2</sub>O<sub>2</sub>+Pt@HSA/CA NPs, and TMB+H<sub>2</sub>O<sub>2</sub>+Pt@HSA/CA NPs+H<sub>2</sub>SO<sub>4</sub>.

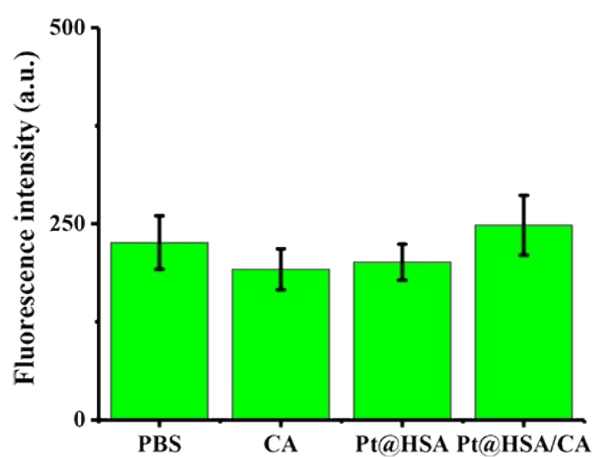


Figure S6. ROS production without X-ray irradiation. The fluorescence probe was DCFH-DA (10  $\mu$ M).

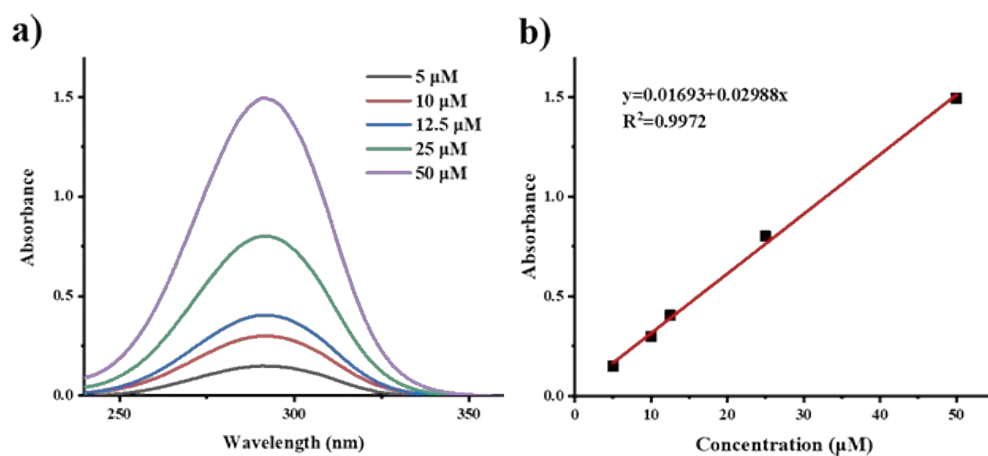


Figure S7. a) UV-vis spectra of different concentration of CA. b) The concentration standard curve of CA.

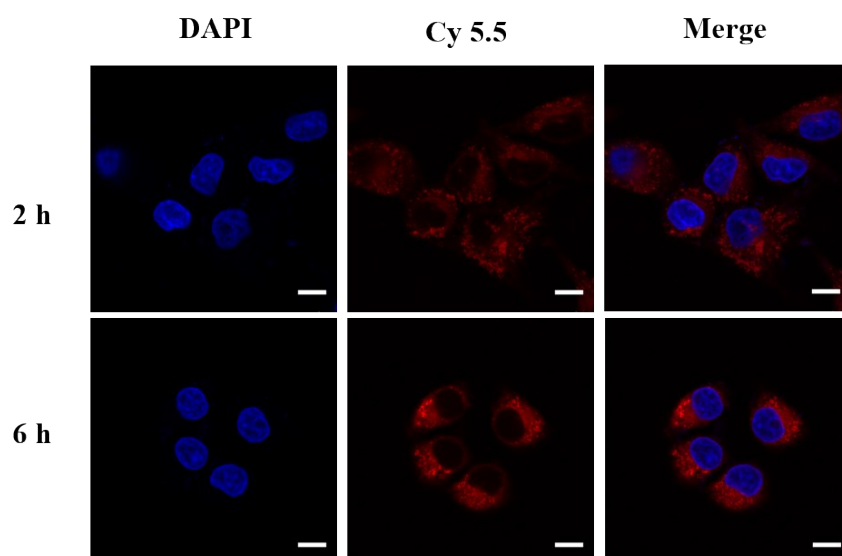


Figure S8. Fluorescence images of HepG2 cellular uptake of Pt@HSA/CA NPs. Scale bar: 10  $\mu\text{m}$ .

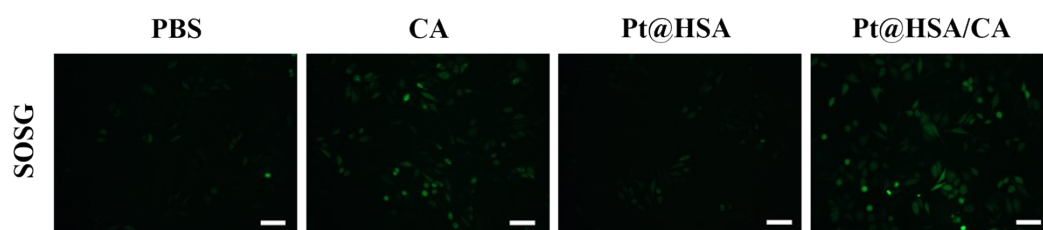


Figure S9. Fluorescence images of intracellular  $^1\text{O}_2$  level in HepG2 cells under different conditions. Scale bar: 100  $\mu\text{m}$ .

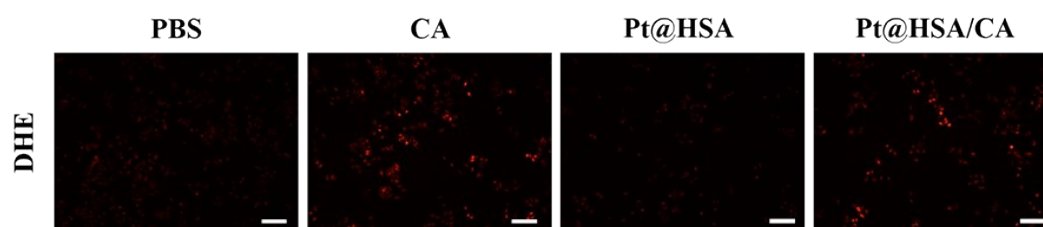


Figure S10. Fluorescence images of intracellular  $\text{O}_2^{\cdot-}$  level in HepG2 cells under different conditions. Scale bar: 200  $\mu\text{m}$ .

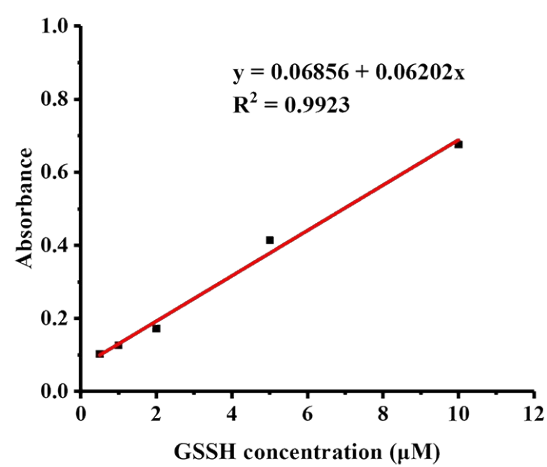


Figure S11. The standard curve of GSSH concentration.

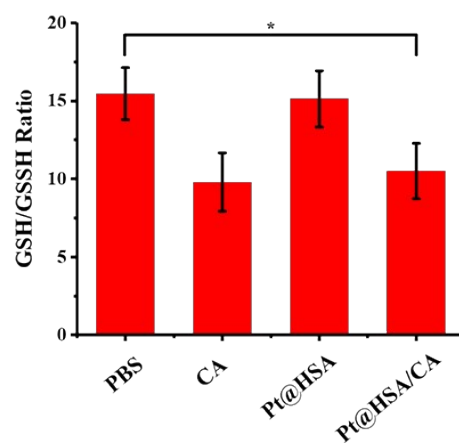


Figure S12. The intracellular GSH/GSSG ratio of solution after different treatments.

\* $p < 0.05$ .

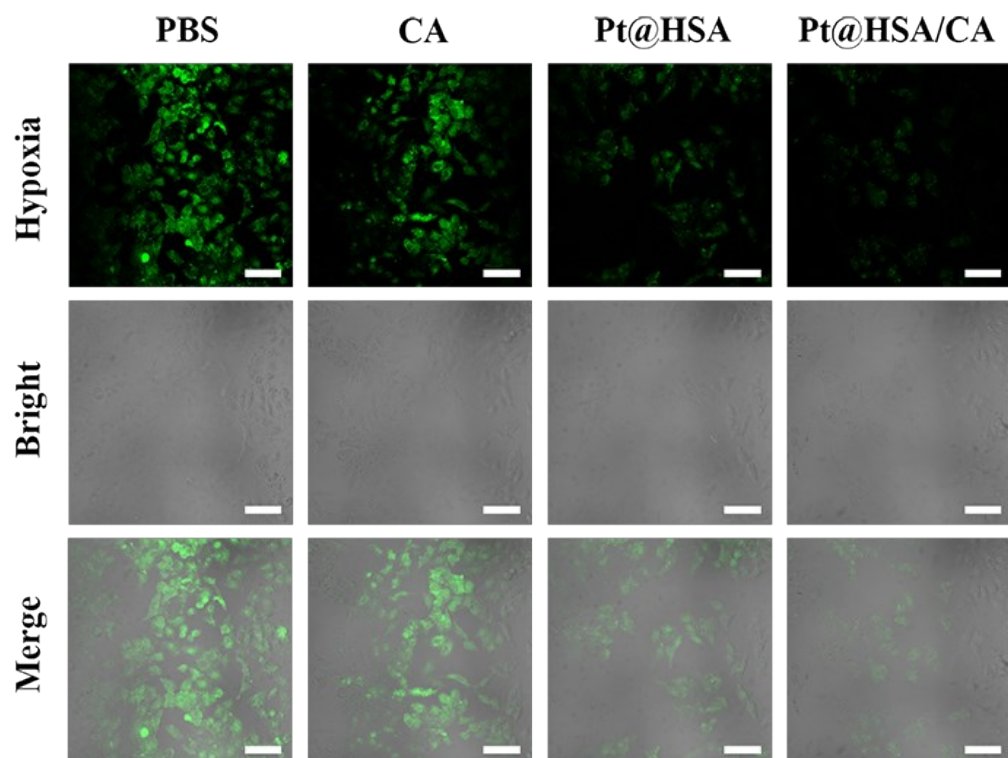


Figure S13. CLSM images of anti-pimonidazole antibody (green) stained HepG2 cells.

Scale bar: 100  $\mu\text{m}$ .

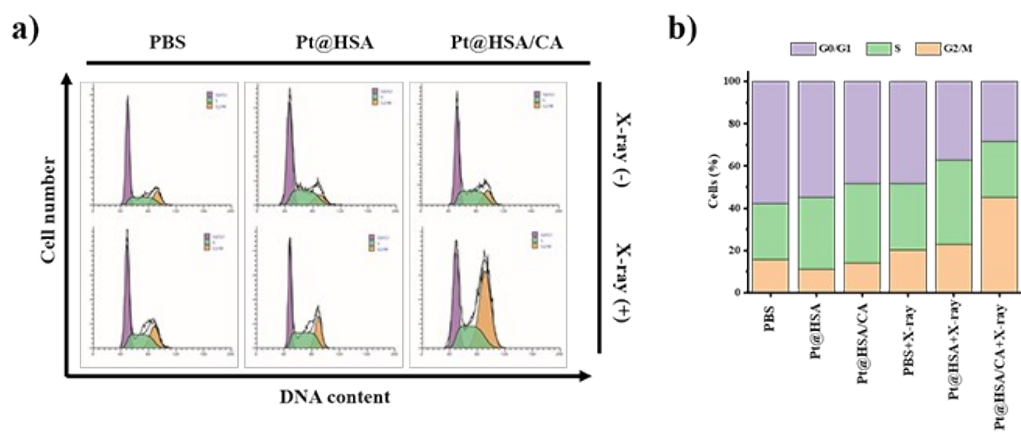


Figure S14. **a)** Cell cycle changes of HepG2 cells under different treatments. **b)**

Percentage of HepG2 cells in different cell phases.

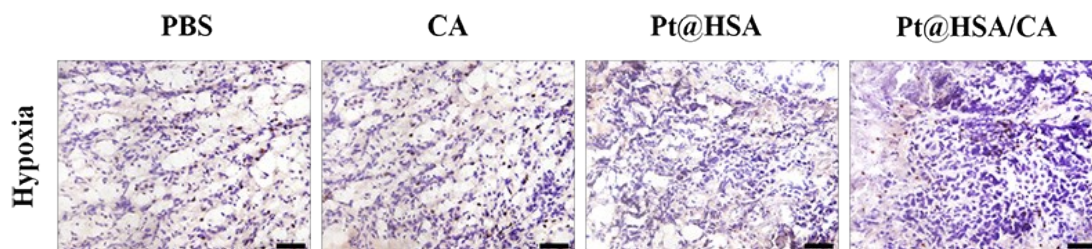


Figure S15. Anti-pimonidazole immunohistochemistry images of different tumor sections. Scale bar: 50  $\mu$ m.

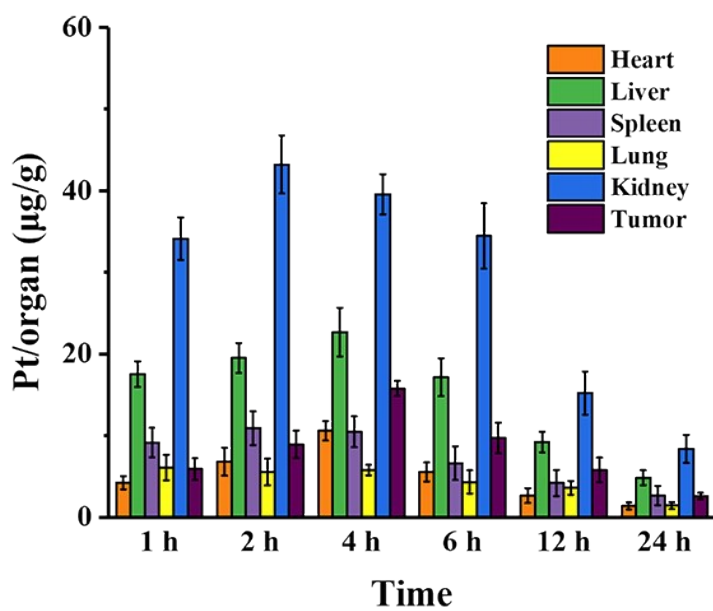


Figure S16. The biodistribution of Pt element in heart, liver, spleen, lung, kidney, and tumor at 1, 2, 4, 6, 12, and 24 h post-intravenous injection.



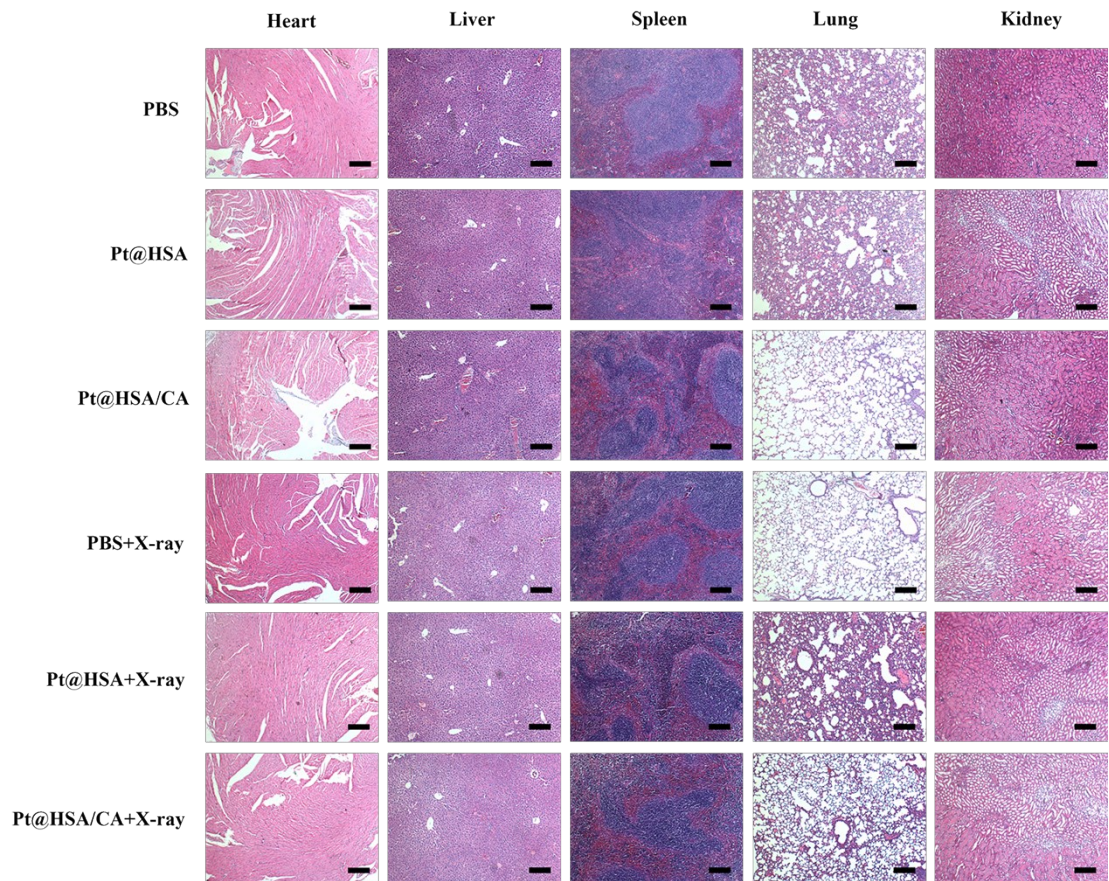


Figure S17. Images of H&E stained slices of major organs after different treatments.

Scale bar: 100  $\mu$ m.

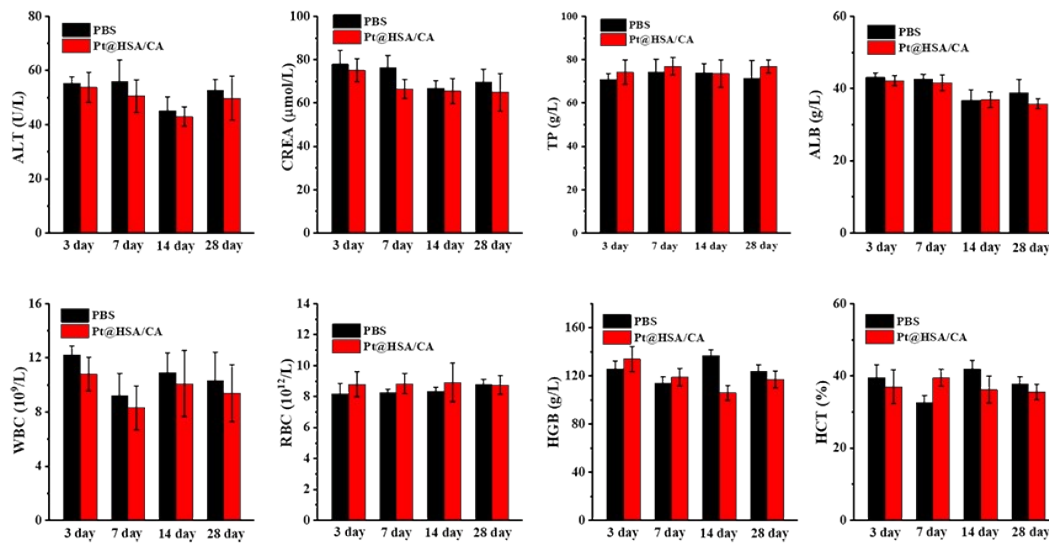


Figure S18. Blood biochemistry and hematology data of the mice treated with Pt@HSA/CA NPs. All the data were collected at the different time points of 3, 7, 14, and 28 day after intravenous injection.

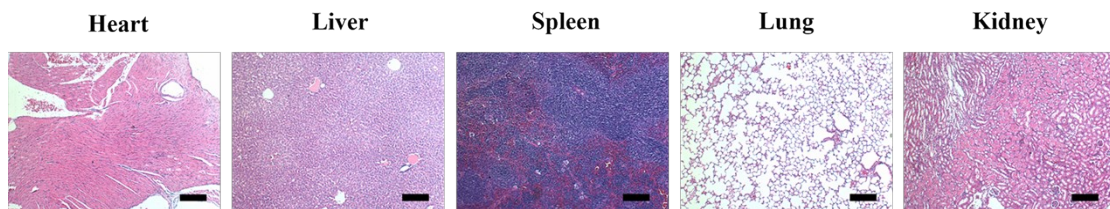


Figure S19. Images of H&E stained slices of major organs after 28 days. Scale bar: 100 μm.

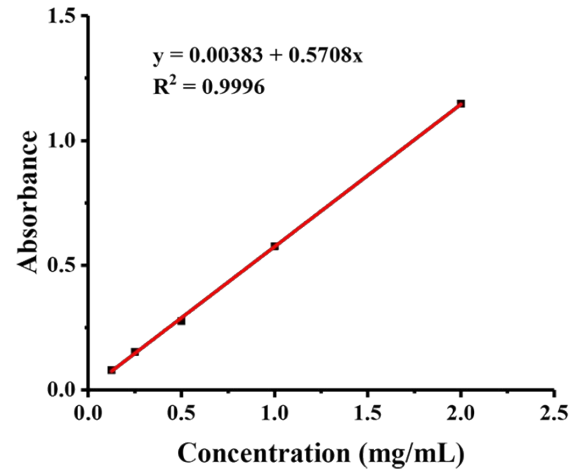


Figure S20. The standard curve of HSA concentration.