Supplements Information

Versatile Nanoplatform for Enhanced Sonodynamic Therapy via Hypoxia Alleviation, Glutathione Depletion, and Calcium Overload

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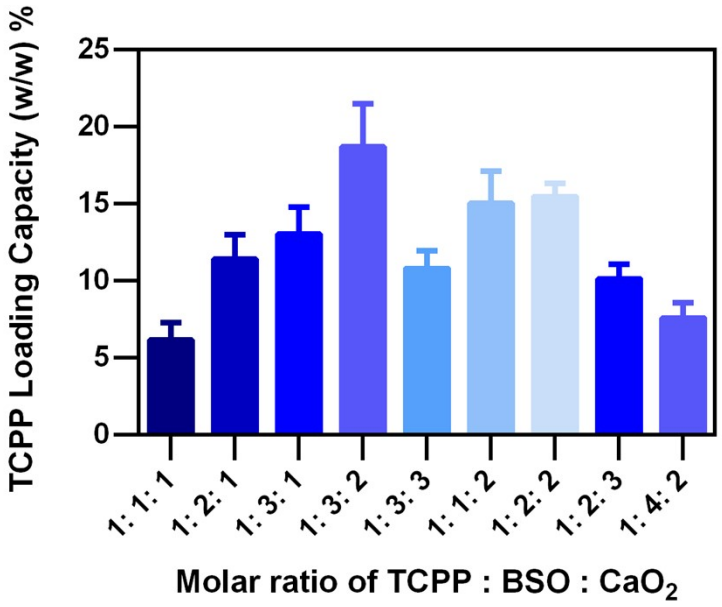


Figure S1. Screening of different molar ratios of TCPP, BSO, and CaO_2 to optimize the loading capacity of TCPP. A total of nine combinations were evaluated while keeping the SH amount fixed. The formulation with a molar ratio of 1:3:2 (TCPP:BSO:CaO_2) exhibited the highest TCPP loading capacity (~19.4%, w/w).

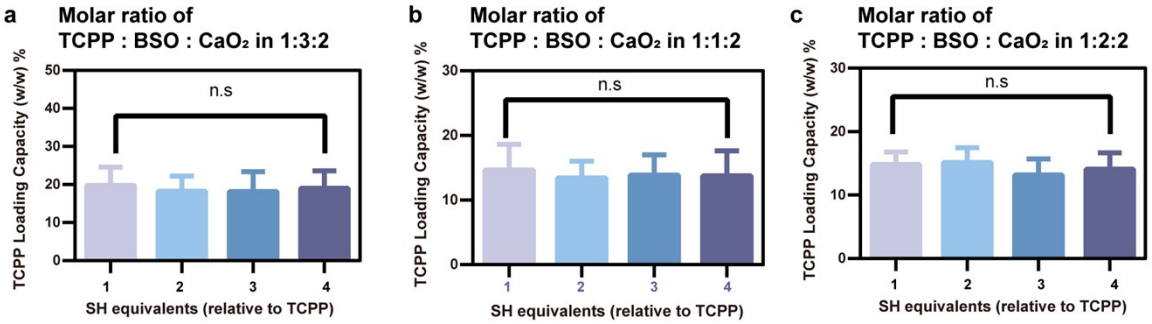


Figure S2. Evaluation of the effect of SH equivalents on TCPP loading capacity under

different fixed molar ratios of TCPP:BSO:CaO_2: (a) 1:3:2, (b) 1:1:2, and (c) 1:2:2. The amount of SH (1 to 4 equivalents, relative to TCPP) did not lead to a statistically significant change in TCPP loading capacity (n.s., one-way ANOVA), indicating that SH plays a surface-modifying role and does not influence the loading capacity of TBC NPs.

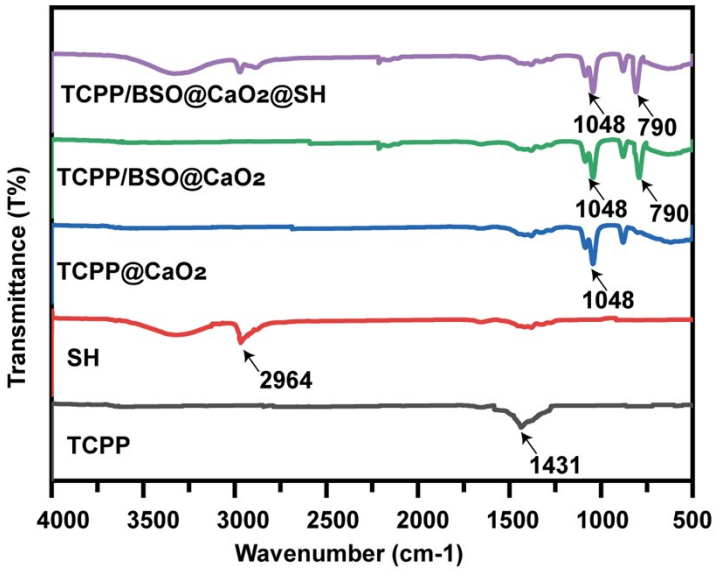


Figure S3. FT-IR spectra of TCPP, SH, TCPP@CaO_2, TBC, and TBC@SH NPs.

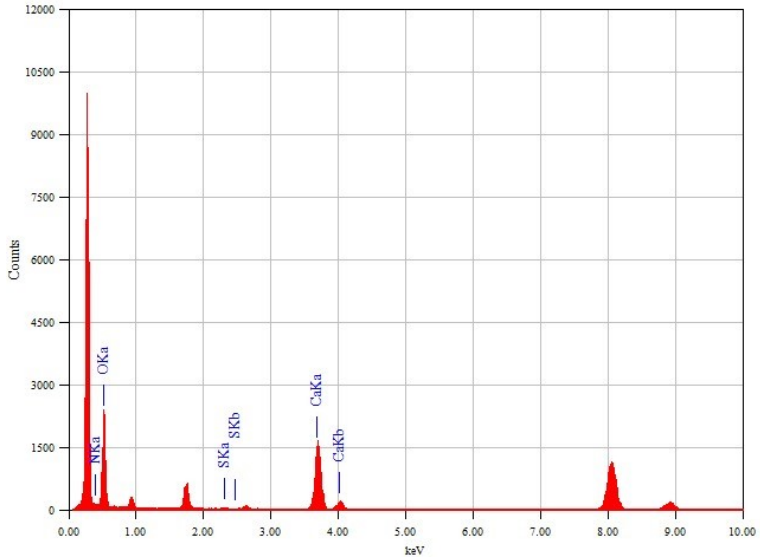


Figure S4. EDS analysis of TBC@SH, revealing the characteristic peaks of oxygen (O), calcium (Ca), sulfur (S), and nitrogen (N).

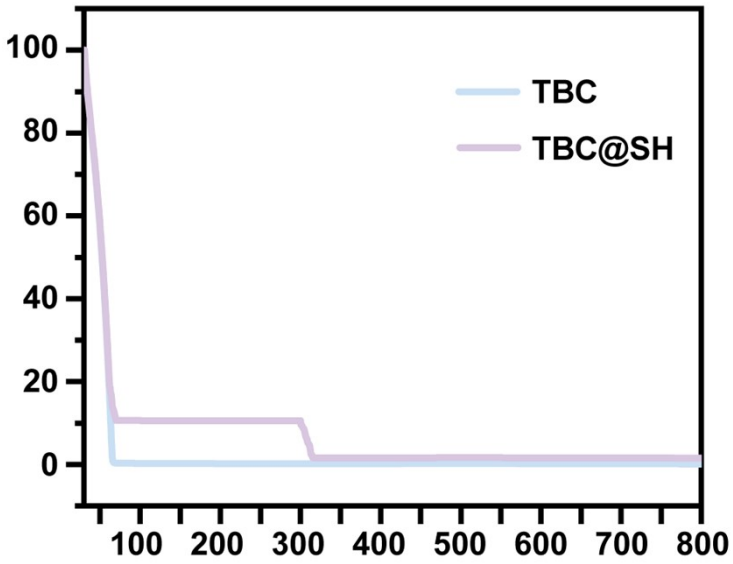
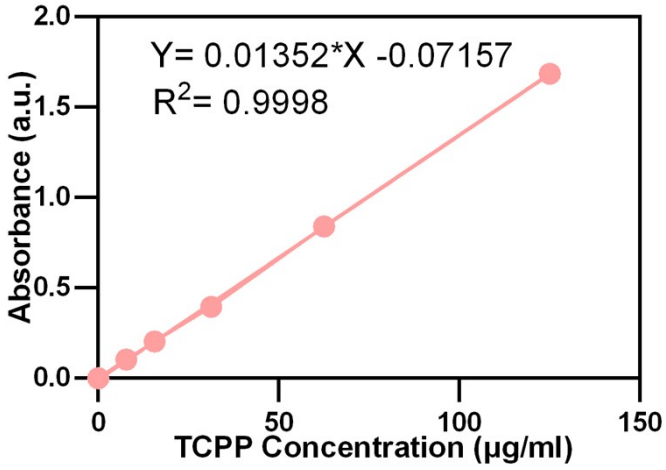


Figure S5. Thermogravimetric analysis (TGA) curves of TBC NPs and TBC@SH NPs under nitrogen atmosphere .



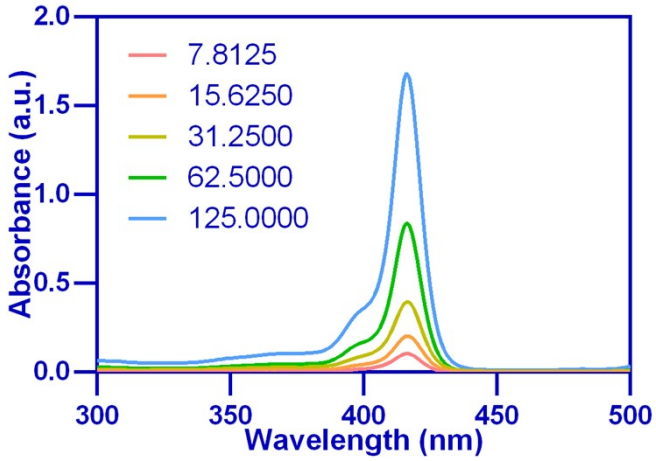


Figure S6. Standard curve of TCPP.

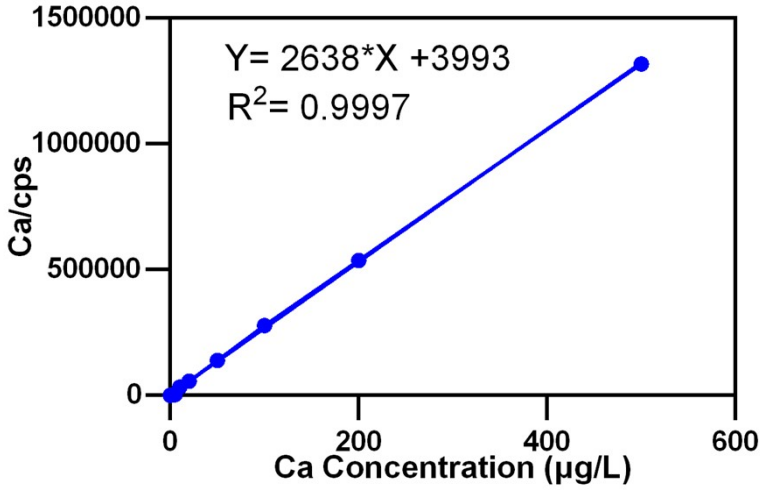


Figure S7. Levels of calcium were determined using a standard curve.

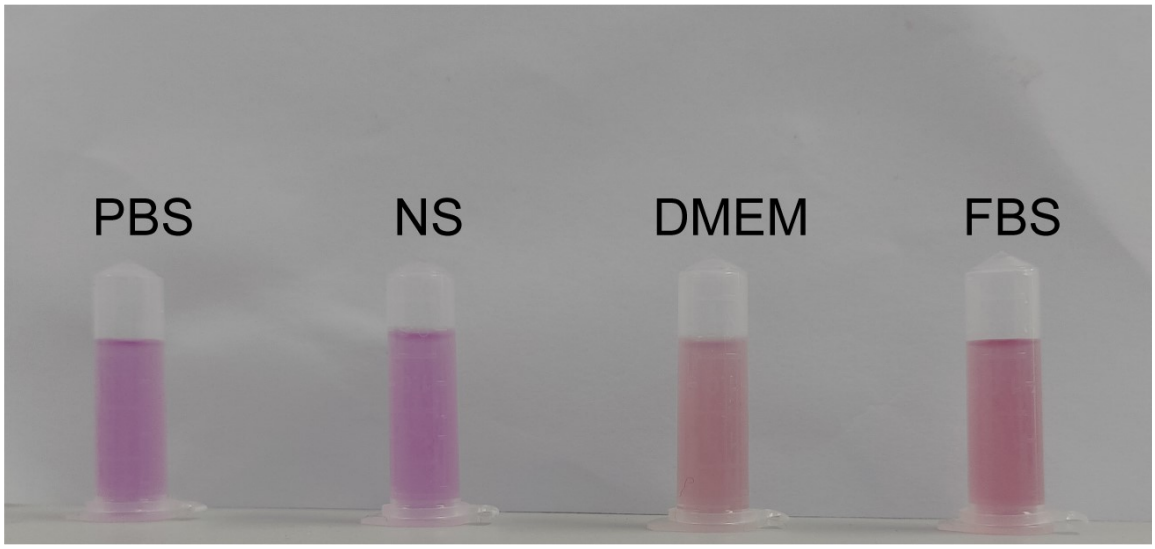


Figure S8. TBC@SH NPs remained well-dispersed in various solutions (PBS, normal saline, DMEM, and fetal bovine serum) for 7 days without noticeable aggregation.

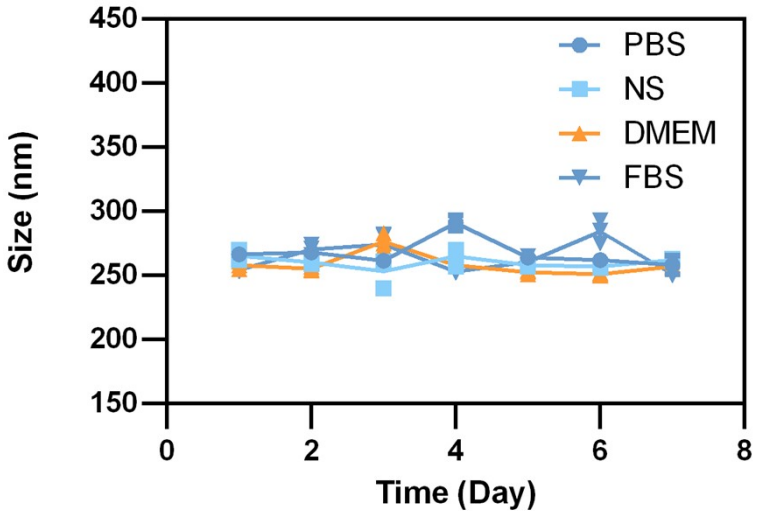


Figure S9. Hydrodynamic size of TBC@SH NPs in various incubation solutions for 7 days.

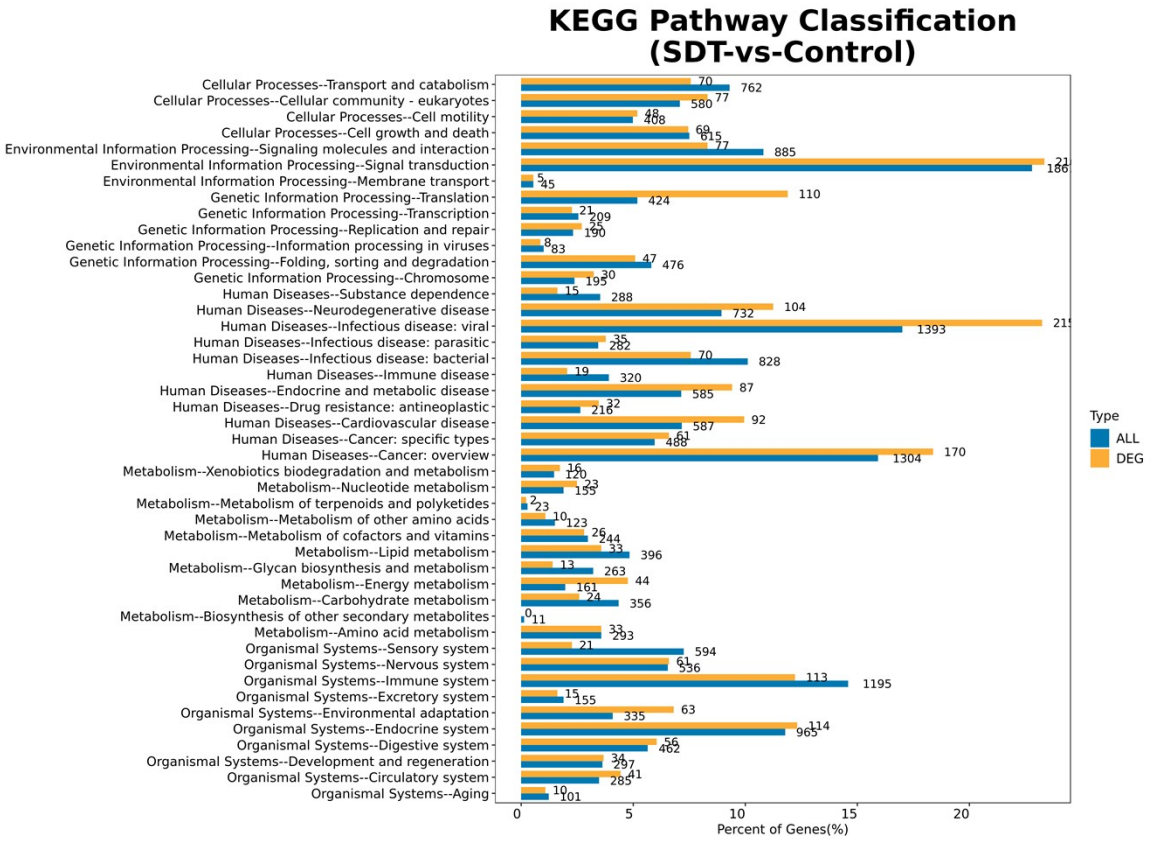


Figure S10. The comparison of the KEGG pathway classification between all genes and differentially expressed genes (DEG) across different groups.

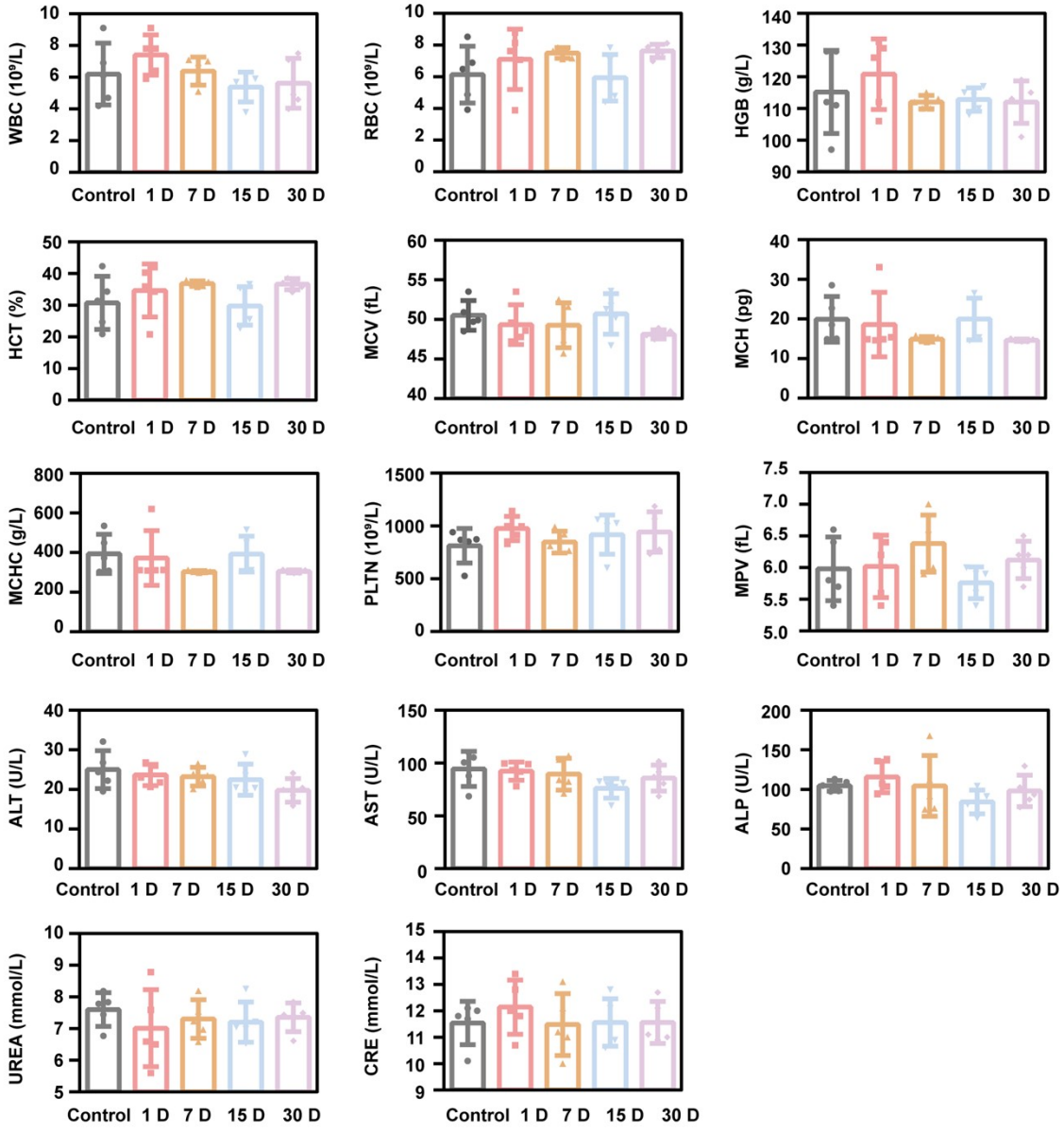


Figure S11. Hematological parameters (WBC, RBC, HGB, HCT, MCV, MCH, MCHC, PLTN, and MPV) and blood biochemical parameters (ALT, AST, ALP, urea, and CRE) of mice at different time points (1 day, 7 days, 15 days, and 30 days) after TBC@SH nanoparticle injection (10 mg/kg).

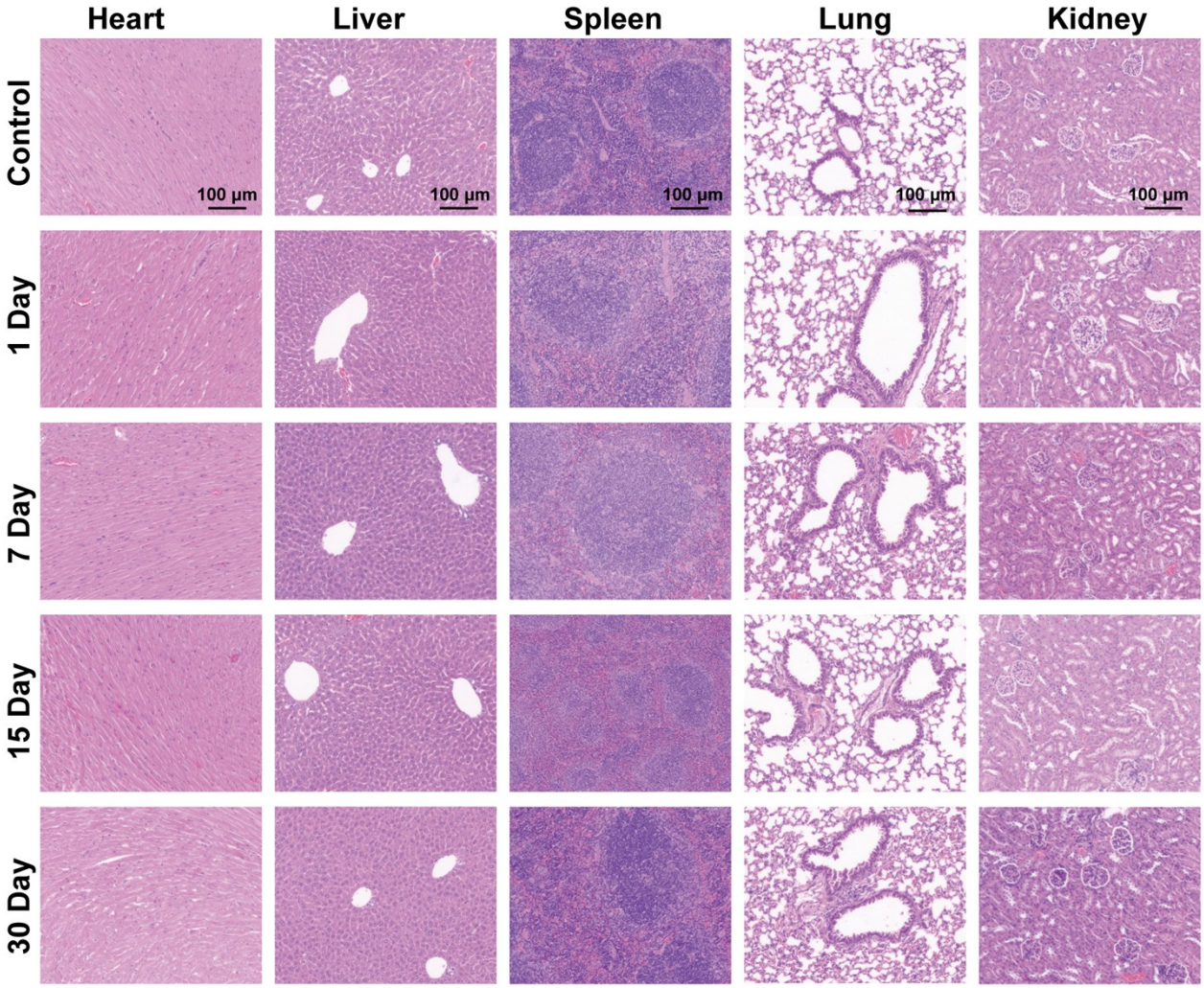


Figure S12. Hematoxylin and eosin (H&E) staining of major organs (heart, liver, spleen, lung, and kidney) from mice at different time points (control, 1 day, 7 days, 15 days, and 30 days) after TBC@SH nanoparticle injection (10 mg/kg).

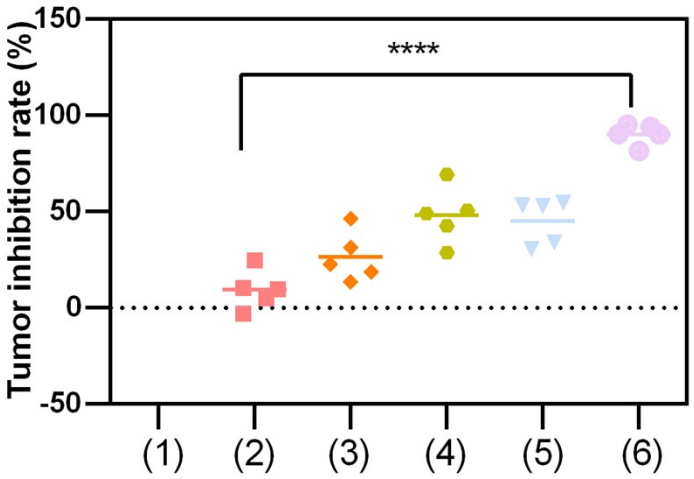


Figure S13. Tumor inhibition rates (%) of various treatment groups: (1) Control group, (2) US group, (3)TCPP+US group, (4) CaO_2+BSO+US group, (5) TBC@SH group, and (6) TBC@SH+US group.

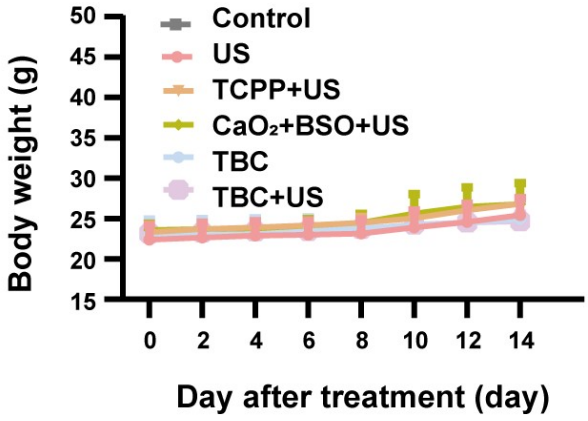


Figure S14. Body weight curves of mice in different treatment groups, including Control, US, TCPP+US, CaO_2+BSO+US, TBC@SH, and TBC@SH+US, over a 14-day period.