

Supporting Information for :

In Situ Fabrication of MSN@MnO₂ Hybrid as Nanozymes for Enhancing ROS-Mediated Breast Cancer Therapy

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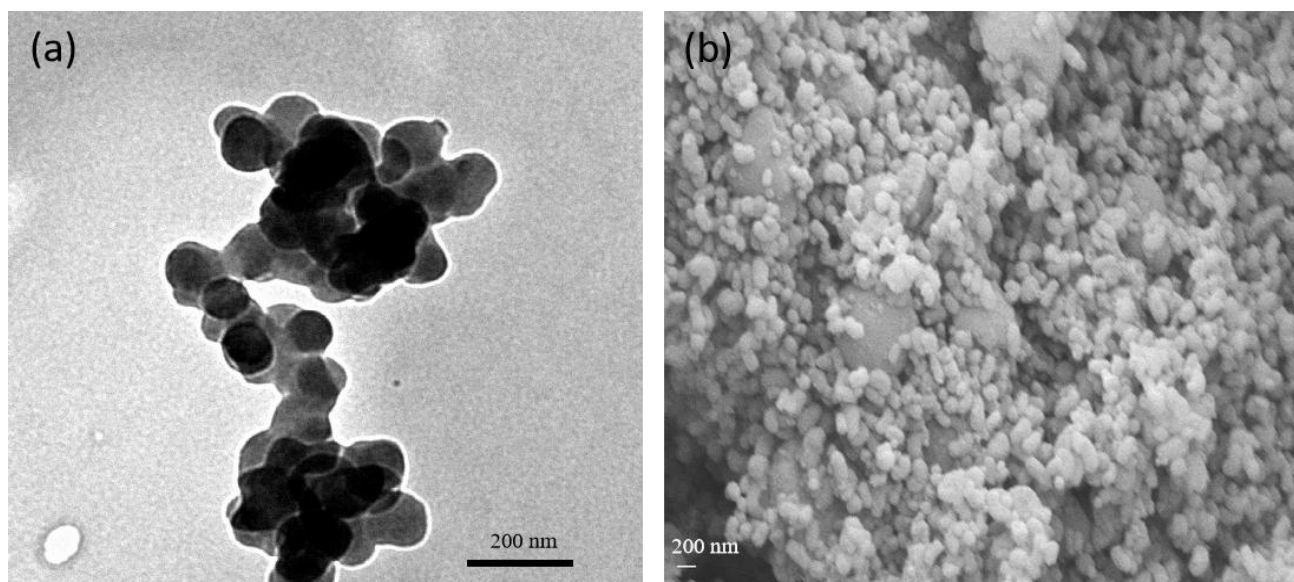


Figure S1. TEM (a) and SEM (b) of MS-ICG@MnO₂@PEG nanozymes.

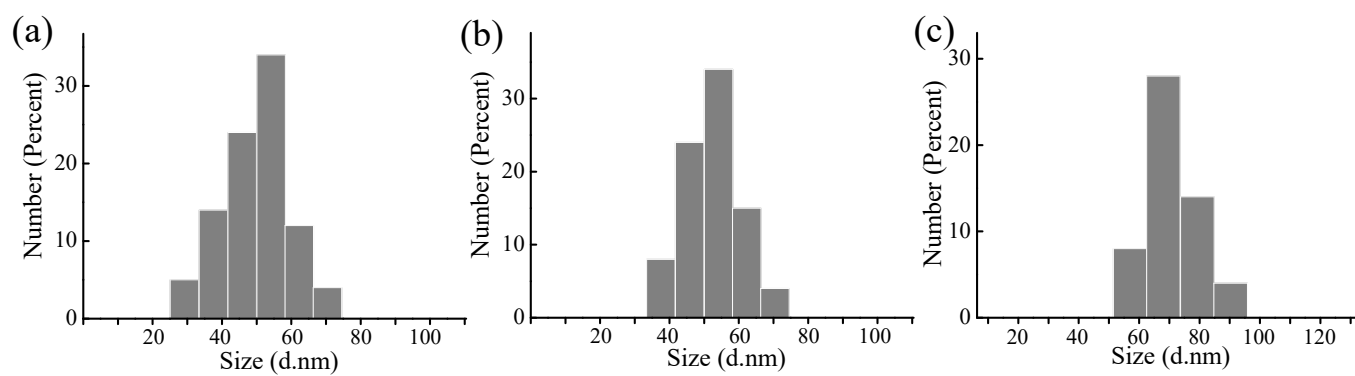


Figure S2. DLS particle size statistics of (a) MS, (b)MS-ICG and (c)MS-ICG@MnO₂.

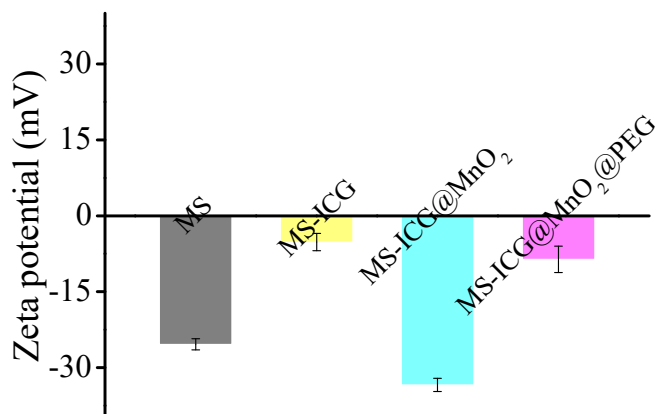


Figure S3. Zeta potential statistics corresponding to MS functionalized products.

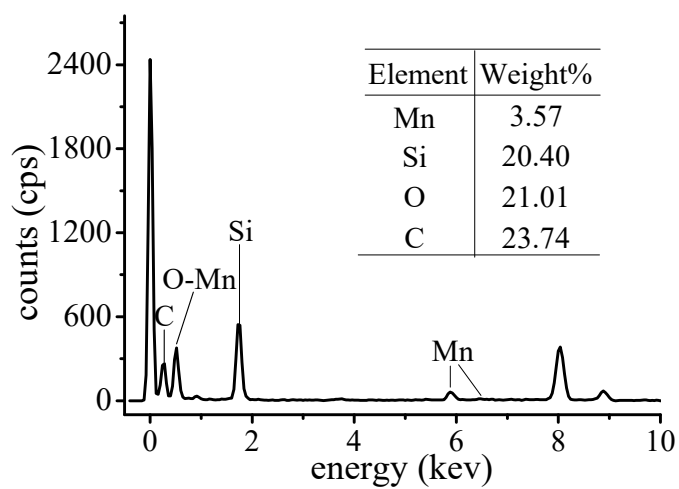


Figure S4.EDX spectrum of MS-ICG@MnO₂.

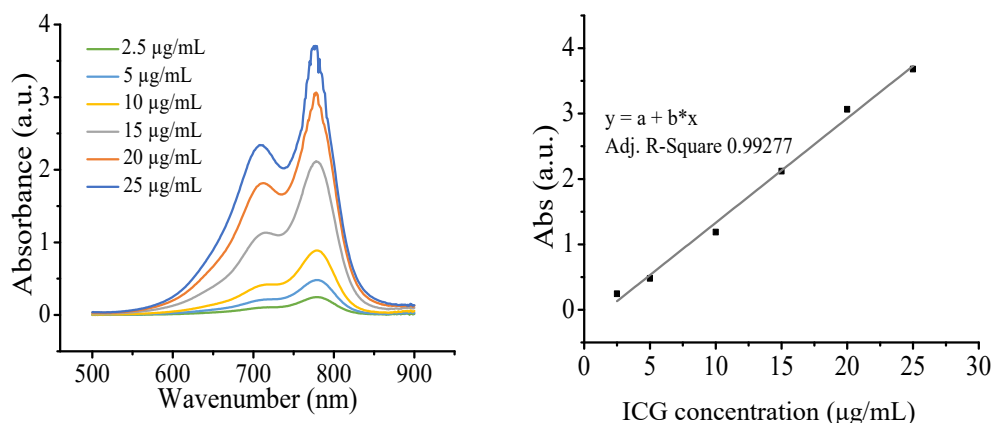


Figure S5. UV-vis absorption spectra of different concentrations of ICG and their linear fit.

To study ICG loading, MS were added into a mixed aqueous solution containing ICG. The mixed solution was dissolved by eddy current for 1-3 minutes. The solution was treated by ultrasonic wave in a 50 HZ ultrasonic cleaner for 1 h, and then stirred for 6 h at a constant speed in darkness. The dispersion was centrifuged to collect the ICG loaded MS and kept the supernatant to calculate ICG loading content. The ICG concentration in the supernatant was determined by a UV-vis spectrophotometer at 780 nm. ICG loading was calculated by the following equation: drug loading = (weight of ICG in the MS)/(weight of the MS). the ICG load efficiency was 25.6% as determined by UV spectroscopy.

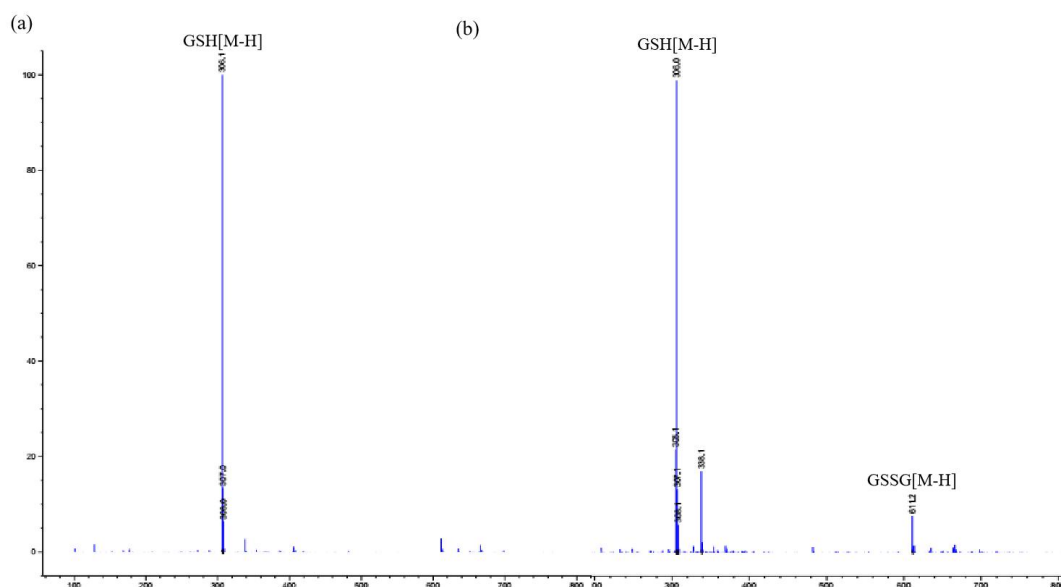


Figure S6. Mass spectrum of GSH(a) alone and GSH after reaction with MS@MnO₂@PEG (b).

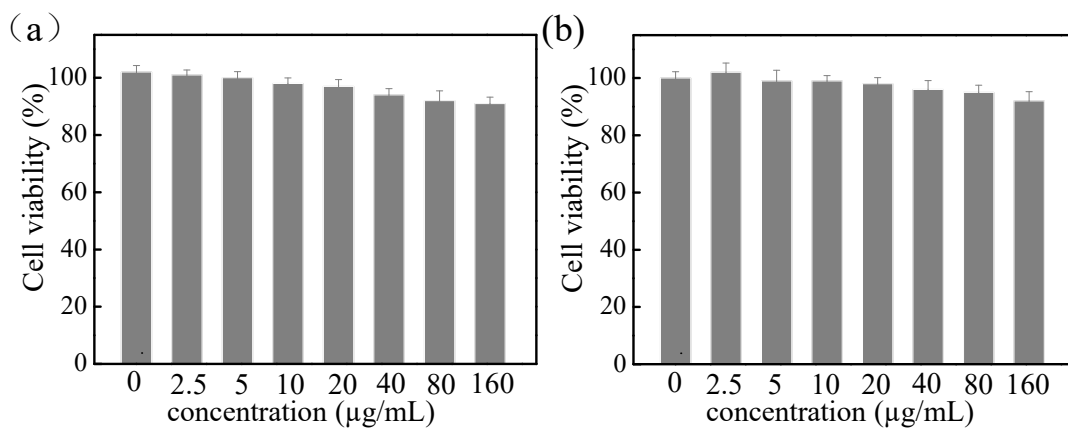


Figure S7. Cell viability of SH nerve cells (a) and RAW264.7 (b) after incubation with different concentrations of MS-ICG@MnO₂@PEG.

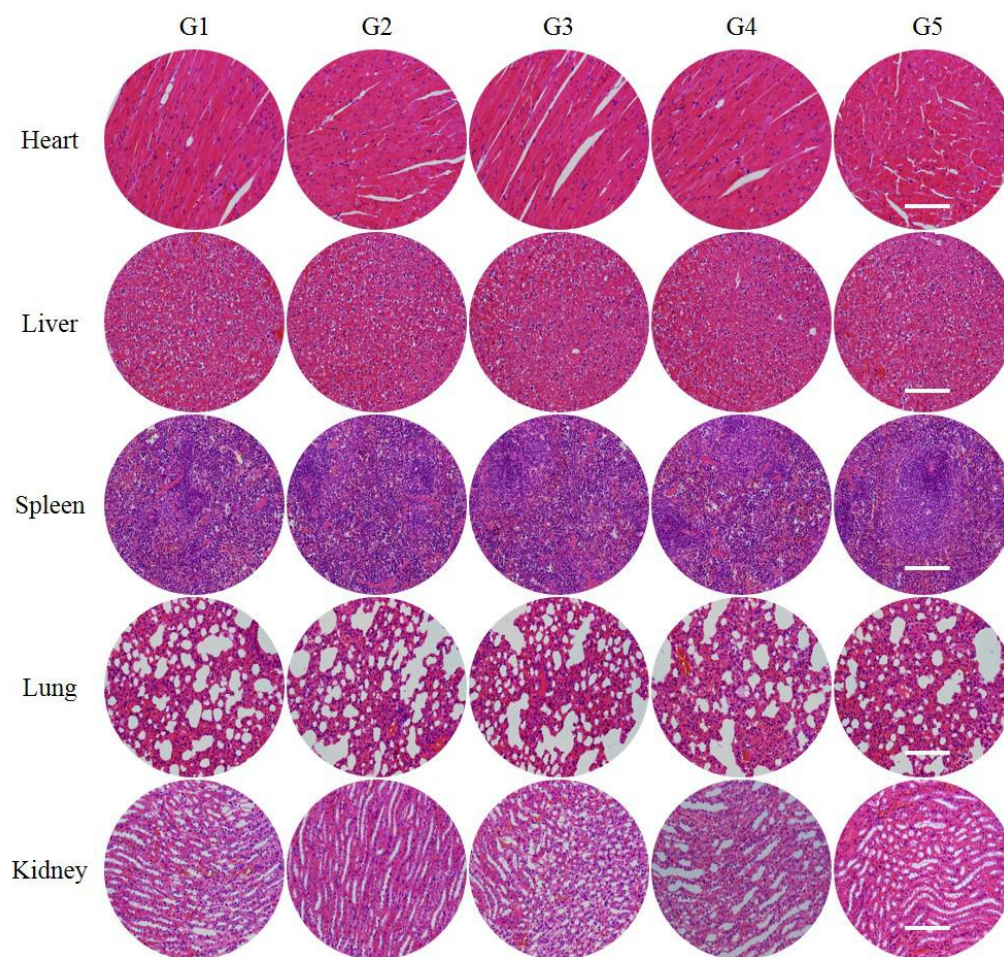


Figure S8. H&E sections of the main internal organs (including heart, liver, spleen, lung and kidney) of mice in different subcutaneous tumor treatment groups. Scale bar = 200 µm. G1: Control+NIR, G2: ICG+NIR, G3: MS-ICG@PEG+NIR, G4: MS@MnO₂@PEG, G5: MS-ICG@MnO₂@PEG+NIR.