Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supporting Information for

Glutathione-depleted prodrug platform of MnO_2-coated hollow polydopamine nanospheres for effective cancer diagnosis and therapy

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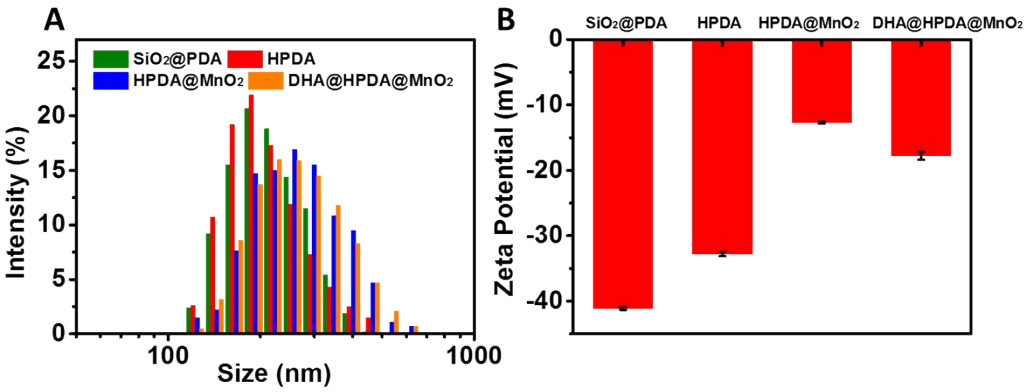

Figure S1. Hydrodynamic sizes (A) and Zeta potentials (B) of SiO_2@PDA, HPDA, HPDA@MnO_2, and DHA@HPDA@MnO_2 in D.I. water, respectively.

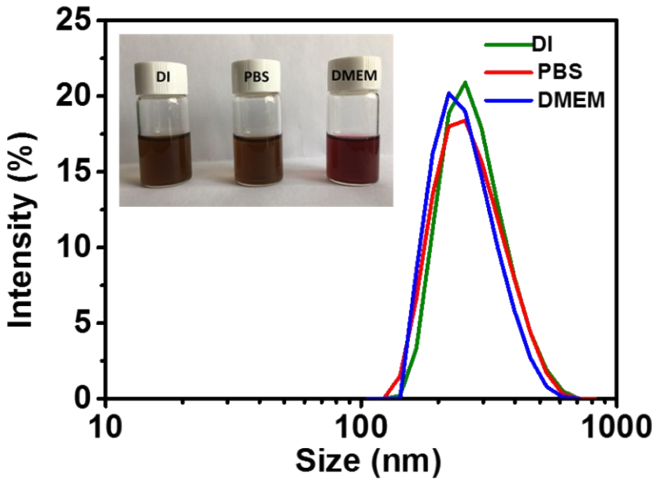

Figure S2. (C) Hydrodynamic size of as prepared DHA@HPDA@MnO_2 in D.I. water (DI), PBS, and DMEM. (Insert: photographs of DHA@HPDA@MnO_2 in DI, PBS, and DMEM) for a week.

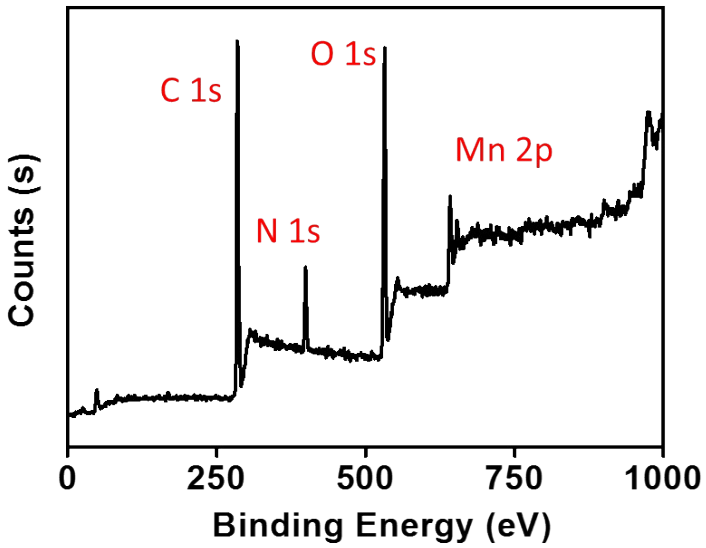

Figure S3. XPS spectrum of HPDA@MnO_2.

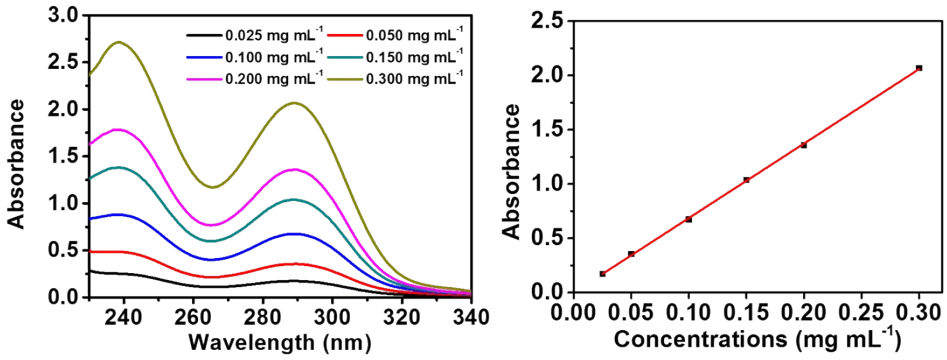

Figure S4. DHA standard curve measurement.

Accordingly, DHA (4 mg mL^{-1}) was diluted to different concentrations (0.125, 0.25, 0.5, 0.75, 1.0, 1.25, and 1.5 mg mL^{-1}) by ethanol solution. Then, 1.0 mL DHA solution of each concentration was added to 4.0 mL 0.2 % (wt%) NaOH aqueous solution to hydrolyze for 30 min at 55℃ and cooled down to form a stable structure of DHA derivative (UV absorbance peak of it was 290 nm). The absorbance spectra of different concentration DHA samples were obtained by using a UV-Vis spectrometer. The absorbance intensity at 290 nm was linearly correlated to the concentration of DHA within a certain range. The obtained standard curve is y=6.85527x + 0.0014 (y: absorbance value at 290 nm, x: concentration of DHA, R^2 = 99.967).

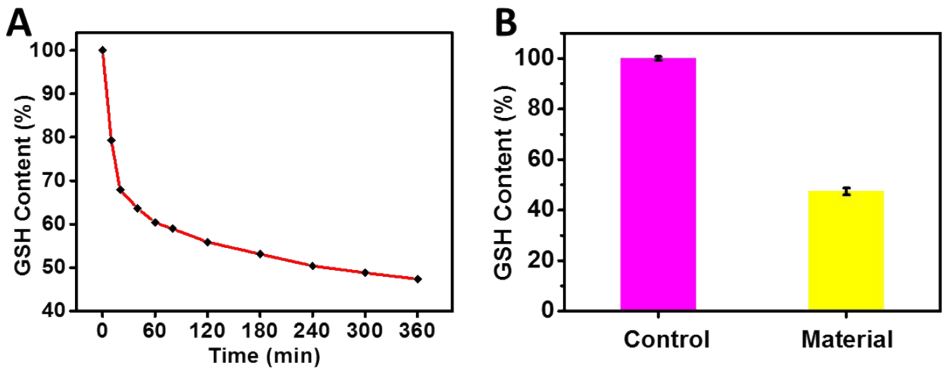

Figure S5. (A) GSH consumption by reacting HPDA@MnO_2 at several time points for 6 h. (B) Relative content of GSH with addition of HPDA@MnO_2 or not.

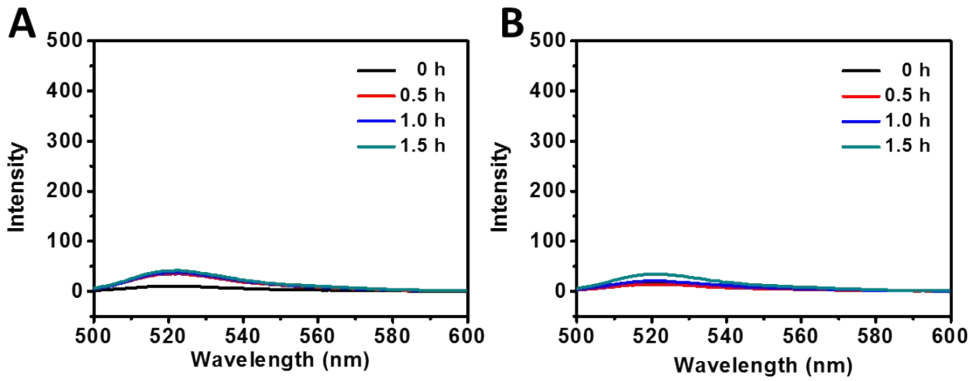

Figure S6. Detection of ROS generation in vitro with DCFH probe, (A) Mn^{2+}, (B) DHA, the fluorescence spectra in each group shows the intensity at different time point (0, 0.5, 1.0, and 1.5 h) with 10 mM PBS buffer (pH 5.5).

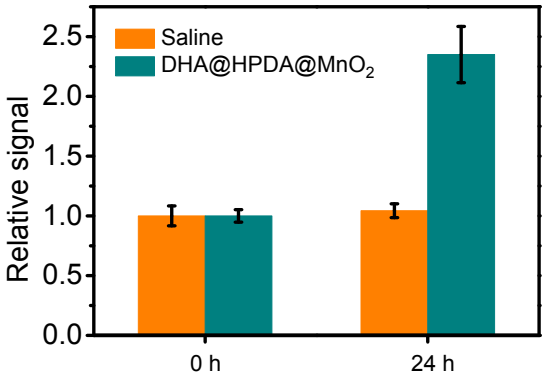

Figure S7. The relative signal intensity of tumor to normal tissue calculated from the marked region in Figure 7D.