Electronic supplementary information for

A reactive oxygen species-responsive antioxidant nanotherapy for the treatment of drug-induced tissue and organ injury

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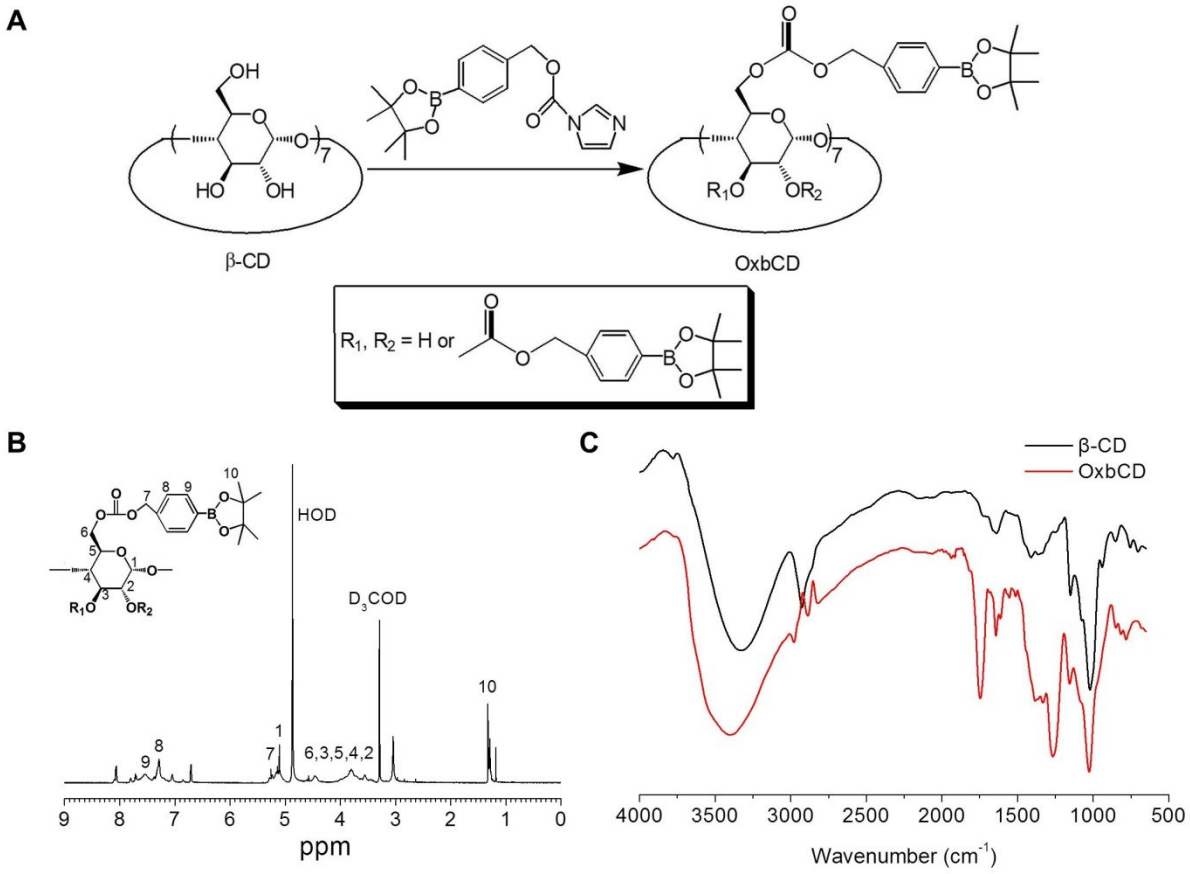

Figure S1. Synthesis and characterization of a ROS-responsive material OxbCD. (A) Schematic illustration of synthesis of OxbCD from a cyclic oligosaccharide β-cyclodextrin (β-CD). (B-C) Characterization of OxbCD by ^{1}H NMR (B) and FT-IR (C) spectroscopy. In the image (B), R_1 and R_2 represent the groups of -H or 4-(acyloxymethyl) phenylboronic acid pinacol ester as indicated in the image (A).

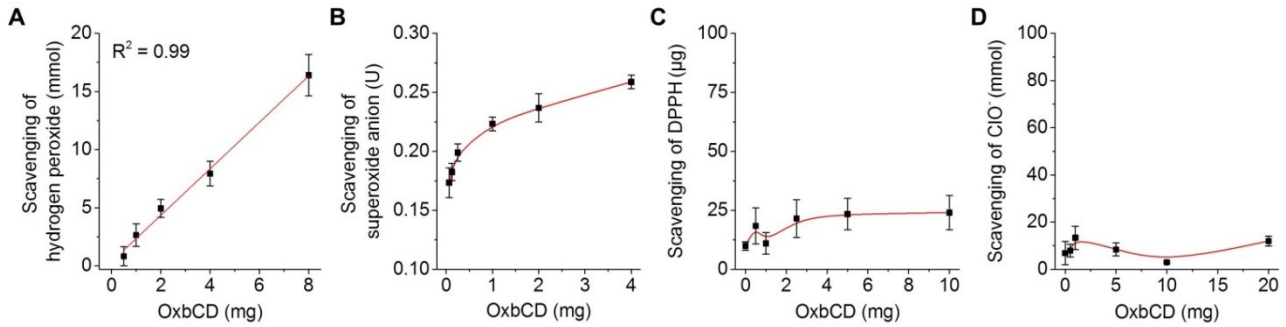

Figure S2. ROS-scavenging capability of OxbCD. (A-B) Elimination of H_2O_2 (A) and superoxide anion (B) by OxbCD. (C) Free radical-scavenging efficiency of OxbCD examined by 2,2-diphenyl-2-picrylhydrazyl (DPPH) assay. (D) Elimination of hypochlorite by OxbCD. Data are presented as mean ± SE (n = 3).

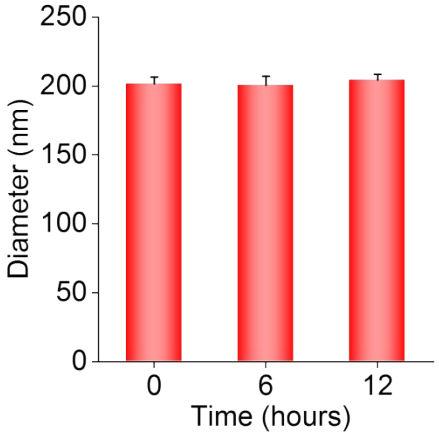

Figure S3. Colloidal stability of TON in serum. Mean hydrodynamic diameters of TON were measured after incubation in serum for varied time periods at 37°C. Data are presented as mean ± SE (n = 3).

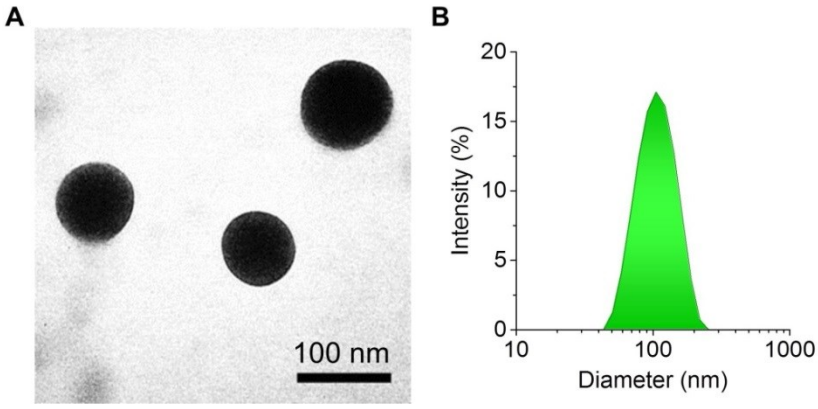

Figure S4. Characterization of Cy7.5-labeled OxbCD nanoparticles (Cy7.5-ON). (A-B) The TEM image (A) and size distribution profile (B) of Cy7.5-ON.

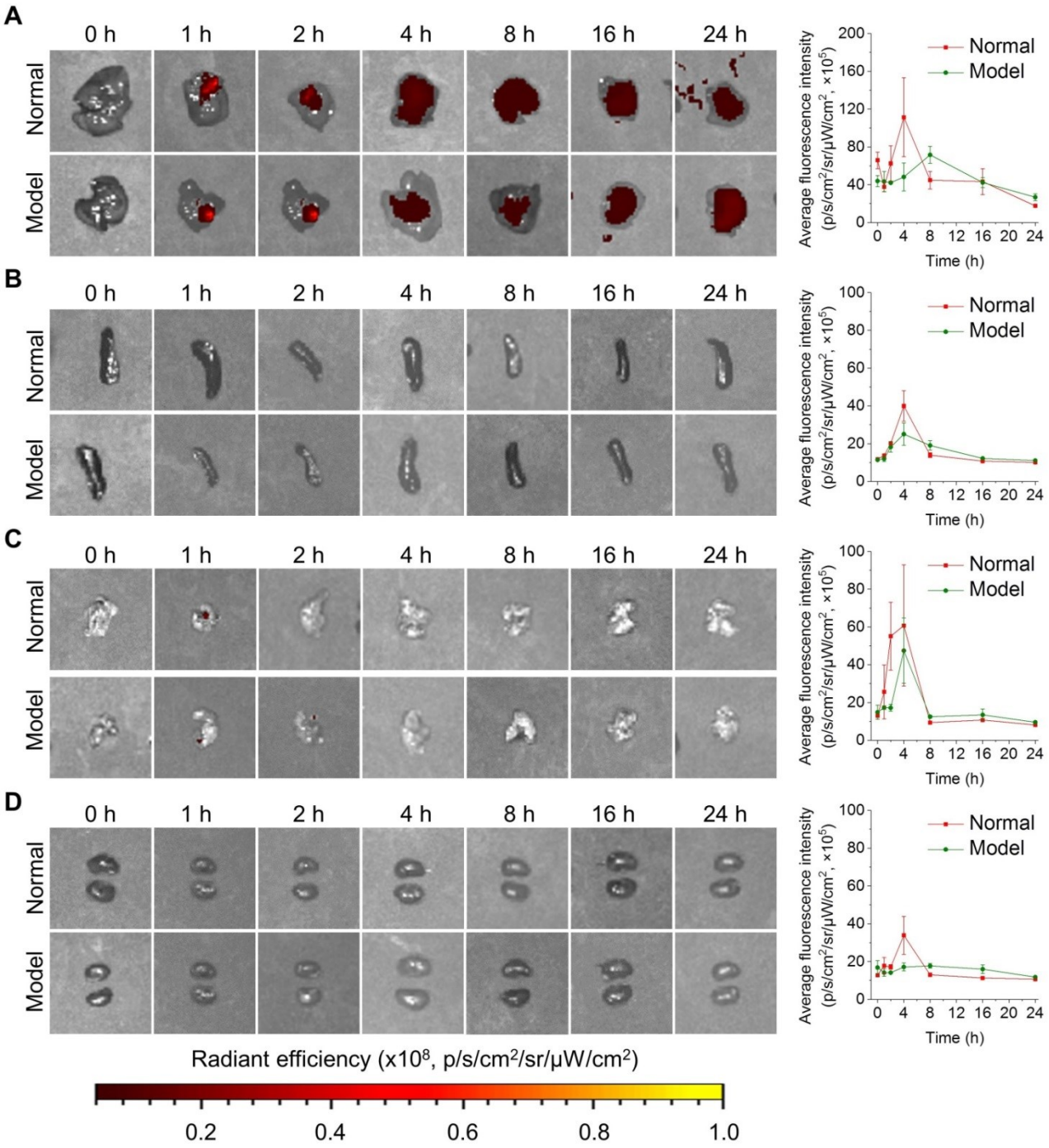

Figure S5. Biodistribution of Cy7.5-ON in representative major organs. (A-D) *Ex vivo* images (left) and quantitative data (right) of the liver (A), spleen (B), lung (C), and kidneys (D) after oral administration in mice with or without IND-induced gastrointestinal injury. BALB/c mice received a single oral administration of Cy7.5-ON. After 1 h, oral administration of IND or saline was performed. Major organs were isolated for *ex vivo* imaging. Data are presented as mean ± SE (n = 3).

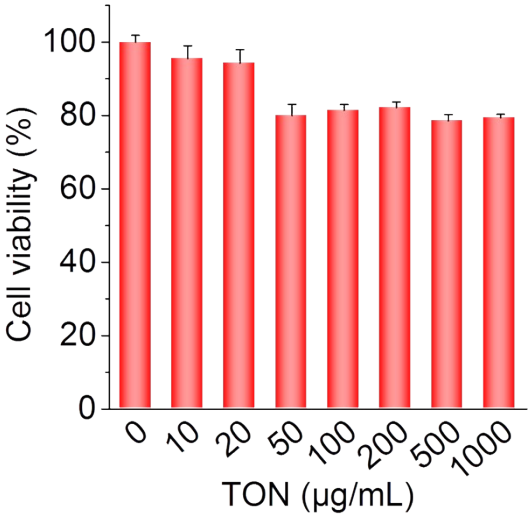

Figure S6. Cell viability of TON in RAW264.7 macrophages. After 12 h of incubation with various doses of TON, cell viability of RAW264.7 cells was quantified by MTT. Data are presented as mean ± SE (n = 6).

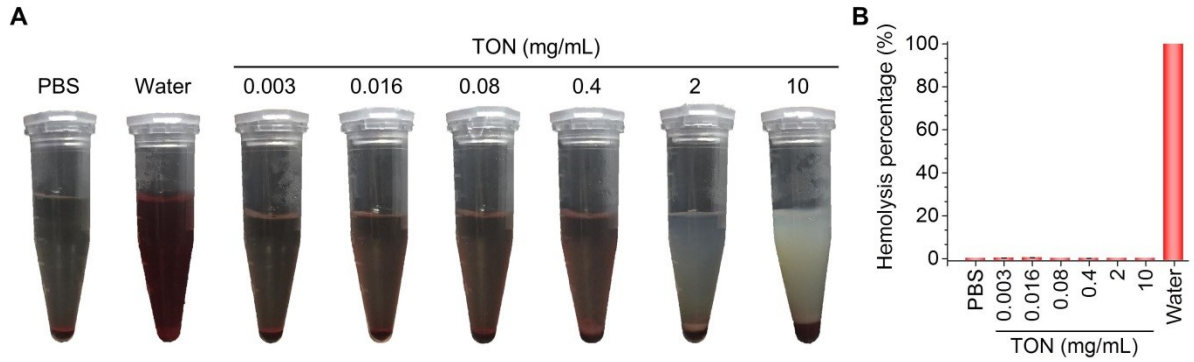

Figure S7. Hemolysis evaluation of TON using fresh erythrocytes collected from Sprague-Dawley rats. (A) Representative digital photos showing erythrocytes that were mixed with saline (negative control), TON at various concentrations, or pure water (positive control) and incubated at room temperature for 2 h. (B) The hemolysis degrees of various groups calculated by quantification of absorbance at 500 nm due to hemoglobin. Data in (B) are presented as mean ± SE (n = 6).