Supporting Information

Multifunctional hydrogel coatings with high antimicrobial loading efficiency and pH-responsive property for urinary catheter applications

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Table S1. Relative area of the deconvoluted peaks of C1s of different surfaces.

Peak/Binding energy	Percentage (%)		
	PT0	PT8	PT8-NFZ
C-C/C-H（284.8 eV）	49.08	54.42	40.27
C-N（285.6 eV）	17.29	13.37	17.05
C-O（286.15 eV）	16.39	18.38	25.22
C=O（287.5 eV）	4.24	1.45	4.02
C-S（287 eV）	7.75	7.3	7.32
O=C-O（288.7 eV）	5.26	5.07	6.12
Total	100	100	100

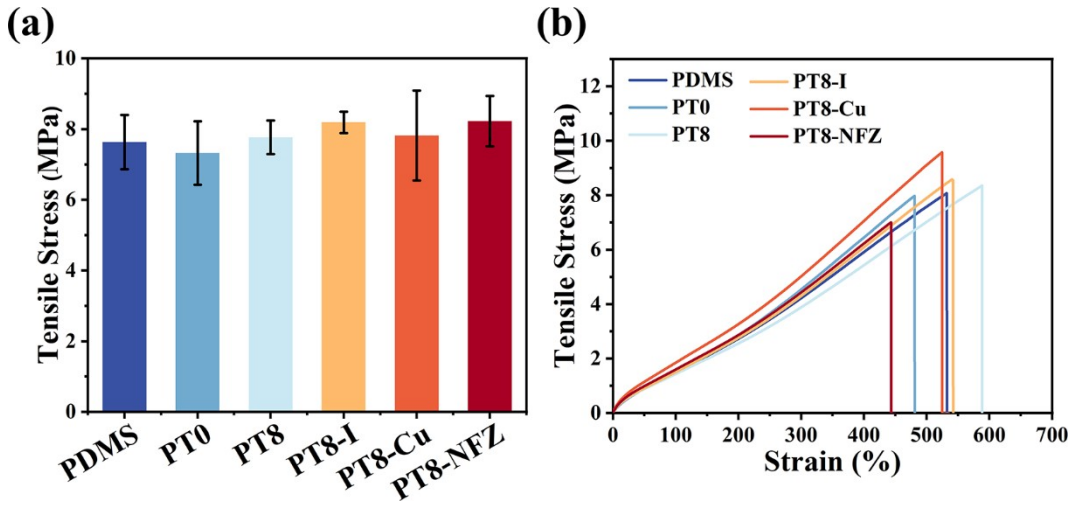

Figure S1. (a) Tensile strength of pristine PDMS and modified PDMS. (b) Representative tensile stress-strain curves of pristine PDMS and modified PDMS.

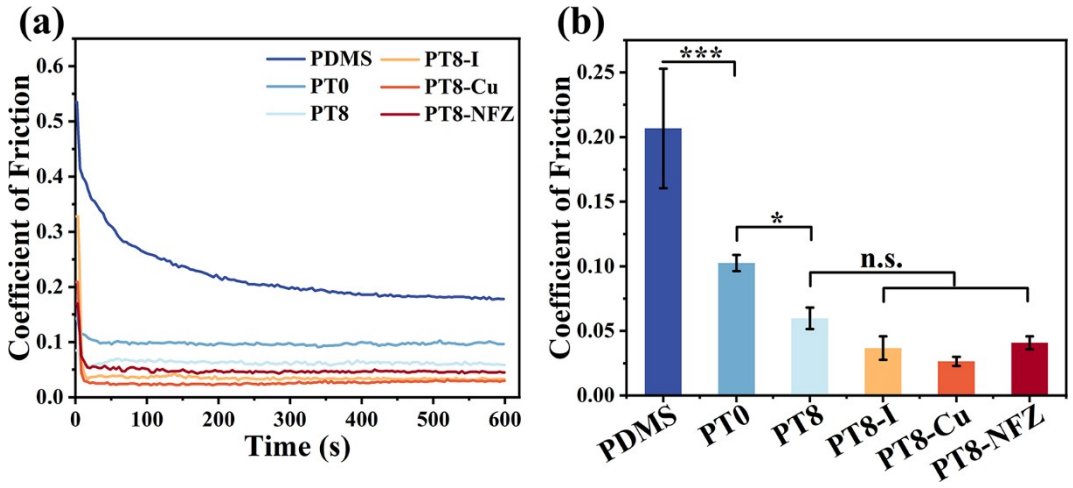

Figure S2. (a) COF-time curves of pristine PDMS surface and modified PDMS surfaces in artificial urine. (b) The average values of COF of pristine PDMS and modified PDMS in artificial urine.

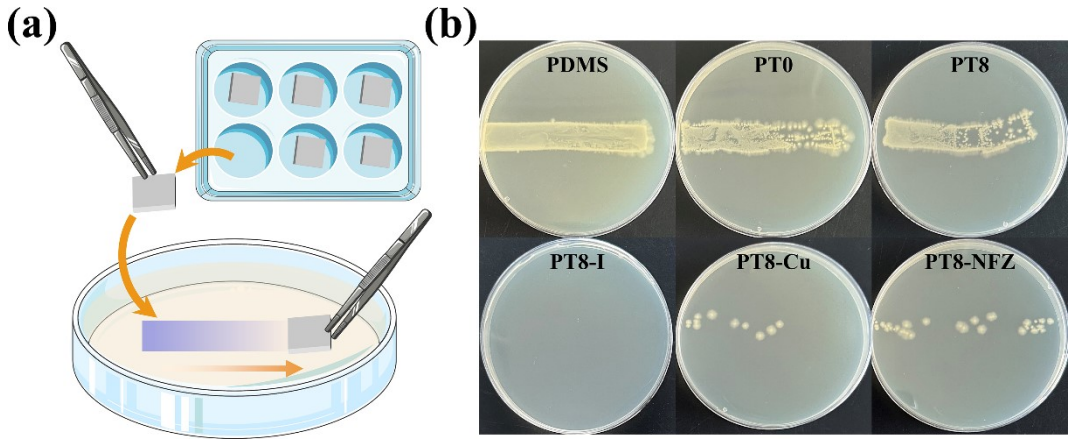

Figure S3. (a) Schematic diagram illustrating PDMS sheets after bacterial assay slid on an agar plate. (b) Pristine and modified PDMS sheets slid on agar plate after exposure to *E. coli* suspension (10^8 CFU/mL in PBS) for 4 h.

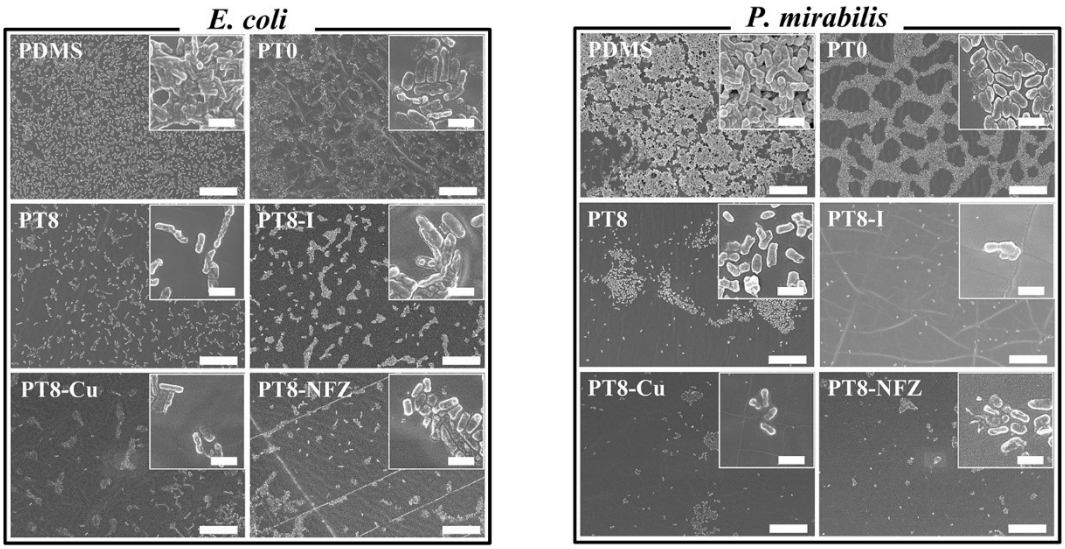

Figure S4. Biofilm formation on pristine and modified PDMS surfaces after incubation in growth medium containing 10^5 CFU/mL (initial concentration) of *E. coli* and *P. mirabilis* for 24 h. Scale bars represent 20 μm and 2 μm in the main images and insets, respectively.

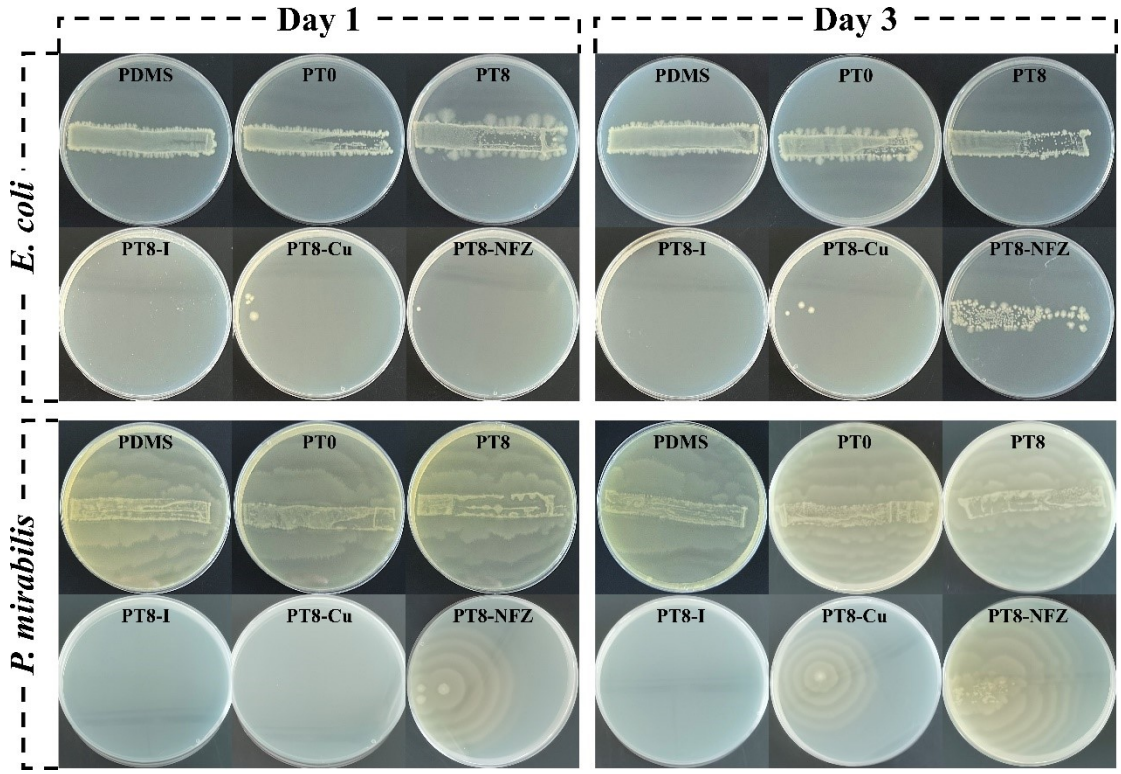

Figure S5. Pristine and modified PDMS sheets slid on agar plate after incubation in growth medium containing 10^5 CFU/mL (initial concentration) of *E. coli* and *P. mirabilis* for 24 h and 72 h. Culture medium was changed daily.

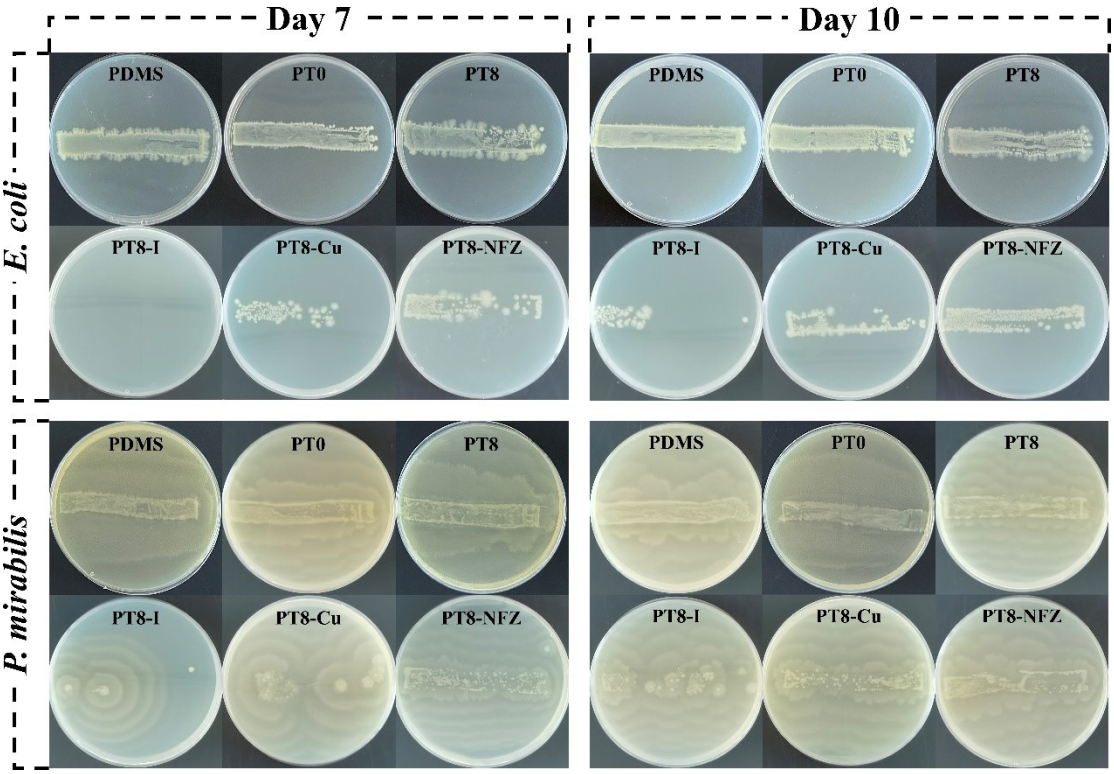

Figure S6. Pristine and modified PDMS sheets slid on agar plate after incubation in growth medium containing 10^5 CFU/mL (initial concentration) of *E. coli* and *P. mirabilis* for 7 days and 10 days. Culture medium was changed daily.

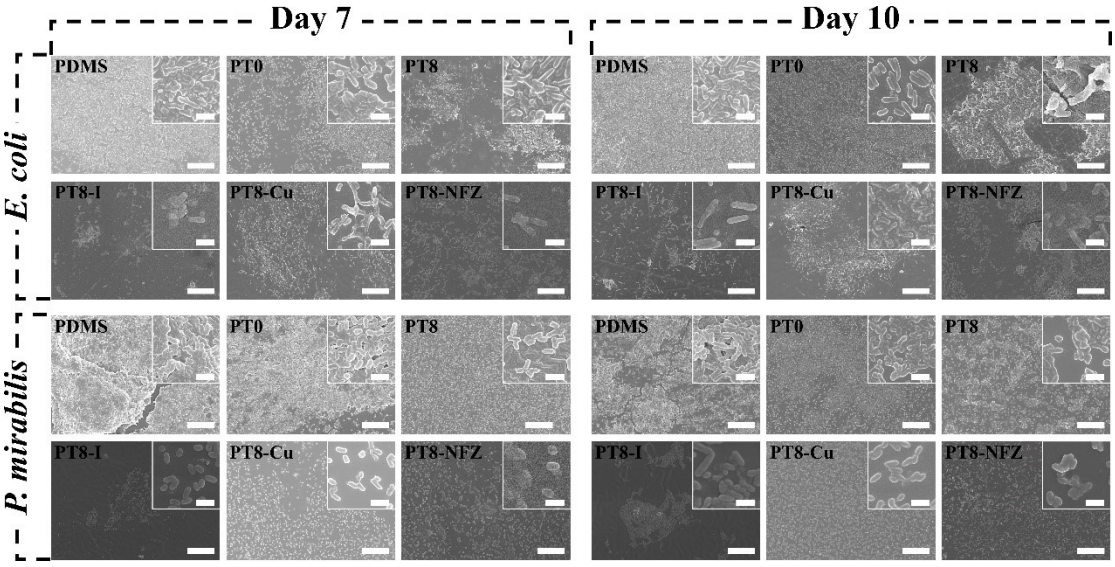

Figure S7. Biofilm formation on pristine and modified PDMS surfaces after incubation in growth medium containing 10^5 CFU/mL (initial concentration) of *E. coli* and *P. mirabilis* for 7 days and 10 days. Culture medium was changed daily. Scale bars represent 20 μm and 2 μm in the main images and insets, respectively.

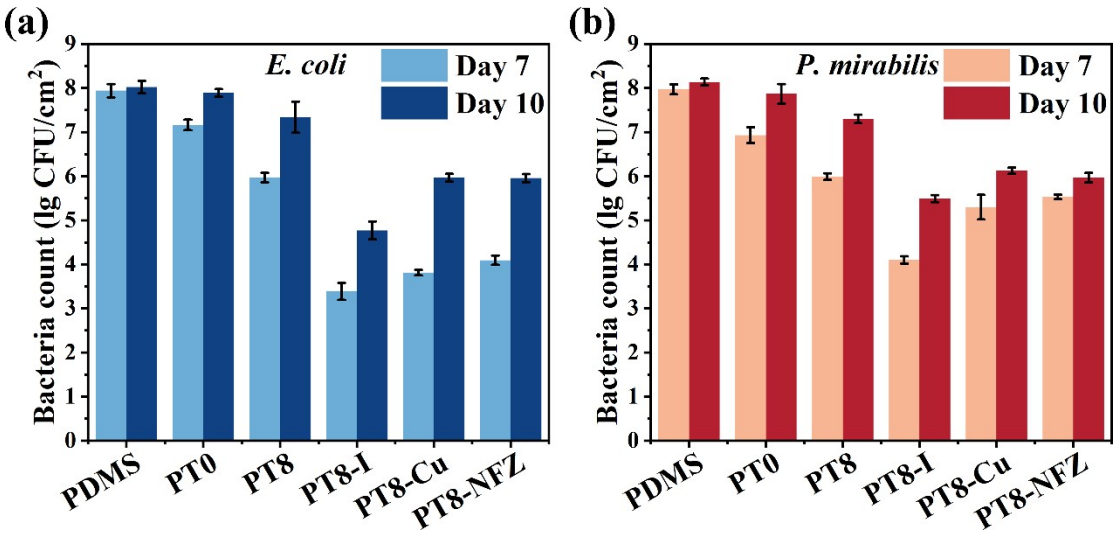

Figure S8. Number of alive bacterial cells adhering on pristine and modified PDMS surfaces after incubation of in growth medium containing 10^5 CFU/mL (initial concentration) of (a) *E. coli* and (b) *P. mirabilis* for 7 days and 10 days. Culture medium was changed daily.

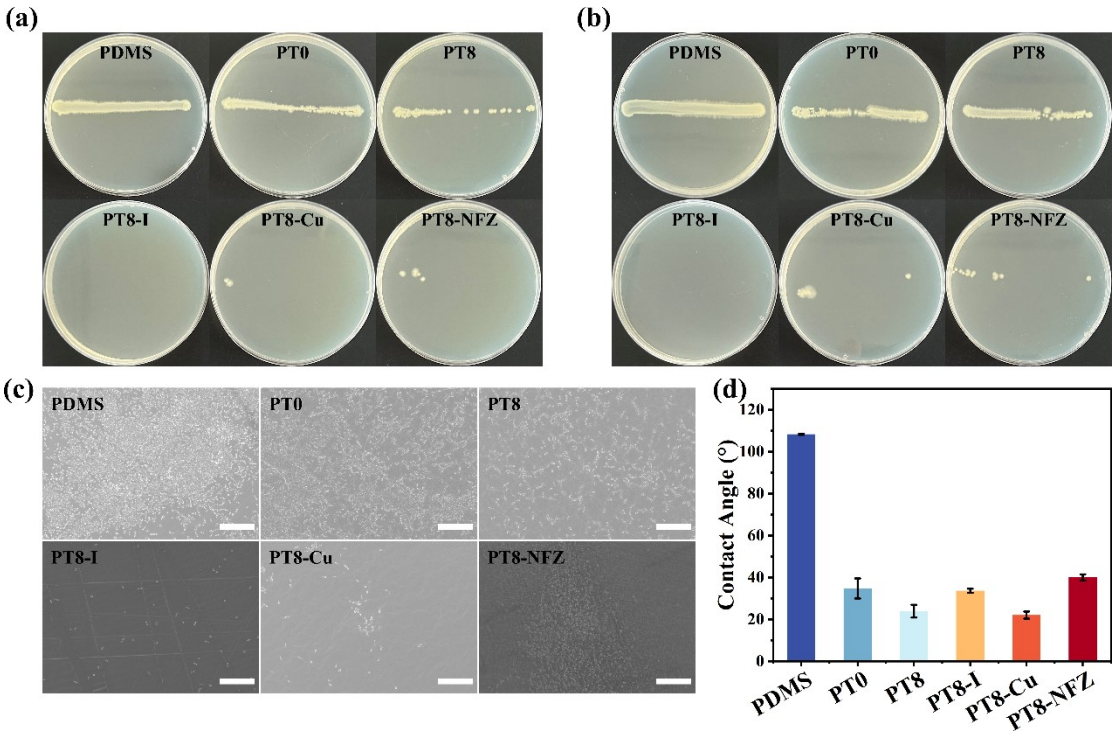

Figure S9. (a) Pristine and modified PDMS balls slid on agar plate after exposure to *E. coli* suspension (10^8 CFU/mL in PBS) for 4 h. (b-d) Pristine and modified PDMS balls were subjected to the frictional test with a total sliding distance of 300 cm: (b) Pristine and modified PDMS balls slid on agar plate after bacteria exposure. (c) SEM images of *E. coli* adhesion on pristine and modified PDMS surfaces after bacteria exposure. Scale bars represent 20 μm. (d) Water contact angles of pristine and modified PDMS surfaces after the frictional test.

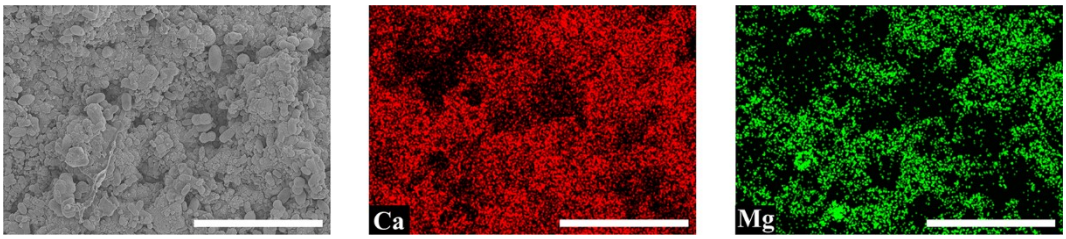

Figure S10. SEM images and EDS mappings of encrustation collected from the lumen of the unmodified catheter after implantation for 7 days. Scale bars represent 100 μm.

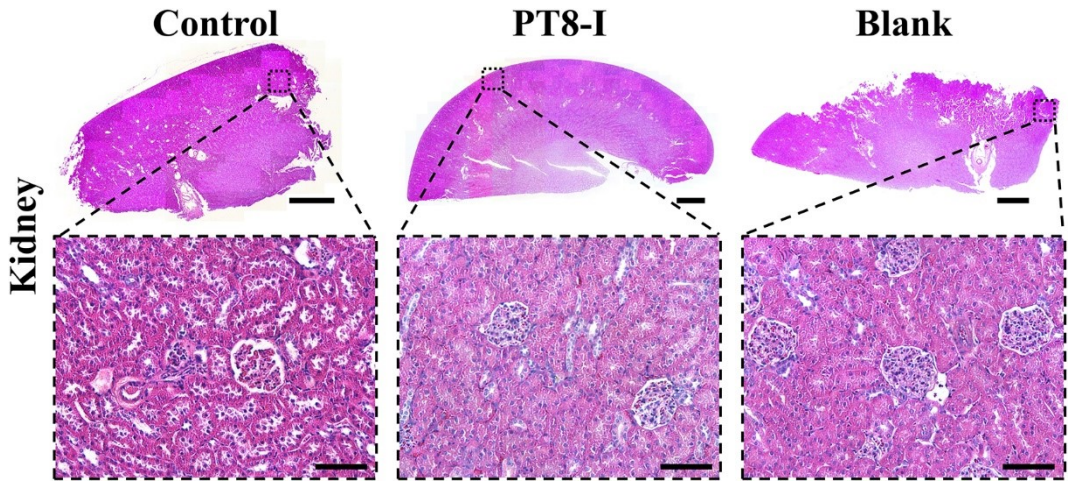

Figure S11. Representative images of H&E stained kidney of rabbit of the control group, PT8-I group, and blank group (without catheterization) after 7 days of study. Scale bars in the main images and insets represent 2 mm and 100 μm, respectively.