

## **Quercetin-functionalized gold/silver nanoparticles with tunable antibacterial selectivity for bacterial infection treatment**

Yuchen Xie<sup>a</sup>, Liyun Ma<sup>b</sup>, Yuxi Xiao<sup>c</sup>, Xin Wang<sup>a</sup>, Xu Yu<sup>a, \*</sup>, Ming Jiang<sup>a, \*</sup>, Li Xu<sup>a, \*</sup>

<sup>a</sup> Tongji School of Pharmacy, Huazhong University of Science and Technology, Wuhan 430030, China.

<sup>b</sup> Department of Pharmacy, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, 430030, China.

<sup>c</sup> Department of Pharmacy, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, 430030, China.

\*Corresponding authors.

E-mail addresses: Xu Yu, xuyu@hust.edu.cn; Ming Jiang, 2001020636@hust.edu.cn; Li Xu, xulpharm@mails.tjmu.edu.cn.

### **Hematocompatibility test**

Fresh blood was collected from healthy Balb/c mice and immediately centrifuged at 1,500 rpm for 15 min. The supernatant was discarded, and the erythrocytes obtained from the precipitation were collected, washed with saline for 3 times and then resuspended in saline to prepare 5% (v/v) erythrocyte suspension. Different concentrations of QueAuNPs1/1 and QueAgNPs10/1 were mixed with the erythrocyte suspension respectively, and incubated at 37°C for 2 h. The erythrocyte suspension (5%, v/v) diluted with deionized water was used as a positive control. Samples from all groups were centrifuged and the absorbance of the supernatants at 540 nm was measured.

### **Cytotoxicity assay**

Human umbilical vein endothelial cells (HUVEC) were inoculated into the complete medium at a density of  $10^4$  cells/well in 96-well plates and incubated at 37°C with 5% CO<sub>2</sub> for 12 h. The original medium was sucked out, and DMEM medium containing

different concentrations of QueAuNPs1/1 and QueAgNPs10/1 were added for another 24 h of incubation. After that, the viability of cells was detected using the CCK-8 kit.

## Supporting

### Figures

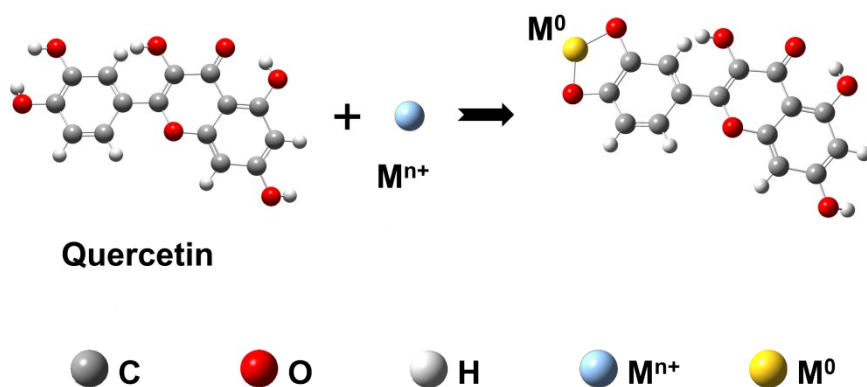


Fig. S1 Schematic illustration of the molecular interactions between Que and metal ions. C represents carbon; O represents oxygen; H represents hydrogen;  $M^{n+}$  represents metal ions ( $Ag^+$  or  $Au^{3+}$ );  $M^0$  represents zero-valent metal ( $Ag^0$  or  $Au^0$ ).

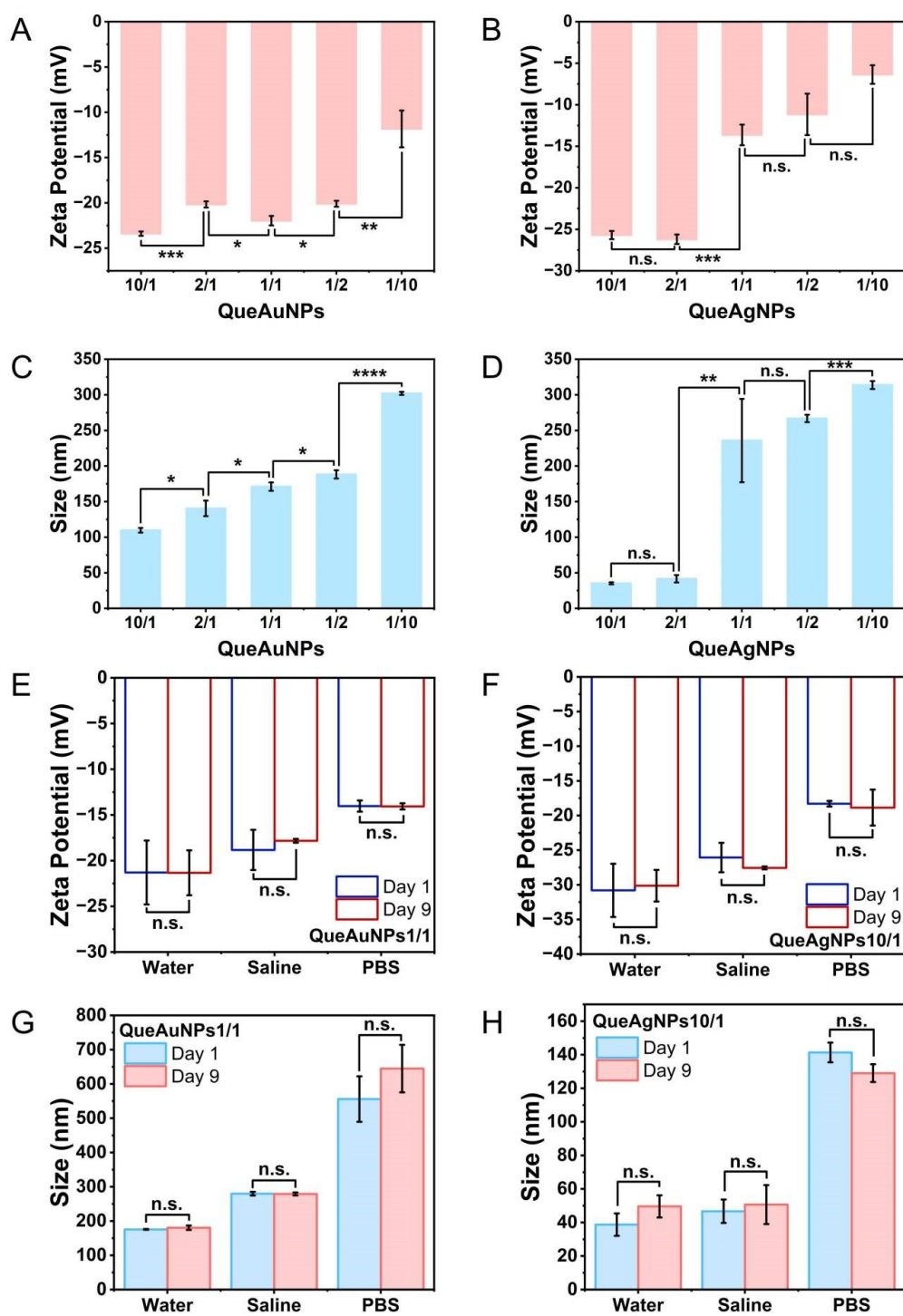


Fig. S2 Zeta potentials of QueAuNPs (A) and QueAgNPs (B) at different Que-to-metal ratios. Particle sizes of QueAuNPs (C) and QueAgNPs (D) at different Que-to-metal ratios measured by DLS. Zeta potentials of QueAuNPs1/1 (E) and QueAgNPs10/1 (F) in water, saline, and PBS. Particle sizes of QueAuNPs1/1 (G) and QueAgNPs10/1 (H) in water, saline, and PBS measured by DLS.

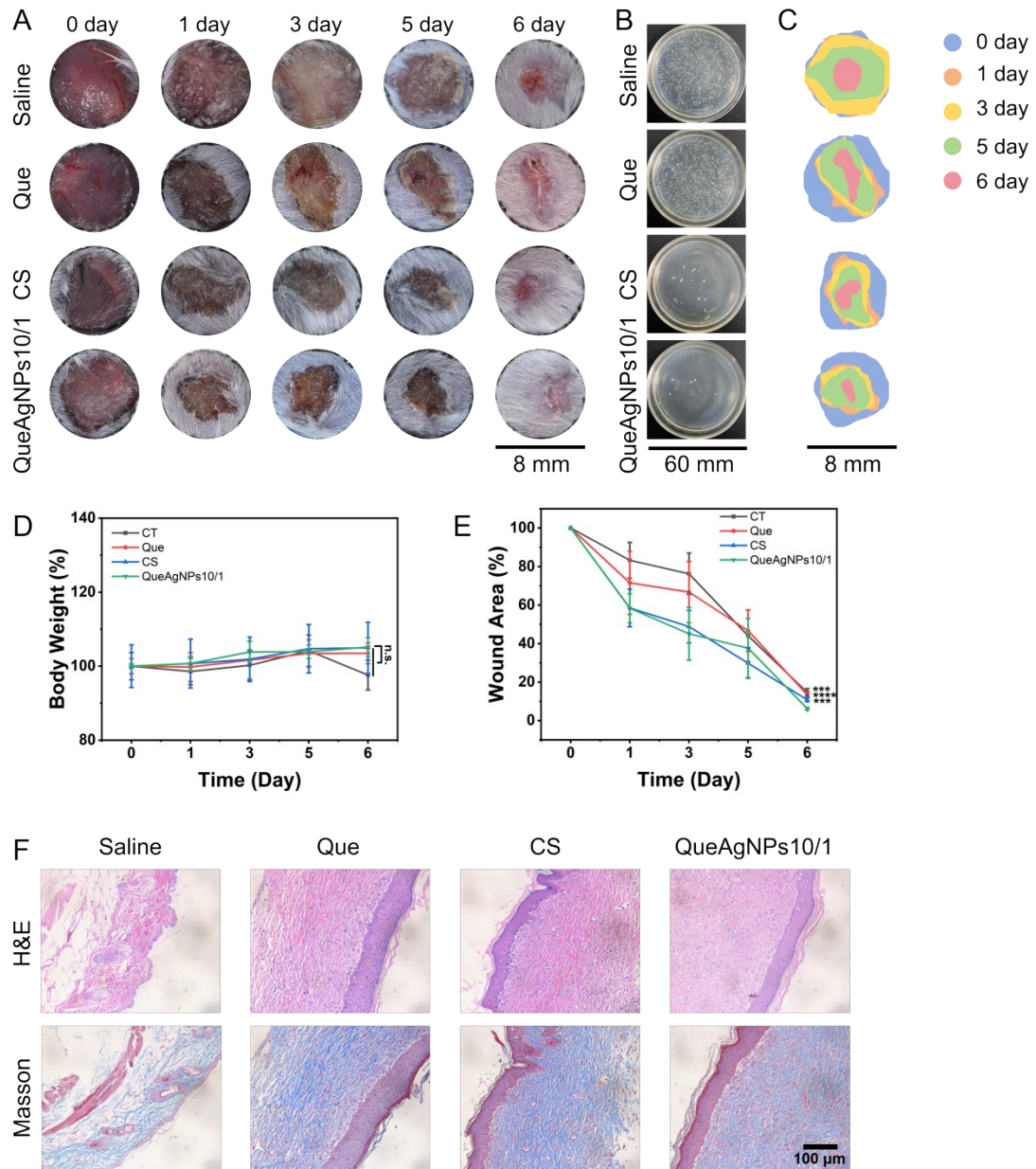


Fig. S3 (A) Photographs of wounds, (B) photographs of bacterial colonies incubated from wound tissues, (C) superimposed graphs of wound traces, (D) percentage of body weight, and (E) relative area of wounds of *E. coli* infected model mice subjected to different treatments on days 0, 1, 3, 5, and 6. (F) H&E staining results of wound tissues and Masson staining results in different treatment groups.

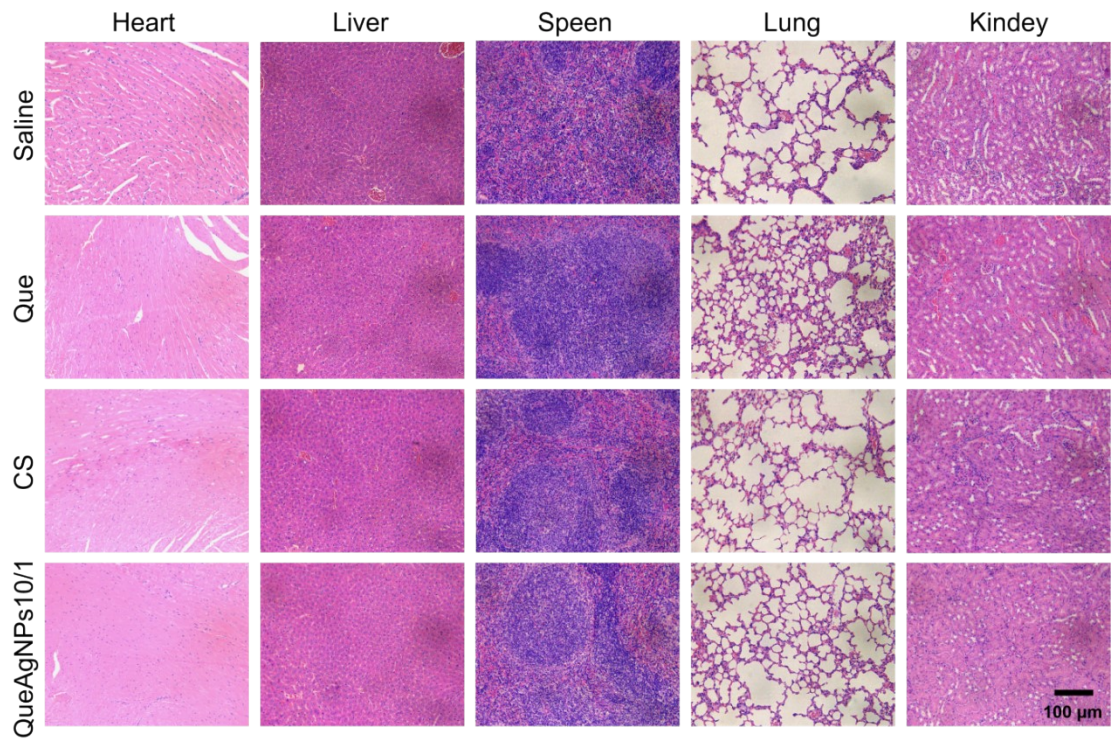


Fig. S4 H&E staining results of major organ sections from different treatment groups in the *E. coli*-infected model mouse.