Supporting Information

Mechanistic studies on the Antibacterial Behavior of Ag Nanoparticles Decorated with Carbon dots bearing Different Oxidation Degrees

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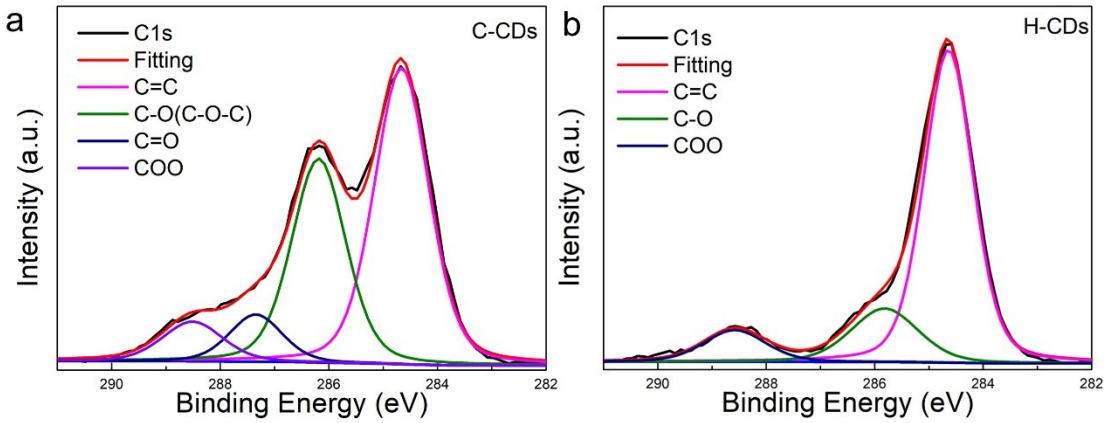

Figure S1. Fitted high resolution XPS spectra of C-CDs (a) and H-CDs (b).

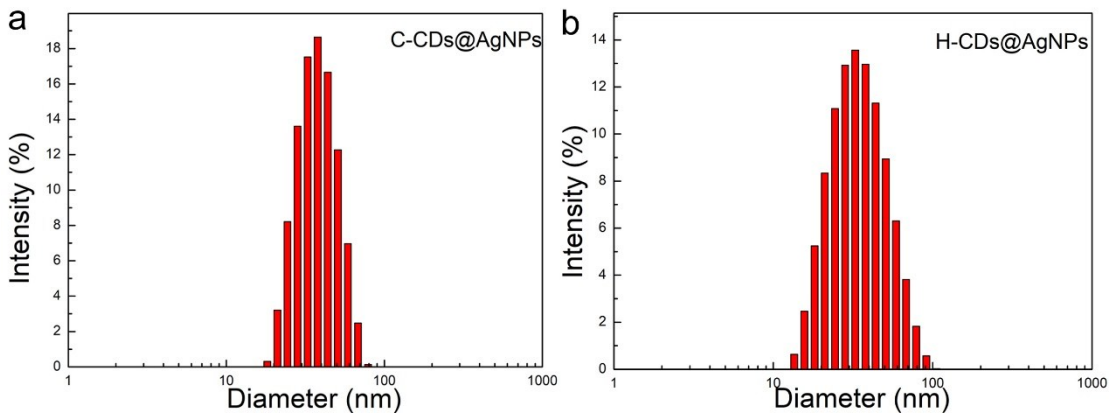

Figure S2. The hydrodynamic size of C-CDs@AgNPs (a) and H-CDs@AgNPs (b) measured by DLS.

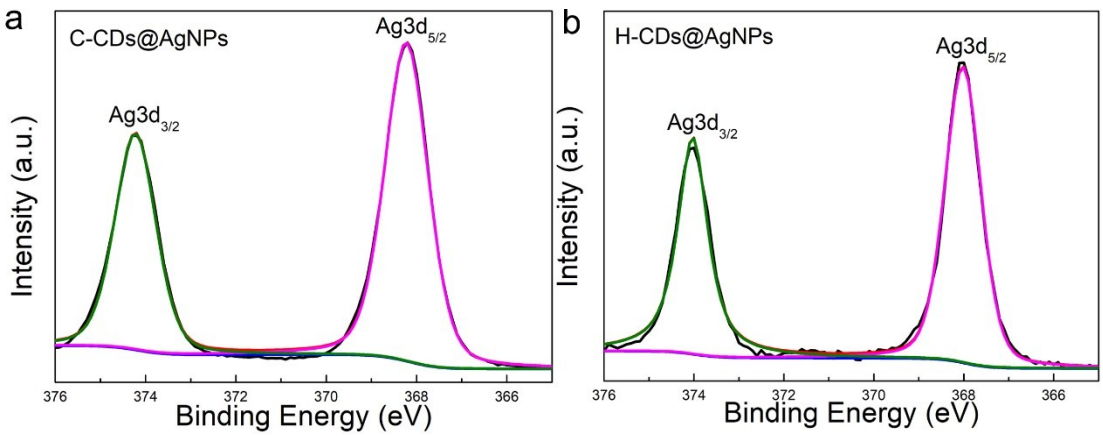

Figure S3. High resolution Ag3d XPS spectra of C-CDs@AgNPs (a) and H-CDs@AgNPs (b).

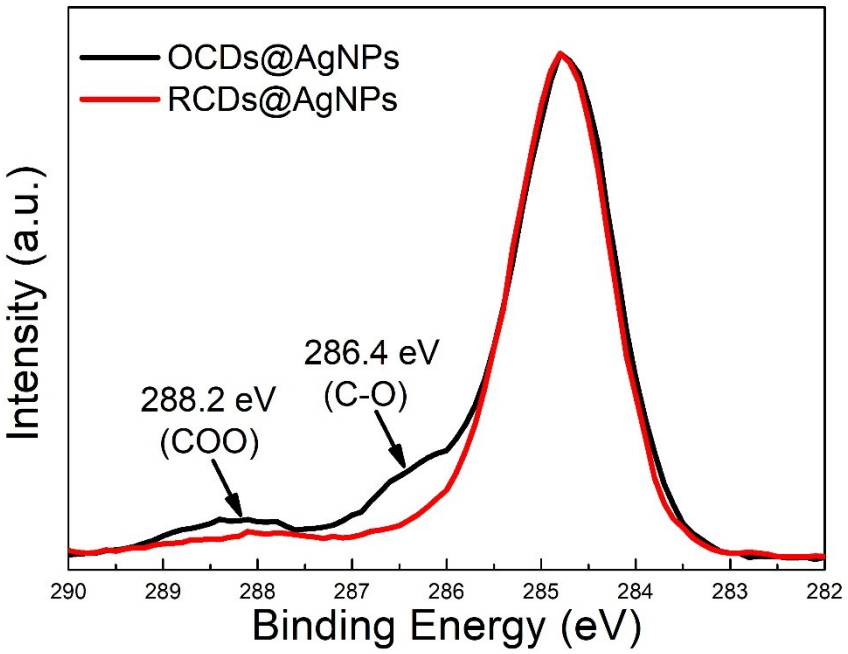

Figure S4. The high resolution C1S XPS spectra C-CDs@AgNPs and H-CDs@AgNPs.

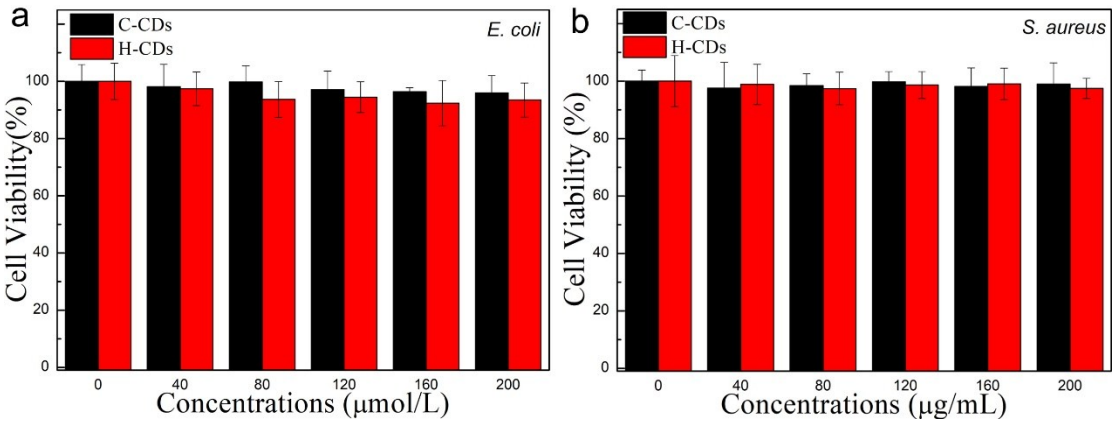

Figure S5. The influence of C-CDs or H-CDs with different concentration on the cell viability of *E. coli* (a) or *S. aureus* (b).

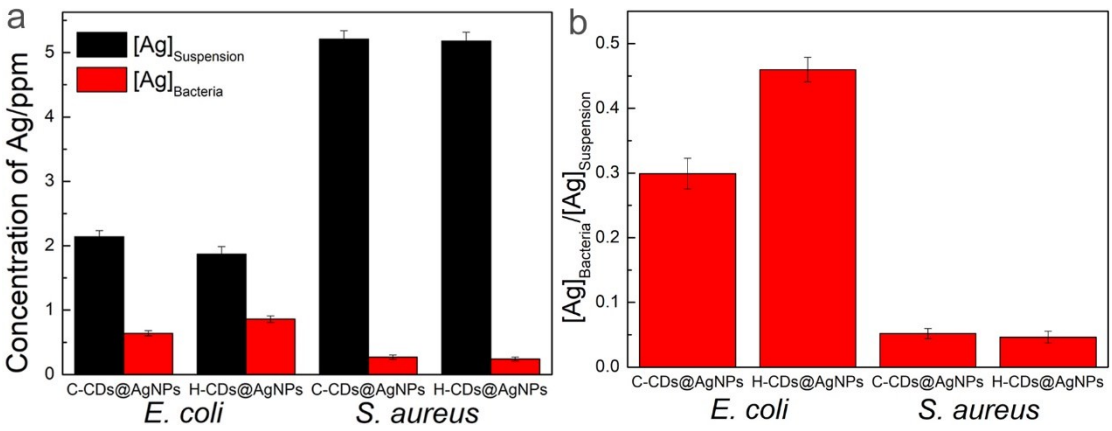

Figure S6. a. The amount of Ag in suspension and bacterial sediments for different sample determined by ICP-OES. b. The ratio of $[Ag]_{bacteria}/[Ag]_{suspension}$ of different samples. C_{AgNPs}=0.2 nmol/L for *E. coli*, C_{AgNPs}=0.4 nmol/L for *S. aureus*.

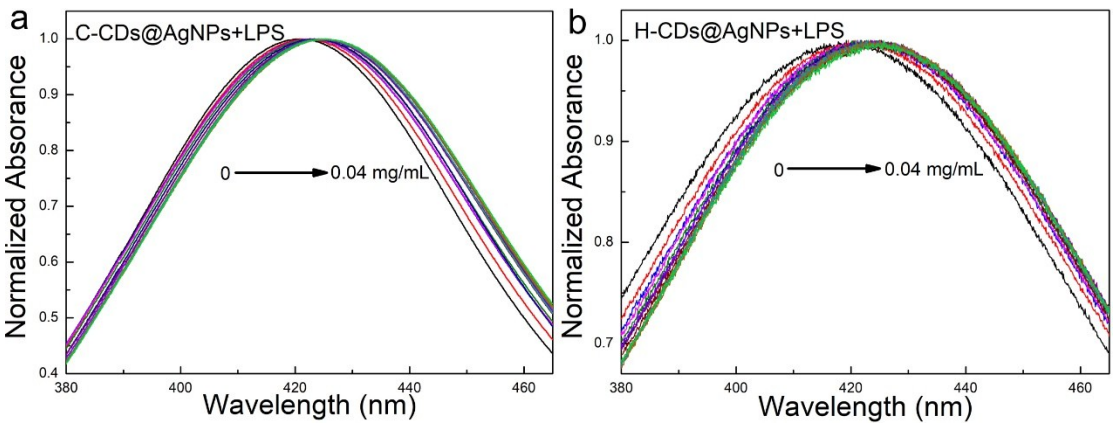

Figure S7. UV-Vis absorption spectra of C-CDs@AgNPs (a) and H-CDs@AgNPs (b) after incubation with increasing amounts of LPS from *E.coli* (corresponding to ratio of LPS/AgNPs span from 0 to 20000).

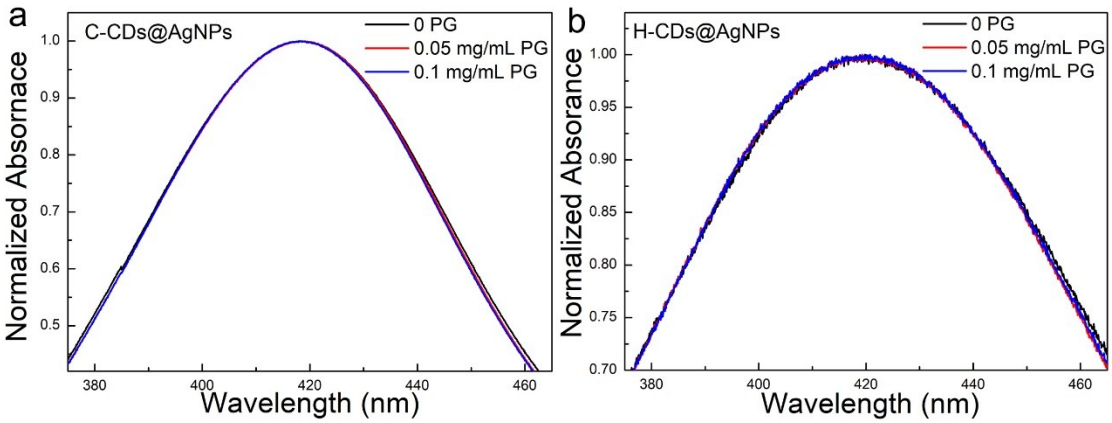

Figure S8. UV-Vis absorption spectra of C-CDs@AgNPs (a) and H-CDs@AgNPs (b) after incubation with increasing amounts (0.05 mg/mL and 0.1 mg/mL) of PG from *S. aureus*.

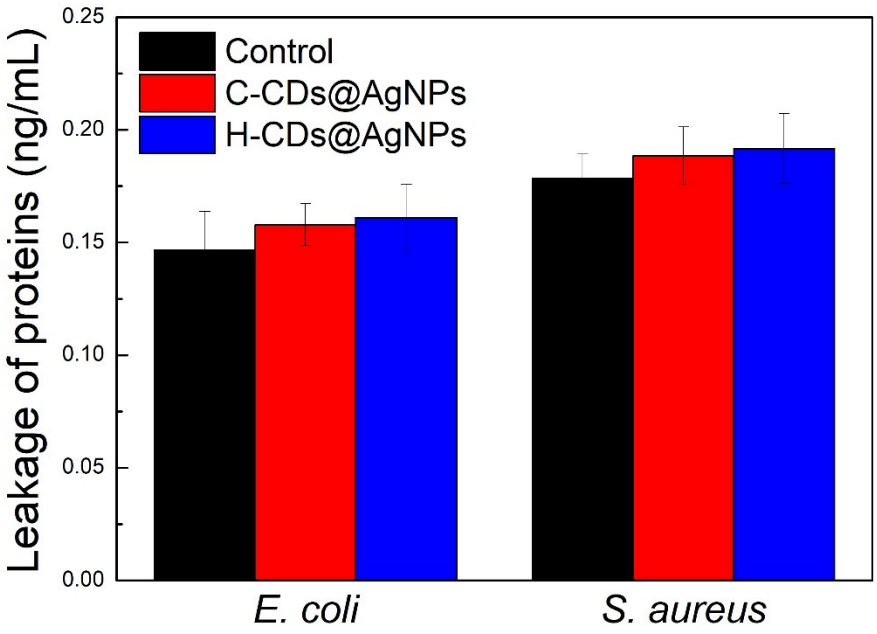

Figure S9. Leakage of cytoplasmic proteins after treated with C-CDs@AgNPs or H-CDs@AgNPs using BCA assay.

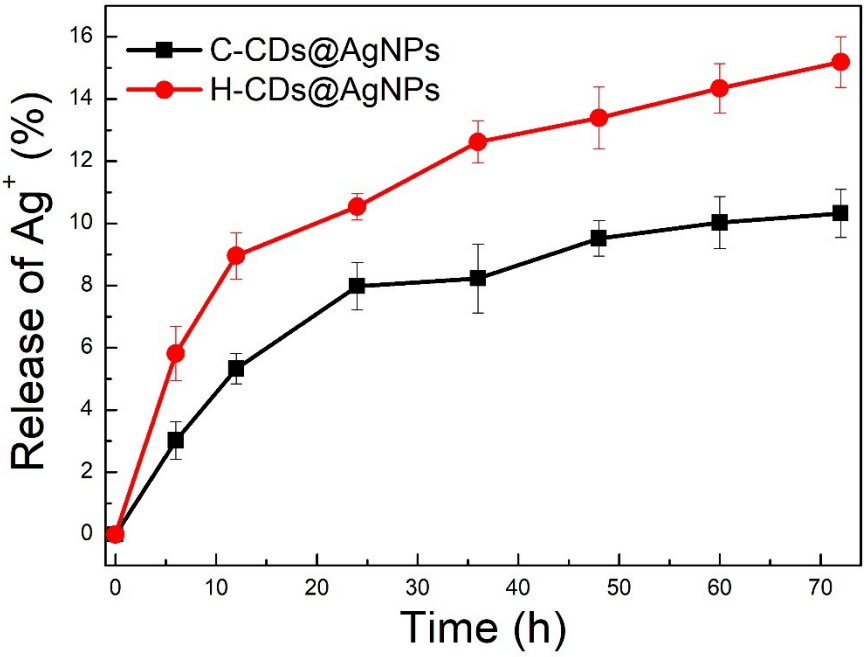

Figure S10. The leakage of Ag^+ from C-CDs@AgNPs and H-CDs@AgNPs (calculated as the percentage of the released Ag^+ from 0.4 nmol/L AgNPs).