



Supplementary Information

The antibiofilm effects of antimony tin oxide nanoparticles against polymicrobial biofilms of uropathogenic *Escherichia coli* and *Staphylococcus aureus*

Inji Park[†], Afreen Jailani[†], Jin-Hyung Lee, Bilal Ahmed, Jintae Lee*

Table S1. Sequences of the primers used for quantitative RT-PCR.

Gene	Name	Primer sequence
<i>agrA</i>	Quorum-sensing regulator A	Forward 5'-TGA TAA TCC TTA TGA GGT GCT T-3' Reverse 5'-CAC TGT GAC TCG TAA CGA AAA-3'
<i>aur</i>	Zinc metalloproteinase aureolysin	Forward 5'-ACC GTG TGT TAA TTC GTG TGC TA-3' Reverse 5'-ATG GTC GCA CAT TCA CAA GTT T-3'
<i>hla</i>	α-Hemolysin	Forward 5'-CGG CAC ATT TGC ACC AAT AAG GC-3' Reverse 5'-GGT TTA GCC TGG CCT TCA GC-3'
<i>icaA</i>	Intercellular adhesion A	Forward 5'-TGA ACC GCT TGC CAT GTG-3' Reverse 5'-CAC GCG TTG CTT CCA AAG A-3'
<i>nuc1</i>	Nuclease	Forward 5'-CAC CTG AAA CAA AGC ATC CTA A-3' Reverse 5'-TAT ACG CTA AGC CAC GTC CAT-3'
<i>RNA III</i>	Transcriptional regulator	Forward 5'-ATC GAC ACA GTG AAC AAA TTC AC-3' Reverse 5'-CTC TAC TAG CAA ATG TTA CTC AC-3'
<i>saeR</i>	Response regulator	Forward 5'-GCC TTA ACT TTA GGT GCA GAT GAC TAT GTC-3' Reverse 5'-CGA CAG TTG TTC AAC TGG TTG ATG ATG G-3'
<i>sarA</i>	Transcriptional regulator	Forward 5'-GAG TTG TTA TCA ATG GTC-3' Reverse 5'-GTT TGC TTC AGT GAT TCG-3'
<i>seb</i>	Enterotoxin B	Forward 5'-TGT TCG GGT ATT TGA AGA TGG -3' Reverse 5'-CGT TTC ATA AGG CGA GTT GTT-3'
<i>sigB</i>	RNA Polymerase sigma factor	Forward 5'-AAG TGA TTC GTA AGG ACG TCT-3' Reverse 5'-TCG ATA ACT ATA ACC AAA GCC T-3'
<i>spa</i>	Protein A	Forward 5'-ACC AGA AAC TGG TGA AGA AAA TCC-3' Reverse 5'-TAA CGC TGC ACC TAA GCC TAA TG-3'
<i>16S rRNA</i>	A component of ribosomes	Forward 5'-TGT TTG ACG ATG TTT GAG CA-3' Reverse 5'-CCT TCC TCC AGT TCA GAT GC -3'

Table S2. The characteristics of antimony tin oxide (ATO) nanoparticles provided by Sigma-Aldrich 8

Size	>50 nm
Density	5.2 g/cm ³
Melting point	655 °C
Tin dioxide composition	90 ~ 95%
Diantimony pentoxide composition	10 ~ 15%

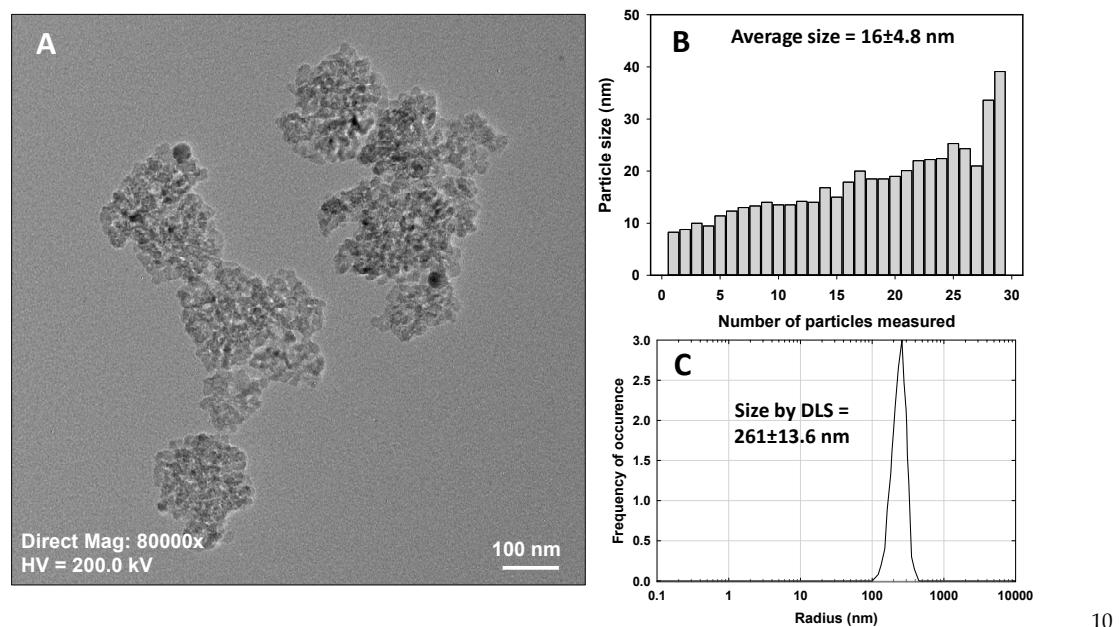


Figure S1. Characterization of ATO NPs by TEM (A). Panel B shows average size by TEM and panel C is for hydrodynamic size by DLS.

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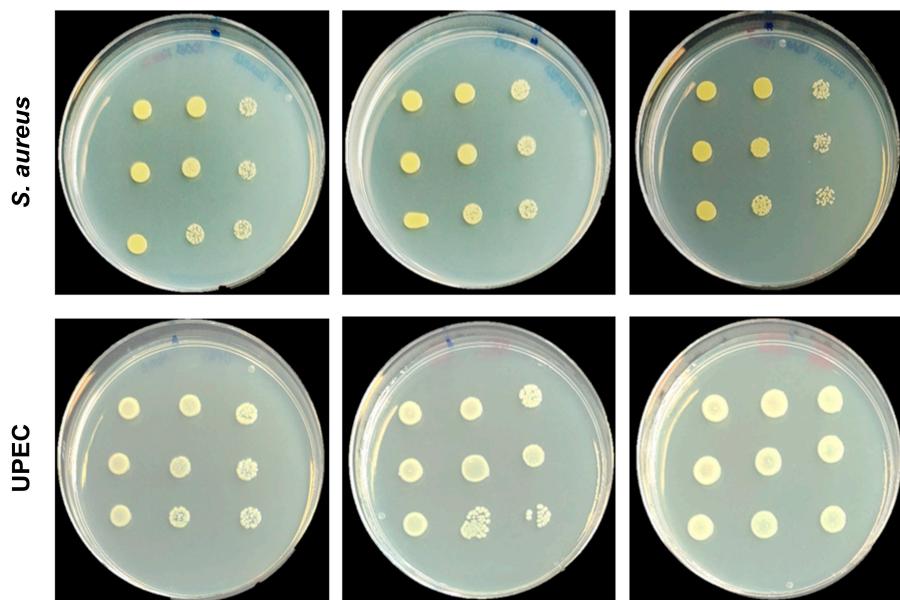


Figure S2. Antimicrobial activity of ATO NPs against *S. aureus* and UPEC.

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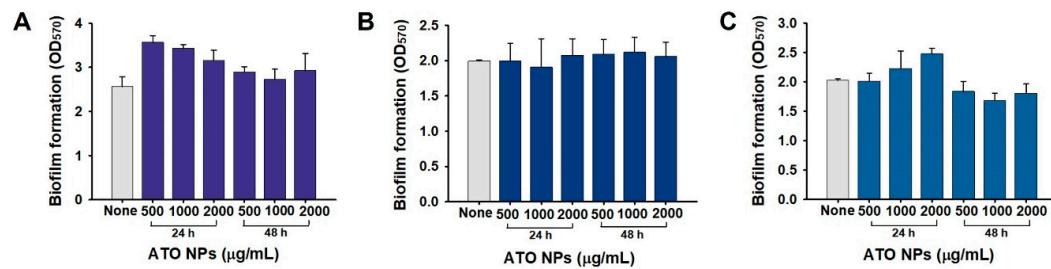


Figure S3. Biofilm dispersal ability of ATO NPs against *S. aureus* (A), UPEC (B) and *S. aureus*/UPEC (C). None indicates untreated biofilm formation for 24 h.

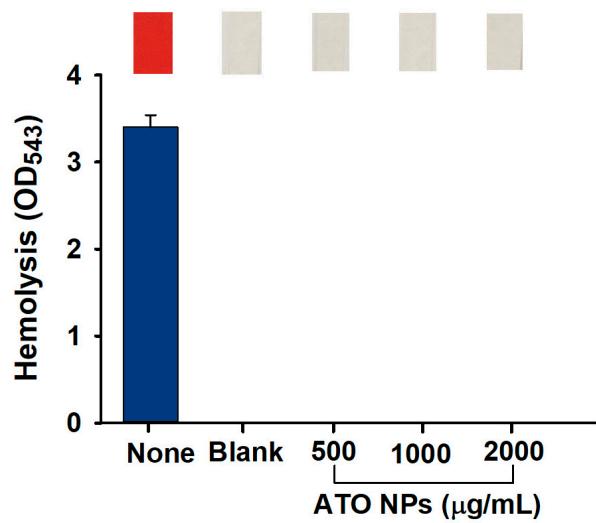


Figure S4. The effects of ATO NPs alone on blood hemolysis. None indicates the presence of *S. aureus* without ATO NPs. ATO NPs indicate the addition of ATO NPs without bacteria.

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