

### Electronic Supplementary Information

**Table S1.** Resistance profile of the set of clinical strains.

Antibiotic	MIC ( $\mu\text{g/mL}$ )				
	GPC		GNB		
	<i>S. aureus</i>	<i>E. faecalis</i>	<i>A. baumannii</i>	<i>K. pneumoniae</i>	<i>P. mirabilis</i>
Amikacin	-	-	-	4 (S)	$\leq 2$ (S)
Ampicillin	-	$\leq 2$ (S)	-	$\geq 32$ (R)	$\geq 32$ (R)
Ampicillin/Sulbactam	-	-	16 (R)	$\geq 32$ (R)	8 (S)
Benzylpenicillin	$\geq 0.50$ (R)	-	-		
Cefalotin	-	-	-	$\geq 64$ (R)	$\geq 64$ (R)
Cefepime	-	-	$\geq 64$ (R)	2 (R)	$\leq 1$ (R)
Cefotaxime	-	-	$\geq 64$ (R)	$\geq 64$ (R)	$\leq 1$ (R)
Ceftazidime	-	-	$\geq 64$ (R)	8 (R)	$\leq 1$ (R)
Ceftriaxone	-	-	$\geq 64$ (R)	$\geq 64$ (R)	(R)
Cefuroxime	-	-	-	$\geq 64$ (R)	$\geq 64$ (R)
Ciprofloxacin	$\geq 8$ (R)	$\leq 0.50$ (S)	$\geq 4$ (R)	$\leq 0.25$ (S)	$\leq 0.25$ (S)
Clindamycin	$\geq 8$ (R)	-	-	-	-
Daptomycin	-	4 (S)	-	-	-
Doxycycline	-	8 (I)	-	-	-
Ertapenem	-	-	-	$\leq 0.50$ (S)	$\leq 0.50$ (S)
Erythromycin	$\geq 8$ (R)	4 (I)	-	-	-
Gentamicin	$\geq 16$ (R)	-	$\leq 1$ (S)	$\geq 16$ (R)	$\leq 1$ (S)
Levofloxacin	$\geq 8$ (R)	1 (S)	-	-	-
Linezolid	1 (S)	2 (S)	-	-	-
Meropenem	-	-	$\geq 16$ (R)	$\leq 0.25$ (S)	$\leq 0.25$ (S)
Moxifloxacin	4 (R)	-	-	-	-
Nitrofurantoin	32 (S)	-	-		
Oxacillin	$\geq 4$ (R)	-	-	-	-
Quinupristin/Dalfopristin	0.50 (S)	-	-		
Rifampicin	$\geq 32$ (R)	-	-	-	-
Tetracycline	$\leq 1$ (S)	$\geq 16$ (R)	-	-	-
Tigecycline	$\leq 0.12$ (S)	$\leq 0.12$ (S)	-	-	-
Trimethoprim/Sulfamethoxazole	$\leq 10$ (S)	-	$\leq 20$ (S)	$\leq 20$ (S)	$\leq 20$ (S)
Vancomycin	$\leq 0.50$ (S)	1 (S)	-	-	-

GNB: Gram-negative bacillus; GPC: Gram-positive cocci.

MIC: minimum inhibitory concentration; S: susceptible; I: intermediate; R: resistant.

**Table S2.** Standardization of antimicrobial test.

Bacteria	MIC QC range ( $\mu\text{g/mL}$ )		Experimental MIC ( $\mu\text{g/mL}$ )	
	Oxacillin	Ceftazidime	Oxacillin	Ceftazidime
<i>S. aureus</i> ATCC 25923	0.12 – 0.50	-	$0.50 \pm 0$	-
<i>E. coli</i> ATCC 25922	-	0.06 – 0.50	-	$0.50 \pm 0$

ATCC®: American Type Culture Collection; MIC: minimum inhibitory concentration; QC: quality control.

**Table S3.** Effect of the combinations among Ag<sub>2</sub>ONPs and antibiotics against reference and clinical strains.

Bacteria	Drug combination MIC (µg/mL)		FICI	Effect	Drug combination MIC (µg/mL)		FICI	Effect
	Ag <sub>2</sub> ONPs	AMP			Ag <sub>2</sub> ONPs	CIP		
<b>Reference strains</b>								
<i>S. aureus</i> ATCC 25923	0.24 ± 0	0.50 ± 0	0.45 ± 0.14	S	0.12 ± 0	0.25 ± 0	0.52 ± 0	PS
<i>E. faecalis</i> ATCC 29212	0.97 ± 0	2.00 ± 0	1.25 ± 0	AD	0.48 ± 0	1.00 ± 0	0.62 ± 0	PS
<i>E. coli</i> ATCC 25922	1.95 ± 0	4.00 ± 0	1.83 ± 0.29	I	0.01 ± 0	0.02 ± 0	1.01 ± 0	AD
<i>P. aeruginosa</i> ATCC 27853	1.95 ± 0	4.00 ± 0	3.01 ± 0	I	0.01 ± 0	0.02 ± 0	0.17 ± 0	S
<b>Clinical strains</b>								
<i>S. aureus</i>	0.97 ± 0	2.00 ± 0	0.96 ± 0.29	PS	0.12 ± 0	0.25 ± 0	0.52 ± 0	PS
<i>E. faecalis</i>	0.97 ± 0	2.00 ± 0	0.62 ± 0	PS	0.97 ± 0	2.00 ± 0	1.12 ± 0	AD
<i>A. baumannii</i>	3.26 ± 1.13	6.67 ± 2.31	0.88 ± 0.31	PS	7.81 ± 0	16 ± 0	2.13 ± 0	I
<i>K. pneumoniae</i>	15.63 ± 0	32 ± 0	2.25 ± 0	I	0.06 ± 0	0.13 ± 0	1.01 ± 0	AD
<i>P. mirabilis</i>	15.63 ± 0	32 ± 0	2.25 ± 0	I	0.24 ± 0	0.50 ± 0	1.03 ± 0	AD

FICI: fractional inhibitory concentration index; MIC: minimum inhibitory concentration; AMP: ampicillin; CIP: ciprofloxacin.

S: synergistic; PS: partial synergistic; AD: additive; I: indifferent; AN: antagonistic.

**Table S4.** Fold change of Ag<sub>2</sub>ONPs in combination with antibiotics against reference and clinical strains.

Bacteria	Ag <sub>2</sub> ONPs MIC (µg/mL)	Ag <sub>2</sub> ONPs*-AMP MIC (µg/mL)	Fold change	Ag <sub>2</sub> ONPs*-CIP MIC (µg/mL)	Fold change
<b>Reference strains</b>					
<i>S. aureus</i> ATCC 25923	7.81 ± 0	0.24 ± 0	32.54 ± 0	0.12 ± 0	65.08 ± 0
<i>E. faecalis</i> ATCC 29212	3.91 ± 0	0.97 ± 0	4.03 ± 0	0.48 ± 0	8.14 ± 0
<i>E. coli</i> ATCC 25922	1.95 ± 0	1.95 ± 0	-	0.01 ± 0	195 ± 0
<i>P. aeruginosa</i> ATCC 27853	0.97 ± 0	1.95 ± 0	-	0.01 ± 0	97 ± 0
<b>Clinical strains</b>					
<i>S. aureus</i>	7.81 ± 0	0.97 ± 0	8.05 ± 0	0.12 ± 0	65.08 ± 0
<i>E. faecalis</i>	7.81 ± 0	0.97 ± 0	8.05 ± 0	0.97 ± 0	8.05 ± 0
<i>A. baumannii</i>	3.91 ± 0	3.26 ± 1.13	1.34 ± 0.58	7.81 ± 0	-
<i>K. pneumoniae</i>	7.81 ± 0	15.63 ± 0	-	0.06 ± 0	130.16 ± 0
<i>P. mirabilis</i>	7.81 ± 0	15.63 ± 0	-	0.24 ± 0	32.54 ± 0

MIC: minimum inhibitory concentration; AMP: ampicillin; CIP: ciprofloxacin.

\*Represents the concentration of Ag<sub>2</sub>ONPs present in the combination.

**Table S5.** Fold change of antibiotics in combination with Ag<sub>2</sub>ONPs against reference and clinical strains.

Bacteria	MIC (µg/mL)		Fold change	MIC (µg/mL)		Fold change
	AMP	Ag <sub>2</sub> ONPs-AMP*		CIP	Ag <sub>2</sub> ONPs-CIP*	
<b>Reference strains</b>						
<i>S. aureus</i> ATCC 25923	1.33 ± 0.58	0.50 ± 0	2.67 ± 1.15	0.50 ± 0	0.25 ± 0	2.00 ± 0
<i>E. faecalis</i> ATCC 29212	2.00 ± 0	2.00 ± 0	-	2.00 ± 0	1.00 ± 0	2.00 ± 0
<i>E. coli</i> ATCC 25922	5.33 ± 2.31	4.00 ± 0	1.33 ± 0.58	0.02 ± 0	0.02 ± 0	-
<i>P. aeruginosa</i> ATCC 27853	4.00 ± 0	4.00 ± 0	-	0.13 ± 0	0.02 ± 0	6.50 ± 0
<b>Clinical strains</b>						
<i>S. aureus</i>	2.67 ± 1.15	2.00 ± 0	1.33 ± 0.58	0.50 ± 0	0.25 ± 0	2.00 ± 0
<i>E. faecalis</i>	4.00 ± 0	2.00 ± 0	2.00 ± 0	2.00 ± 0	2.00 ± 0	-
<i>A. baumannii</i>	> 128 ± 0	6.67 ± 2.31	21.33 ± 9.24	> 128 ± 0	16 ± 0	8.00 ± 0
<i>K. pneumoniae</i>	> 128 ± 0	32 ± 0	4.00 ± 0	0.13 ± 0	0.13 ± 0	-
<i>P. mirabilis</i>	> 128 ± 0	32 ± 0	4.00 ± 0	0.50 ± 0	0.50 ± 0	-

MIC: minimum inhibitory concentration; AMP: ampicillin; CIP: ciprofloxacin.

\*Represents the concentration of antibiotic (AMP or CIP) present in the combination.

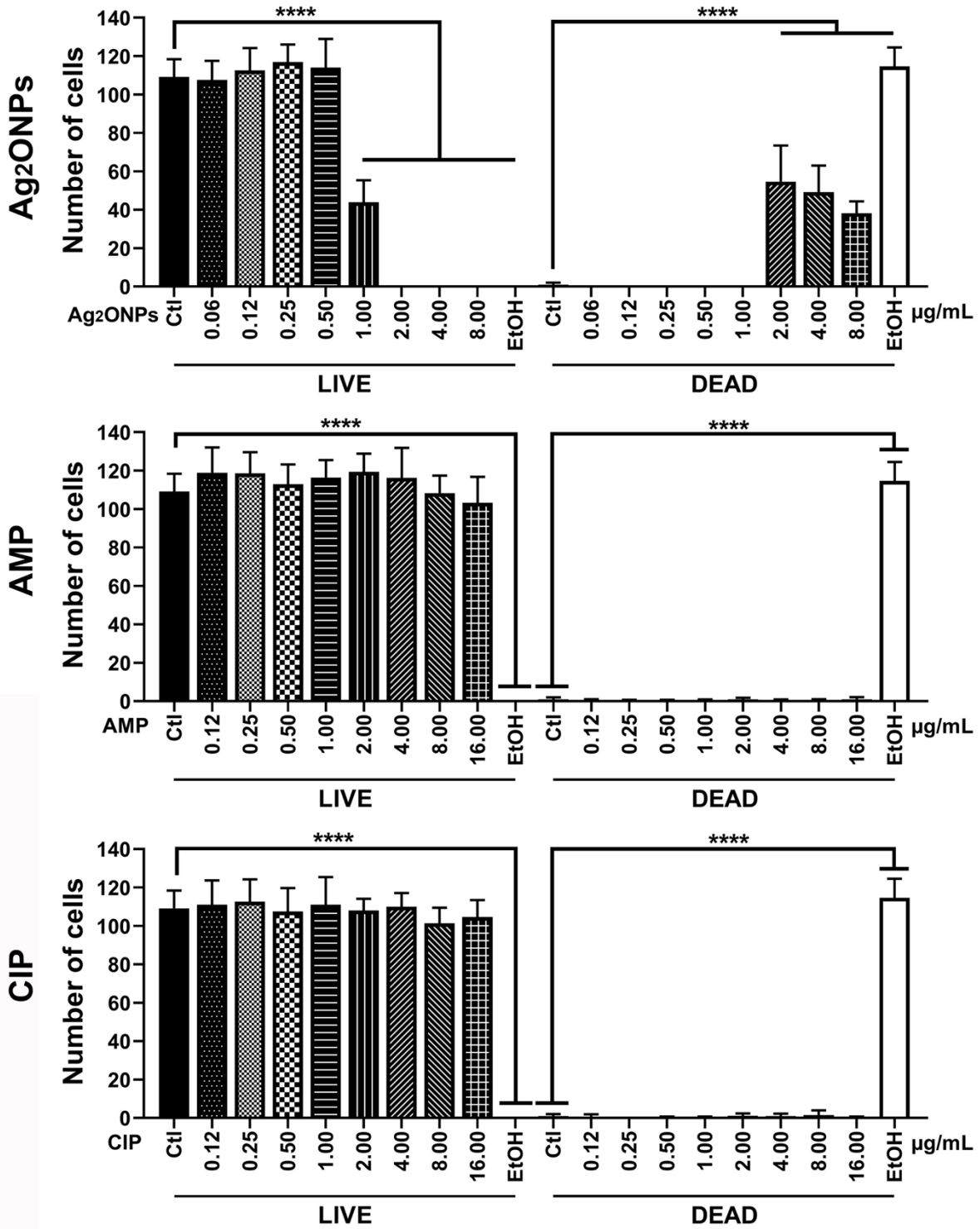


Figure Supplementary 1.- Cell viability of HDF exposed to individual treatments. a) Total number of cells (live and dead). b) Cell viability percentage for each experimental condition. \*\*\*\*p < 0.0001 vs control (untreated cells); ANOVA, Tukey post-hoc. HDF: human dermal fibroblasts; AMP: ampicillin; CIP: ciprofloxacin; EtOH: 70 % ethanol.