Electronic Supplementary Material (ESI) for Environmental Science: Processes & Impacts.
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Electronic Supplementary Information for

The effects of ultraviolet disinfection on vancomycin-resistant *Enterococcus faecalis*

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Supplementary information captions:

Table S1 Primer sequence list.

Table S2 The set of samples and blank controls.

Table S3 Kinetic parameters for the UV inactivation of *E. faecalis*.

Fig. S1 Ultraviolet device diagram.

Fig. S2 The standard curve of RLU to ATP concentration.

Fig. S3 Disinfection kinetics model fitting of *E. faecalis* with ultraviolet. Reaction conditions: pH = 7.1, T= 25 °C, initial concentration of bacteria: ~10^6 CFU/mL.

Fig. S4 FCM statistic analysis of *E. faecalis* subjected to ultraviolet disinfection. Reaction conditions: ultraviolet irradiation intensity = 30 μw/cm^2, pH = 7.1, T= 25 °C, initial concentration of bacteria: ~10^6 CFU/mL.

Fig. S5 ESS assays of *E. faecalis* after (a) light repair and (b) dark repair process. Reaction conditions: ultraviolet irradiation intensity = 30 μw/cm^2, irradiation time = 5 min, pH = 7.1, T= 25 °C, initial concentration of bacteria: ~10^6 CFU/mL. Lane 1, standard marker – λ-Hind Ⅲ digest Marker; lane 2, no UV; lane 3, after UV irradiation and no photoreactivation; lane 4 to 7, respectively represented UV irradiation followed by 3 h, 6 h, 9 h, 24 h photoreactivation; Lane 8, standard marker - DL 2000 Marker.

Fig. S6 Distribution patterns of each lane including the DNA standards. Arrows pointed the median migration distance of each distribution pattern. (a) light repair and (b) dark repair. Lane 1, standard marker – λ-Hind Ⅲ digest Marker; Lane 8, standard marker - DL 2000 Marker; lane 2, no UV; lane 3, after UV irradiation and no reactivation; lane 4 to 7, respectively represented UV irradiation followed by 3 h, 6 h, 9 h, 24 h

reactivation.

Fig. S7 Log removals of *van*B gene. Reaction conditions: ultraviolet irradiation intensity = 30 μw/cm^2, pH = 7.1, T= 25 °C, initial concentration of bacteria: ~10^6 CFU/mL.

Table S1

Gene	Primer	Sequence (5'-3')	Amplified fragment (bp)	Annealing temperature (°C)
*van*B	*van*B-F	GTAGGCTGCGATATTCAAAGC	331	58
	*van*B-R	GCCGACAATCAAATCATCCTC		

Table S2

	Sample	Blank1	Blank2
Sample	20 μL	-	-
SOD detection buffer	-	20 μL	40 μL
WST-8 / enzyme working solution	160 μL	160 μL	160 μL
Reaction starting working solution	20 μL	20 μL	-

Table S3

Ultraviolet intensity (μw/cm^2)	6	10	30	60	90
K value (cm^2/mJ)	0.0809	0.3264	0.2620	0.1538	0.1305
Adjusted R^2	0.9433	0.9825	0.9930	0.9778	0.9490

Fig. S1

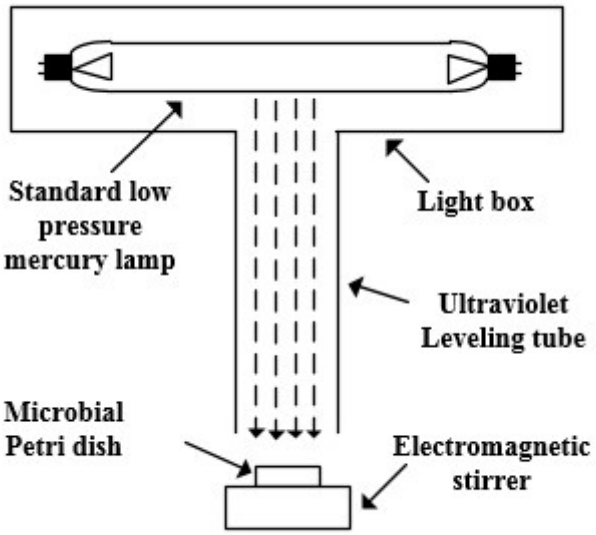

Standard low pressure mercury lamp
Light box
Ultraviolet Leveling tube
Microbial Petri dish
Electromagnetic stirrer

Fig. S2

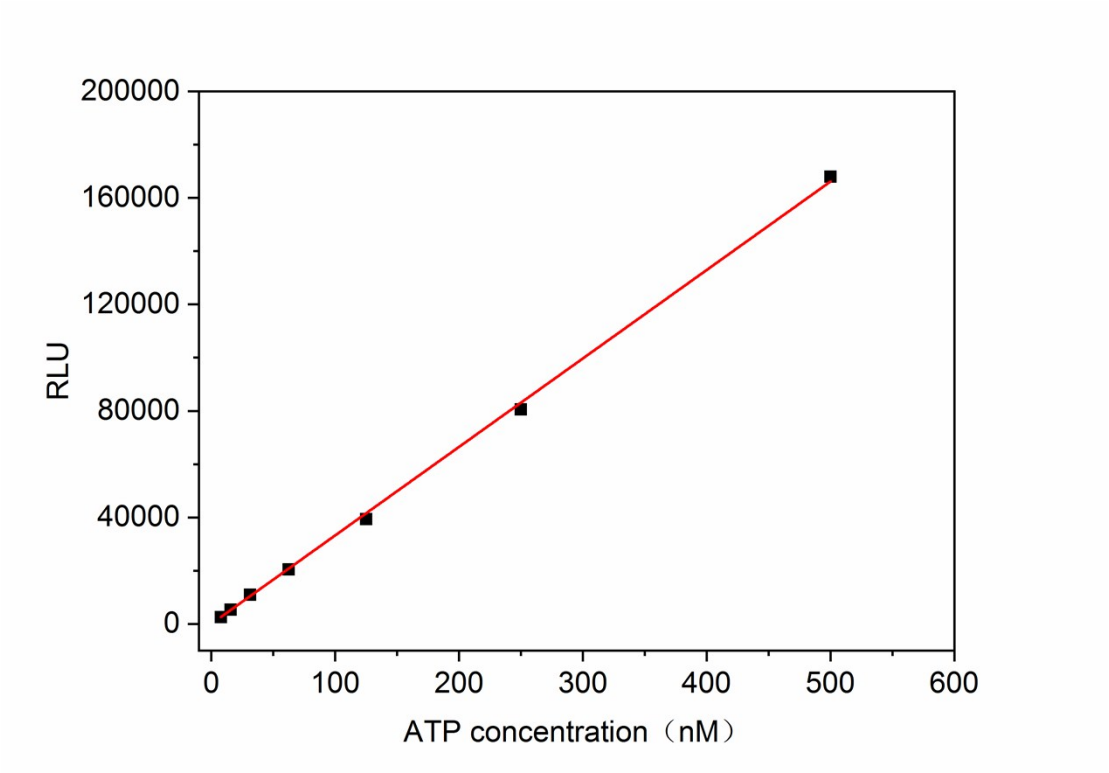

200000
160000
120000
80000
40000
0
RLU
0
100
200
300
400
500
600
ATP concentration（nM）

Fig. S3

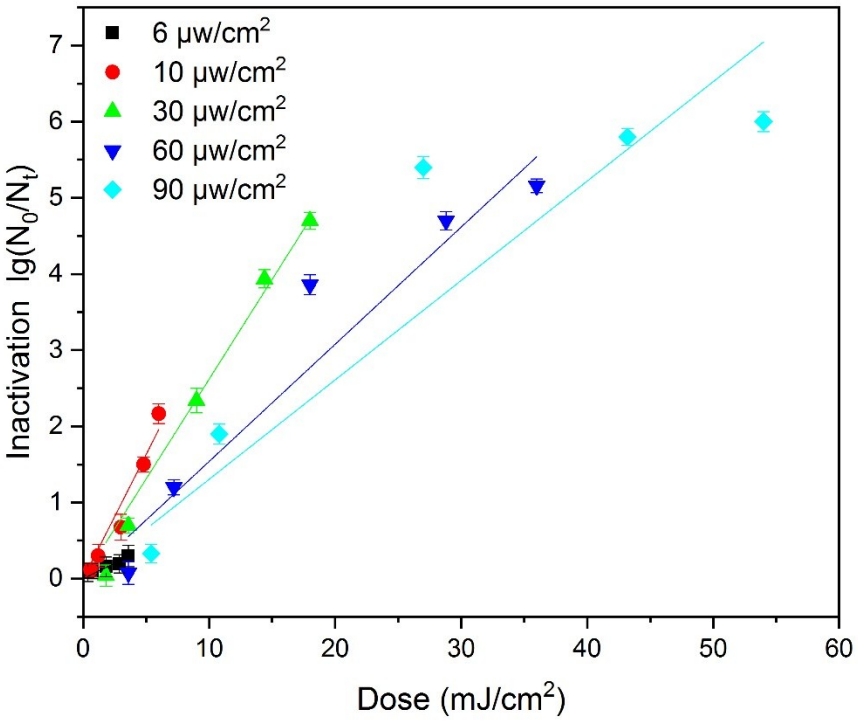

6 μw/cm2
10 μw/cm2
30 μw/cm2
60 μw/cm2
90 μw/cm2
Inactivation lg(N0/Nt)
Dose (mJ/cm2)
0
1
2
3
4
5
6
7
0
10
20
30
40
50
60

Fig. S4

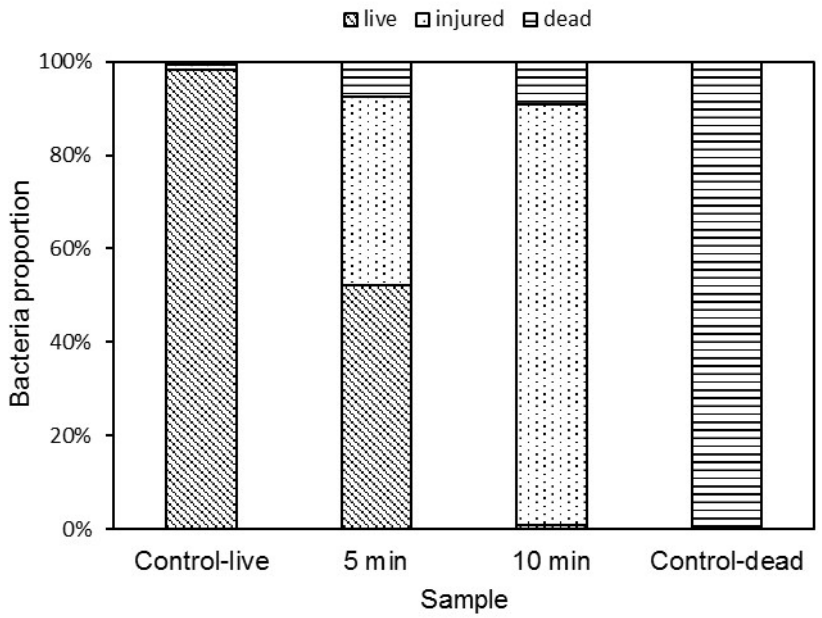

live
injured
dead
100%
80%
60%
40%
20%
0%
Bacteria proportion
Control-live
5 min
10 min
Control-dead
Sample

Fig. S5

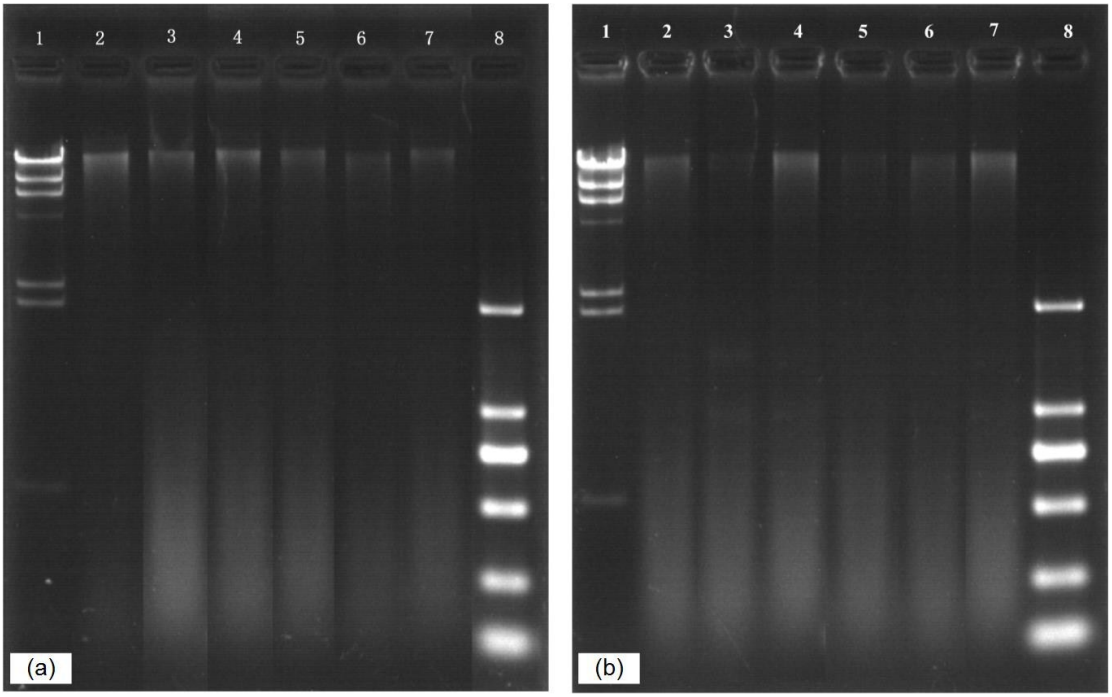
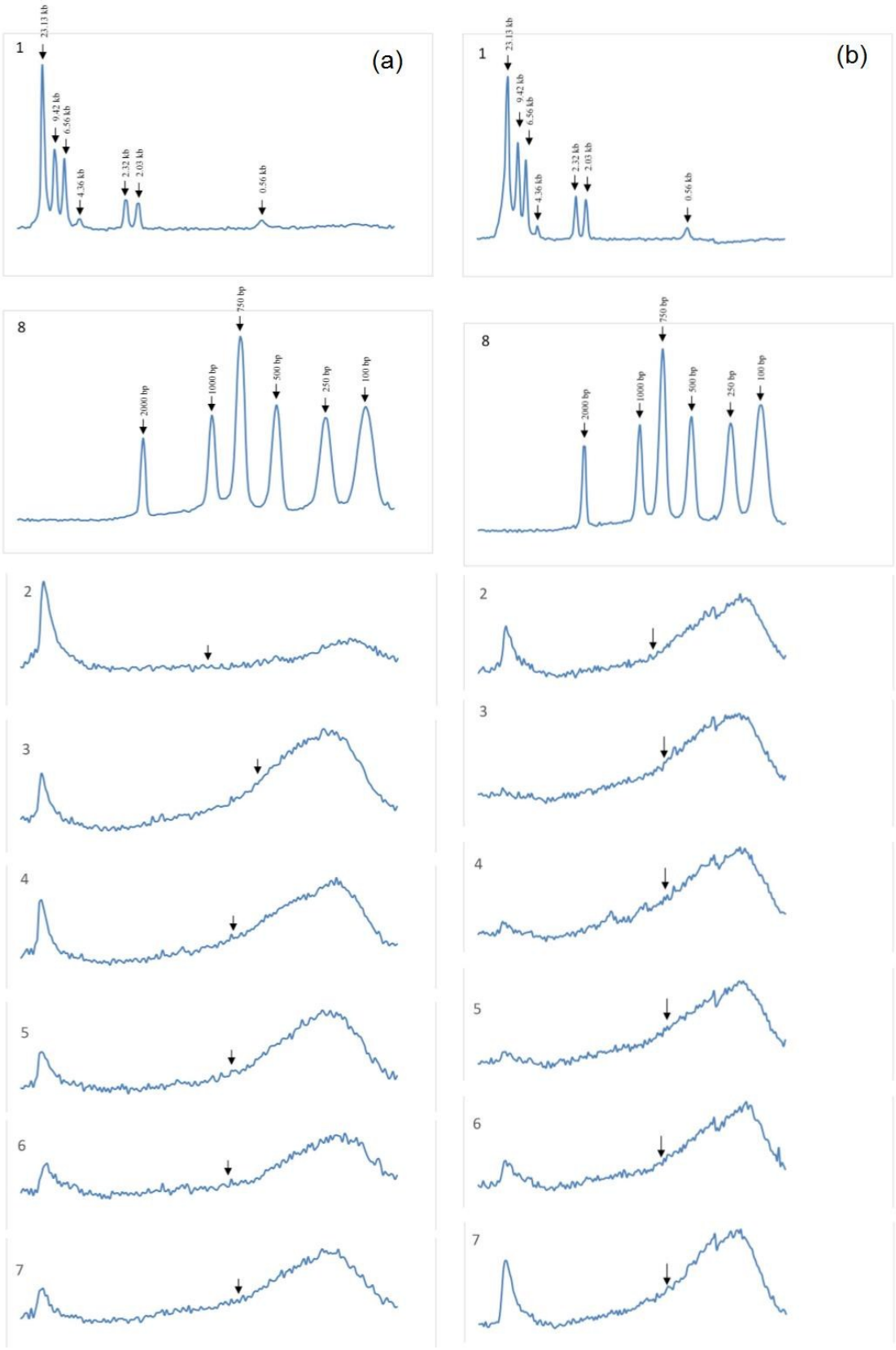


Fig. S6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9.42 kb
6.56 kb
4.36 kb
2.32 kb
2.03 kb
0.56 kb
(a)
(b)
8
2000 bp
1000 bp
750 bp
500 bp
250 bp
100 bp
2
3
4
5
6
7

Fig. S7