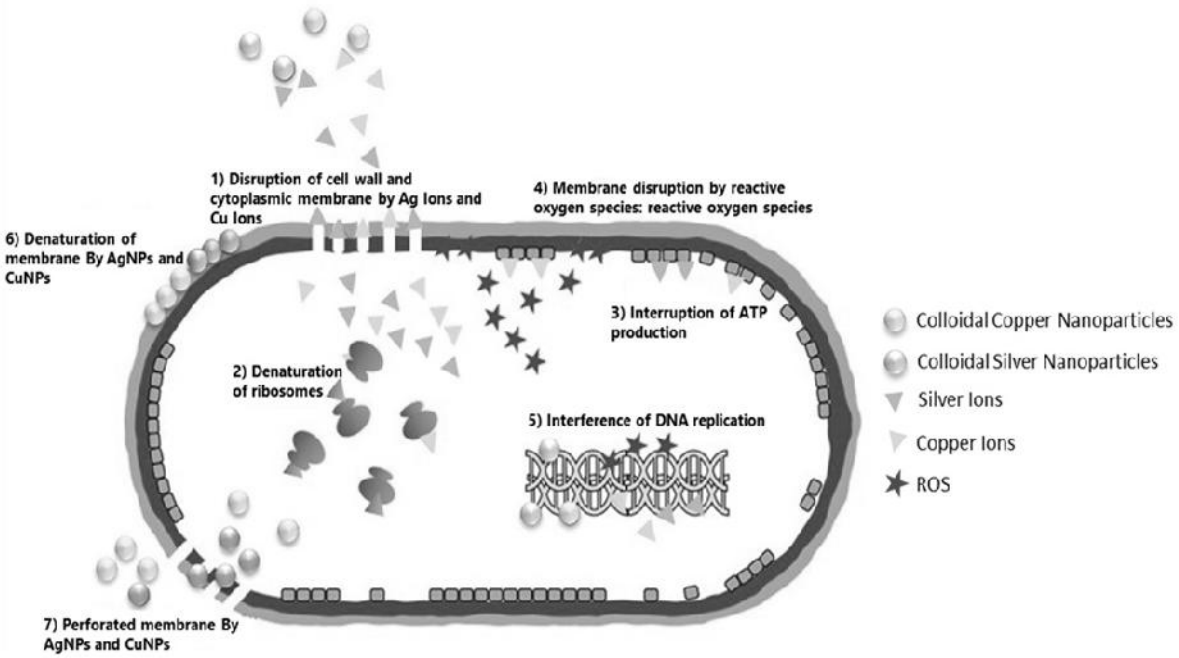


Figure 1 Reactive Oxygen Species Inactivation Mechanism of Colloidal Silver and Copper Nanoparticles

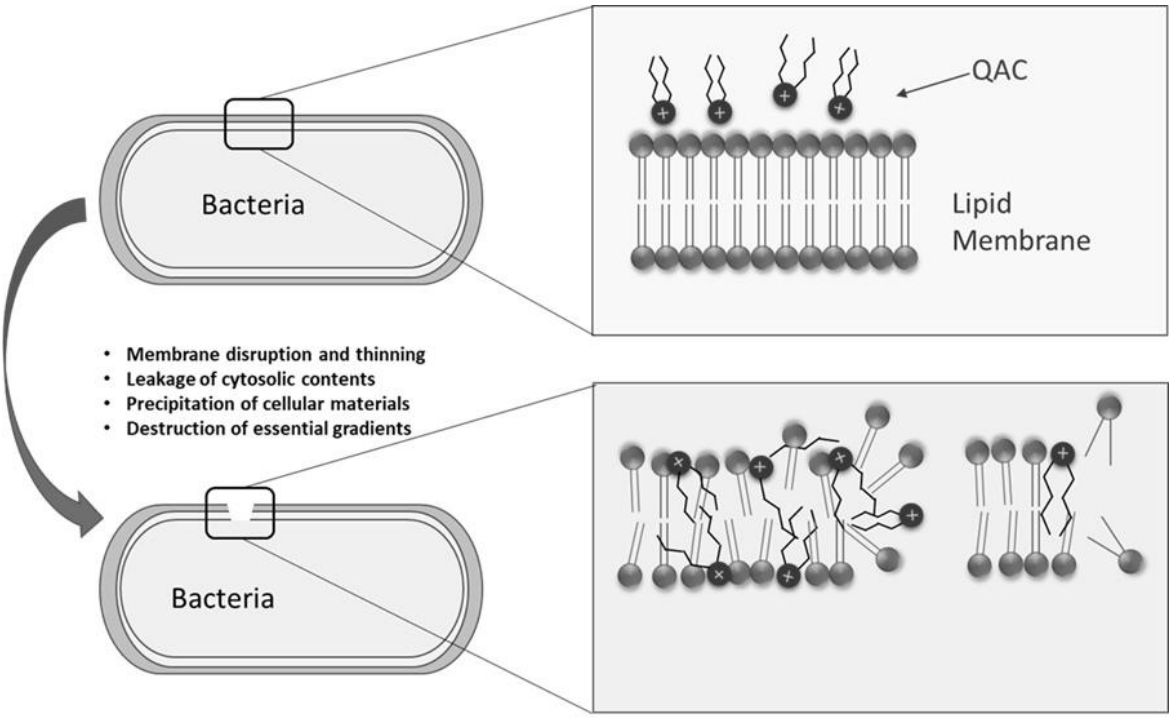


Figure 2 Denaturation Mechanism of Quaternary Ammonium Compound (QAC)

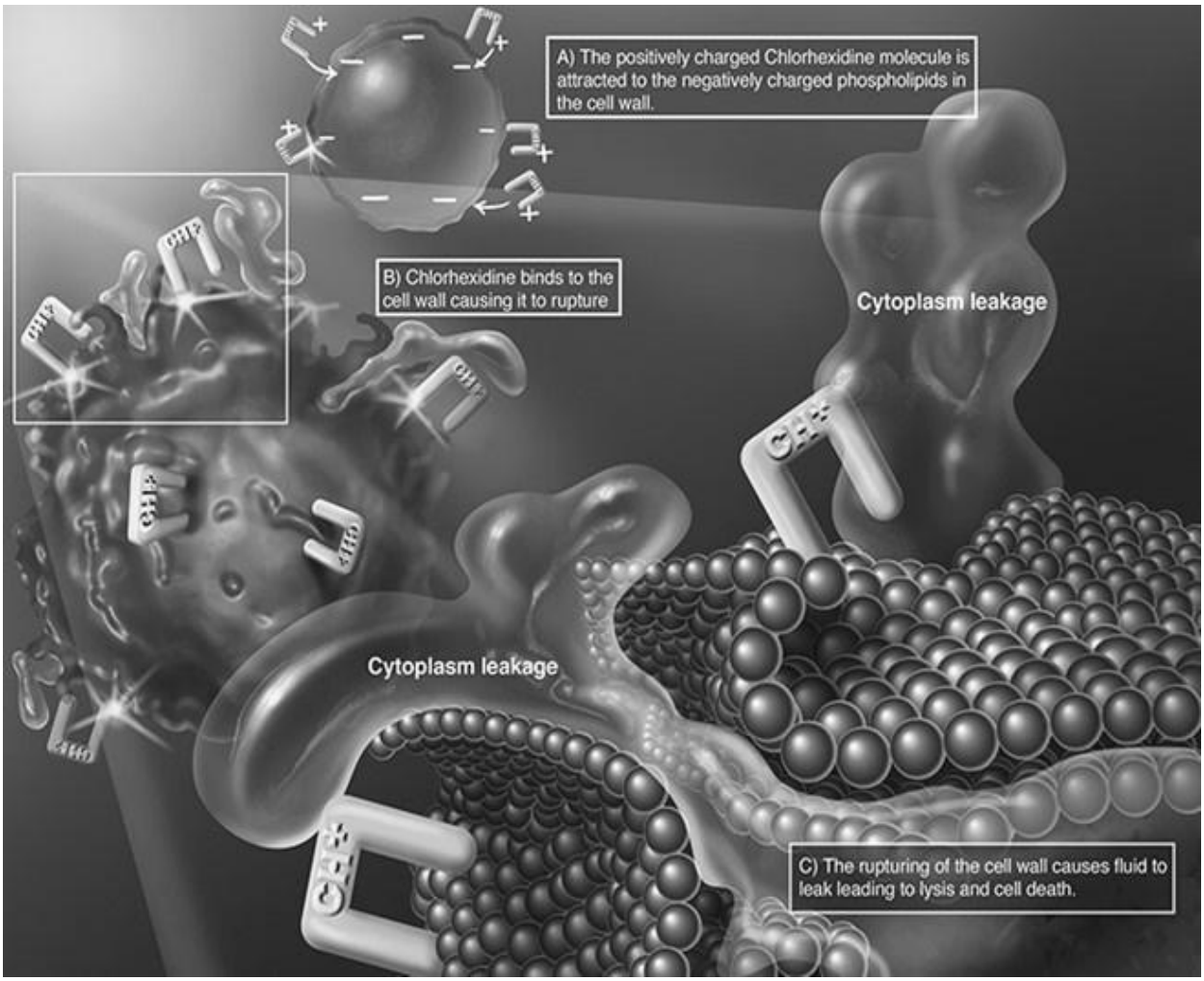

A) The positively charged Chlorhexidine molecule is attracted to the negatively charged phospholipids in the cell wall.
B) Chlorhexidine binds to the cell wall causing it to rupture
Cytoplasm leakage
Cytoplasm leakage
C) The rupturing of the cell wall causes fluid to leak leading to lysis and cell death.

Figure 3

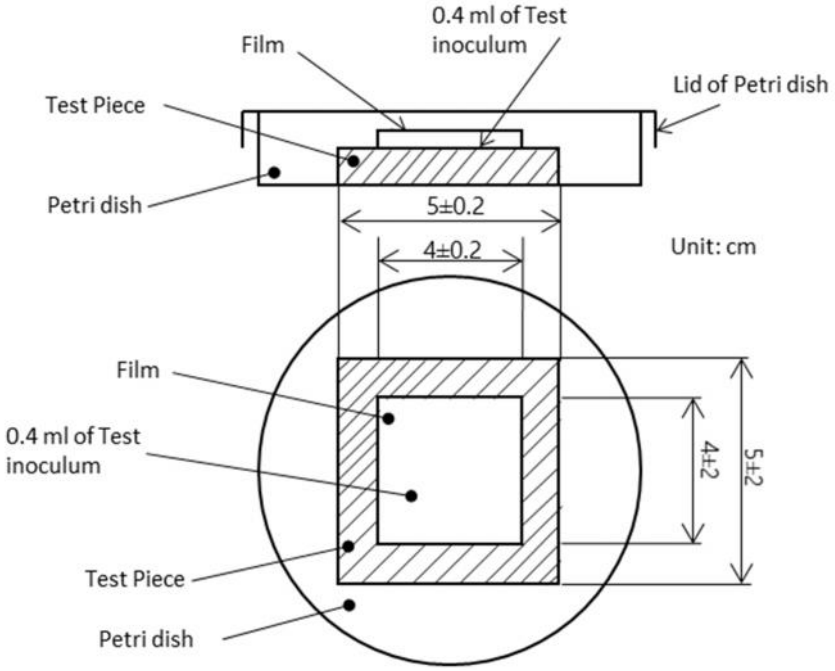

0.4 ml of Test inoculum
Film
Lid of Petri dish
Test Piece
Petri dish
5±0.2
4±0.2
Unit: cm
Film
0.4 ml of Test inoculum
Test Piece
Petri dish
4±2
5±2

Figure 1A

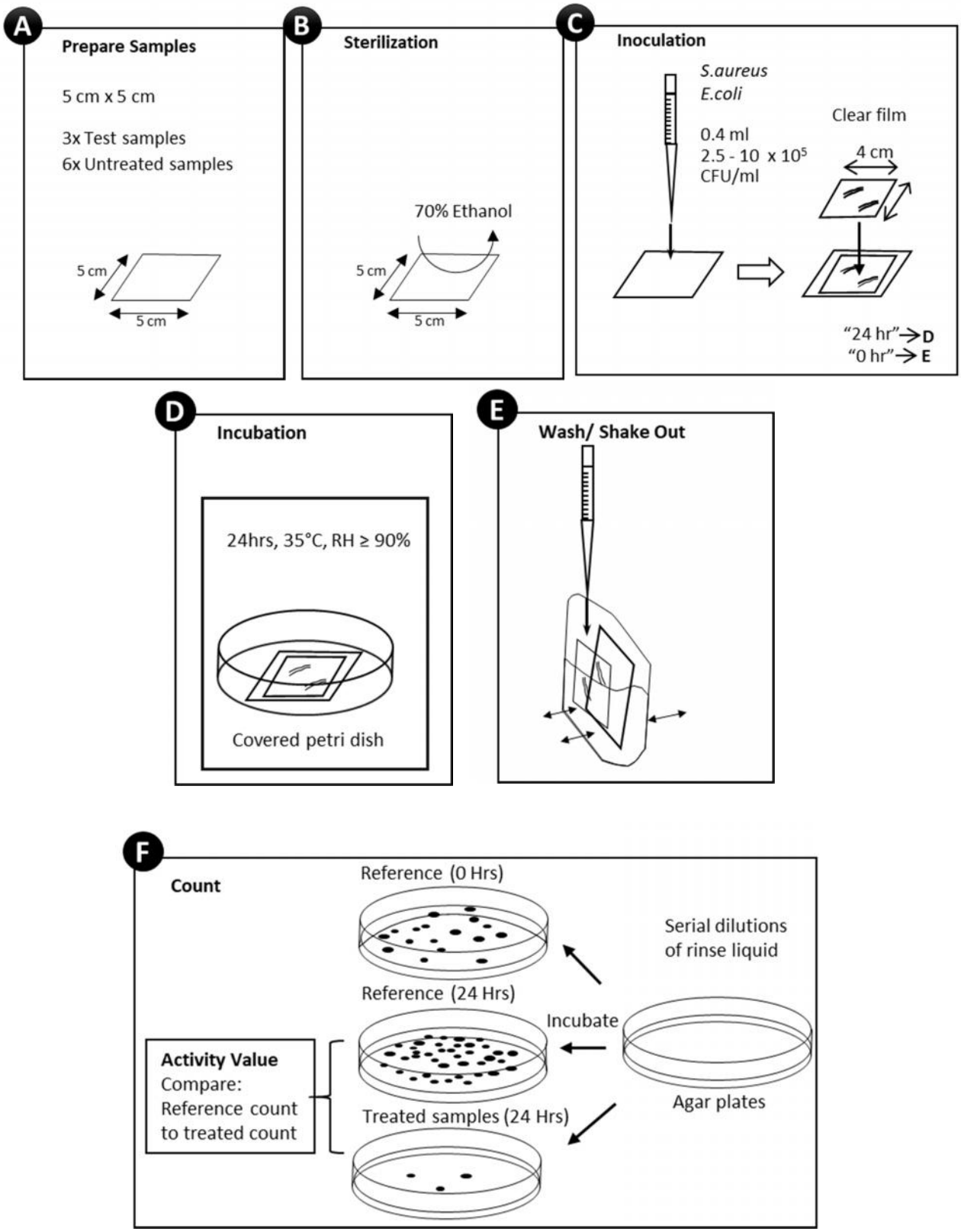

A
Prepare Samples
5 cm x 5 cm
3x Test samples
6x Untreated samples
5 cm
5 cm
B
Sterilization
70% Ethanol
5 cm
5 cm
C
Inoculation
S.aureus
E.coli
0.4 ml
2.5 - 10 x 10⁵
CFU/ml
Clear film
4 cm
"24 hr"→D
"0 hr"→E
D
Incubation
24hrs, 35°C, RH ≥ 90%
Covered petri dish
E
Wash/ Shake Out
F
Count
Reference (0 Hrs)
Serial dilutions
of rinse liquid
Reference (24 Hrs)
Incubate
Activity Value
Compare:
Reference count
to treated count
Agar plates
Treated samples (24 Hrs)

Figure 1B

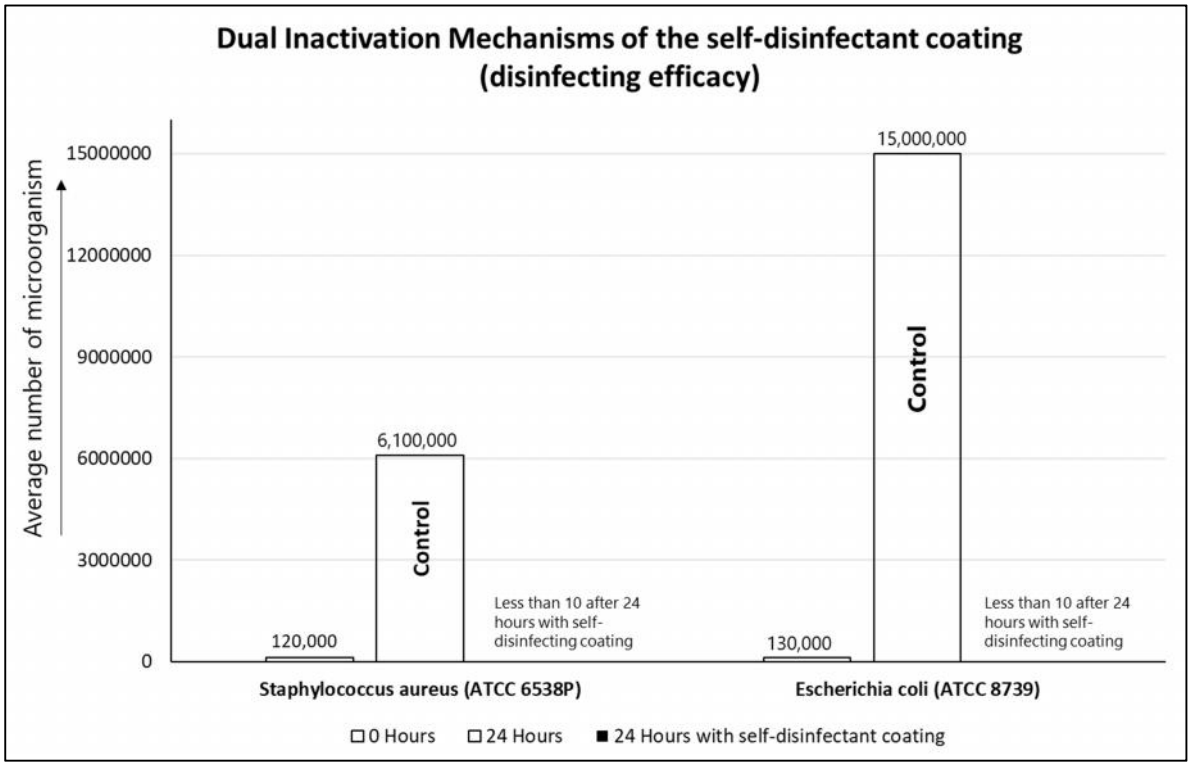

Dual Inactivation Mechanisms of the self-disinfectant coating
(disinfecting efficacy)
Average number of microorganism
15000000
12000000
9000000
6000000
3000000
0
120,000
6,100,000
Control
Less than 10 after 24 hours with self-disinfecting coating
130,000
15,000,000
Control
Less than 10 after 24 hours with self-disinfecting coating
Staphylococcus aureus (ATCC 6538P)
Escherichia coli (ATCC 8739)
0 Hours
24 Hours
24 Hours with self-disinfectant coating

Figure 2A

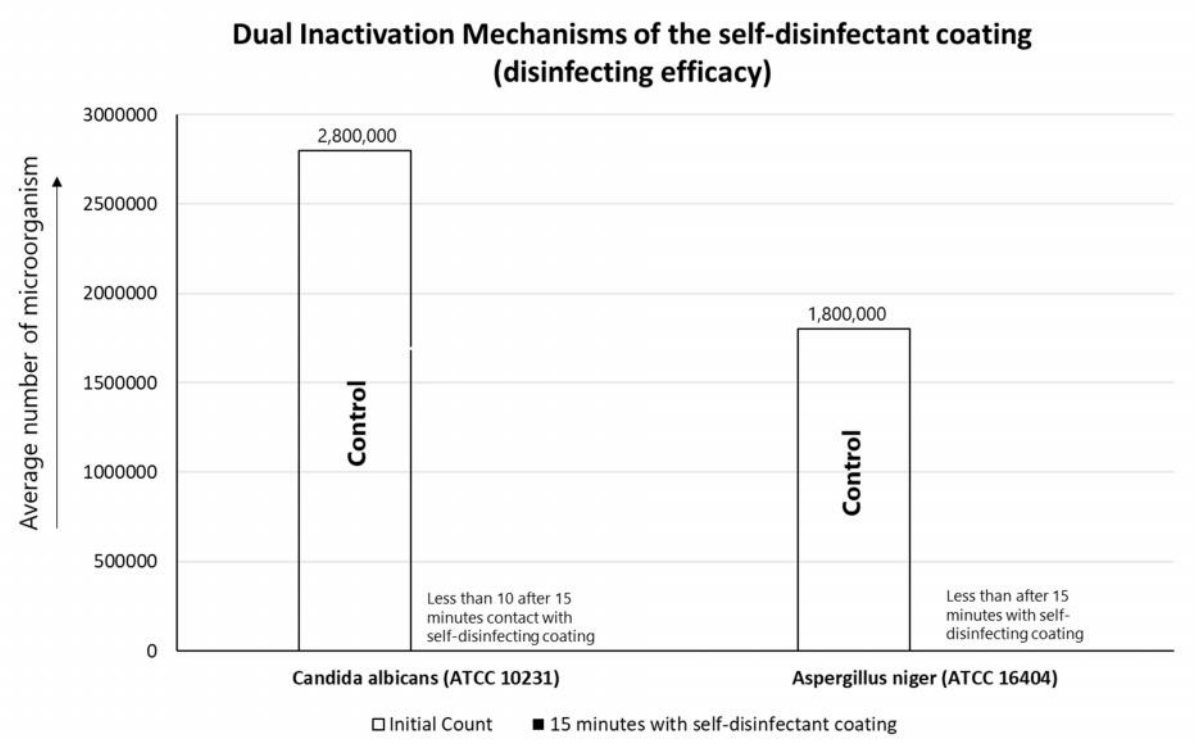

Dual Inactivation Mechanisms of the self-disinfectant coating
(disinfecting efficacy)
Average number of microorganism
3000000
2500000
2000000
1500000
1000000
500000
0
2,800,000
Control
Less than 10 after 15 minutes contact with self-disinfecting coating
1,800,000
Control
Less than after 15 minutes with self-disinfecting coating
Candida albicans (ATCC 10231)
Aspergillus niger (ATCC 16404)
Initial Count
15 minutes with self-disinfectant coating

Figure 2B