

Hypochlorous acid



Hypochlorous Acid (HOCl) has a broad biocidal effect on numerous pathogens. The following table shows an in vitro log of the kill rate for HOCl against bacteria, viruses, fungi, spores, eukaryotes and biofilms.

Experimental kill rates of HOCl (\log_{10} CFU ml⁻¹ reduction per minute)

Aerobic/facultative bacteria	Kill rate
Acinetobacter spp.	10.0
Aeromonas liquefaciens	13.8
Alcaligenes faecalis	13.6
Bacillus subtilis	1.7
Bacillus cereus	2.3-5.9
Burkholderia cepacia	34.5
Citrobacter freundii	13.3
Campylobacter jejuni	44.9
Escherichia coli	1.7-16.0
Enterobacter aerogenes	10.0
Enterococcus spp.	3.5-15.4
VRE	3.5-10.0
Flavobacter spp.	14.2
Haemophilus influenzae	>10.0
Helicobacter pylori	3.50
Lactobacillus spp	4.4-5.0
Legionella pneumophila	8.0
Listeria monocytogenes	1.3-16.3
Klebsiella spp.	10.0
Micrococcus luteus	10.0
Mycobacterium spp.	3.5-5.1
Proteus spp.	10.0
Pseudomonas aeruginosa	8.0-16.0
Salmonella spp.	5.2-16.0
Serratia marcescens	10.0
Staphylococcus spp.	3.9-16.0
MRSA	13.4
MRSE	3.2
Stentotrophomonas maltophilia	2.0
Streptococcus spp.	3.8-5.0

Biofilms 24h	Kill rate
Staphylococcus aureus	6.0
Pseudomonas aeruginosa	6.0
Candida albicans	6.0

Eukaryotes	Kill rate
Aspergillus spp.	5.25
Candida spp.	3.5-16.0

Viruses	Kill rate
FCV	22804.0
Flu A H1N1	2.0
Flu A H5N1	6.0
Flu A H9N2	6.0
Flu A H3N1	2.0
HIV	18.0
HSV	12.0
HSV	23.0
Norovirus	3.0
Polio	16.0
Rhino A	12.0
RSV	6.0
WNV	3.0

Anaerobic bacteria	Kill rate
Actinomyces spp.	2.9
Bifidobacterium bifidum	5.0
Bacteroides fragilis	10.0
Clostridium difficile	5.9
Eubacterium lentum	3.0
Fusobacterium nucleatum	2.9
Peptococcus niger	4.2
Peptostreptococcus anaerobius	4.1
Prevotella melaninogenica	5.8
Porphyromonas spp.	3.5
Prevotella loeschii	5.5
Propionibacterium acnes	4.6
Veillonella parvula	4.7

Bacterial Spores	Kill rate
Bacillus anthracis	0.2
Bacillus atrophaeus	0.4-2.0
Bacillus cereus	1.32-6.98
Bacillus subtilis	1.0-15.0
Clostridium difficile	2.0
Clostridium perfringens	0.04

Information provided by the World Health Organization :

https://www.who.int/selection_medicines/committees/expert/21/applications/s15_hypochlorous_acid_add.pdf?