

# FOOD AND BEVERAGE FOCUS

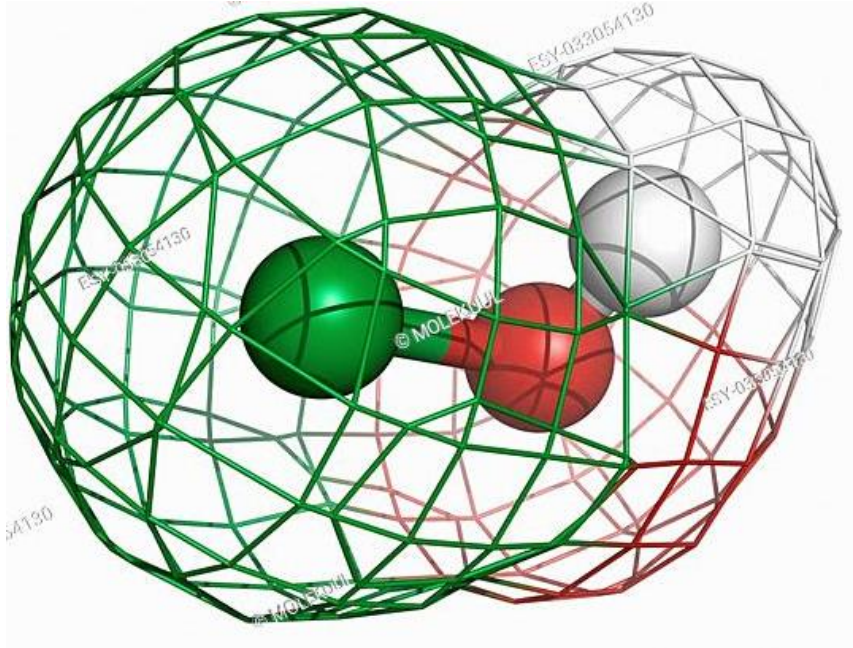


atm plus



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# Hypochlorous Acid (HOCl)



also known as

- electrolyzed water / electrolyzed reduced water  
**(ERW, EW)**
- electrochemically activated water  
**(ECA)**
- anolyte  
**(AEW, NEW, SAEW)**

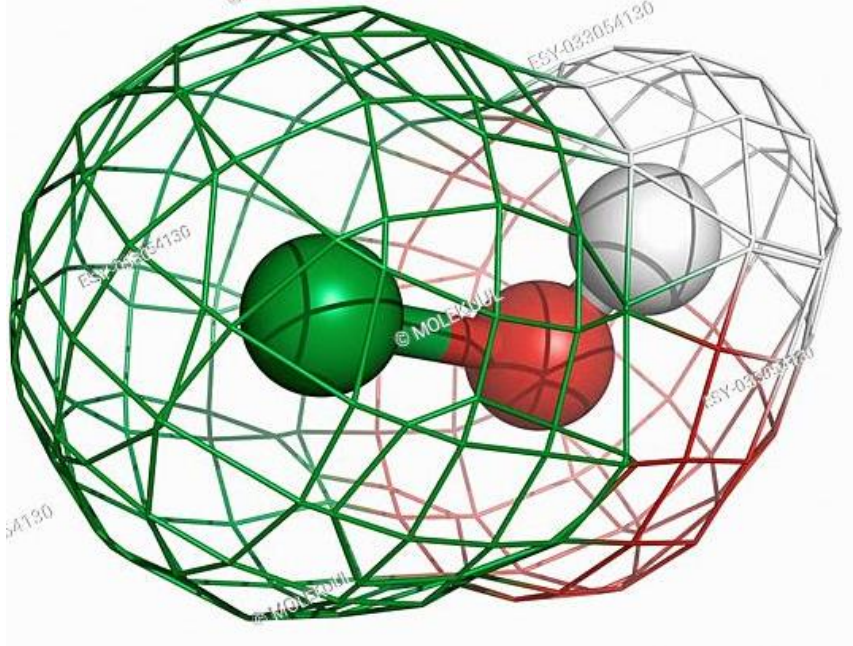
**atm plus** has a broad spectrum anti-microbial use



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# Hypochlorous Acid (HOCl)



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most effective disinfectant in the chlorine family

- No polar charge
- Low molecular weight

PERFECT structure to penetrate CELL WALLS

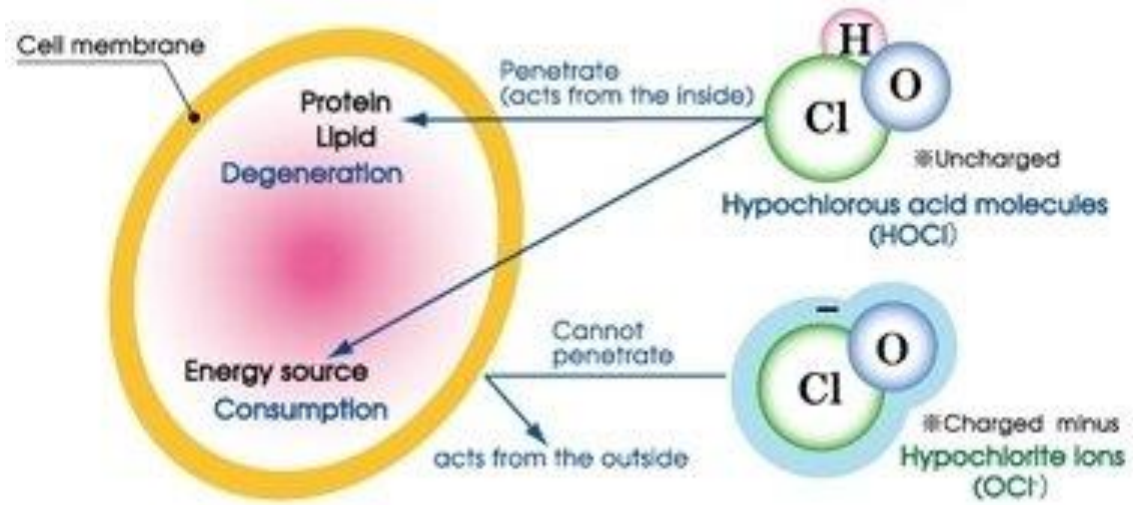
- HOCl is a WEAK ACID
- At a pH of 4 – 8.5 most available Chlorine is HOCl

NO RESIDUE after dissolving in water

- Solution stays active for  
7 – 10 DAYS



# Hypochlorous Acid (HOCl)



[hypochlorousacid.com/about](http://hypochlorousacid.com/about)

- HOCl diffuse through cell membrane
- Without a polar charge it is not repelled
- OCl- (BLEACH) is unable to penetrate cell membrane due to **negative charge**
- Bleach can only clean on the EXTERIOR
- HOCl acts from INSIDE

**atm plus** most effective disinfectant in the chlorine family

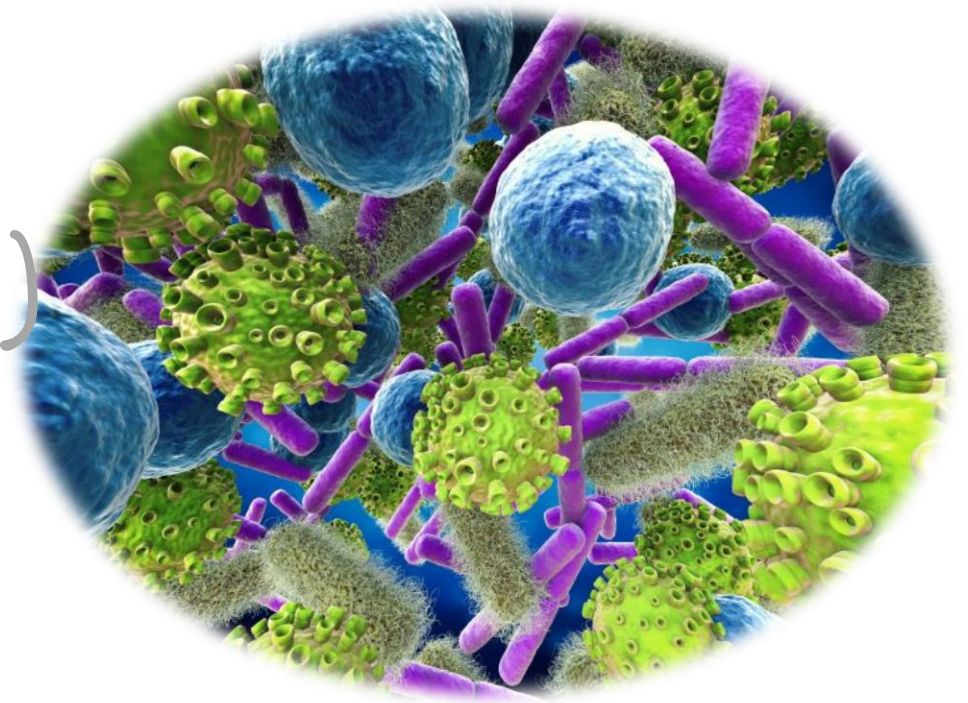


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# NATURE of Hypochlorous Acid (HOCl)

- Natural component of our own immune systems
- Fights against infection
- Reduces inflammation
- Bio-degradable in the environment

**atm plus** organic, lethal, cost effective



**“Hypochlorous acid is  
LETHAL to every pathogen  
it has been tested against  
but completely HARMLESS  
to humans and other  
mammals.”**



# phagocytosis

[ fag-uh-sahy-toh-sis ]

*noun*

*Physiology.* the ingestion of a smaller cell or cell fragment, a microorganism, or foreign particles by means of the local infolding of a cell's membrane and the protrusion of its cytoplasm around the fold until the material has been surrounded and engulfed by closure of the membrane and formation of a vacuole: characteristic of amoebas and some types of white blood cells.



- Neutrophils (WHITE BLOOD CELLS) seek out pathogens (VIRUSES AND BACTERIA) and destroy them using HOCl
- HOCl causes necrosis (RUPTURING OF THE CELL) and destroys the cell contents
- While disinfecting, HOCl is {OXIDISED} and consumed
- The only by-product is slightly salty water





# EFFECTIVENESS OF HOCl

## atm plus

disinfects and destroys:

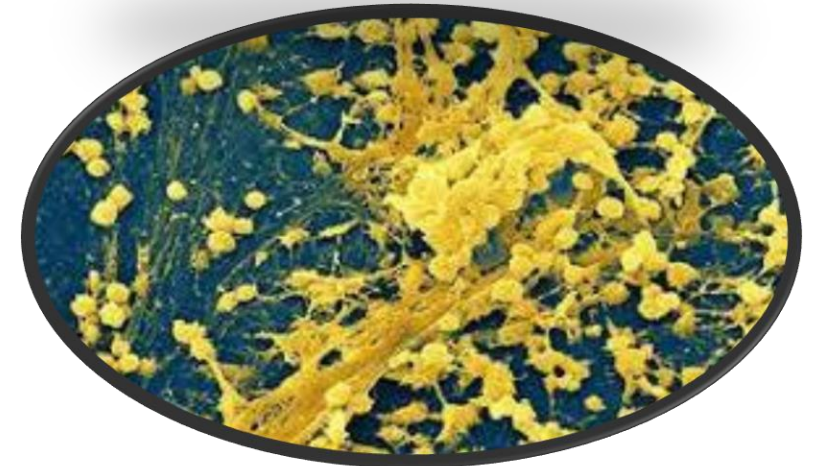
- ✓ VIRUSES
- ✓ BACTERIA
- ✓ MOULDS
- ✓ FUNGI
- ✓ SPORES
- ✓ BIOFILMS

defends against:

- ✓ INFECTION
- ✓ RESISTANCE/TOLERANCE
- ✓ PATHOGENS BENEATH BIOFILMS
- ✓ FERMENTATION IN STORAGE

## atm plus

80 – 100 times more effective than bleach



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# PROVEN EFFECTIVE AGAINST SARS-CoV-2

The latest peer approved scientific papers conclusively show that **HOCL effectively kills the SARS-Covid 2 virus**. The papers also compare HOCL to other disinfectants showing its comparative performance with other disinfectants such as bleach.

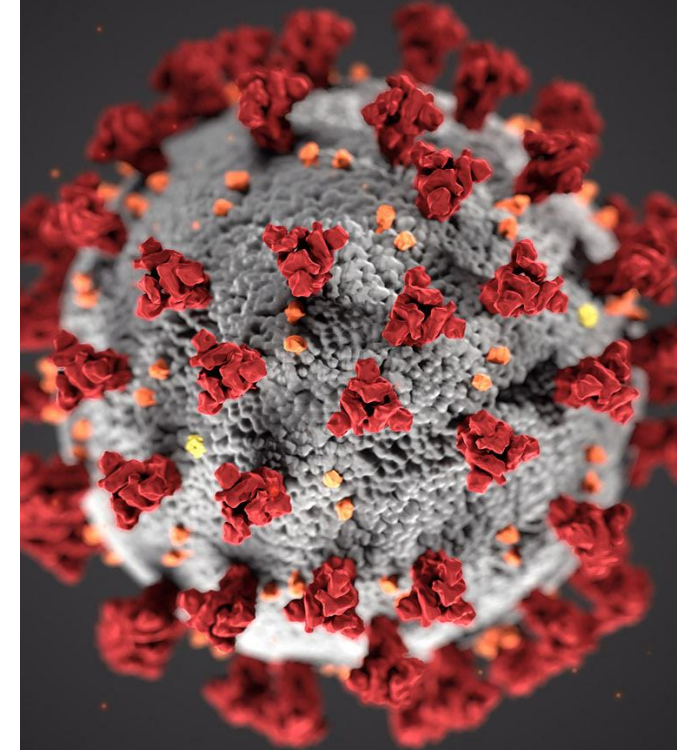
Chan K-H, Sridhar S, Zhang RR, Chu H, Fung AY-F,  
Chan G, Chan JF-W,  
To KK-W, Hung IF-N, Cheng VC-C, Yuen K-Y,  
Factors affecting stability and infectivity of SARS-  
CoV-2,  
*Journal of Hospital Infection*,  
<https://doi.org/10.1016/j.jhin.2020.07.009>.

‘The surgeon needs to have an **inexpensive, available, nontoxic, and practical** disinfectant that is effective in sanitizing against the COVID-19 (Coronavirus Disease 2019) virus.’

‘The results indicate that this material can be used with a **high predictability** for disinfecting against the COVID-19 (Coronavirus Disease 2019) virus.’

Michael S. Block, Brian G. Rowan,  
Hypochlorous Acid: A Review,  
J Oral Maxillofac Surg,  
10.1016/j.joms.2020.06.029

**atm plus** 80 – 100 times more effective than bleach



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# atm plus

*the effervescent tablet*



HOCl concentrated into a 6 gram dissolvable tablet

1 tablet = 12.5l of disinfectant

consistent solution at 100PPM every time

active for 7 – 10 DAYS after dissolving  
then returns to pure water

easy STORAGE

low TRANSPORT COSTS

1 year SHELF LIFE in tablet form

# atm plus

effective at 25PPM to 200PPM depending on use



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# USES of atm plus

*to name a few...*

- DISINFECTING any and all surfaces
  - fresh fruit / veg preparation
  - hydroponics / irrigation
- AGRICULTURAL
  - pesticidal treatment
- LIVESTOCK
  - control / reduction of disease
  - improves digestion / feed conversion ratios
  - increase livestock yields
- MEDICINAL / DENTISTRY
  - mouthwash / wound care
  - waterline disinfection
  - scrubbing in

**atm plus** 100% organic, bio-degradable, MRL FREE



# USES of atm plus

*to name a few...*

- HORTICULTURE
  - increase shelf life
  - reduces rotting / infection
- WATER TREATMENT
- FACILITIES
  - shopping centres
  - accommodation
  - office buildings
- TRANSPORT
  - airlines / airports
  - public transport
  - shipping / cruiseliners

**atm plus** safer exposure to humans than regular disinfectant





# atm plus:

## GENERAL USE

atm plus CAN BE USED TO CLEAN AND SANITIZE:



- Floors and walls
- Preparation areas
- Workers' hands, clothes and shoes
- Food contact surfaces



*'As a Disinfectant/Sterilant, HOCl has greater killing power than Chlorine, Chlorinated Water, Chlorine Dioxide, Sodium Hypochlorite, Hydrogen Peroxide and Ozone'*

# atm plus

gentle, effective, safe – NO PPE NECESSARY



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# atm plus:

## FOOD PROCESSING

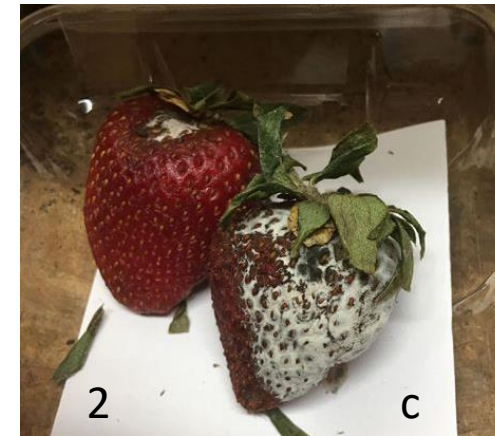
### TREATMENT AGAINST MOULDS AND FUNGI

Spraying of Strawberries post harvest

Strawberries were treated by spraying HOCl {atm plus} on (1) and (2) and not spraying on Control (c)



Strawberries 4 days after application



Strawberries 14 days after application

Conclusion: fresh produce treated with HOCl stay **FREE OF MOULDS** for longer

# atm plus

no DISCOLORATION after use on fresh produce



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# atm plus:

## FOOD PROCESSING



- wash and rinse fruit and vegetables  
– NO RESIDUE ON PRODUCT
- disinfect and clean equipment  
– PREP AREAS, SORTING MACHINES, WASH BAYS  
– PPE, BOOTS, TOOLS
- disinfect BINS, CRATES and STORAGE AREAS



atm plus spray, wipe and dry: NO RINSE REQUIRED



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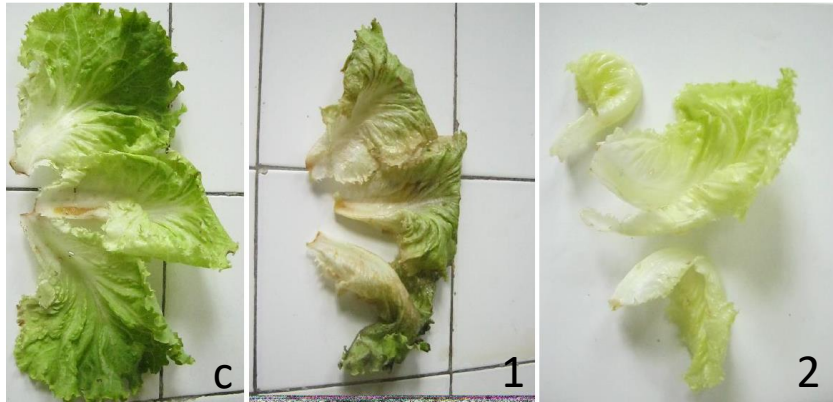


# atm plus:

## FOOD PROCESSING

Disinfection of leafy vegetables with activated waters

Lettuce was treated with tap water (c) anolyte without salts (1) and HOCl {atm plus} (2) for 15 minutes



Lettuce after 24 hours of application



Lettuce after 1 week of application

*Journal of Advances in Agriculture Vol 9 (2018) ISSN: 2349-0837*

Conclusion: vegetables treated with HOCl stay **FRESH** (free of bacterial decay) for longer

**atm plus** use at max 60PPM on fresh produce



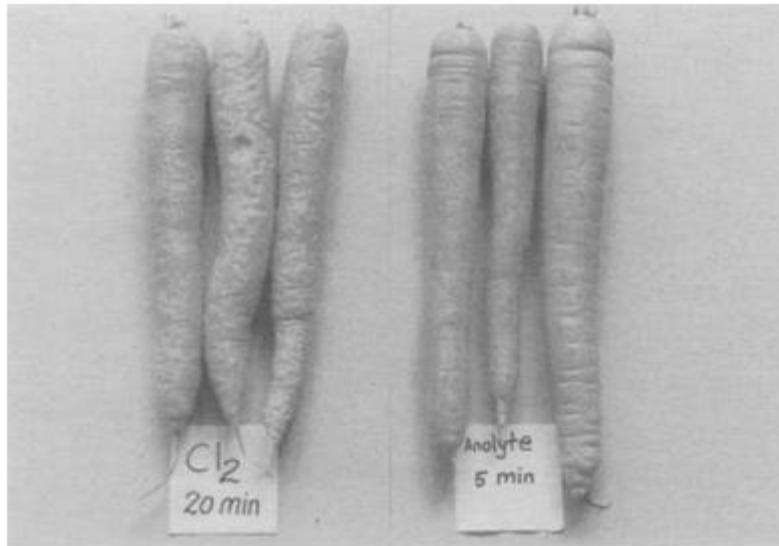
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## FOOD PROCESSING

### Anolyte vs chlorinated water as disinfecting dipping treatment

Carrots were dipped in HOCl {atm plus} (1) and Chlorinated water (2) for 5 or 20 minutes respectively



Results after 16 days

Pears, apples, peaches and strawberries were dipped in HOCl {atm plus} and Chlorinated water



Results after 25 days

# atm plus

No chlorine-induced phytotoxicity are observed on treated fruit



# atm plus:

## FOOD PROCESSING



- POULTRY
- BEEF
- FISH
- PIGS
- GAME

'We applied electrolyzed water (EW) directly to multi-strain cocktails of *Listeria monocytogenes*, *E. coli* O157:H7, and *Salmonella* sp. at 250 ppm free available chlorine (FAC) and achieved greater than 6-log reductions in 2 min'

**atm plus** reduces overall bacterial spread



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## FOOD PROCESSING

### ON CONTACT SURFACES



- Reduces biofilm formation – with SUBMERSIVE treatments of 30 seconds
- Eliminates bacterial contamination
- Effectiveness is not dependent on surface type
  - Plastic cutting boards
  - Wooden cutting boards
  - Steel preparation areas

*'For fresh meats, a commonly used antimicrobial is organic acids like HOCl {atm plus}'*

**atm plus** should be used with an appropriate degreaser



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# atm plus:

## FOOD PROCESSING

DESTRUCTION OF BIOFILM AND SCALE IN IRRIGATION SYSTEMS



atm plus recommended use at 100 - 200PPM



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# atm plus:

## COMPARING DISINFECTANTS

	CHLORINATION	atm plus	ALCOHOL
Solution	Sodium Hypochlorite Solution	Hypochlorous Acid Solution	Isopropyl / ethanol / other
Compound description	NAOCl	HOCl	Ethanol, Triethanolamine
Other Name	Bleach	Anolyte	Alcohol
Usage Level	50ppm	5 - 500ppm	60% - 95%
MSDS Statements	Very hazardous in case of skin contact, eye contact, or ingestion. It is an irritant and corrosive. Prolonged exposure may result in skin burns and ulcerations	Under prescribed use conditions, the likelihood of adverse health effects are low. The solution is recommended for wound treatment. If any irritation occurs, flush with water	Highly flammable and combustible. Keep away from food, drink and animal feeding stuffs. Not corrosive. Non-Hazardous
Dose level harmful to humans	Yes	No	Yes
Effective as surface decontamination	Yes	Yes	No, due to evaporative nature
Kills Legionella	Yes	Yes	No
Removes Biofilm and Scale, and resulting bacteria	No	Yes	No
At high pH	Hypochlorite Ion (OCl <sup>-</sup> )	Hypochlorous Acid (HOCl)	
Contact time	Up to 15 min necessary	Effective as fast as 30 seconds after application	10 Minutes
Biocidal impact	Only as disinfectant	As Disinfectant and Sporicidal agent	Only as disinfectant
Resistance	Bacteria develops a resistance	Bacteria is unable to develop resistance due to cellular level impact.	Bacteria develops a resistance
Rinse required	Yes	No	Yes

