



# **Germicide / Disinfectant**

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# There are mainly two classes of germicides uses in teat disinfectants

## Oxidative

- Oxidative germicides typically have the broadest spectrum of bacteria that are killed. Examples of oxidative germicides are iodine, chlorine dioxide, chlorine, hydrogen peroxide, and ozone.
- Products like hydrogen peroxide work best when little organic matter is on the teats prior to applying the teat disinfectant.

## Nonoxidative

- Nonoxidative teat disinfectants are more targeted on the classes or types of bacteria that they kill. Examples of nonoxidative dips are chlorhexidine, fatty acids, and alpha hydroxyl acids.
- Nonoxidative germicides often work best when paired with an oxidative germicide.

# Germicide / Disinfectant

- Iodine
- Chlorine dioxide (Acidified Sodium Chlorite)
- Chlorhexidine
- Hydrogen peroxide
- Fatty Acid – Lactic, Salacilic, Glycolic, DDBSA

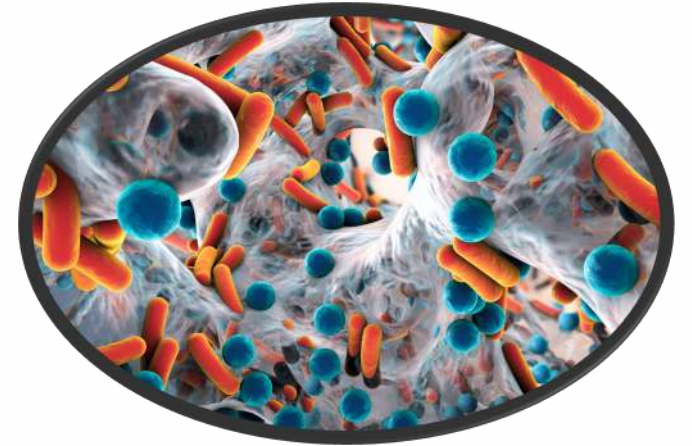
# Mastitis Causing Organisms

## Environmental

- E.Coli
- Step. uberis
- Step. dysgalactiae
- Klebsiella
- Enterobacter
- Citrobacter
- Enterococcus

## Contagious

- Staph. aureus
- Strep. ag.
- Mycoplasma
- Corynebacterium bovis
- CNS
- Pseudomonas
- Nocardia



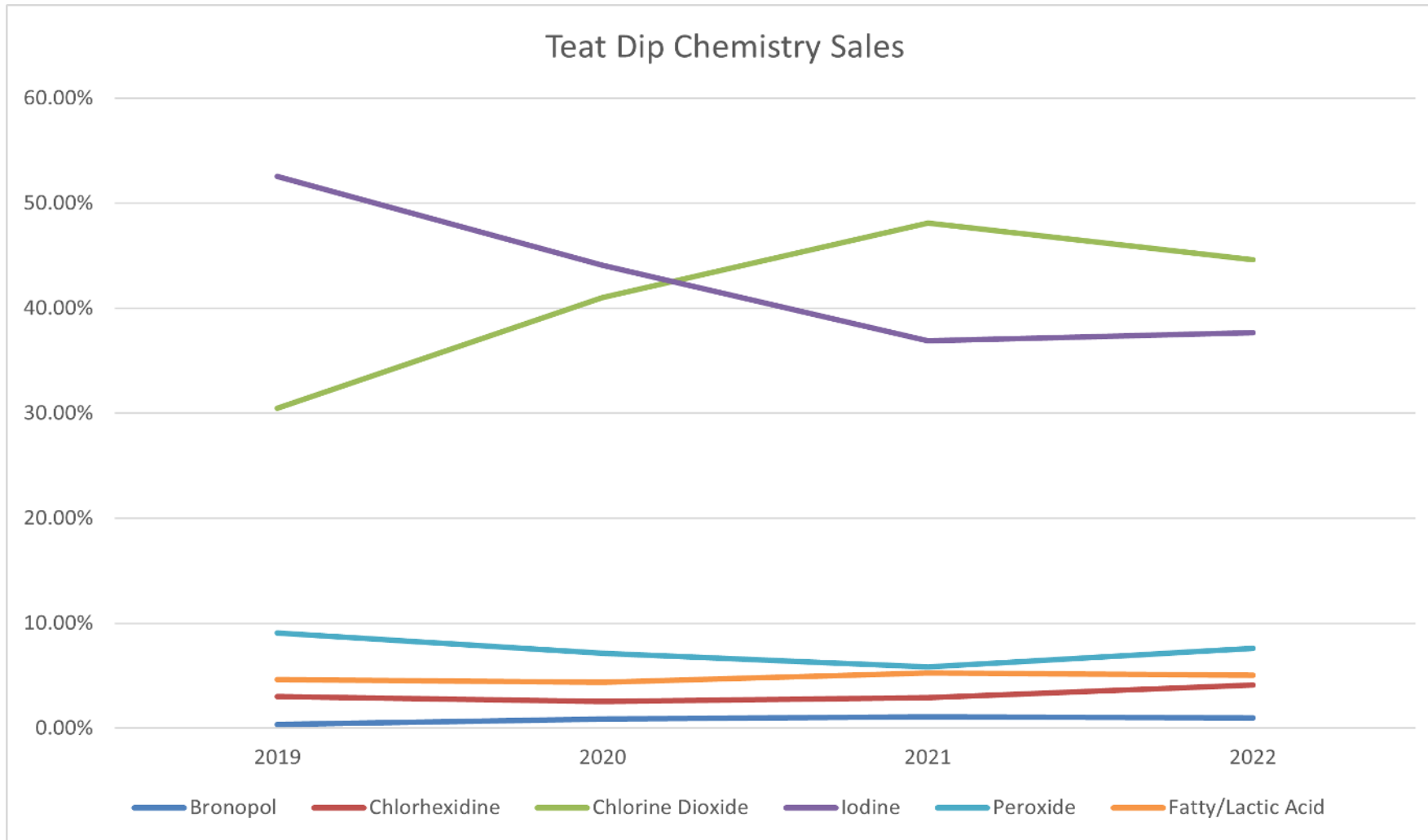
# Teat dip disinfectant market share

<b>Germicide</b>	<b>Action</b>	<b>Percent of market</b>
Iodine	Oxidative	65
Chlorhexidine	Non-oxidative	10
Chlorine dioxide	Oxidative	10
Peroxide	Oxidative	10
Bleach	Oxidative	2
Other	Non-oxidative	3

DeLaval estimates



# AgroChem Teat Dip Sales history %



**Teat dip sales are changing**

# Iodine

- Most common teat dip: >60% of market share.
- Oxidizing, fast acting disinfectant against bacteria, virus, fungi and spores.
- Iodine dissolved in water with detergents or surfactants and the resulting solution is an iodophor.
- Nearly all iodine is in the complexed but unbound form-not antimicrobial.
- Uncomplexed iodine or free iodine provides the antimicrobial activity by oxidizing.
  - Free iodine is usually 6-12 ppm.
- Surfactants and detergents as complexing agents remove natural protective oils from the teat skin; thus, teat conditioners are added.
- 0.5% iodine is equal to 5,000 ppm titratable iodine-pre dip
- 1% iodine is equal to 10,000 ppm titratable iodine-post dip



# BovaPro

# SmartDip

- Formulated in 0.5% and 1.0% Iodine.
- Provide superior softening and conditioning.
- Formulated with IoPlex, AgroChem's proprietary process that provides a steady, stable supply of free, available iodine.
- Remains effective during freeze-and-thaw cycles.
- Quickly kills mastitis-causing pathogens.
- Multiple formulations available with varying iodine concentrations and emollient packages.

## SmartDip

- Highest amounts of available free iodine
- Premium Protection, Economic Price

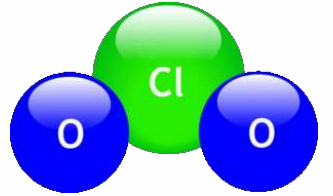


 **AgroChem**  
kersia group



# Chlorine Dioxide (Acidified Sodium Chlorite)

Sodium Chlorite + Lactic Acid=**Chlorine Dioxide**(+DDBSA)



- Kills by Diffusion Through Cell Membranes
  - Inactivates Bacteria Inside Out
- Prohibits Anerobic and Aerobic Bacteria Resistance Development
  - >600 ppm =7 Log Kill at 15 seconds
- As Effective on Contagious Mastitis as Iodine(Fitzpatrick, 2021)
  - Streptococcal
  - Staphylococcal
- Kills Broad Spectrum Bacteria
  - Works Independently from pH
  - Ideal on Farms with High Organic Load
  - Not effected by environmentals

**NOTHING LIKE CHLORINE!!!**



Sodium Chlorite + Acid=Chlorine Dioxide(+DDBSA)

- Chlorine Dioxide
- Lactic Acid Activator
- DDBSA

**XTRA**  
**Blu** RTU and  
Concentrate



**Pre-Post  
Barrier  
Armor**

**XTRA**  
**GUARD**



**XT 22C and  
XT Ultra Concentrates**



# Chlorhexidine

- Non-irritating, fast acting germicide that adheres well to the skin and provides prolonged antimicrobial activity.
- Residual kill of up to twelve hours.
- Many positive benefits for the skin (neutral pH and non-irritant effects).
- Known for treating Herpes/warts/ Mammillitis
- Different concentrations (0.35 - 0.5%) – lower conc. is bacteriostatic and higher conc. is bactericidal. Research shows a conc.  $\geq 0.5\%$  is needed to be efficacious.
- Negative Properties: Ineffective against gram negative bacteria like Serratia and Pseudomonas. Can survive in the dip itself

# CHLORDINE

- Fast-acting chlorhexidine gluconate-based teat dip with a distinctive blue color.
- Extremely effective microbicide active against most gram-positive and gram-negative organisms, certain anaerobes, aerobes and yeasts.
- Helps decrease intramammary infections due to *Strep. agalactiae* and *Staph. aureus*.
- Adheres well and stays active for up to 5-6 hours longer than other antimicrobial agents.
- Available as teat dip in 0.5% and 1.0% chlorhexidine concentrations or 1.75% Udder Wash.

# Peroxide

- **Broad-spectrum** properties.
- Mixed solutions have synergistic effects in disinfection e.g., Lactic acid.
- Good foaming action – extended contact time, volume saving, etc.
- Excellent cleaning properties aid its effectiveness as a pre-dip.
- Many positive benefit for the skin health (exfoliation of outer skin layer).
- Negative properties:
  - Sensitive to sun light and extreme temperatures.
  - The active is not as effective under high organic matter contamination.

# PeroxyGuard

- Formulated with a 1% stabilized hydrogen peroxide sanitizer to kill bacteria safely and effectively.
- Contains several surfactants which produce a rich debris-lifting foam.
- Provides a fast and effective kill. ½ the time of iodine
- pH balanced formula is mild and non-irritating.
- Includes lactic acid, which provides a secondary kill and mild exfoliation of rough teat ends.





# Fatty Acids/Lactic Based

- Part of the cows natural defense mechanisms against Mastitis-causing organisms.
- Mixed solutions to have synergistic effects in disinfection.
- Many positive benefits associated with this product e.g., good skin care, quick acting, highly compatible with emollients, etc.
- Fast effective Kill – ½ the time of iodine
- Negative Properties:
  - Not as broad spectrum in kill as iodine but adequate for most conditions.



# PREP 8X

- Unique combination of lactic acid and linear alkylate sulfonates.
- Excellent detergency provides quick, thorough pre-cleaning for optimal hygiene.
- All formulations contain 2% lactic acid for hydration and gentle exfoliation of skin.
- Emollient Packages: Ready-to-Use 4%, Prep 8X Concentrate (1:7) 4%, Prep 8X8 Concentrate (1:7) 8%



# Other Chemistries

- **Bronopol** is an organic compound that is used as an antimicrobial.
- Due to its low mammalian toxicity at in-use levels and high activity against bacteria, especially Gram-negative species.
- Effective against both gram-positive and gram-negative bacteria, microorganisms and fungi.
- It forms a lasting physical barrier for protection between milkings.
- pH approximates teat skin.
- Gentle
- Good detergency, yet non-irritating to skin and non-toxic to humans and animals.

# *Ultra Soft*

- Effective against both gram-positive and gram-negative bacteria, microorganisms and fungi.
- It forms a lasting physical barrier for protection between milkings.
- Contains a rich 14% emollient package, capable of re-establishing the natural lipid barrier.
- pH approximates teat skin.
- Good detergency, yet non-irritating to skin and non-toxic to humans and animals.

# More than Just dipping – it's a program

## A Complete Mastitis control program

- The environment
- Milking Procedures
- Teat Dip
- Dry Cow Therapy
- Milking Equipment
- Handling Infected cows



# ***Aurora Premier***

## *A premium teat blending system*

- Multilingual - English and Spanish
- Splash resistant and durable ABS enclosure
- Quick change pumps and fittings for easy replacement, no tools required
- Data management including chemical usage, cost, load counts, shift report
- Accuracy is achieved by only measuring water with the flow meter and automatically adjusting dispensing time as the squeeze tubes wear for a precise dose
- Ability to add additional emollients to solution based on farm needs.
- Comes pre-assembled. Just mount onto the wall, connect and set the program. No additional manual configuration is required.





# Ideal Options for Aurora Premier System

## **CHLORINE DIOXIDE TEAT DIP SOLUTIONS**

### **XT-ULTRA**

Ultra concentrated formula provides a very cost effective pre-dip solution. 1:1:58 mix rate. Premium emollient system that contains lanolin, glycerin, and propylene glycol for ideal post-milking skin conditioning. Effective surfactants thoroughly cleans teats. Solution remains active, with high levels of Chlorine Dioxide, for multiple days.

### **XT-22C**

Highly concentrated formula provides a cost effective pre and post-dip solution. 1:1:20 mix rate. Premium emollient system that contains lanolin, glycerin, and propylene glycol for ideal post milking skin conditioning. Solution remains active, with high levels of Chlorine Dioxide, for multiple days.

### **XTRA BLU CONCENTRATE**

6.0% emollient package including 0.5% lanolin to replenish oils in the skin and re-establish the natural lipid barrier. Resistant to breakdown and loss of activity caused by organic matter and soil – unlike iodine and peroxide-based teat dips. Produces powerful germicides once activated, including chlorine dioxide and chlorous acid.

## **OTHER TEAT DIP SOLUTIONS**

### **PEROXYGUARD CONCENTRATE**

Formulated with a 1% stabilized hydrogen peroxide sanitizer to kill bacteria safely and effectively. Contains several surfactants which produce a rich debris-lifting foam. Provide superior softening and conditioning. pH balanced formula is mild and non-irritating.

### **AURA CONCENTRATE**

Combination of lactic acid and several germicidal acids produces a synergistic effect with broad-spectrum killing activity. Contains 7.5% DermaPlex, a unique 3-part moisturizing system that includes a skin emollient, humectant and plasticizer. Formulated in 0.5% and 1.0% Iodine. Provides excellent skin conditioning while aiding in the reduction of bacteria that cause mastitis.

### **PREP 8X**

Effective and economical non-iodine pre-dip. Excellent detergency provides quick, thorough pre-cleaning for optimal hygiene. Provides 2% emollients and lactic acid for hydration and gentle exfoliation of skin. Contains no iodine or quaternary ammonium compounds.

## **IODINE TEAT DIP SOLUTIONS**

### **BOVAPRO CONCENTRATES**

Formulated in 0.5% and 1.0% Iodine. Provide superior softening and conditioning. Formulated with IoPlex, AgroChem's proprietary process that provides a steady, stable supply of free, available iodine. Remains effective during freeze-and-thaw cycles.

### **SMART DIP CONCENTRATES**

Formulated in 0.5% and 1.0% Iodine. Highly concentrated & economical formulas provide a cost effective pre and post-dip solution. Formulated with IoPlex, AgroChem's proprietary process that provides a steady, stable supply of free, available iodine.

### **ALPHAPRO CONCENTRATE**

A unique, hybrid iodine teat dip for use during pre-milking . 0.25% Iodine teat dip with a 2% emollient package. Formulated with IoPlex, AgroChem's proprietary process that provides a steady, stable supply of free, available iodine.





# **Thank You!**

## **Questions or Comments?**

- Contact your AgroChem representative for additional questions and comments