

# Mastitis management

**CID LINES<sup>®</sup>**

—  
What is the purpose of a dairy farm?



# What is the purpose of a dairy farm?

Increase the profitability of the dairy farm!

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# What is the purpose of a dairy farm?

## Better milk quality

Lower amount of bacteria

Lower somatic cell count

Lower antibiotics



# What is the purpose of a dairy farm?

## Lower production cost

Mastitis management

Focus on prevention instead of treatment

Lower diseases, lower cost of antibiotics, veterinary cost...



# What is the purpose of a dairy farm?

**Increased milk production**

Better management

If you give a better welfare to the cow, she will pay you back with higher milk production!

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# What is the purpose of a dairy farm?

**better milk quality +**

**lower production cost +**

**increased milk production**

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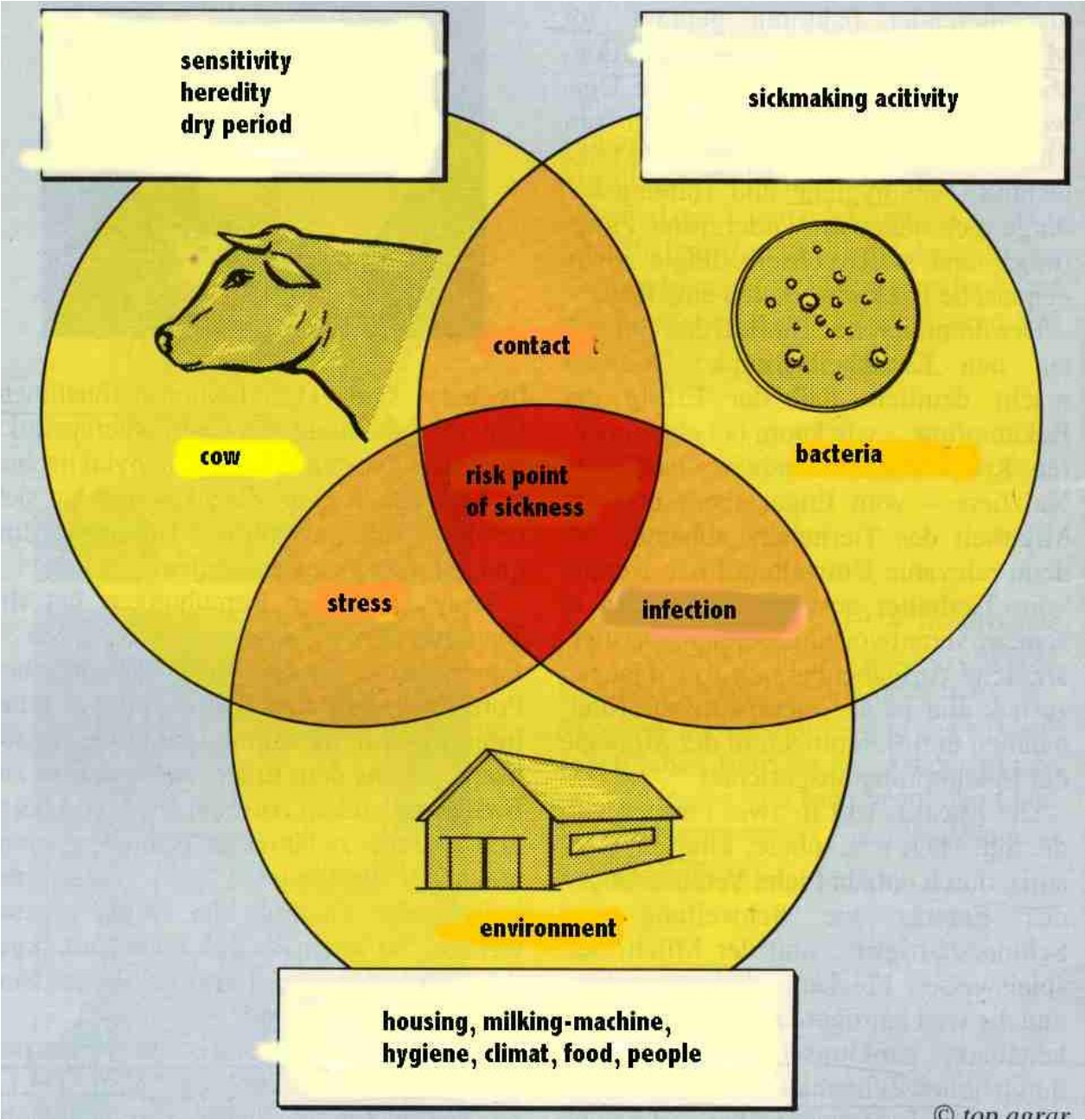
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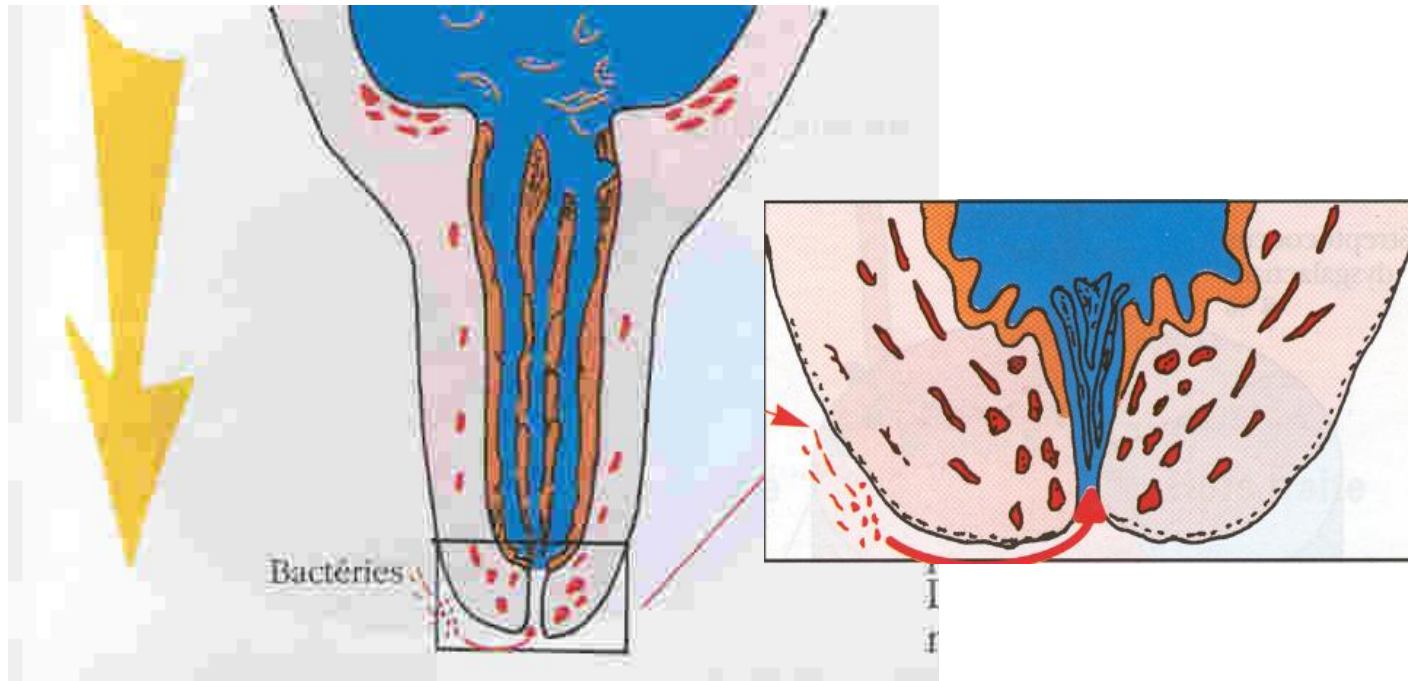
Focus on mastitis



# Risk factor for mastitis



**Entry = always the sphincter!**



## 2 types of bacteria

Bacteria growing in the environment

*E.coli*

*Klebsiella*

*Pseudomonas*

...

Bacteria growing on the skin

*Staphylococcus aureus,*  
*Streptococcus agalactiae,*  
*dysgalactiae,*  
*uberis*

...



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How is the environment on your farm?

# Good for the cow

Dry

Cold

Clean

Space

! COMFORT !

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# Good for the bacteria

Wet

Hot

Dirty



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**Good for cows  
or for bacteria?**



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**Good for cows  
or for bacteria?**



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**Good for cows  
or for bacteria?**



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**Good for cows  
or for bacteria?**



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**Good for cows  
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**Good for cows  
or for bacteria?**



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**Good for cows  
or for bacteria?**



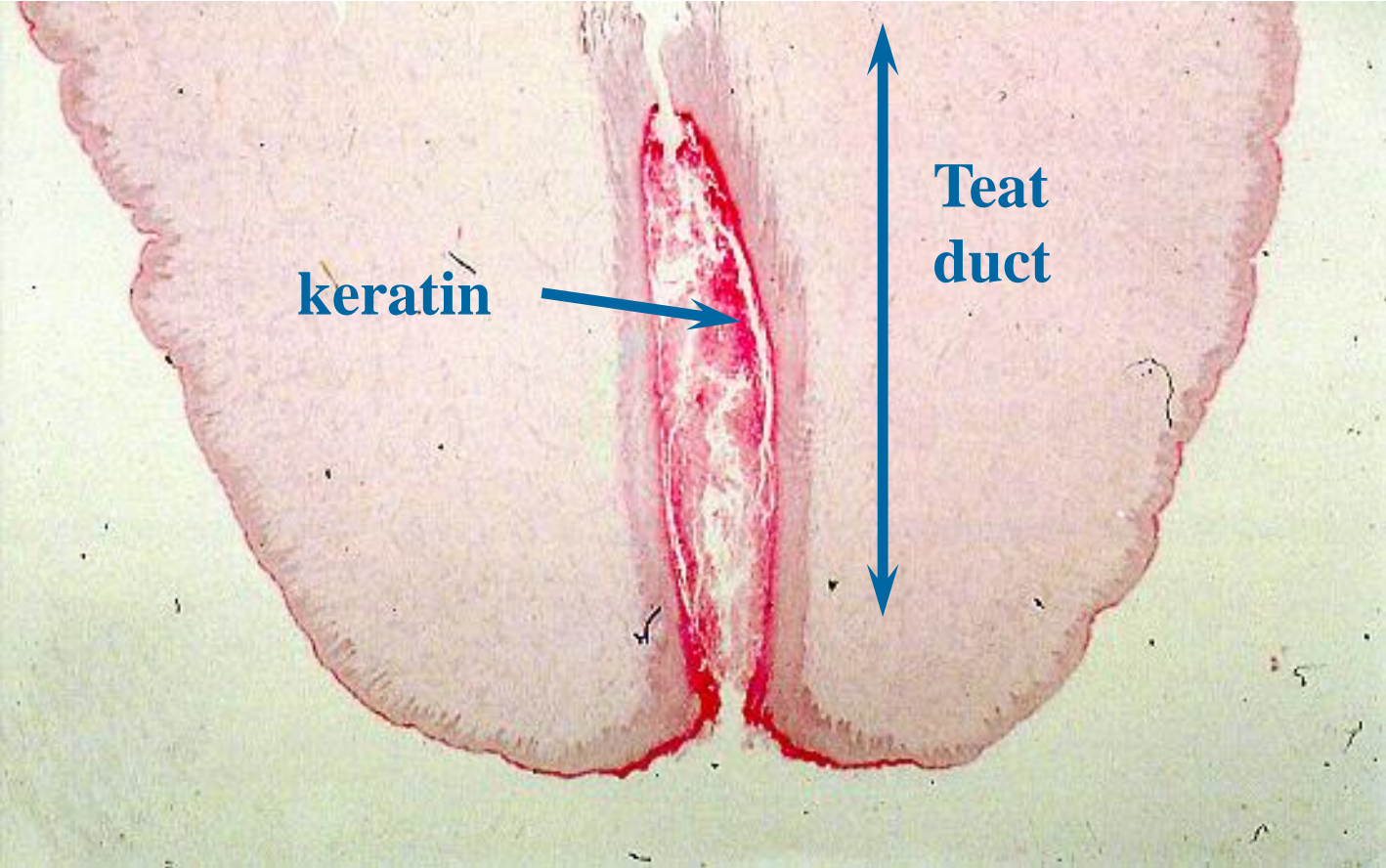
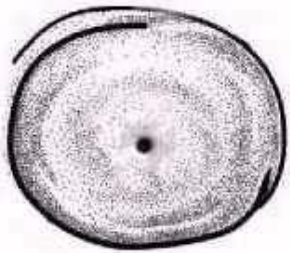
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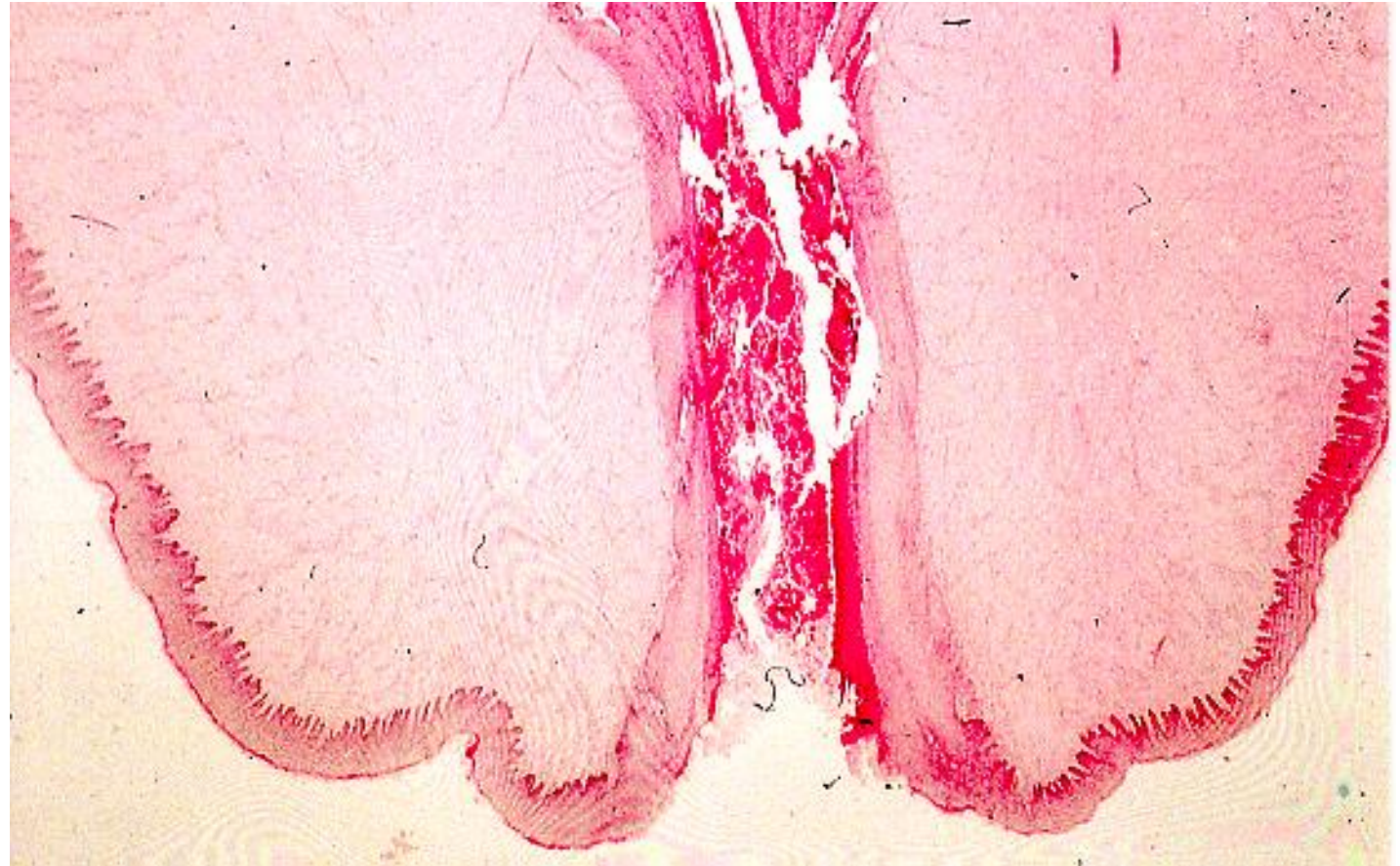
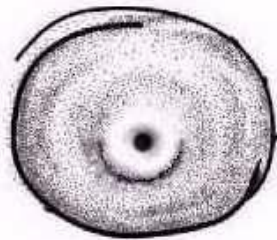
How is the teat condition on your farm?

# Thin smooth ring

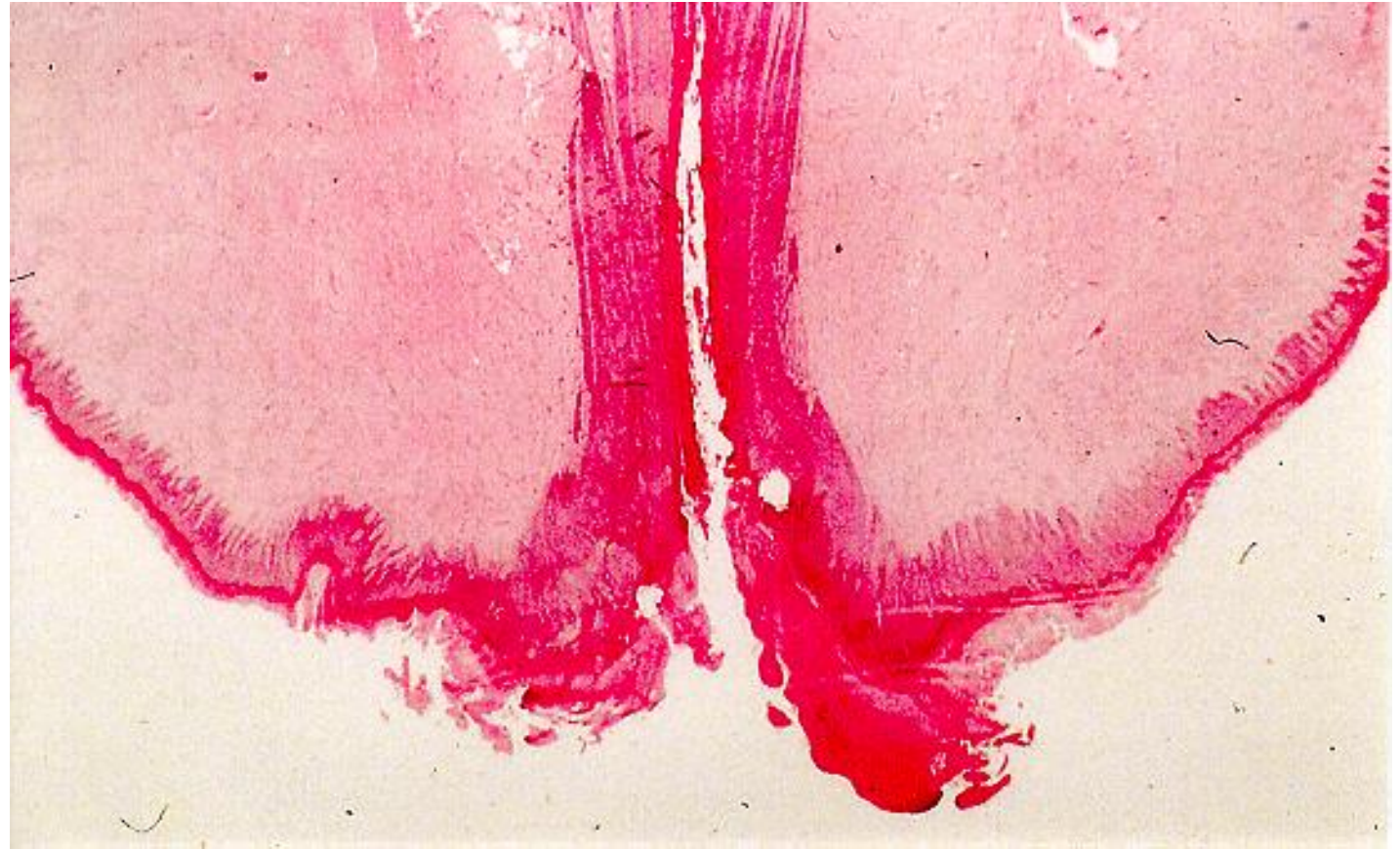
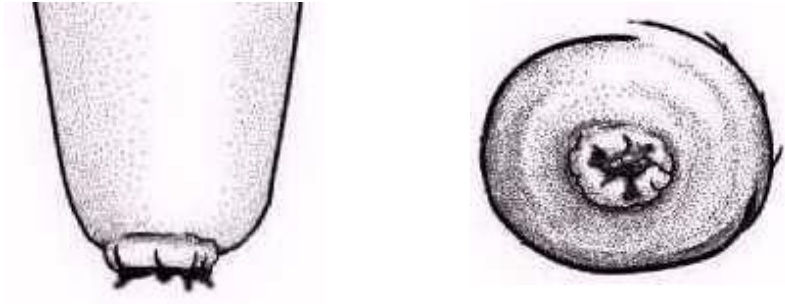




# Thick smooth ring



# Thick rough ring





Mastitis, the process of infection

# PROCESS OF INFECTION

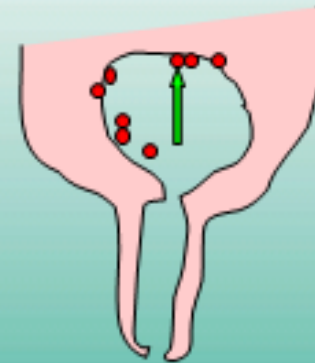
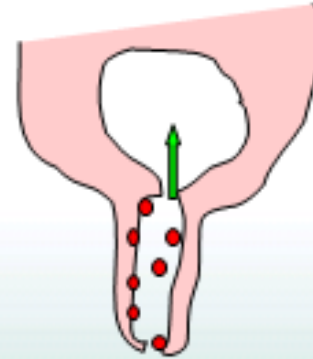
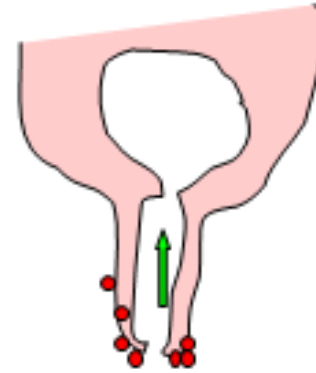
**Organisms invade the udder through teat canal**



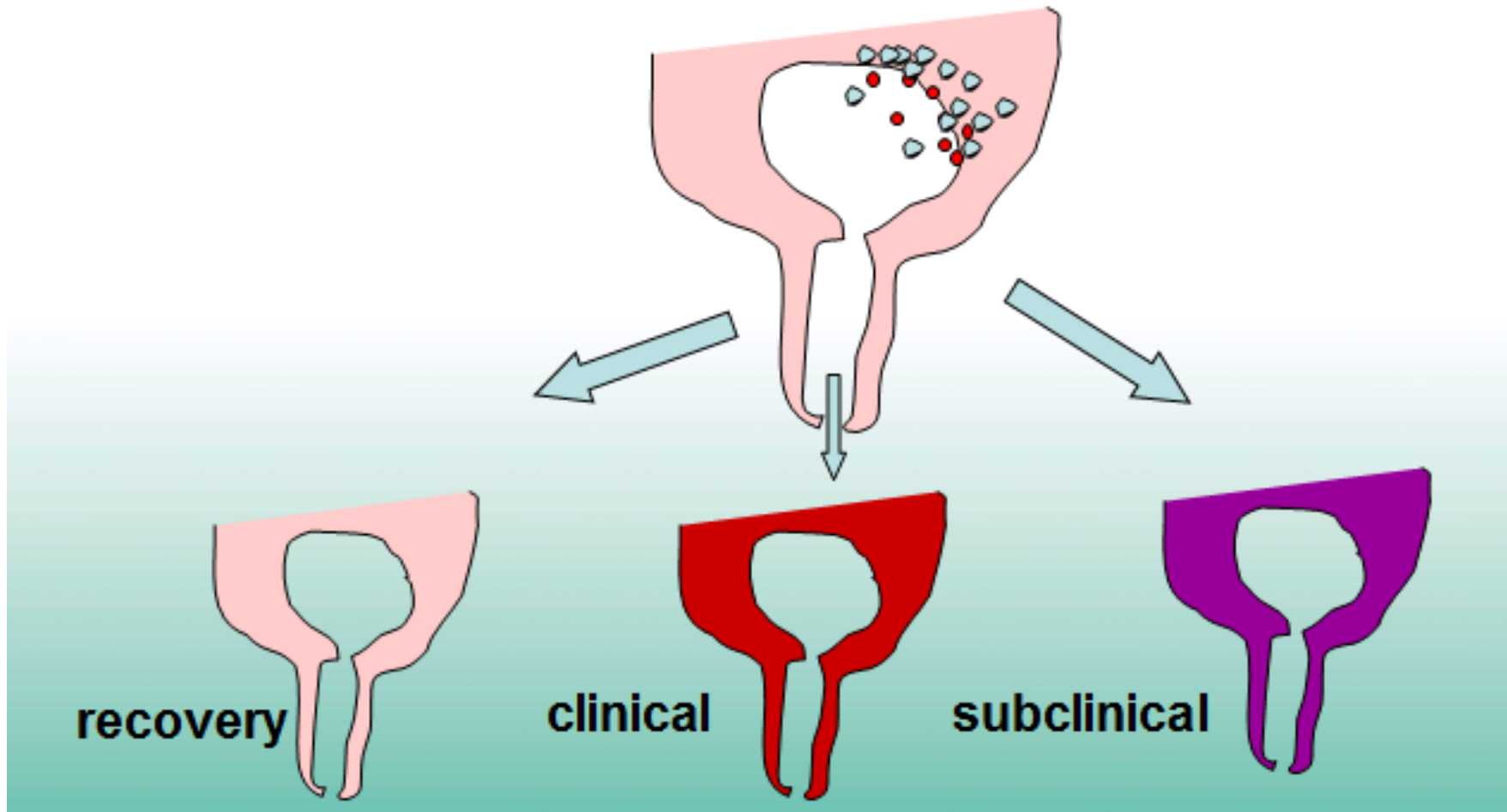
**Migrate up the teat canal and colonize the secretory cells**

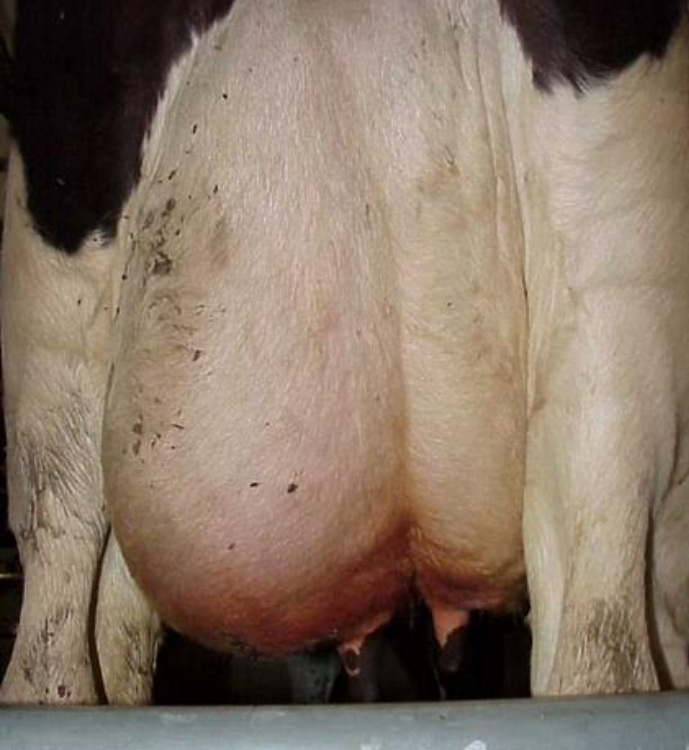


**Colonized organisms produce toxic substances harmful to the milk producing cells**



The cow's immune system send white blood cells (Somatic cells) to fight the organisms

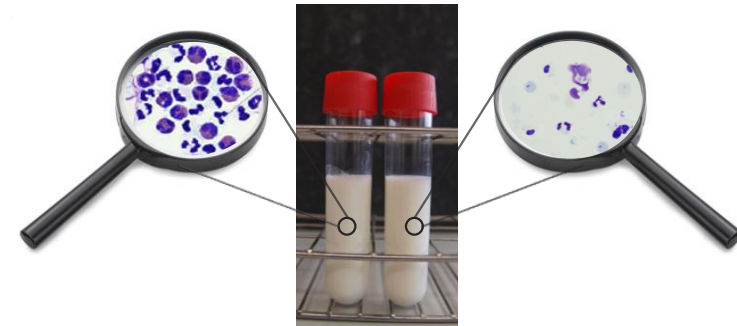




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# What is Mastitis?

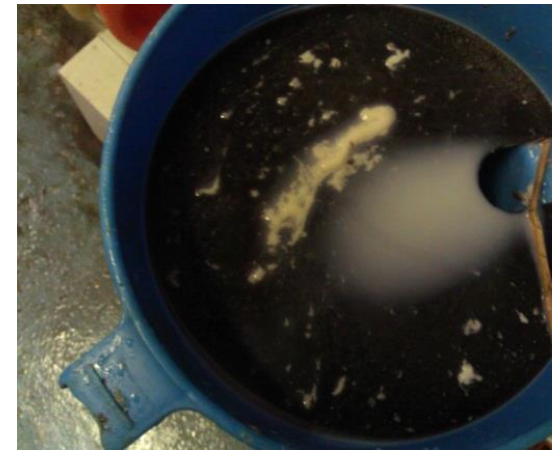
Mastitis is **an inflammation** of the mammary gland in the udder



Mastitis has various forms, causes, effects and preventive measures

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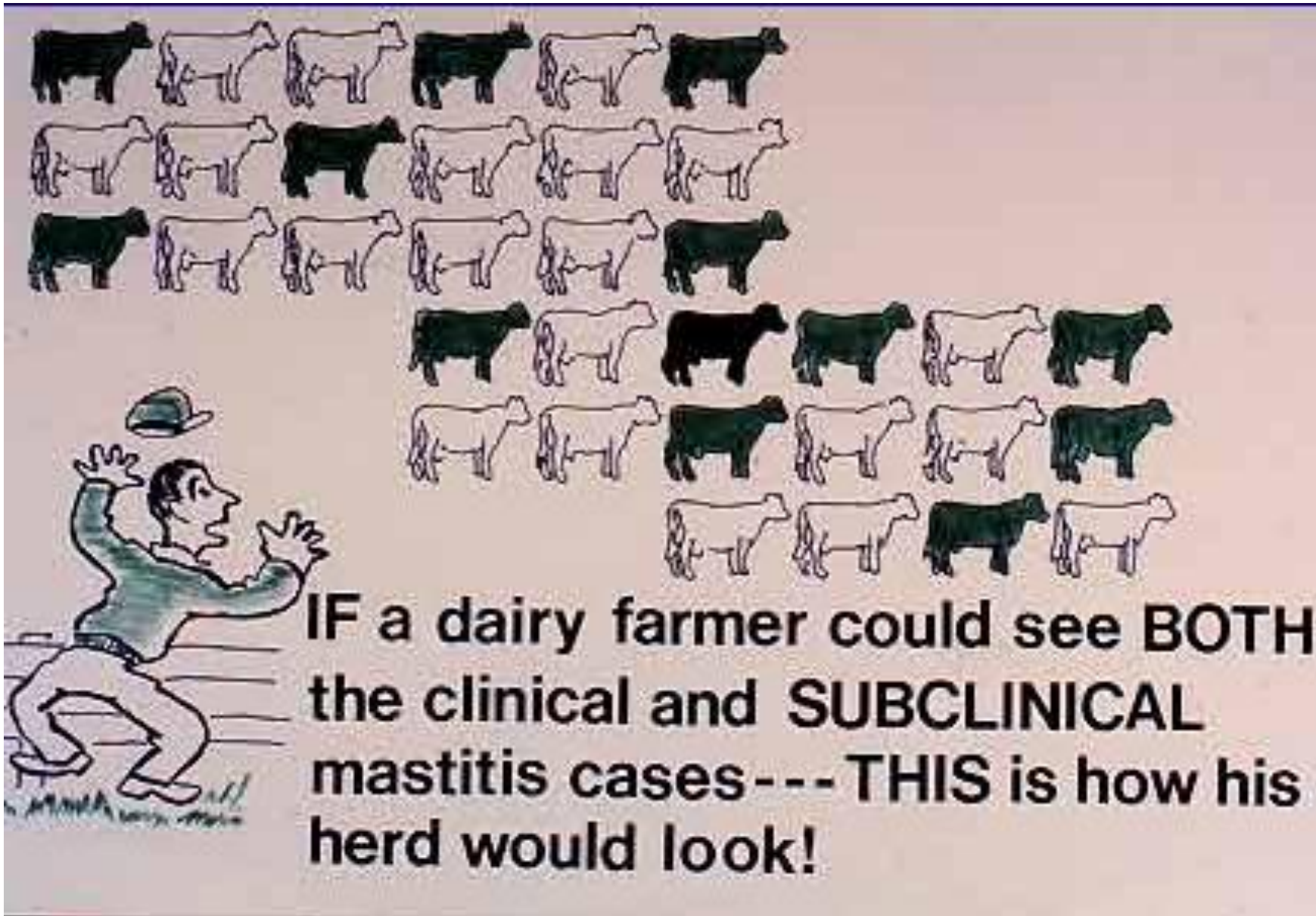
# Clinical mastitis = visible



WHEN the average dairy farmer counts the **CLINICAL** mastitis cases he knows about in his herd --- **THIS** is what he sees ...







# Forms of mastitis



Clinical

Subclinical

Healthy



Clinical mastitis cases are only the tip of the iceberg

# Making the invisible visible



Detection of subclinical mastitis

Kenocell

# Making the invisible visible



Detection of subclinical mastitis

Keno™ test

CMT = Californian mastitis test



# Keno™test

Add to each cup 2 ml Keno™test  
and mix the solution during 10  
seconds



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# Keno™ test

Compare the colour and the viscosity of the solution with the table



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What is the cost of mastitis?

# Economical impact of mastitis

Estimated annual losses due to mastitis

(National Mastitis Council)

€ 182 per cow\*

## SOURCE OF LOSS

Discarded milk	5.7%	10,45\$
Treatment	4,1%	7,36\$
Veterinary services	1,5%	2,72\$
Reduced milk yield	66,0%	121\$
Replacement cost	22,6%	41,73\$
Extra Labour	0,1%	1,15\$
<b>TOTAL</b>	<b>100%</b>	

\*Assumption: 1/3 of cows infected in an average of 1.5Q



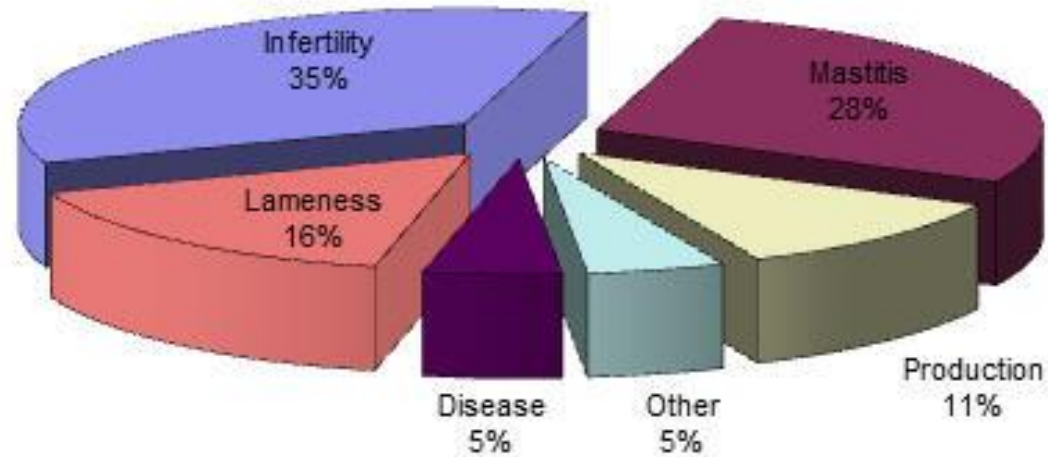
# Cost of subclinical mastitis

Lactation Average	Loss of Milk Yield (Kg)	
SCC	Lactation 1	Lactation 2
25,000	0	0
50,000	0	0
100,000	91	182
200,000	182	364
400,000	273	546
800,000	364	728
1,600,000	455	910

Estimated production of 8500 kg

# Cost of mastitis

## Reasons for culling dairy cows



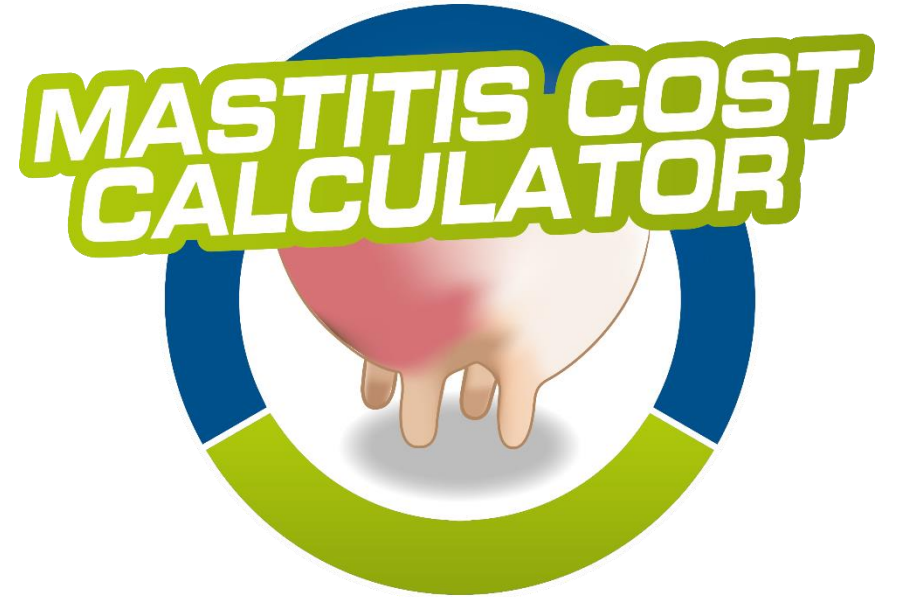
Source: NAHMS, 2003. Dairy Report.



# Mastitis

**MANAGE MASTITIS PROGRAM**

by **CID LINES**



# Causes of mastitis

## Contagious 20%

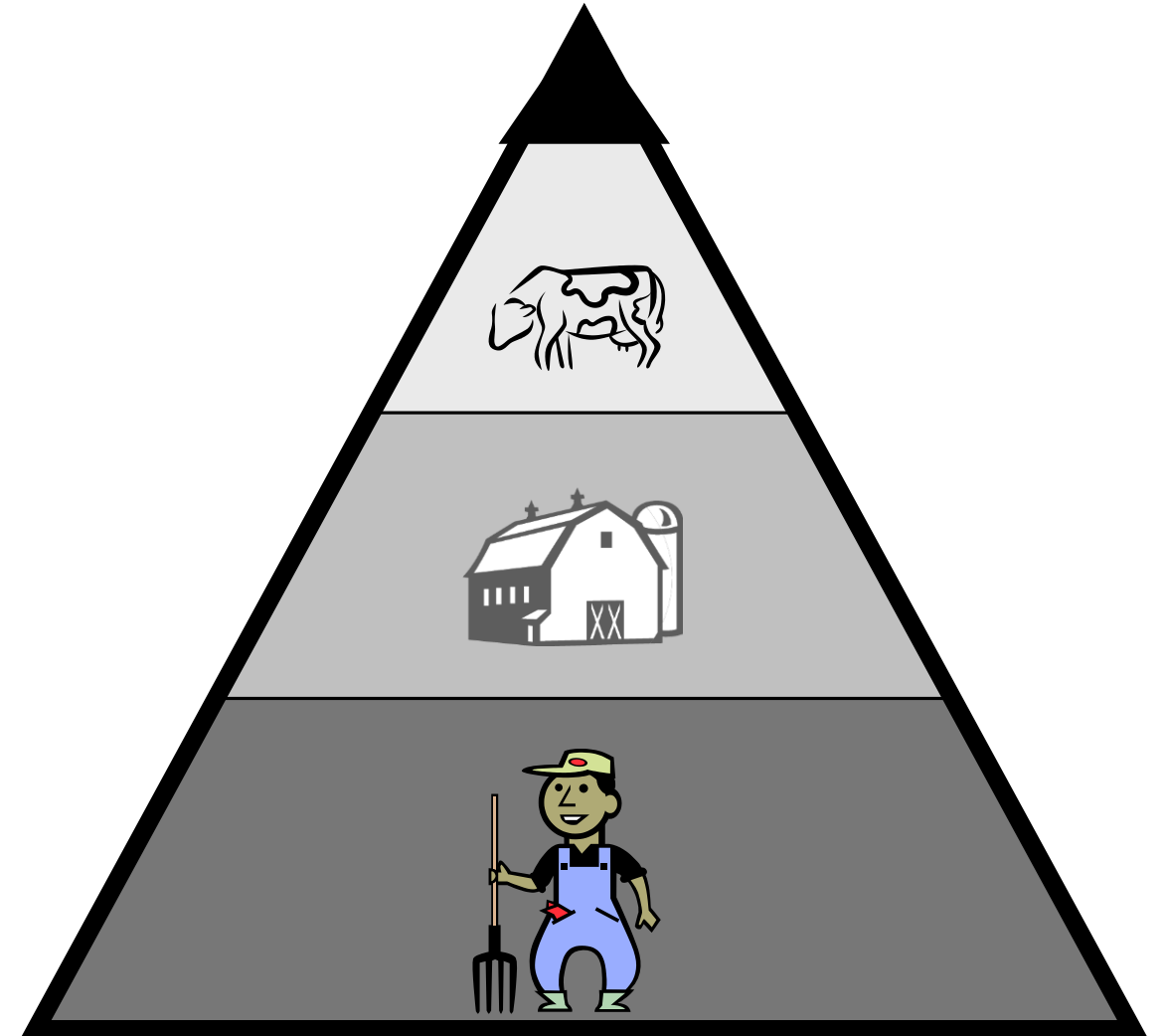
Genetics  
Age

## Environmental factors 25%

Housing  
Climate  
Stress

## Management

Farmer  
Personnel



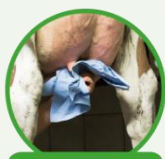
## MILK PROCESS



DETECTION



PRE-DIP



DRY



POST-DIP

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innovative hygiene solutions

## EQUIPEMENT HYGIENE



CLEANING



DISINFECTION



CLUSTER  
HYGIENE

# MANAGE MASTITIS!

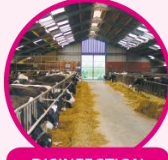
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## ENVIRONMENTAL HYGIENE



CLEANING



DISINFECTION



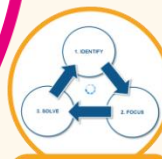
DRY



DRINKING WATER  
TREATMENT

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## INDIVIDUAL DATA ANALYSIS

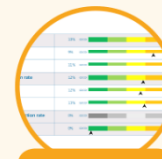


ANALYSIS



EVOLUTION

ACTION PLAN



PROBLEM SOLVING

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# Milk process

# Mastitis management is...

Hand hygiene

Hand washing and disinfection

Wearing gloves

Disinfect hands after milking a cow with mastitis



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# Mastitis management is...

Disinfecting the milking clusters

Prevents transmission of mastitis  
among cows

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# Mastitis management is...

## Pre-milking

in a specific cup in order to prevent the spread of bacteria and to detect clinical signs



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# Mastitis management is...

## CMT test

Detects subclinical mastitis

## When to use

After mastitis treatment

Before the dry period

Early lactation



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# Mastitis management is...

## Pre-dip

Hygiene solution before milking  
cleaning, disinfecting and conditioning

## Why

- Prevention of mastitis
- Monitoring udder health
- Avoid contamination of the milk
- Encourage the release of milk

# UDDER HYGIENE SCORING CARD

DATE: \_\_\_\_\_

FARM: \_\_\_\_\_

N° PEN: \_\_\_\_\_

Score the udder hygiene on a scale of 1 to 4 using the criteria and pictures below.

Place an X in the appropriate box of the table and count the number of marked boxes under each picture.

lactating cows  heifers  dry cows

Score 1 Free of dirt or manure					Score 2 Slightly covered with dirt/manure (<10% of surface area)					Score 3 Moderately covered with dirt/manure (10 – 30% of surface area)					Score 4 Mostly covered with dirt/manure (> 30% of surface area)				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
6	7	8	9	10	6	7	8	9	10	6	7	8	9	10	6	7	8	9	10
11	12	13	14	15	11	12	13	14	15	11	12	13	14	15	11	12	13	14	15
16	17	18	19	20	16	17	18	19	20	16	17	18	19	20	16	17	18	19	20
21	22	23	24	25	21	22	23	24	25	21	22	23	24	25	21	22	23	24	25

Total number of udder scores: \_\_\_\_\_  
 Number of udders score 1: \_\_\_\_\_  
 Number of udders score 2: \_\_\_\_\_  
 Number of udders score 3: \_\_\_\_\_  
 Number of udders score 4: \_\_\_\_\_

Percent of udders scored 3 and 4: \_\_\_\_\_

Udders scored 3 and 4 have increased risk of mastitis as compared to scores 1 and 2

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# Cleaning and disinfection

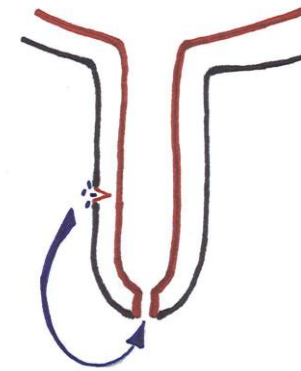
# Avoid self-infection

1 clinical mastitis case

250 €

Price of Keno™pure

3-4 € / animal / year



## Impact phenomenon

manure and dirt on the teats get into milking machine and can enter into the teats during milking

# Avoid liners or milking machine contamination

1 infected liner can infect up to 7  
COWS



# Avoid bacteria in the milk

Bactoscan norm < 15

Indicator of general cleanliness

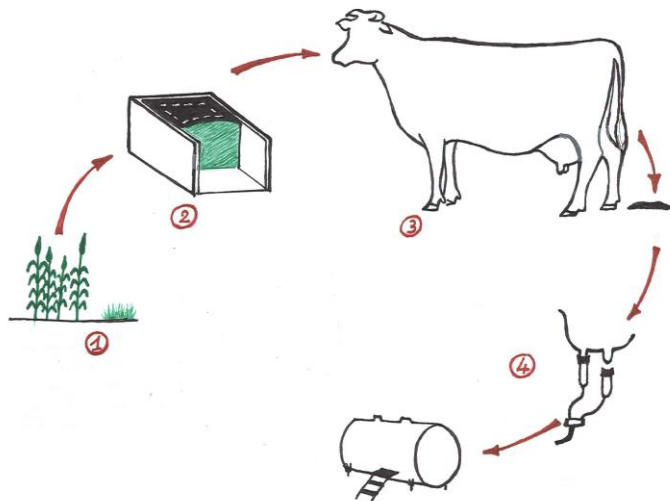




# Keno™ pure

## Prevention of milk contamination

by cleaning the teats before milking, you can decrease the risk of contamination due to environmental pathogens



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All bacteria that are not removed from the teats before cluster attachment will end up in the milk

What is the first sign of a poor milking preparation?



All bacteria that are not removed from the teats before cluster attachment will end up in the milk

# “I’m doing a good pre-milking preparation”

Only results matter

clean or dirty teats at the end of the preparation?

clinical mastitis issues?

Assess preparation efficiency in farm



# TEAT CLEANLINESS SCORING CHART



Score the teat hygiene on a scale of 1 to 4 using the criteria and pictures below.

Place an X in the appropriate box of the table and count the number of marked boxes under each picture.

DATE: \_\_\_\_\_  
FARM: \_\_\_\_\_

Score 1 Free of dirt or manure	Score 2 Slightly covered with dirt/manure	Score 3 Moderately covered with dirt/manure	Score 4 Mostly covered with dirt/manure
			

1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
6	7	8	9	10	6	7	8	9	10	6	7	8	9	10	6	7	8	9	10
11	12	13	14	15	11	12	13	14	15	11	12	13	14	15	11	12	13	14	15
16	17	18	19	20	16	17	18	19	20	16	17	18	19	20	16	17	18	19	20
21	22	23	24	25	21	22	23	24	25	21	22	23	24	25	21	22	23	24	25

Total number of teat scores: \_\_\_\_\_  
 Number of teats score 1: \_\_\_\_\_  
 Number of teats score 2: \_\_\_\_\_  
 Number of teats score 3: \_\_\_\_\_  
 Number of teats score 4: \_\_\_\_\_

Percent of teats scored 3 and 4: \_\_\_\_\_

Teats scored 3 and 4 have increased risk of mastitis as compared to scores 1 and 2



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# National Mastitis council procedure

- 1st step Pre-cleaning the teats
- 2nd step Fore-milk strip
- 3rd step Dipping teats with a proven germicidal pre-dip product
- 4th step Allowing the recommended contact time
- 5th step Drying each teat thoroughly with a single paper towel
- 6th step Attaching teat cups to the dry udder

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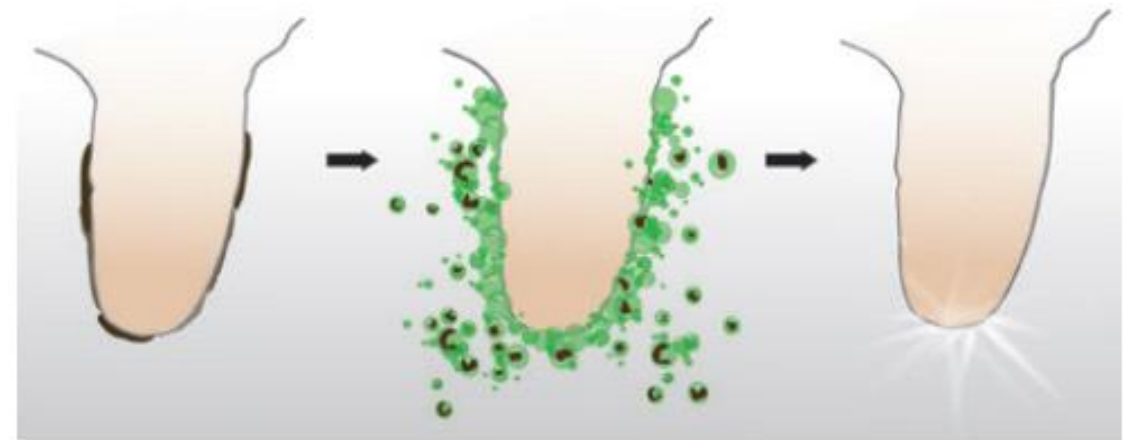
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# Cleaning action

Surfactants = **surface acting agents**

Reducing the interfacial tension between dirt and skin

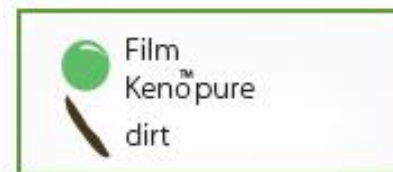
Acts fast and uniformly on teat skin



① Dirty teat

② Action of Kenopure™

③ Clean and good conditioned teat, ready for milking



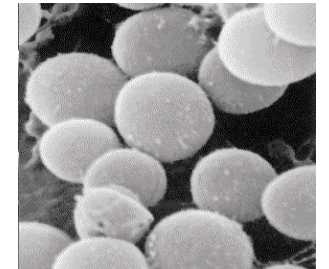


# Disinfecting action

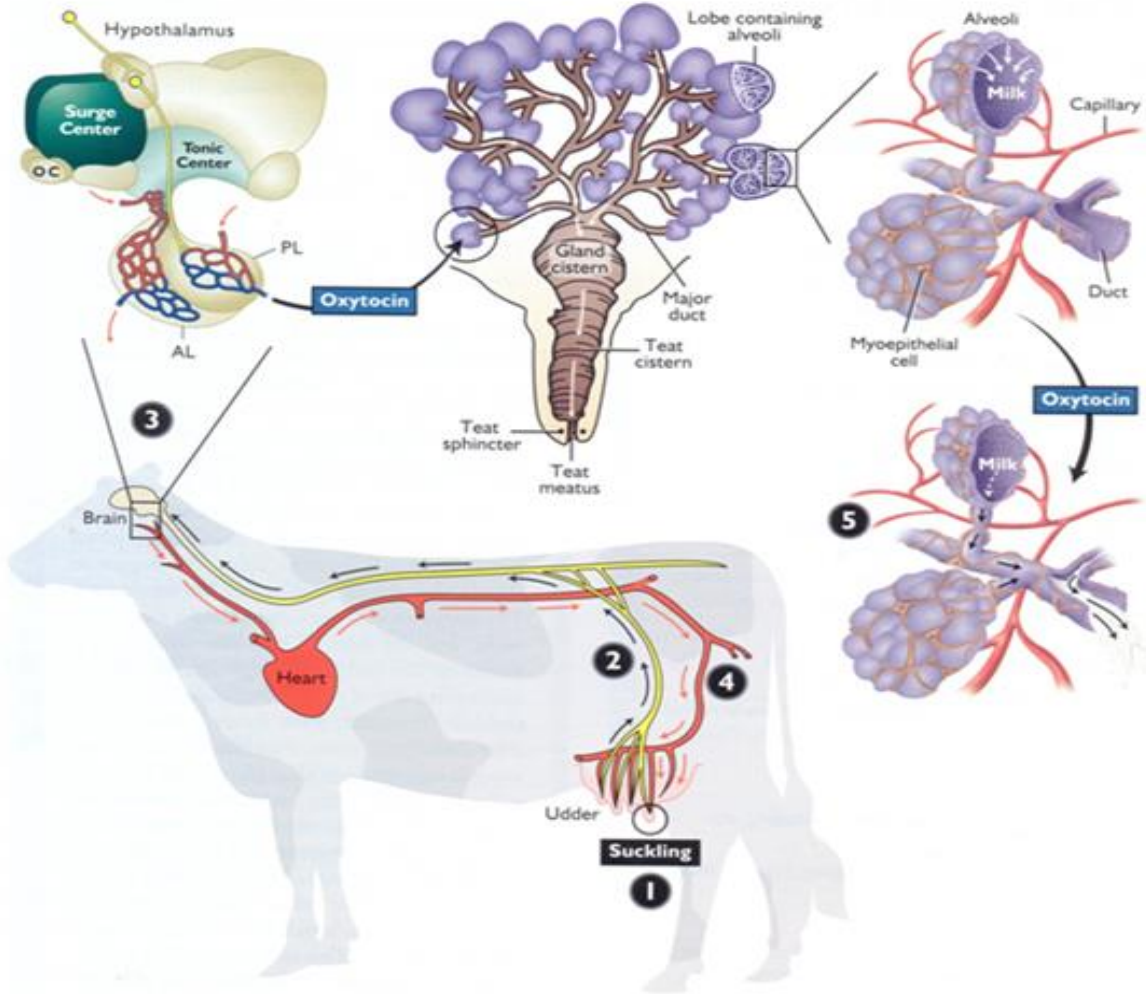
## European Norm Test 1656

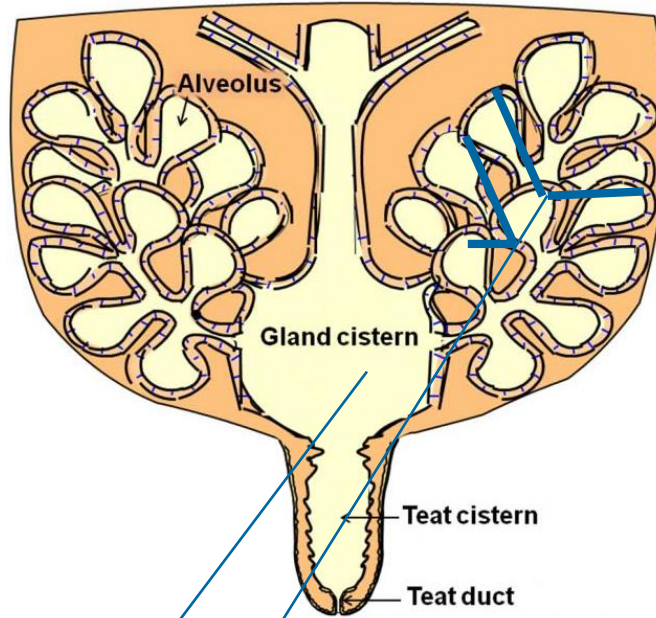
Determination of bactericidal activity in presence of interfering substance (milk)

BACTERIA TESTED	DILUTION		
	40% (Foaming)	10% (Spraying)	2% (Cloths)
<i>Pseudomonas aeruginosa</i> <i>Staphylococcus aureus</i> <i>Enterococcus hirae</i> <i>Proteus vulgaris</i>	30 seconds	30 seconds	1 minute



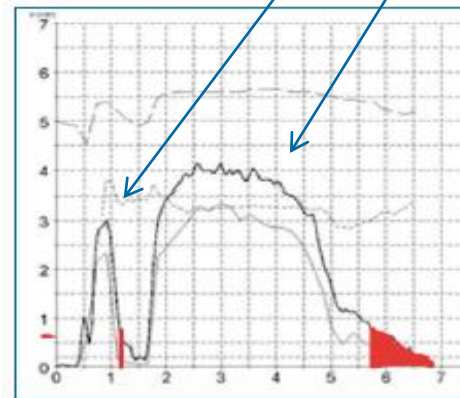
# Touch to attach 60 to 90 seconds



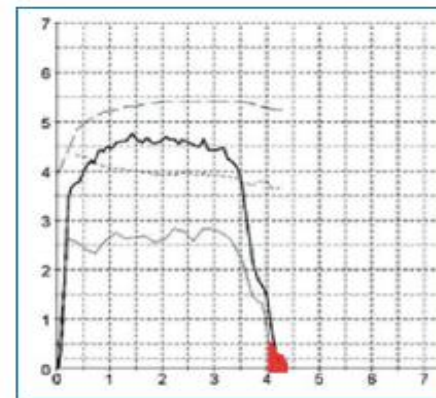


Alveolar milk 80%

Cisternal milk 20%



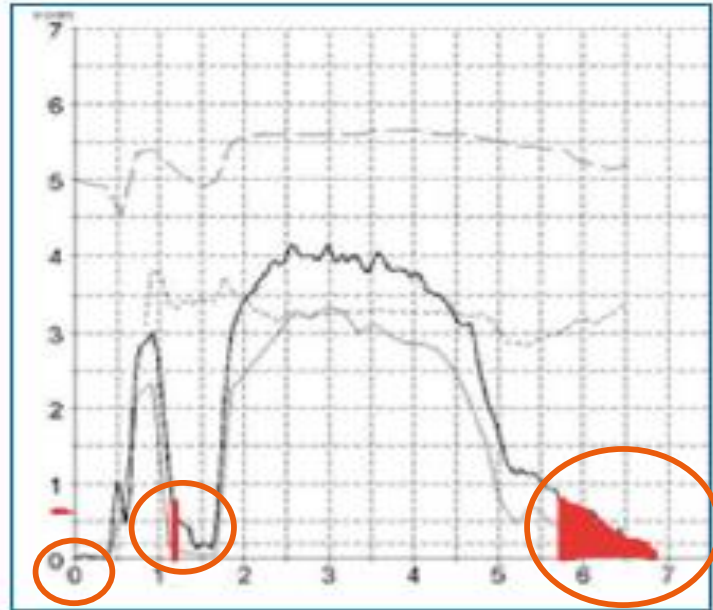
Milk flow **without stimulation**  
(kg/min)



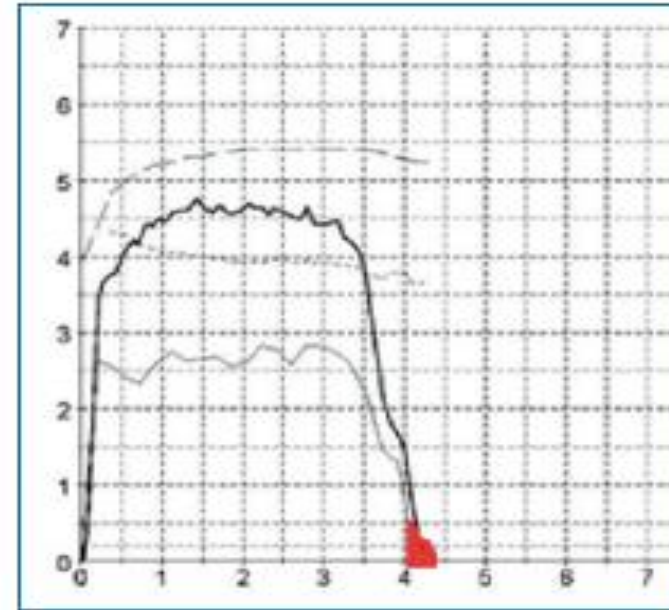
Milk flow **with an optimum preparation**  
(kg/min)

Source : Precision milking, DVM Dan Humphries & DVM Tom Greenham

# Over milking risks



Milk flow **without stimulation**  
(kg/min)



Milk flow **with an optimum preparation** (kg/min)

Source : Precision milking, DVM Dan Humphries & DVM Tom Greenham



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# Good stimulation of the COW

**Higher production of milk**  
+ 0,4 liter / milking / cow

**Reduce milking time for each cow**  
around – 1 or 2 minutes

Reduce mastitis infection risk  
Gain of time

**More efficient milking**  
less over milking

Reduce teat skin lesions  
Reduce pain for the cow

**Shorter milking time for the whole herd!**

Source : <http://milkquality.wisc.edu/wp-content/uploads/2011/09/seven-habits-of-highly-successful-milking-routines.pdf>

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# Proper pre-milking practice

Table 4: Summary of six studies on the effect of stimulation on milking.

	No Stimulation	Optimal Stimulation
Milk Yield (lb/milking)	22.9	23.8
Milk Flow Rate (lb/min)	3.9	4.7
Machine on Time	6.3	5.5

Up to 0,4 Kg more milk per milking !!

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# Foaming cup or Pure Foamer

**Prepare a 40 % solution in clean water**

(400 ml of Keno™pure and 600 ml of clean water,  
stable for 3 weeks mixed)

**Squeeze cup to activate foam**

**Cover the whole teat with foam**

**Wipe the teat with 1 paper towel per cow**

Pay attention to the teat end



# Keno™pure is economic

Concentrated product ≠ ready to use products (60% water)

Very low consumption of concentrated Keno™pure

Foam = Economical

no losses compared to spraying

good coverage

sticks on the teats

## Reminder

Mastitis = 250€ / case

Keno™pure = 3 - 4€ / cow / year







# Mastitis management is...

Drying the teats before attaching the milking unit



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# Mastitis management is...

A good milking procedure

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# Mastitis management is...

## Post-dipping

Apply immediately after milking to protect against environmental bacteria

Choose a product with a high value for care

Choose a product that sticks good on the teat skin and sphincter/teat end

		Non registered teat dip	Registered teat dip
<b>COMPOSITION</b>			
1	Suppliers	No quality requirements	Quality certificates
2	Raw material	No quality requirements	European Pharmacopoeia Control before use
<b>STABILITY</b>			
3	Monitoring	Up to 1 year	Tested at 25°C, 4°C freezing, compression packagings
<b>SAFETY</b>			
4	Residues	no	No residues in the milk
5	Tolerance	no	Studies on animal
6	Monitoring	none	Pharmacovigilance
<b>EFFICACY</b>			
7	In vitro	EN testing if claim of disinfection	EN testing
8	In vivo	None	Clinical trials



**Guarantees!**

# Kenocidin®

Close teat canal

Fast and broad spectrum  
disinfection

Long term activity

Improves teat skin quality

Optimizes sphincter  
Action

Fly repellent activity

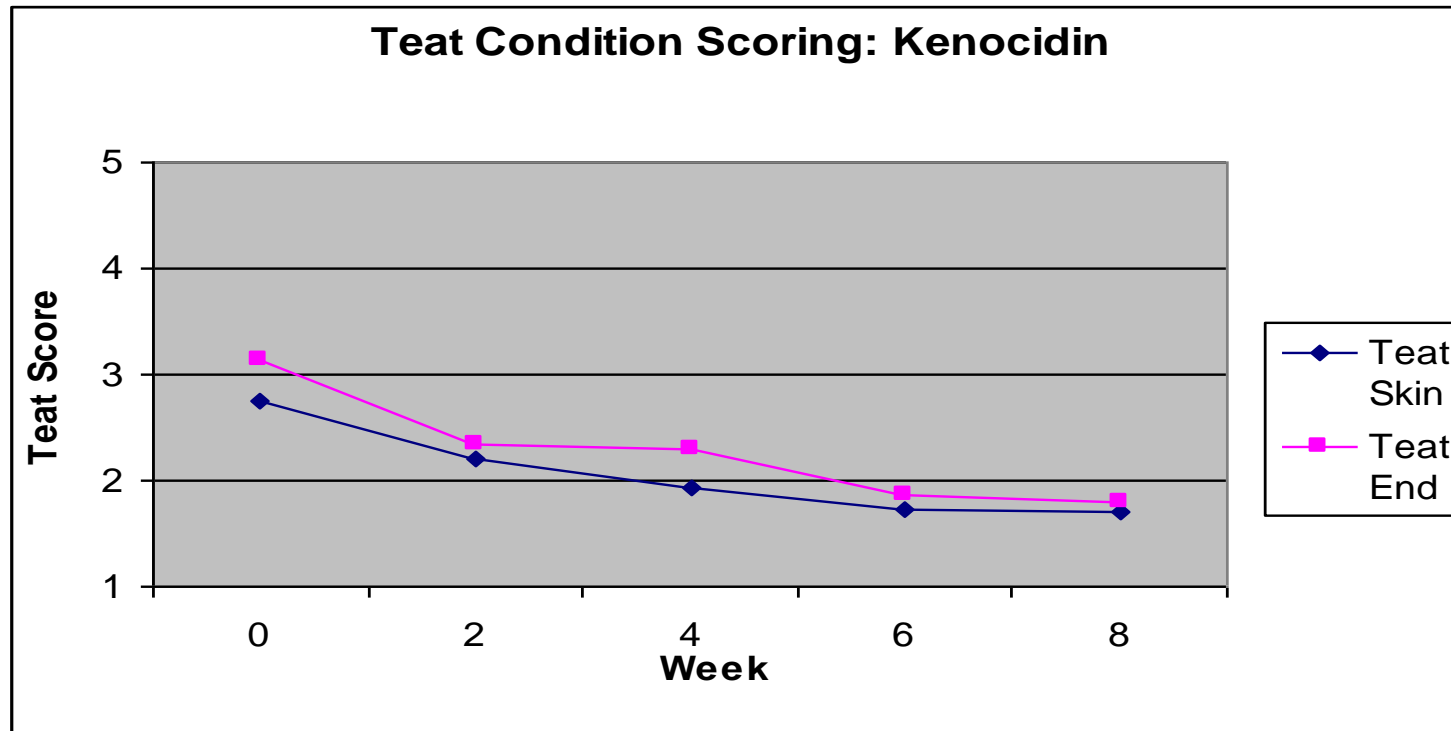
Blood stimulation

Colourisation of the teats

No residue in the milk



# Improves teat skin quality and optimizes sphincter activity



Score 1



Score 2



Score 3

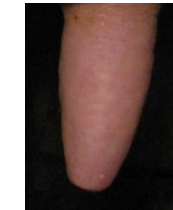
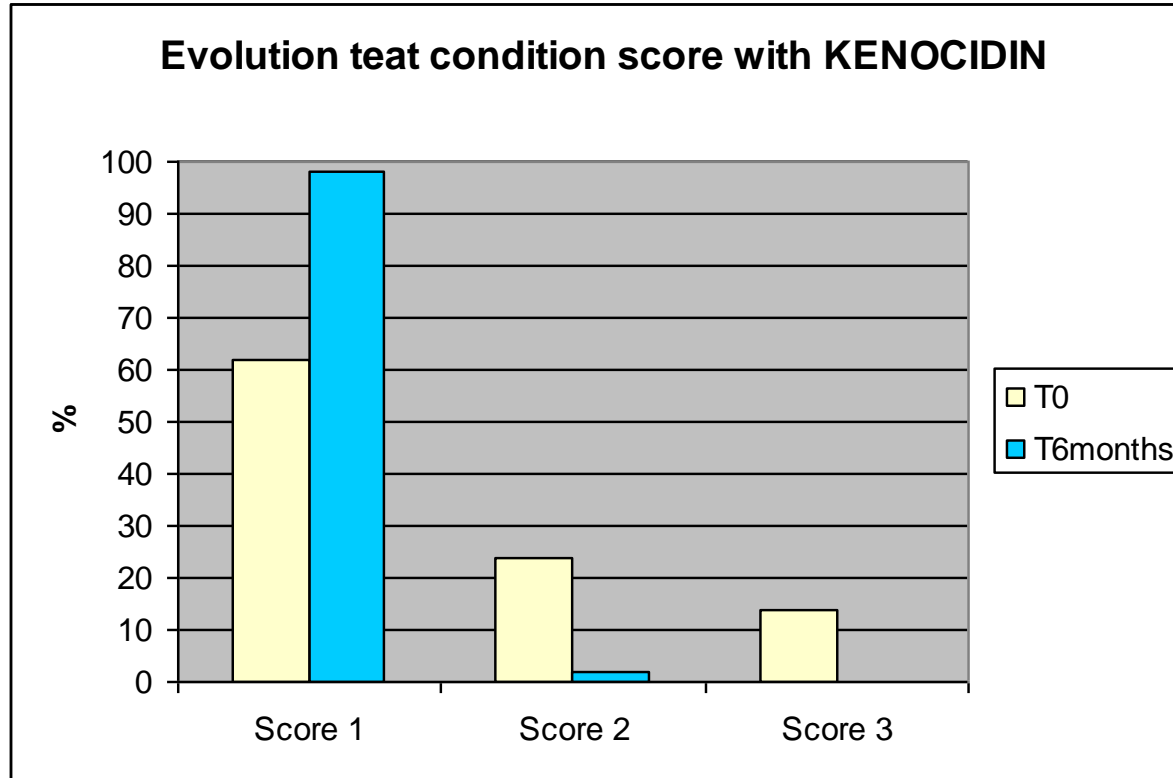
Score > 2.5

bad teat score condition

Score < 2

good teat score condition

# Improves teat skin quality and optimizes sphincter activity



Score 1



Score 2

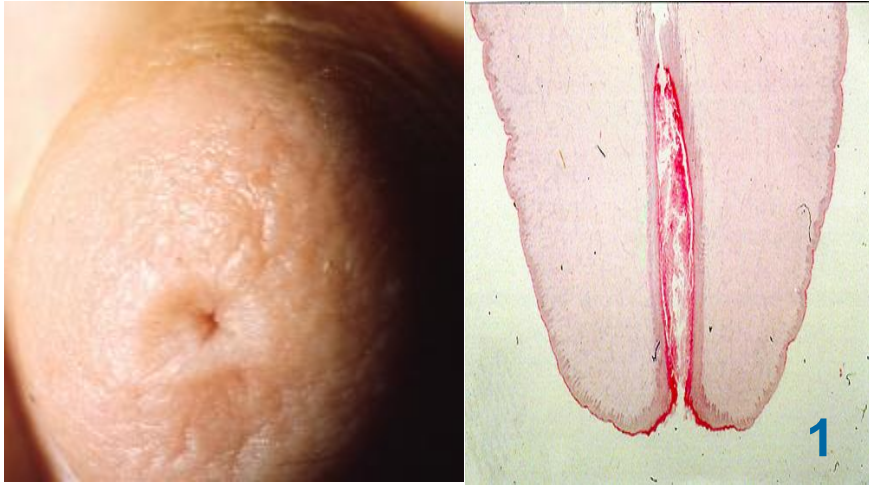


Score 3

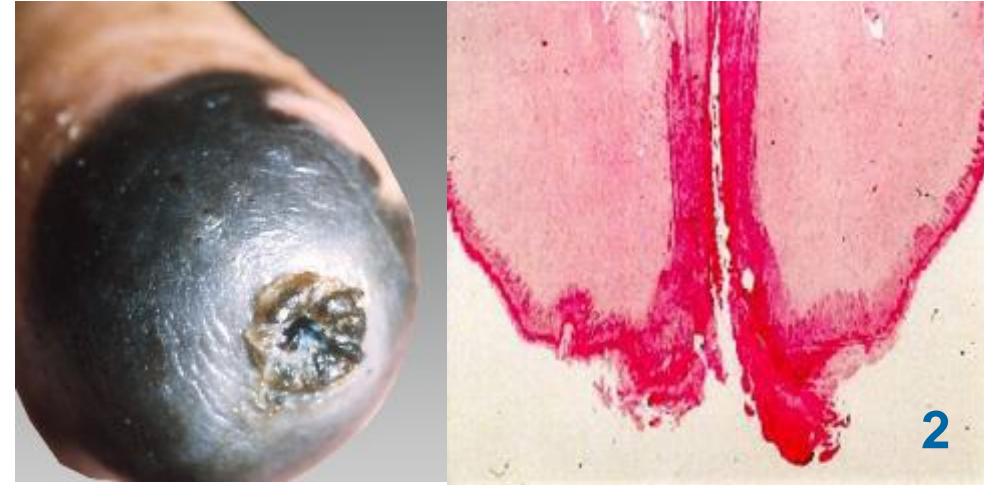
Don't forget that the teat condition has a direct impact on the milk production!



# Improves teat skin quality and optimizes sphincter activity



- 1 Teat can close easily
- 2 Difficult to close

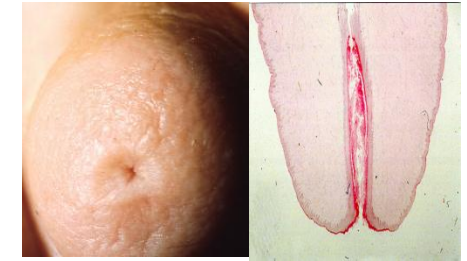
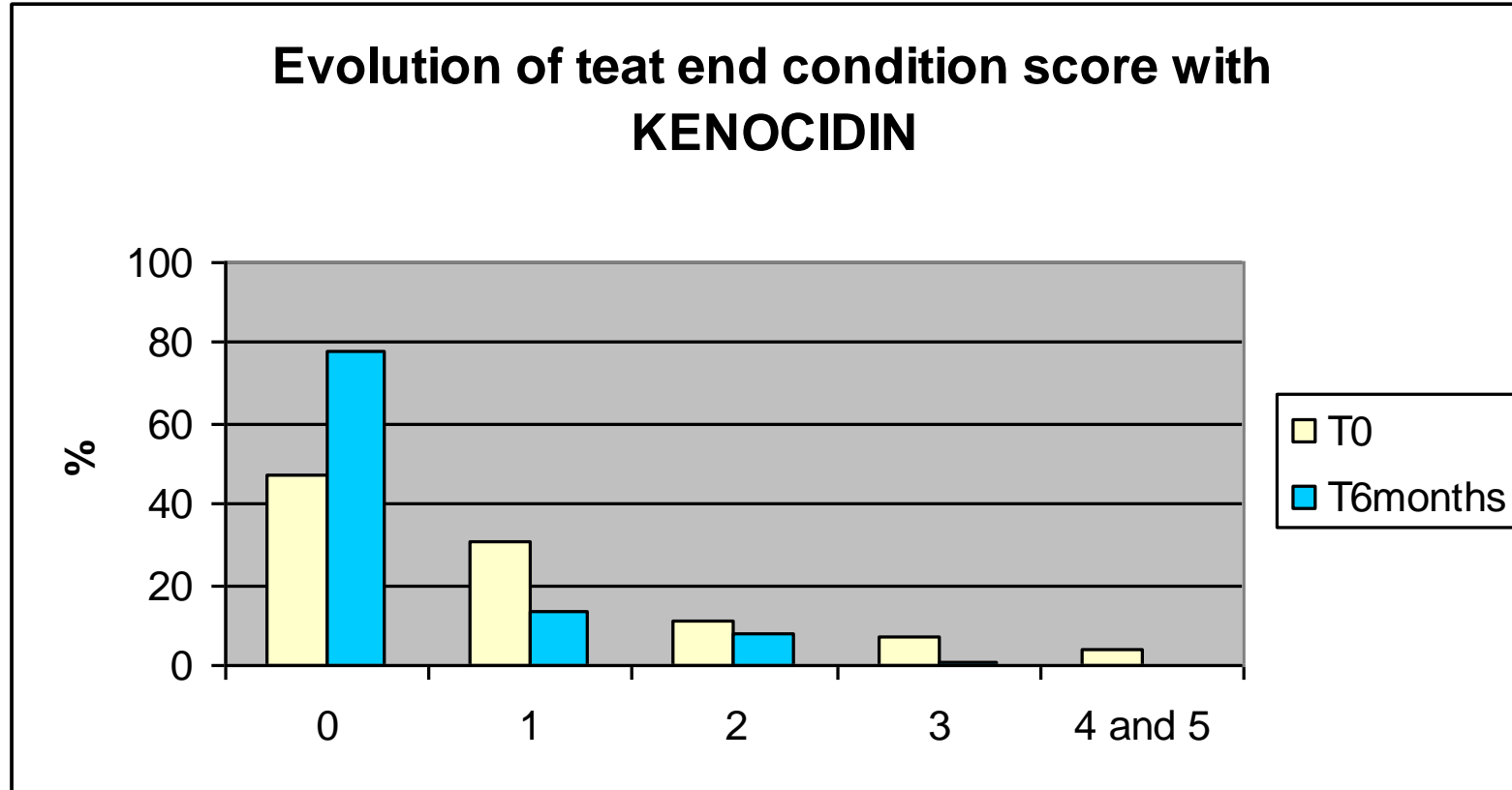


PROTECTION  
NO PROTECTION

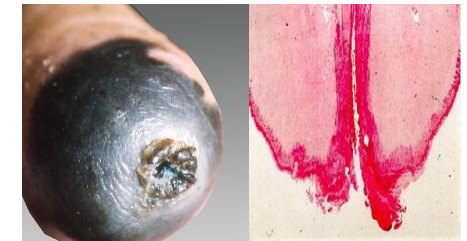


Overmilking  
High vacuum  
Liners stiff or at high tension

# Improves teat skin quality and optimizes sphincter activity



Score 0



Score 3

# Keno™mix

Just shake it!



**CID LINES**

## **BARRIER**

Perfect coverage  
Closing of the teat canal  
Colourisation of the teats

## **DISINFECTING POWER**

Active ingredient ClO<sub>2</sub>  
Broad spectrum disinfectant

## **COSMETIC**

High percentage of emollients  
Maintains a healthy skin and teat end

## **STABILITY**

The mixing procedure  
Sustained release of ClO<sub>2</sub>

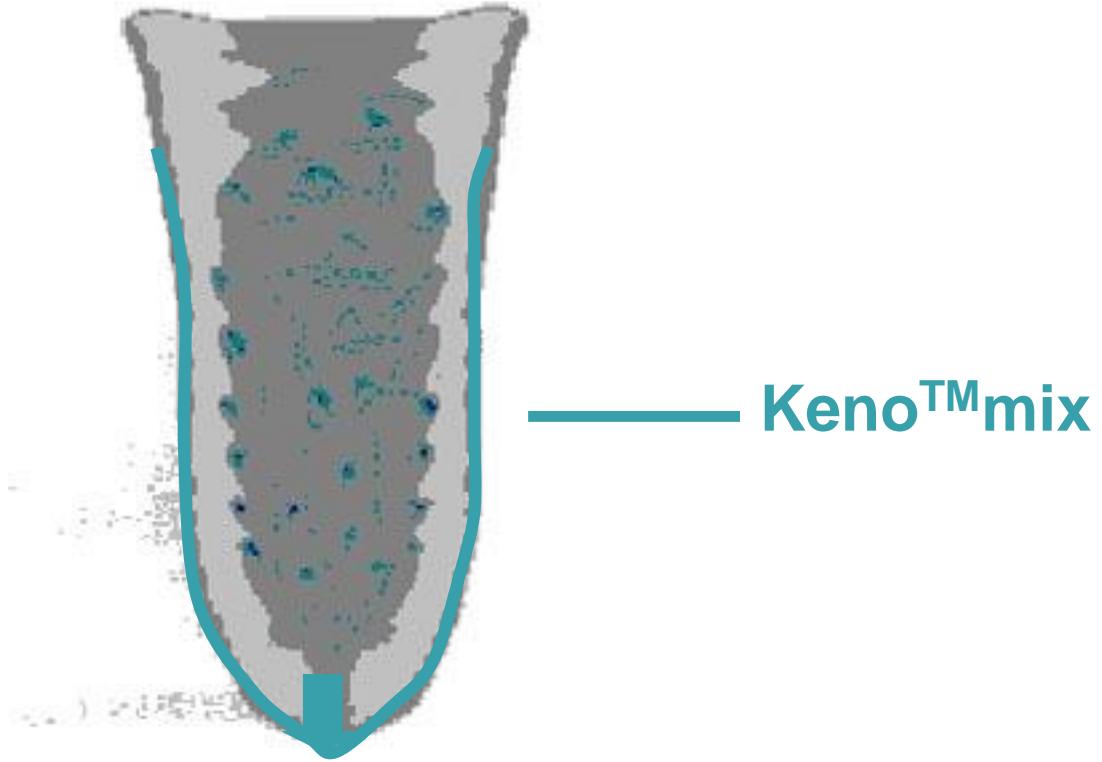
## **SAFETY**

High biodegradability  
No residue in the milk

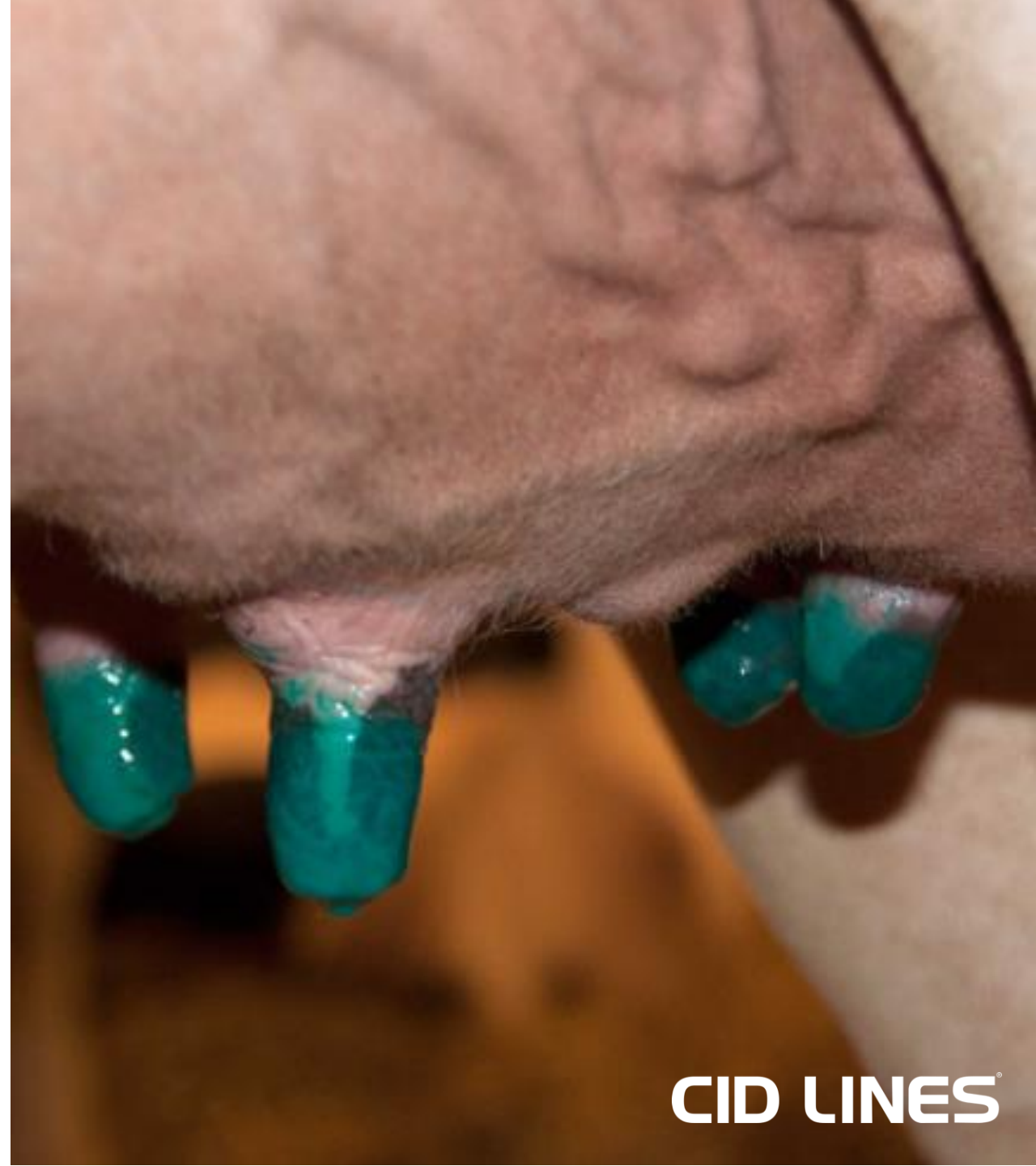
## **ECONOMIC IN USE**

Low consumption  
Ideal drum size

# Perfect coverage

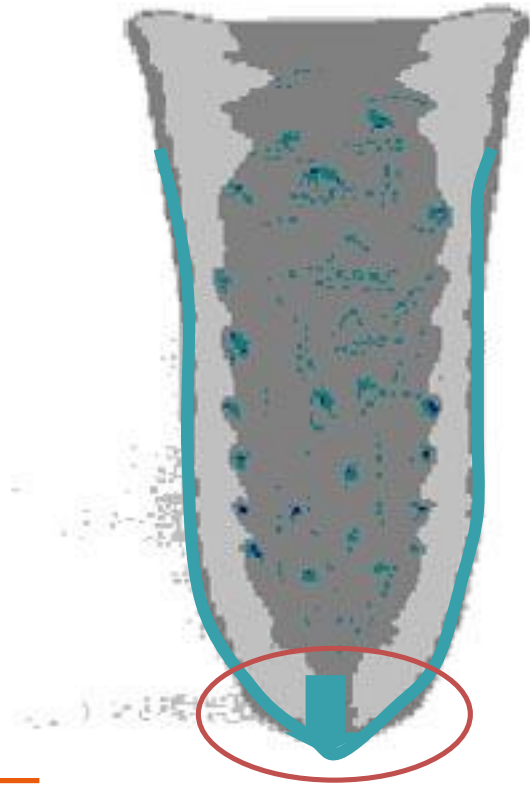


WE  
MAKE  
HYGIENE  
WORK



CID LINES®

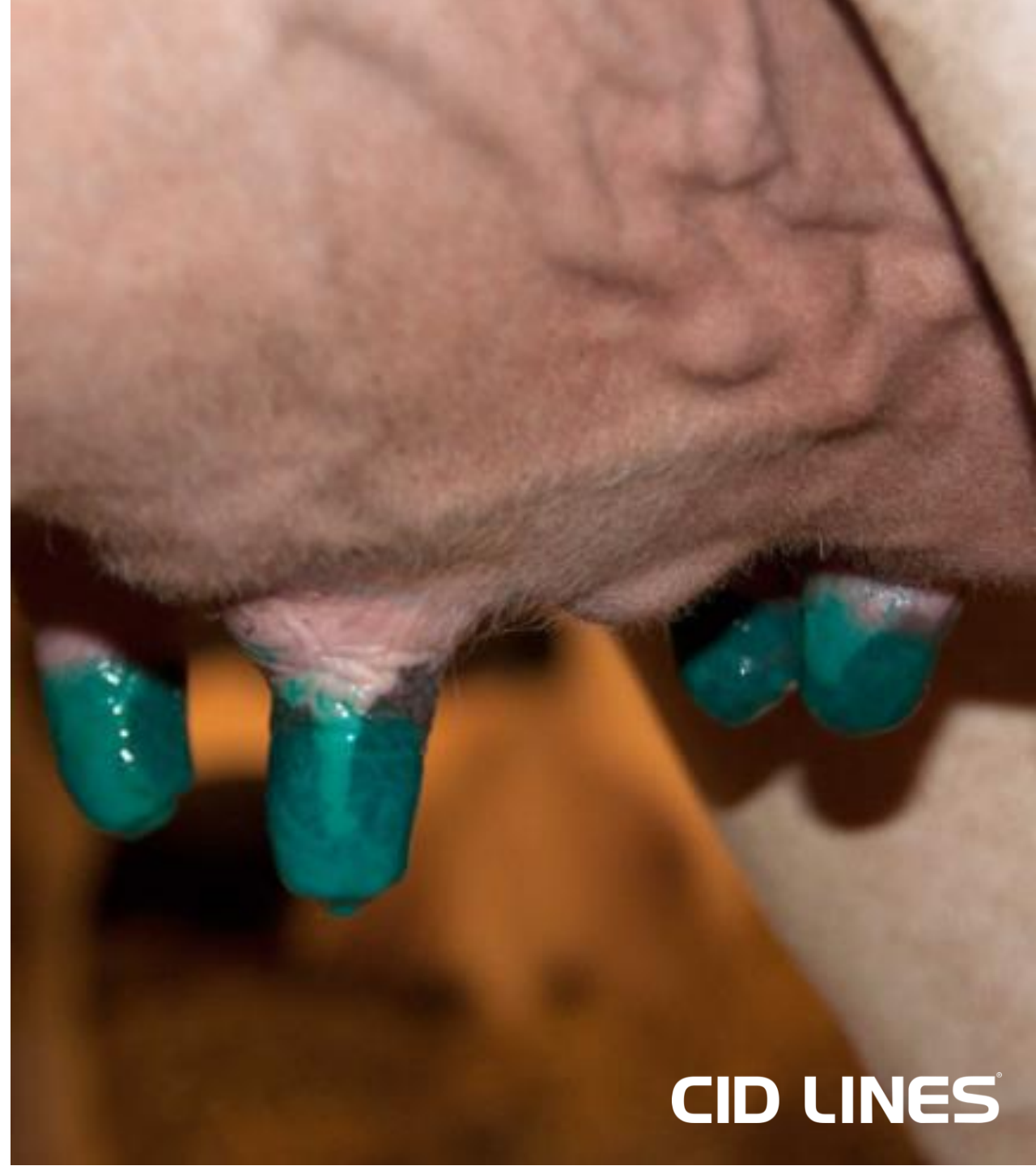
# Perfect coverage



— Keno™mix

Thanks to adequate  
viscosity

WE  
MAKE  
HYGIENE  
WORK



CID LINES®

# Perfect coverage

The strong **colour** and **opacity** of the film allows a perfect control of dipped cows







# Skin defense high percentage of emollients



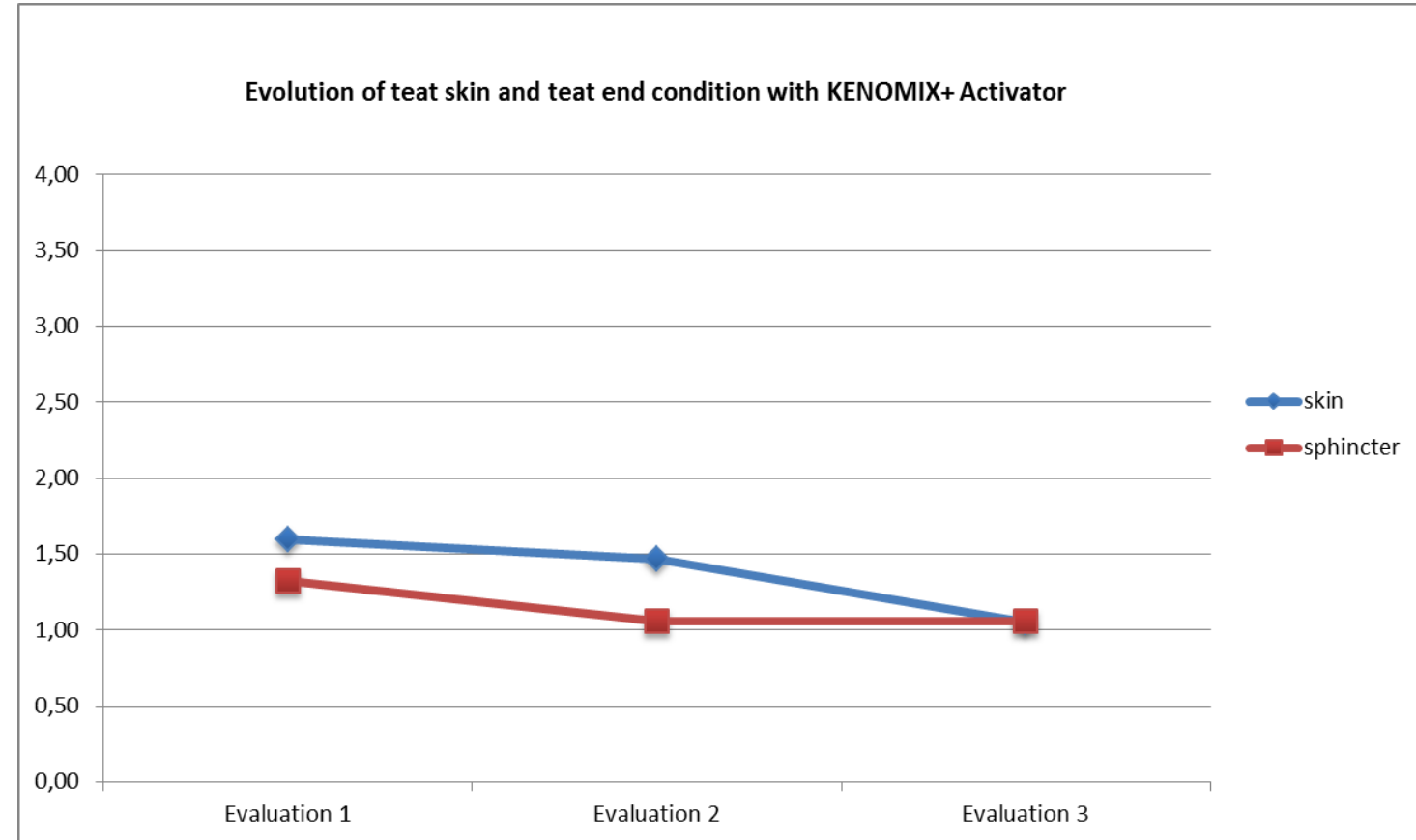
Score 1



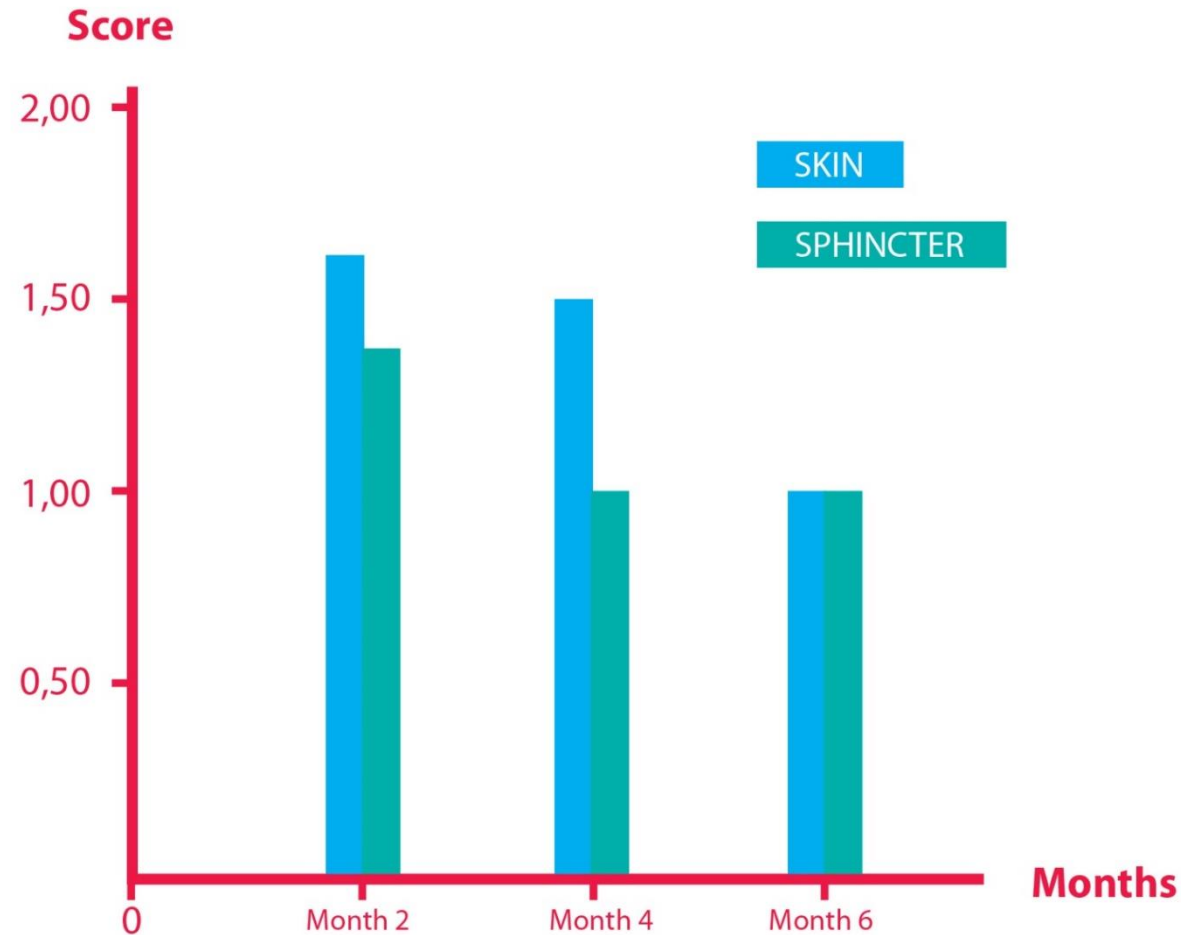
Score 2



Score 3



# Skin defense high percentage of emollients



# Mixing procedure



**Kenomix**  
How to mix correctly

**STEP 1**  
Add the activator to the product.

**STEP 2**  
Mix the product during 5 min, turn upside down and shake well.

**STEP 3**  
Wait 1 hour before use.

**Kenomix & Kenomix SD**

SUN	MON	TUES	WED	THURS	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

**26 DAYS OF ACTIVITY**  
AFTER MIXING

KENOMIX, JUST SHAKE IT! [www.cidlines.com](http://www.cidlines.com)

Component A, 1 part  
activator

Component B, 19 parts  
base

# Mixing procedure



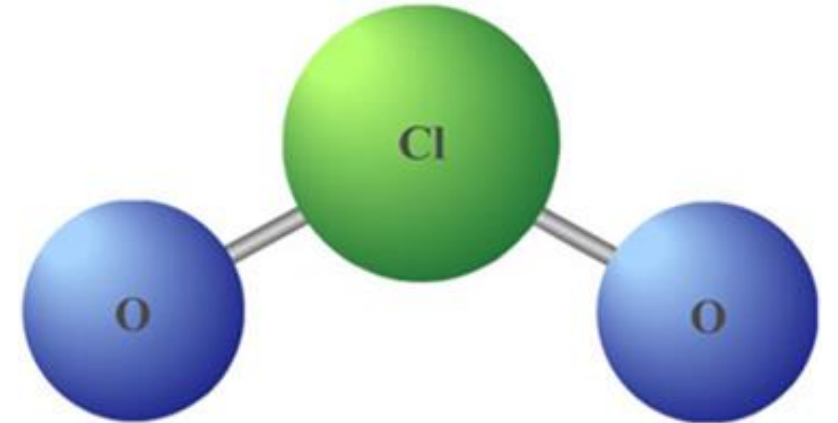
# Sustained release of ClO<sub>2</sub>

1<sup>st</sup> step 1 hour after mixing

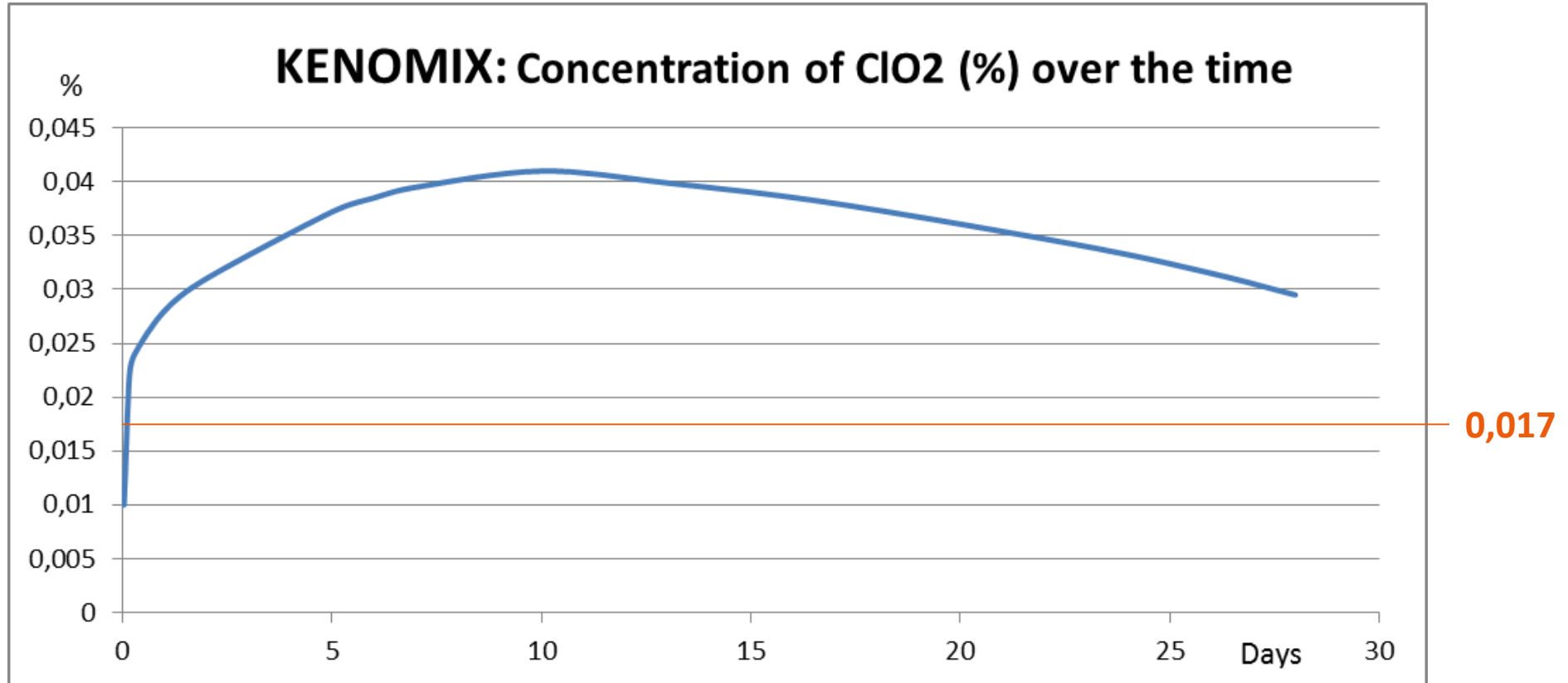
**Fast generation of ClO<sub>2</sub>**

2<sup>nd</sup> step during the shelf-life

**Sustained release to keep the disinfecting concentration level**

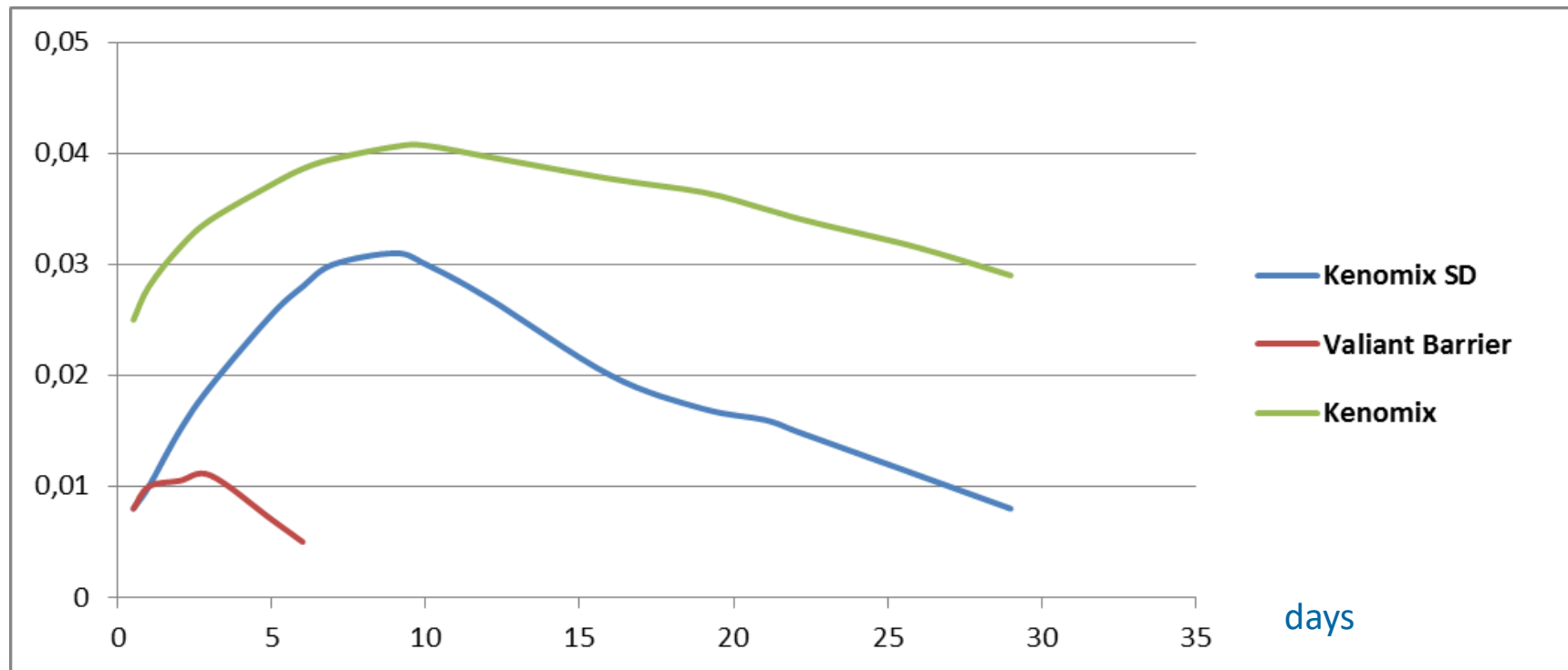


# Sustained release of ClO<sub>2</sub>



# Sustained release of ClO<sub>2</sub>

% ClO<sub>2</sub> Concentration over the time



# Hyperkeratosis

## Causes

Agressive milking machine

Too much vacuum

Cluster too tight

Overmilking

## Effects

Hyperkeratosis

Painful for the cow

Hard to clean

Teat not able to close





# Where to use?

Very high infection pressure

dirty cows, dirty environment, high level  
clinical mastitis

High SCC for the herd

> 400 000

Good teat skin condition

*Candida albicans, Prototheca zophii*

If farmer wants a strong marking effect of teats

Limestone



# Where **not** to use?

Very bad teat skin condition\*

Hyperkeratosis\*

In farms where you are sure that the mixing procedure will not be respected

\*In both cases, if Keno™mix is really needed, it can be used together with Keno™mint. One milking per day with Keno™mint, until the problem is solved

# Mastitis management is...

Managing the after milking

Leave the cows standing up

Sphincter of the teat is open

Prevention of infection

Provide a clean and dry resting/bedding area

Bedding/drying powder

Disinfection with Virocid®

**CID LINES**

WE  
MAKE  
HYGIENE  
WORK

# Milk process



CMT-TEST



PRE-DIP



DRY



POST-DIP

# Mastitis management is...

Prevention is a **continuous** process!

To be used every day, at **every milking...**

Although not new, **hygiene is the modern way to go!**

# Mastitis management



**CID LINES**<sup>®</sup>