

Setting the gold standard for dairy cow mastitis protection

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Mastitis is the most important and most costly disease of modern milking cows. Disease causing germs are referred to as pathogens. The most common mastitis pathogens are found either in the udder (contagious pathogens) or the cow's surroundings (environmental pathogens), such as bedding, manure and soil.

Contagious mastitis pathogens (*Staphylococcus aureus*, *Streptococcus agalactiae*) are spread from infected udders to 'clean' udders during the milking process through contaminated teat cup liners, milkers' hands, paper or cloth towels used to wash or dry more than one cow, and possibly by flies.

Although new infections by environmental pathogens (other streptococci such as *Str. uberis* and *Str. dysgalactiae* and coliforms such as *Escherichia coli* and *Klebsiella*) can occur during milking, primary exposure appears to be between milkings.

Coliform infections are usually associated with an unsanitary environment (manure and/or dirty, wet conditions), while *Klebsiella* are found in sawdust that contains bark or soil.

Most coliform infections become clinical (abnormal milk, udder swelling, or systemic symptoms that include swollen quarters, watery milk, high fever, depressed appetite or elevated body temperature). Environmental pathogens are often responsible for most of the clinical cases.

Good hygiene essential

Current mastitis control programs include teat disinfection, antibiotic therapy, and culling of chronically infected cows. Acceptance and application of these measures throughout the world has led to considerable progress in controlling

| Time (week) | Skin redness | Slight dryness | Slight leatheriness | Number of teats |
|-------------|--------------|----------------|---------------------|-----------------|
| 0 | 0 | 2 | 0 | 203 |
| 4 | 0 | 3 | 4 | 223 |
| 8 | 0 | 0 | 1 | 221 |
| 12 | 0 | 0 | 0 | 216 |
| 16 | 0 | 0 | 0 | 215 |

Table 1. Skin condition for the duration of the trial for cows treated with Alcide UDDERgold PM vet – Uddergold Platinum (Institute for Animal Health, UK).

mastitis caused by contagious mastitis pathogens.

However, as the prevalence of contagious mastitis pathogens was reduced, the proportion of IMI caused by environmental pathogens such as *E. coli* and *Strep. uberis* has increased markedly.

Therefore, it is not surprising that mastitis caused by coliforms and environmental *Streptococcus* species has become a major problem in many well managed dairy farms that have successfully controlled contagious pathogens. Contagious mastitis pathogens are controlled effectively by procedures that prevent spread of bacteria at milking time, which include good udder hygiene, and pre-milking and post-milking teat disinfection with quality teat disinfectants.

Control of environmental mastitis pathogens is best achieved by maintaining a clean, dry environment for lactating and non lactating cows, by fast pre-milking disinfection and by the use of 'barrier' forming post milking teat disinfectants.

Use of premium quality teat dips is a critical success factor in mastitis prevention. Fast but lasting disinfection, cosmetic ingredients for teat skin conditioning and cracks prevention, 'barrier' protection for difficult environmental conditions, proven efficiency through norms, clinical field trials and veterinary drug approvals are amongst the needed properties of a comprehensive contagious and environmental mastitis prevention teat care product. The choice of the active substance is crucial as efficiency depends strongly on the nature of the molecule used.

Ultimate technology

Alcide UDDERgold PM vet (also registered as Uddergold Platinum in some EU countries), the world leading veterinary drug germicidal barrier teat dip now registered in Europe, is based on two highly effective and complementary germicidal active substances: Alcide ASC technology and lactic acid. This ensures the highest product efficacy.

ASC (acidified sodium chlorite) technology is based on a powerful oxidising active substance that eliminates hard-to-kill mastitis causing pathogens within 15 seconds.

ASC technology is recognised as the best biocidal technology avail-

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Fig. 1. Veterinary drug barrier teat dips with high skin care properties and powerful active substance give maximum protection against contagious and environmental mastitis.



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able for mastitis prevention without any side effects like ecotoxicity or formation of toxic residues. Lactic acid, a well known biocide of natural origin, completes the biocidal protection between milkings, whilst also caring for teat conditions

Alcide UDDERgold PM vet is for post milking use and forms a protective barrier. It is explicitly recommended for farms with a high incidence of contagious and environmental mastitis, with wet, muddy farming conditions, when weather is hot and humid.

Its germicidal polymer barrier reduces the number of new intra mammary infections over and above other barrier and film products.

To ensure fresh active product is applied on the teat, the mixture is prepared once a day at a rate of 1:1. Its cosmetic efficacy is



based on the unique association of glycerin, Cosmedia, a specific emollient polymer, and lactic acid. Lactic acid is well known, beside its bactericidal activity, for its exfoliating properties, and is often used in human cosmetic products.

Numerous reports of very low hyperkeratosis problems in herds using the product support the efficacy of the skin conditioning system.

In vitro and clinical studies

The killing efficacy of Alcide UDDERgold PM vet has been proven in vitro on a wide range of germs including *Staphylococcus aureus*, *Escherichia coli*, *Streptococcus uberis* and *agalactiae*, the coagulase negative staphylococci, the methycillin resistant *Staphylococcus aureus*, *Prototheca zopfii*, *mycobacterium*, *mycoplasma*, *orthopox virus*.

All these mastitis causing germs are destroyed in a very short time under strong organic load in the conditions of European norms and American AOAC tests.

Efficacy in vitro is a pre-requisite but, of course, the proof of efficiency in vivo, with clinical studies, is absolutely needed. In this aim, the product has been tested extensively for its efficacy in preventing new intra mammary infections in lactating dairy cows. These clinical studies were performed in

Italy (University of Milan), the UK (Institute for Animal Health, Compton) and in the USA (Louisiana State University and Washington State University).

The studies were conducted according to split udder and split herd protocols on groups of 30 to 348 cows. This is a natural exposure trial using a treated or untreated control design.

In the split udder studies, challenge organisms (*Staphylococcus aureus* and *Streptococcus agalactiae*) were applied to all four teats of each animal after milking. Immediately following, the same two teats of each animal were treated with Alcide UDDERgold PM vet daily for up to 14 weeks. Infections on the treated and control quarters were measured at the end of the trial.

With the split herd protocol, two treatment groups have been established, with roughly the same number of cows having similar bacteriological status, lactation stage and parity. This ensures that the statistical analysis can be performed correctly.

The two groups were managed in 'real life' conditions, the same way as in a farm. About 700 quarters free of infections are included in each treatment group. Cows in the two groups were also classified according to their production levels. High producing cows were milked thrice daily while the others were milked twice daily.

Teat dipping was performed according to

the supplier recommendations and at least on half of the teat length. Bacterial examinations of milk samples were done according to International Dairy Federation recommendations. Teat condition scoring was done on the high producing cows in order to check skin integrity.

This examination took place three days before the trial started and then every 28 days during the test. Parameters observed were skin colouration, skin roughness, orifice condition for hyperkeratosis. All data were statistically analysed using methods recommended by the National Mastitis Council (NMC).

Clinical study results

The studies showed that the product significantly reduced new infection rate with the challenge organisms. Up to 88% reduction of infections caused by *Streptococcus agalactiae* and up to 85% reduction of *Staphylococcus aureus* infections.

Concerning teat condition and especially hyperkeratosis, scores did not worsen with time for both treatment groups of the split herd study showing that the product also act as an excellent teat condition protector. This study has been conducted during 114 days, very different weather conditions were found, this gives a high significance to the results obtained.

The conclusion of the European MRP Vet drug dossier review on these studies is as follows: "The results from the field studies demonstrate that the acidified chlorite system of the Alcide UDDERgold PM vet product produces a clear reduction in the incidence of the new natural infections caused by a variety of mastitis causing organisms. Not only has Alcide UDDERgold PM vet been shown to significantly reduce the incidence of the new udder infections when compared with untreated controls, it has also been shown to provide better results than those obtained with other commercially available teat dips."

Conclusion

From these strongly positive results, it clearly appears that using a modern veterinary drug barrier product with powerful active substances and excellent skin conditioning properties is a real solution for contagious and environmental mastitis prevention.

The ASC technology, complemented by lactic acid, brings a very strong disinfecting efficiency while keeping a healthy skin condition. The barrier polymer creates a perfect physical protection of the teat which still can breathe. In all difficult conditions (environment, weather), the efficacy remains at a high level. This new solution has been proven *in vitro* and *in vivo* to be one of the key success factors in the fight against mastitis in dairy herds worldwide. ■

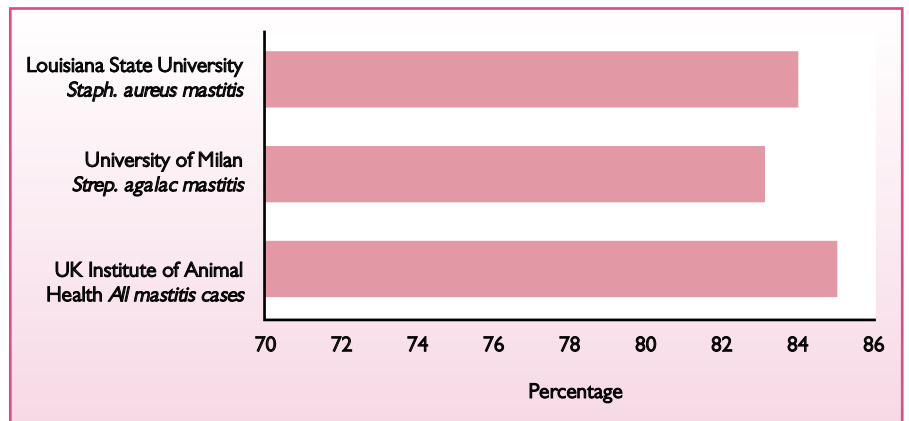


Fig. 2. Clinical studies – percentage reduction in new cases of mastitis.