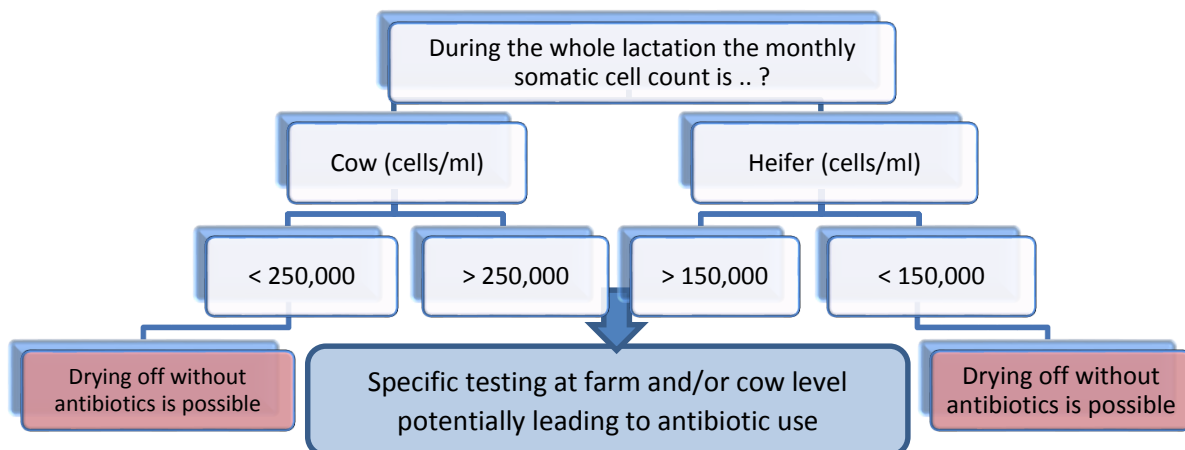


Optimal immunity for less mastitis after calving

Mastitis is often the most expensive, often recurrent, disease on a dairy farm. The inconvenience and costs associated with clinical mastitis are most visible. However, subclinical mastitis (cows with elevated somatic cell count) is responsible for the greatest losses (reduced milk production, fines, etc.). This has already been the subject of long-standing attention through the 10-point programme. This comprises measures for the prevention and control of mastitis, supplemented by guidelines for comfort, hygiene and housing. Since 1969 the standard recommendation was to use antibiotics when drying off heifers and cows. However, this old habit is encountering opposition. In the Netherlands, preventive use of antibiotics when drying off has already been banned since 2012. Responsible and prudent use of antibiotics when drying off is aimed at preventing resistance development. Of course this measure should not lead to an excessive increase of curative use of antibiotics because of clinical or subclinical mastitis.

To prevent an increased risk on sub(clinical) mastitis after calving, the university of Ghent (Belgium) has listed several guidelines:

- In case of drying off without antibiotics, it is strongly advised to use intra mammary teat sealants.
- Farms, where milk (bulk tank) has a somatic cell count lower than 200.000 cells/ml and maximum 10% of cows, which need special care, could consider drying off without antibiotics.
- During the whole lactation the somatic cell count may not exceed the limit of 250.000 cell/ml for cows and 150.000 ml for heifers.
- During the whole lactation of the cow no clinical mastitis may be reported.
- After drying off, the cow should be able to calf in a clean and comfortable environment.



In the Netherlands the tipping point between an acceptable increase of udder inflammation and a reduced use of antibiotics is considered at a somatic cell count of 150,000/ml for heifers and a somatic cell count of 50,000/ml for older cows, no more than four weeks before drying off, as found at the last milk recording. This means that below this reference point, the use of antibiotics for drying off can be considered as preventive use, which is forbidden.

In addition to the somatic cell count, the milk yield also plays an important role. When this is still high when drying off is near, the risk of milk leakage is high: the pressure in the udder increases and the entrance to the streak canal remains open in the first days of the dry period. That is when bacteria will seize their chance to infect the udder via the teat meatus. So it is obvious that the immune system needs to be optimally prepared for

this stressful period. A lower milk yield (< 12 kg) can be achieved by feeding a low-protein ration, since protein has an effect on the sphincter muscle of the teat. It is also important, however, for the cow to take in sufficient feed to meet its maintenance requirements (for example 4 kg of grass silage or 6 kg of hay). This ration should also contain sufficient minerals and vitamins.

Optimising immunity

The bacterial invasion of a quarter depends on the invading germ and on the strength of the immune system. The interaction between the bacterium and the cow's immunity will determine the eventual result of the infection. In the best case scenario, the germ is eliminated completely without the udder tissue being affected.

Who guarantees elimination of the infection?

The innate immunity consists of natural resistance barriers preventing bacteria, viruses and other microorganisms from invading the body and destroying them when this has happened nevertheless. As a primary immune response, the neutrophils (white blood cells) are attracted to the site of the infection, where they attack the pathogens. In the udder, this results in a massive influx of neutrophils (= elevated somatic cell count) and an altered consistency and quality of the milk.

Neutrophils have a short life in the bloodstream and the tissues, and die after a few days through apoptosis, programmed cell death, harmlessly removing them from the body. Apoptotic neutrophils, however, are no longer capable of destroying pathogens. It is therefore very important that the activity of the neutrophil remains intact for as long as possible.

Good vitality of neutrophils is very important around the time of calving, since at that moment the immune system is suppressed, making the cow more susceptible to all kinds of infections. During the first four weeks of the lactation, a large number of animals may suffer from mastitis. This may become manifest in different ways: from elevated somatic cell count (e.g. *S. aureus*) to marked clinical mastitis with very ill animals (e.g. *E. coli*). **A healthy immune system is the best guarantee for preventing and controlling these infections.** Therefore it is necessary to keep the quality of the neutrophils as high as possible, thereby minimising the dip in resistance around calving and making the cow more resistant to mastitis in early lactation.

Together with the research centre of the Faculty of Veterinary Medicine of Ghent University, the effect of **Aromabiotic Cattle**, a balanced mixture of medium-chain fatty acids (MCFAs) on the longevity of neutrophils in blood and milk was measured. The programmed cell death of the neutrophils was reduced dramatically by the use of **Aromabiotic Cattle**. A lower level of programmed cell death results in a higher overall quality of the white blood cells, in other words, a better immune status.

Aromabiotic Cattle supports the cow to combat (sub)clinical mastitis, helping to minimise the resulting costs. Specially for the dry period, Mervit DRYBOOST (ZP), a complete dry period mineral with Aromabiotic Cattle, is now available as well. A better immune status of the cow means a higher health status within the herd and eventually a higher milk production.

Neutrophils

