

Oral supplementation of medium chain fatty acids for better immunity

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Clinical mastitis or udder inflammation is a recurrent problem on all dairy farms. It is often associated with a reddened, hard and warm udder in one or more quarters. The presence of flakes or an abnormal appearance of the milk in particular is a clear sign of an inflammation. The cows are usually generally ill, and as well as running a fever they also suffer from a loss of appetite.

However, an equally serious problem is formed by subclinical inflammations. In this case, the cow is not ill and no indications are noticed in the milk. The only sign that points to the presence of a subclinical inflammation is the clearly elevated somatic cell count of these dairy cows.

Udder inflammation

The costs involved in (subclinical) mastitis are often underestimated by the dairy farmer. Mainly only the direct costs are taken into account, such as the costs for the veterinarian, medication and the amount of milk that has to be thrown away. But alongside these direct losses there are also many indirect losses such as the total reduction in milk production (caused by the damage suffered to the udder), possible fines, the extra labour required to treat the animals and the higher replacement percentages. A recent publication issued by the Dutch Udder Health Centre estimates the average damage caused by mastitis to be €140 per cow per year, which is probably also an underestimation of the true situation.

As the farmer himself exerts no influence on the price of milk, he can only increase his profits by producing more efficiently. Good prevention and management of mastitis therefore plays a vital role.

Mastitis is a multifactorial condition and is therefore influenced by a variety of factors (including milking machine, milking technique, hygiene,

comfort, dry-off management, heifer management, general condition and resistance of the cows and nutrition).

The plan of approach has the greatest chance of success if all these factors are taken into consideration. Treatment should be limited to cows with a high chance of recovery. It is better to cull chronically affected or old animals.

What is the cell count?

The cell count is an expression of the number of cells present per ml of milk, including neutrophils.

Neutrophils are white blood cells with a short lifetime which are one of the first responders that migrate toward the site of an inflammation. If bacteria are present in the milk, a variety of chemical substances are released (anti inflammatory response) that ensure that a greater number of neutrophils move from the blood stream to the infected milk gland. Once they reach the milk they will attempt to eliminate the bacteria they find there. This in turn releases more substances that attract even greater numbers of neutrophils, causing the total number of cells in the milk (expressed as the cell count) to increase further.

The causative agents of mastitis are bacteria in the environment (mainly the cubicles) or bacteria hosted by the cow. They invade the udder via the teat duct (especially after milking as the teat duct has been wide open for around 30 minutes).

Fig. 1. Influence of Aromabiotic Cattle on the percentage apoptotic neutrophils in the blood and milk after calving.

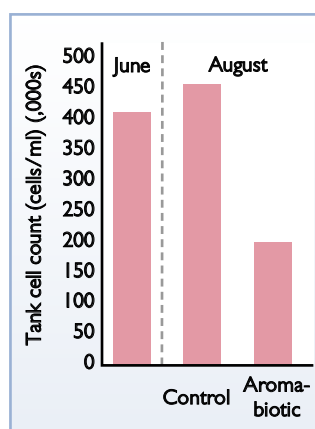
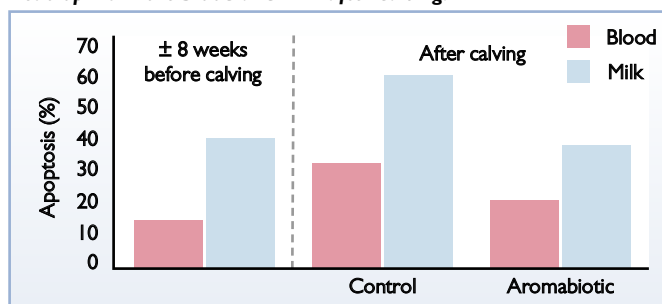


Fig. 2. Influence of Aromabiotic Cattle in the feed on the tank milk somatic cell count.

These bacteria can be divided classically into two groups, namely bacteria that cause a lot of damage to the udder (such as *Staphylococcus aureus*, the streptococci and *E. coli*) and milder pathogenic bacteria that cause less damage (such as *Corynebacterium bovis* and the coagulase-negative staphylococci or CNS).

Aromabiotic Cattle

Aromabiotic Cattle is a balanced mixture of medium chain fatty acids (Aromabiotic-MCFA), especially developed for cattle.

In vitro and in vivo tests with fistulated cows have already demonstrated the positive effect of Aromabiotic Cattle on the rumen microflora and rumen fermentation.

Dr Sofie Piepers (Mastitis and Milk Quality Research Unit, Faculty of Veterinary Medicine, Ghent University) recently evaluated the effect of oral supplementation with Aromabiotic Cattle during the dry period on blood and milk neutrophil viability (quality) in dairy cattle shortly after calving.

Typically, both heifers and cows suffer from an impaired blood and milk neutrophil viability around calving.

This decrease in cell viability is closely related to an impaired cell activity and is most probably resulting in an increased incidence of (severe) clinical mastitis cases in early lactation.

In the trials the animals (heifers and cows) were divided into a control group and a trial group.

The latter was given a supplement of Aromabiotic Cattle in addition to the ration after dry-off (for the heifers 6-8 weeks before the expected calving date).

At the start of the trial and shortly after calving the quality of the neutrophils in blood and milk was established by measuring the percentage of apoptotic (dead or dying) cells.

A high percentage of apoptosis is indicative of a lesser quality of the neutrophils.

The clinical trial showed that oral supplementation of Aromabiotic Cattle during the dry period curbs the depression in blood and milk neutrophil viability.

Fig. 1 shows a clear reduction in the apoptosis in the blood and the milk through the use of Aromabiotic Cattle.

The viability, and therefore the 'strength' of the neutrophils is clearly higher if Aromabiotic Cattle is used and can limit the traditional immunity dip to a great extent.

Lower tank milk cell count

Several practical trials have already revealed that the use of Aromabiotic Cattle in dairy cattle gives a reduction in the tank milk somatic cell count after just a few weeks (see Fig. 2). The risk of clinical mastitis also appears to fall.