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MILK FEVER IN DAIRY CATTLE

Milk Fever is a common problem of the “modern dairy cow” usually affecting cattle in their 3rd+ lactation. It has been said that for every clinical case of milk fever that there may be at least 5 animals suffering with the sub-clinical form. It has also been described as a “gateway” disease in that it rarely happens without complications and there is a strong association between milk fevers and other problems around the time of calving such as ; Displaced abomasums, retained placenta, mastitis and ketosis to name but a few.

Sub clinical milk fever; more common than we think.

Low blood calcium levels are known to affect the cow in various ways to the detriment of her health. We know that a sub-normal blood calcium will:

1. Increase the risk of mastitis due to the fact that cows are usually more recumbent and also there is a negative effect on the function of the white blood cells and their ability to fight infections.
2. Increased risk of ketosis due to the effect of calcium on insulin
3. It has also been recognised that hypo-calcaemic cows (even in the sub-clinical form) suffer increased stress at the time of calving. This has the effect of increasing blood cortisol levels which will have a negative effect on the immune system hence increasing the potential for disease to develop. **It is now thought that a strong immune system is required to enable recognition and expulsion of the placenta as a foreign body.**

To determine if sub-clinical milk fever exists, blood samples should be taken from cows within 48 hours of calving. This should be done even if the cows are standing as we have seen quite a few sub-normal blood calcium results in cows that otherwise appear normal.

Normally blood calcium levels in the blood are very tightly controlled and will only be outside the normal range for a brief period around calving. Low levels of calcium will stimulate the release of parathyroid hormone (PTH) which acts to activate Vitamin D3 in the kidneys. The latter will have a dual effect of mobilising calcium from the bone and also increasing calcium uptake from the gut. PTH also increases renal re-absorption of calcium. But it has been found that Vitamin D activation is very inefficient, even when PTH levels are normal, when the cow is in metabolic alkalosis (on a high DCAB ration). Hence to improve Vitamin D activation and calcium balance the ration needs to create a slight metabolic acidosis, hence the importance of lowering the DCAB.

WHAT IS DIETARY CATION ANION BALANCE (DCAB) ALL ABOUT

Cations have a positive value and the main ones that we are concerned about are sodium (Na) and potassium (K).

Anions have a negative effect with the most important ones being chloride (Cl) and sulphur (S)

The aim is to restrict Na and K and to increase Cl and S. This is easier said than done as the chloride and sulphur salts that can be added to a ration to produce a desirable metabolic acidosis are usually very bitter and if used excessively will depress dry matter intakes.

Typical DCAB values of some common feeds (remember a high positive value is undesirable in the 3 weeks prior to calving)

Maize	+194	Potatoes	+343
Whole Crop Silage	+139	Sugar Beet Pulp	+123
Barley	+25	Soya ex.	+203
Brewers grains	-220	Rape	-201
Kale	+806	Wheatfeed	+177
Molasses	+681		

Grass silage can be very variable but is usually a high positive value and hence I would consider it important to have its DCAB value measured several times throughout the season. It has been known for it to vary quite considerably within the same pit depending on what fields have been cut and fertilizer used etc.

Dry cow paddocks can be doctored to help with the milk fever situation. It would be best to have a more mature grass in these fields and refrain from using any form of potassium fertilizer or farmyard manure on them. Baled silage could also be made from such fields and fed to the dry cows hence reducing the risks of milk fevers.

TREATMENT OF MILK FEVER

There are several stages where we can intervene to prevent the “downer cow” stage developing. If we are suspicious that a cow has the potential to develop a milk fever i.e. she is a big milky cow entering her third or higher lactation and on spring grass, then we could administer calcium supplementation prior to her calving. This could be in the form of a bolus, paste or a drench. These usually have a negative DCAB value which reduces the risk of their use pre calving. They should be repeated at 12 hour intervals until calving occurs. These products usually have 2 forms of calcium, calcium chloride which is released rapidly, and calcium carbonate which has a more sustained release.

The second scenario would be where we notice that the cow is not down but slightly wobbly and she may be hyper-excitabile. In this instance it is not advisable to give I/V calcium as this will interfere with PTH release and therefore oral supplementation is the treatment of choice.

When we have a downer cow situation then I/V calcium should be administered along with an Agger's/Selekt fresh cow sachet. This will have an added benefit of a negative DCAB hence allowing activation of vitamin D more efficient. This can be followed up with either form of oral supplementation or more I/V calcium if still down.

Oral products that can be utilised for prevention/treatment of milk fevers

Bovicalc Boluses

Botonic Calcium

Aggers Pro calcium