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## SUB ACUTE RUMINAL ACIDOSIS (SARA) IN THE DAIRY HERD

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Sub-acute ruminal acidosis (SARA) is increasingly being seen as a major nutritional problem which affects the high yielding, modern dairy herd, and it has been linked to high herd culling rates.

SARA is a group problem and is a disorder of ruminal fermentation that is characterised by extended periods of depressed ruminal pH below 5.5-5.6. For optimum ruminal fermentation and fibre digestion, ruminal pH should lie between 6.0 and 6.4, although even in healthy cows, it will fluctuate below this level for short periods during the day.

### Symptoms of SARA

- Loose faeces often containing fibrin casts, undigested grains and long fibres
- Excessive faecal soiling of the tail, udder and hindquarters
- Tail swishing in the absence of flies - this is likely to be caused by the irritation produced by acidic urine and faeces
- Individual cows “off their food” with no other obvious symptoms - the problem normally resolves within 24-48 hours
- Cows dropping their cud
- Reduced milk yield and reduced milk butterfat
- Increased number of cases of digestive/metabolic disorders such as displaced abomasums and ketosis
- Excessive loss of body condition in early lactation
- Increased incidence of foot lameness - SARA can lead to chronic low grade laminitis and the production of poor quality hoof horn. This results in an increased incidence of solar ulceration and white line disease.
- Overall health and appearance of cows - acidotic cows look dirty and rough coated

### SARA diagnosis

Apart from the clinical symptoms listed above, there are several other useful indicators of a SARA problem within the herd.

### Milk recording information

#### Milk fat percentage

There is a direct relationship between ruminal pH and milk fat percentage. A ruminal pH of 5.5, as would be found with SARA, would be associated with a butterfat percentage of 2.5. So the proportion of cows on milk recording day with a butterfat percentage of below 2.5 can be monitored. There would be concern about SARA if this proportion exceeds 10-25% of the cows tested.

#### Fat: Protein ratio

When acidosis occurs the proportion of cows with a fat:protein ratio less than one increases.

#### Faecal sieving.

Collect six to twelve faecal samples per group of cows and sieve through a standard kitchen sieve under running water. Faecal fibre greater than 1.25 cm in length, fibrin casts and the presence of undigested grains are suggestive of ruminal acidosis.

#### Rumenocentesis

Rumenocentesis is the definitive test for the identification of SARA. It is a herd-based test and involves the collection of a sample of rumen fluid from a carefully selected group of cows in the earlier part of lactation and the measurement of the pH of this fluid. If 30% of the cows tested have a pH equal to or below the threshold of 5.5, then a diagnosis of SARA can be made.

## Prevention

The prevention of SARA involves attention to a combination of several feeding, management and nutritional factors including:

- Make sure there is sufficient long fibre in the diet of the correct length. Long fibre is defined as fibre longer than 2.5cm in length and is essential for rumen mat formation and to stimulate cudging. If the fibre is longer than 10cm cows can sort the food and leave the fibre, so have forages chopped to between 2.5cm to 10cm for inclusion in TMR. Adding 0.5 to 1kg dry matter of straw, hay or round bale silage to the diet is very beneficial.
- Don't overfeed concentrates in the parlour. If more than 3-4kg of concentrates are fed at a time then rumen pH will fall and SARA can develop. A substitution effect will also occur, so the more concentrates fed the less forage will be eaten.
- Distribute concentrate feeds by adding a midday feed, using out of parlour feeders or TMR.
- Don't overfeed starches and sugars. Starches and sugars should be fed to a maximum of 25% of the diet.
- Don't overmix the TMR diet as the long fibre will become less effective.
- Include buffers such as sodium bicarbonate.
- Feed a transition diet so the rumen lining and its microflora adapt to the lactation ration. The transition period should be from three weeks pre-calving to three weeks post-calving. The rumen is not capable of handling high energy density diets until this period is complete.
- Maximise dry matter intakes by ensuring fresh food is always available in clean troughs at all times. There should not be any time when there is not food available for the cows. Periods of food deprivation may disrupt the rumen microbial population, and tend to cause cows to overeat when food is re-introduced. Both of these factors increase the risk of SARA developing. If TMR can only be fed once daily then feed in the afternoon so food is available at night. During the day farm staff should keep food pushed up.
- Cow comfort. Poor cow comfort will result in less time being spent ruminating with an associated reduction in saliva production and ruminal buffering. Cows should be milking, feeding or lying down and ruminating.

SARA is a subtle condition in most high producing dairy herds leading to unnecessary economic losses. Dairy cow nutrition has advanced sufficiently over the years to avoid SARA. If you suspect a SARA problem in your dairy herd work with your vet and nutritionist to reduce the incidence of this problem.