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SUB-ACUTE RUMINAL ACIDOSIS

IN contrast to the acute ruminal acidosis seen in grain overload cases, sub-acute ruminal acidosis (SARA) is a herd, rather than an individual, cow problem.

Enemark (2009) states, "SARA is the most important nutritional disease of dairy cows", but that on high-yielding dairy herds, some degree of SARA may be inevitable.

SARA has been defined as occurring when rumen pH is depressed (pH less than 5.5) for prolonged periods (greater than three hours per day), although in practice this may be difficult to confirm (Plazier et al, 2007). It is problematic to gauge an accurate UK incidence of SARA due to the subtle nature of the condition, but literature from the US suggests a range of 19 per cent to 26 per cent (Enemark, 2009). Although the clinical signs are non-specific, the economic losses can be substantial due to reduced dry matter intake (DMI) with an associated drop in milk yield together with increased premature culling and unexplained deaths. Therefore, herd monitoring is essential to detect SARA early and implement appropriate nutritional management changes to minimise these economic losses.

SARA occurs when the total load of volatile fatty acids (VFAs) and lactic acid from fermentation of feed in the rumen exceeds the buffering capacity of the rumen (Cook et al, 2006). This typically occurs with rations that have a high ratio of concentrate to forages (greater than 60:40). Concentrate and other high energy, starchy feeds are rapidly fermentable and do not stimulate chewing in the same way as forages. Saliva contains inorganic buffers

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discusses this herd nutritional disease, in part one of two, providing insight into its incidence and aetiology

(sodium bicarbonate) and so acts as one of the main sources of rumen buffering; therefore, less chewing means reduced buffering as the process of chewing increases saliva production. The reduced saliva production and rapid production of VFAs lead to the depression in rumen pH. As a rule of thumb, dairy cow rations that contain less than 35 per cent neutral detergent fibre (NDF) and greater than 18 per cent combined sugars and starch can mean cows are at risk of developing SARA (Cooper, 2013).

Energy density

To support higher yields and prevent ketosis and negative energy balance, the energy density of the ration needs to be maximised. This is often achieved by upping the concentrate portion of the diet. A common scenario for SARA is on farms that feed a mixed ration as well as concentrate feed in the parlour. This can lead to periods of the day after milking time when the rumen pH can drop below the safe range. Another common factor implicated in the aetiology of SARA is the increased use of maize silage in dairy cow rations. Although maize silage is a forage, it is higher in starch than many other forages and can act almost like a concentrate feed. As a general rule, twice daily in-parlour feeding of concentrates is more risky than out-of-parlour feeders that are more risky than feeding a total mixed ration (TMR).

Robotic milking systems tend to feed concentrates fairly heavily and while these feeds are spread out for the cows that visit the robots frequently, some cows may get the same frequency and amount of concentrates as with in-parlour feeders.

There are two main groups of cows that appear to be at greater risk of developing SARA. It is most commonly seen in early lactation cows that have been introduced to a high-energy diet too quickly post-calving. The papillae in the rumen take four to six weeks to adapt to starchy diets and so transition cow management is an important area to target when implementing management strategies for SARA prevention (Cooper, 2013). Mid-lactation cows have relatively high DMIs and so are more sensitive to sudden changes in diet (Enemark, 2009). There are a number of SARA-as-

sociated conditions of dairy cows (see Table 1) although the link between depressed rumen pH and compromised cow health is unclear. One suggestion is low pH can lead to the production of certain immunogens in the rumen including lipopolysaccharide endotoxin and histamine, which are subsequently absorbed and may play a role in reduced immune function (Plazier et al, 2007).

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It is important to look at how the cows are being fed.

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Table 1. SARA is often blamed in the aetiology of lameness conditions in dairy cattle including laminitis and solar ulcers although recent research suggests this link is less likely.

Displaced abomasums
Abomasal ulcers
Liver abscesses
Ruminal bloat
Diarrhoea
Poor pregnancy rates
Laminitis

Adieu. 
No más. 
Kaputt. 
Finito. 
Dead. 

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