Nutrition & Health: Dairy

Ruminal acidosis

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IN addition, this would appear to slow the release of sugars (similar to what is observed when protozoa engulf starch particles). Thus, the availability of the carbohydrate is slowed, resulting in no large bursts or spikes in the presence of VFAs, thereby helping to stabilize ruminal pH. The growth and metabolic activity of lactate-utilizing bacteria are also increased due to the production of metabolites from the yeast, which appear to stimulate these organisms. Thus, lactate production and accumulation are reduced, also affecting ruminal pH.

Fibrolytic bacteria are also stimulated through the addition of active dry yeasts, again through a variety of different modes of action. These organisms utilize starch only to drastic decreases in ruminal pH, but small amounts of oxygen can also affect their growth. Although the rumen is regarded as an anaerobic system, small pockets of oxygen can be found. Live yeast are effective at scavenging any available oxygen, and as a consequence, they improve anaerobiosis in the rumen, thereby creating an optimum environment for the growth of the fibrolytic community.

Certain metabolites produced by yeast may also stimulate the growth of fiber-degrading organisms. By slowing the availability of carbohydrates and sugars, not only is pH elevated and stabilized, but these fibrolytic bacteria may also be subjected to catabolite repression. By reducing carbohydrate overload, enzymatic activity of these organisms is also increased.

Overall, all of these effects on the fibrolytic population in terms of growth and metabolic activity can result in increased dry matter intake and increased meal frequency, leading to improved production. Even in high-fiber-containing diets, a positive effect on the fibrolytic community is observed upon the inclusion of yeast due to a stabilization of ruminal pH and a reduction in lactate production. Generalized pH is not only lowered and an issue with high-fiber diets, but a recent study by Guedes et al. (2007) demonstrated that ruminal pH can decline after feeding maize silage and that live yeast may help prevent a sharp decline in pH. Less lactate production was also observed in the presence of yeast.

The type and nature of the forage also had an effect upon its degradability, and yeast was particularly effective at improving the digestibility of low-quality maize silages as well as having a less pronounced stimulatory effect on the digestibility of silages regarded as highly degradable. This effect may not only be due to increased growth of the fibrolytic bacteria but also to improved growth of the anaerobic fungi that are also known to be positively enhanced by the addition of yeast. Unfortunately, changes in the microbial community were not evaluated in this study.

To conclude, diets can have a significant effect on the composition and stability of the ruminal microbial population and, subsequently, on ruminal fermentation. Since ruminal fermentation is a critical component of nutrient input for the animal, any disturbance or disruption of this process may have an effect on the health and productivity of the host animal. Therefore, it is important to achieve a balanced and stable microbial population. By including active dry yeast in the diet, ruminal pH can be stabilized, resulting in a positive effect on the fibrolytic population, and an increase in dry matter intake and digestibility may be observed.

References

Price, Protein, & Packaging Changes for SoyChlor®

As my brother-in-law is quick to remind me, when commodity prices go up, the feed mills are quick to pass the cost on to the dairyman. West Central realizes there is a risk. The food sector generates more than $1.24 trillion per year. The complexity of the food system makes contamination at many levels a real risk.

The Food & Drug Administration’s Center for Food Safety & Applied Nu- trition (CFSAN) has several new and upcoming programs designed to help health protection and food supply.

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The tool can be used to assess vulner-abilities to an attack. The online software tool allows users to think like an attacker to identify the most attractive targets for an attack. CARVER breaks a food system into its smaller pieces. The tool models in the farm-to-table continuum. By conducting a CARVER + Shock assessment of a food production facility or process, the user can determine the most vul-nerable points in their infrastructure and focus resources on protecting the most susceptible points in the system.

West Central News

JACQUI FATKA

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Resources for food defense available

By JACQUI FATKA

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