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PROVEN MILK FEVER PREVENTION STRATEGIES

By Ruby Wu, PhD
Field Technical Services

The most common dietary prevention strategies for milk fever all work on the same principle; to achieve a negative blood calcium balance. But, there are several ways this can be achieved via the cow's diet.

When a cow has negative blood calcium, it triggers the secretion of parathyroid hormone (PTH) from the parathyroid glands. The release of PTH initiates a cascade of actions that occur over minutes, hours and days to increase the availability of the animal's own calcium reserves. By initiating this process prior to calving, the cow is prepared for the huge increase in calcium requirements after calving.

To achieve a negative calcium status, there are three strategies that farms could use. These are:

1. Low calcium diets
2. Calcium binders
3. Negative Dietary Cation Anion Difference (nDCAD)

Any milk fever prevention strategy should also consider the potential for improved animal performance after calving. Feeding a low level of calcium is one of the cheapest prevention strategies, however, it is also the riskiest.

For this strategy to be successful, diets need to restrict calcium to very low levels but achieving this in practice is very difficult; ad-lib forages will typically provide around 60 grams of calcium a day.

For these reasons, it is not recommended to rely on low calcium feeding as your sole milk fever prevention strategy.

Calcium binders have increased in popularity over the last 5 to 10 years, largely due to their simple feeding approach. One of the most expensive options on the market today, calcium binders work as the name suggests – to bind calcium making it unavailable for absorption. Unfortunately, calcium binders do not only bind calcium; other essential minerals are also bound, which should be taken into consideration when formulating diets. The binders also do not provide any nutritive value and when fed in large quantities, will reduce the diet's nutrient density, making it difficult to hit desired protein levels.

In contrast, negative DCAD approaches are thoroughly researched. Dr. Ruby Wu from Arm & Hammer's Dairy Technical Team in the US trusts negative DCAD diets: **"Millions of cows and scores of research trials have demonstrated the positive benefits of feeding a negative DCAD diet."**

Specifically, nDCAD diets increase the calcium that's available in the soluble pool surrounding the bones. More importantly, correctly formulated nDCAD diets can improve dry matter intakes, leading to higher start up milks. Our research shows that, on average, an extra 1kg of dry matter intake and 1.7kgs of milk can be achieved with an nDCAD diet of -100 meq/kg[1] when feeding Bio-Chlor.

Dr. Ruby Wu has been a pivotal member of Arm and Hammer's Field Technical Services team since 2017. In her role, she provides expert technical support to the sales team, key influencers, and producers across the Americas. Dr. Wu holds a Bachelor of Science degree in Animal Science from China Agricultural University in Beijing, China. She furthered her education at the University of Georgia, earning both a Master's and a Ph.D. in Dairy Nutrition, with a focus on rumen bypass lysine and DCAD feeding for transition cows. Her specialized expertise lies in transition cow nutrition and management.

"There are always those who look for new and better ways to accomplish the goal of reducing incidence of clinical and subclinical milk fever. But while those interventions do exist, it is hard to beat the proven efficacy of feeding a negative DCAD diet," adds Dr. Wu. ■

Reference:
1 Santos, J.E.P., Lean, I.J., Golder, H. and Block, E., 2019. Meta-analysis of the effects of prepartum dietary cation-anion difference on performance and health of dairy cows. Journal of dairy science, 102(3), pp.2134-2154.

NEXT IN THE SERIES: We'll discuss into more detail about negative DCAD diets and how they work to prevent milk fever.

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