Calf Notes.com

Calf Note #250 – Feeding Electrolytes

Introduction

I was recently asked to advise a colleague on the potential use of an animal health product that was recommended to her as a treatment for scouring calves. She was concerned about the feeding recommendations, so I looked at the product literature online. According to the product website, the product is intended to be used "*as a substitute for milk or powdered milk replacement for use at weaning, or when animals are stressed due to scours.*". The person who contacted me said that several other vets were recommending this product when calves developed scours.

According to a distributor website, the product is about 63% lactose, 5% salt, and 0.8% potassium, and contains glycine, sodium bicarbonate, and citric acid. A calf should be fed one packet of the product (100 grams) mixed into 2 quarts (1.8 L) of warm (~37°C) water twice daily for 2-3 days. No milk or milk replacer should be fed during the treatment.

My initial response to the question of "would I recommend this product for its recommended use?" was an unequivocal **NO**. Using this product as an electrolyte *instead* of milk is a particularly bad idea. Let's unpack this a bit.

"Starve a Cold"?

The feeding recommendation for this product is a 100-gram packet twice daily for 2 to 3 days. That's 200 grams of powder per day. Let's say it's 95% DM, so that's about 190 grams of DM. At 62.5% lactose and glycine and minerals, there doesn't appear to be much additional energy for the calves. We'll be well below maintenance ME requirement.

To explore this point, I entered the feeding program into a calf growth model to see the effect on growth. I chose a 7-day old calf. So, on day 7, we feed 200 g/d of the product mixed into 4 L of water. I assumed 7% protein, 0.1% fat, and 18% ash to get to 62.5% lactose. The ME intake was 0.42 Mcal/day compared to an ME *maintenance* requirement of 1.68 Mcal and an ME growth requirement of 2.82 Mcal/day for 800 g of ADG per day. We are feeding the calf only about 25% of its maintenance energy requirement. By feeding 200 g of this product, we're effectively starving the calf of energy during the treatment period. On the protein side, we provide somewhere around 17 g of MP per day compared to a maintenance requirement of 24 g/d and total requirement of 230 g/d. This calf is going to lose significant body weight, not only due to loss of water as scours, but due to malnutrition. This is not a good situation.

The "old wives tale" of "starve a cold and feed a fever" has long been debunked for humans, as this Scientific American article states. The same holds true for calves. When an animal is fighting an infection, the immune system is upregulated and demands more energy and protein to produce the disease-fighting components to try to fight off the infection. Starving the calf of energy and protein doesn't support this effort very well.

What Goes Around Comes Around…

Back in the 1980's and 1990's, our traditional paradigm for treating electrolytes was to "starve the bugs" by only feeding electrolytes. However, research (see links below) showed clearly that feeding milk plus electrolytes was better than electrolytes alone. Calves fed milk in addition to electrolytes were able to maintain body weight and they recovered more completely and faster than calves fed electrolytes alone. Calves fed only electrolytes suffered atrophy of the thymus among other negative outcomes. Of course,

electrolytes should be fed at different times than milk feeding, and electrolytes should never be mixed with milk or milk replacer.

Product recommendations should be based on sound science. Unfortunately, manufacturers of this product don't read Calf Notes! It seems that we're repeating the "old cycle" of "what goes around comes around". In this case, the "new" product feeding advice is better left in history.

When feeding electrolytes to sick calves, always continue milk feeding and allow adequate time (at least 2 hours) between milk and electrolyte feeding.

References and links:

https://calfnotes.com/pdffiles/CN043.pdf

https://www.calfnotes.com/pdffiles/CN206.pdf

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1255580/

https://hoards.com/article-33881-dont-skip-the-milk-meals-for-sick-calves.html

https://www.journalofdairyscience.org/article/S0022-0302(94)77018-1/fulltext

https://www.researchgate.net/publication/240640707_Electrolytes_for_Dairy_Calves

Written by Dr. Jim Quigley (16 May 2024)

Calf Notes.com (https://www.calfnotes.com)