

Impact of Feeding Nurture® Electrolytes to Calves Daily for 3 weeks

Young calves are susceptible to a number of health challenges early in life, most of which can cause scours and dehydration. A previous Nurture Research Center (NRC) Report reviewed how to manage scours and dehydration with one strategy to proactively feed electrolytes before scouring periods. Calves typically develop scours within the first 3 weeks of age and can dehydrate quickly and die without intervention. Additionally, most young calves have not learned to drink water from a bucket within this time frame and may be prone to dehydration during hot weather, independent of any struggles with scours.

A trial was designed to evaluate ways to reduce dehydration in calves.

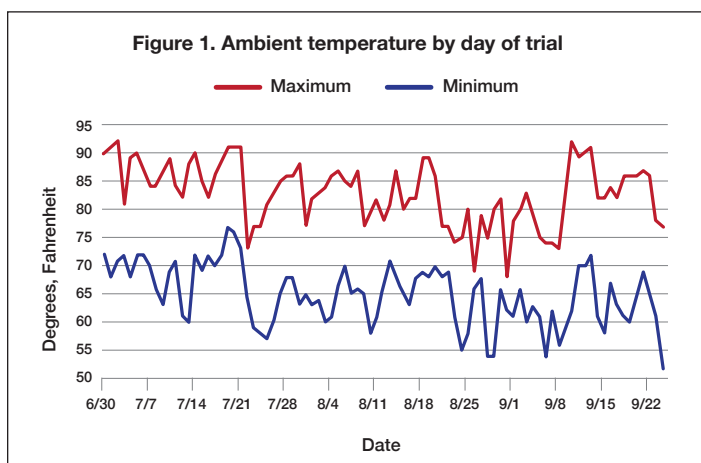
Three treatments were used:

- **Control** – free-choice water provided in a pail
- **Electrolytes** – control plus 3 quarts of a Nurture electrolyte (1 ounce per quart)
- **Water** – control plus 3 quarts of warm water

All calves were fed 1.5 lb. of a 24% protein, 17% fat milk replacer diluted to 14% solids via a bottle and given free-choice access to a textured calf starter. The trial used 48 Holstein bull calves from one farm that were 2 to 3 days old initially. There were 16 calves per treatment. It was conducted from July through September. The average trial temperature was 74° Fahrenheit. Daily temperatures are shown in Figure 1.

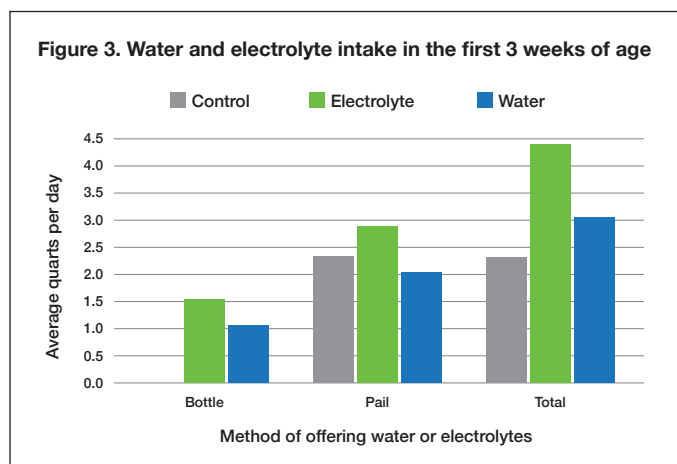
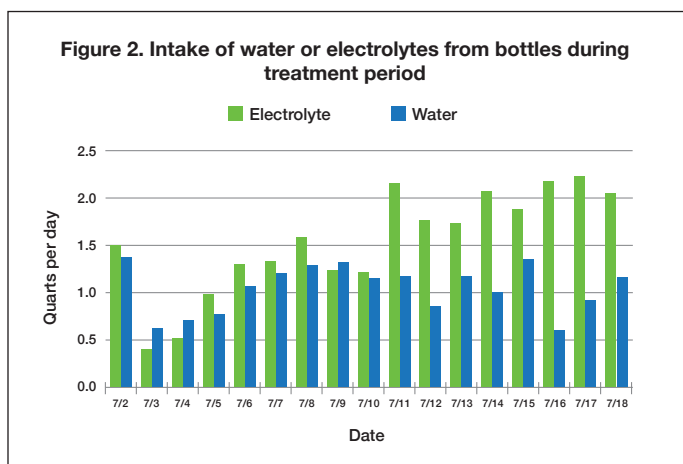
Take home points from this report:

1. Feeding Nurture's electrolyte product improved hydration status in scouring calves during the summer, demonstrating that it was an effective electrolyte to reduce the risk of dehydration.
2. Feeding Nurture's electrolyte product increased total water intake and supported greater growth rates through 8 weeks of age compared to feeding water only.

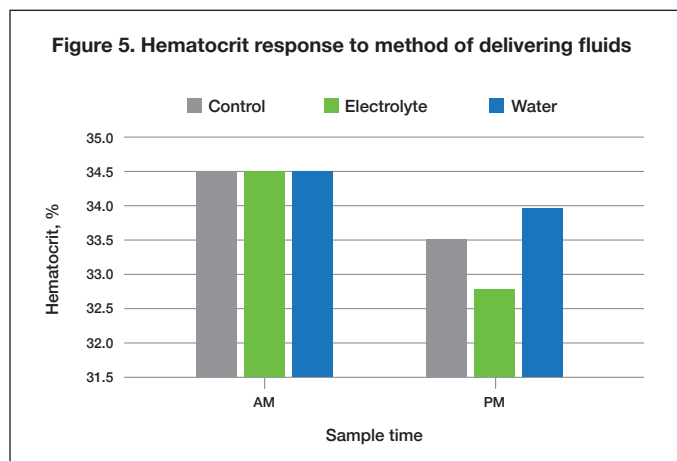
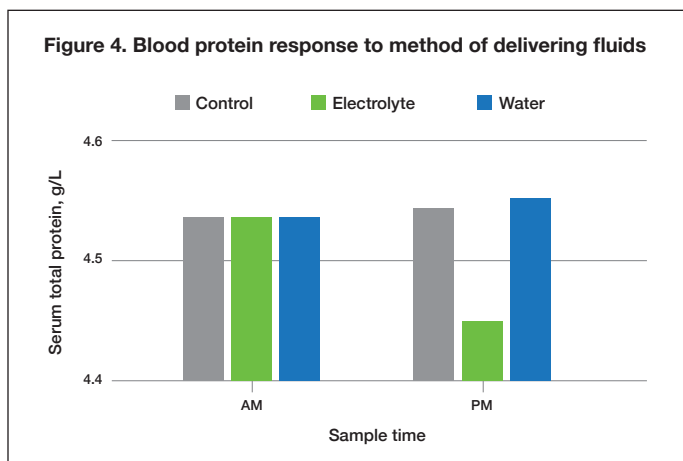


The bottle and electrolyte treatments were offered to calves for 1 hour (11:00 AM to 12:00 PM) from day 3 to 18. Water consumption from bottles and pails was measured daily. On days 4, 8, 11, 15 and 18, blood was sampled from 8 calves per treatment ~1 hour before (AM) and 2 hours after (PM) feeding water and electrolytes. Blood was measured for total protein concentration and hematocrit (red blood cell volume). A decrease in blood protein concentration or hematocrit between the AM and PM measurements would indicate an increase in hydration status.

Daily intakes of electrolyte and water from bottles and overall averages by treatment are shown in Figures 2 and 3. Electrolyte intake was greater than water intake via bottle. Water intake from pails was greater for the electrolyte treatment than the control or water treatments. This resulted in the most total liquid intake by the electrolyte treatment calves. Calves fed water via bottles consumed more total liquid than the control treatment.



Average blood protein and hematocrit concentrations indicate that the electrolyte was effective at rehydrating calves as a decrease in blood protein and hematocrit was observed (Figures 4 and 5; initial AM measurements were standardized to average values across treatments for clarity). This response was greater than feeding water via bottle or pail which is likely due to the overall increase in fluid intake for calves receiving electrolytes.



Performance over the 8-week trial is shown in Table 1. Feeding electrolytes supported greater growth rates from 0 to 8 weeks of age versus feeding water only.

In summary, feeding calves a bottle of Nurture’s electrolyte product from 3 to 18 days of age was shown to be effective at rehydrating calves based on blood parameters of hydration status. Feeding electrolytes improved total water intake during a period where fluid intake and electrolyte balance is critical.

Table 1. Calf performance from 0 to 8 weeks of age.

Item	Control	Sweet Treat	Water	Improvement from Control to Sweet Treat
Sweet Treat offered, quarts	0	3.0	0	-
Starter intake, lb/day	1.09	1.04	0.95	-
ADG, lb/day	1.13	1.14	1.03	-
Gain to feed efficiency	0.50	0.53	0.49	6%
Hip height change, inches	3.6	3.8	3.7	4%
Hip width change, inches	1.1	1.3	1.0	13%