

Electrolytes: They're not all the same

"To me they're all the same." It is a common thought farmers may have when choosing an electrolyte for their calves. With so many electrolytes available, it's hard to know where to start looking.

"When it comes to selecting an electrolyte for your calves, start by looking at the ingredients label," says Skip Olson, technical services veterinarian for Milk Products. "The ingredients, listed from highest to lowest concentration, are key in deciding which electrolyte is best for your calves."

Some electrolytes include ingredients well outside the recommended levels by university experts. Olson recommends reviewing the following key factors before selecting an electrolyte:

1. Reliable energy source

"When a calf is sick, it will naturally pull any energy available to help combat what's making it ill, putting the calf at risk for lower average daily gain (ADG)," says Olson. "When a calf is suffering from dehydration, it's in need of an energy source to correct hypoglycemia and negative energy balance."

One of the most common energy sources in electrolytes is dextrose, which is also frequently used intravenously to rehydrate animals. However, a calf cannot meet its energy needs alone with an electrolyte, which is why it is recommended to keep a calf on a milk ration during times of illness.

Electrolytes with very high levels of dextrose can bring harm to calves by slowing down gut movement, which could cause bloat. If a calf already has scours, it can worsen their symptoms.

2. Strong Ion Difference (SID)

"When a calf scours, a large amount of sodium and potassium are lost, which can result in metabolic acidosis, a drop in blood pH level," says Olson. "A calf is not able to correct acidosis without intervention. In a moderate case of acidosis, electrolytes with a high SID formulation can help balance the loss."

Some common electrolyte ingredients to achieve a high SID include:

- Cations: Primarily sodium and potassium along with minor contributions of calcium and magnesium
- Anions: Primarily chloride, but should also include a D or L isomer of lactate depending on the stage and cause of scours¹

"If the metabolic acidosis is too severe, oral antibiotics cannot make the correction alone and the calf will need intravenous therapy," adds Olson.

3. Contains an alkalinizing agent

“Alkalinizing agents are better known as ‘buffering agents’ used to achieve optimal blood pH levels,” says Olson. “One of the most common alkalinizing agent ingredients you’ll find in electrolytes is sodium bicarbonate, mostly because it helps counteract acidosis.”

Other ingredients you may see on an electrolytes label include acetate and propionate, both alkalinizing agents with several benefits. These buffering agents help facilitate sodium and water absorption, produce energy when metabolized and they don’t alkalinize the abomasum or interfere with milk clotting in the abomasum.

When selecting an electrolyte, look for alkalinizing agents including a combination of bicarbonate, propionate and acetate.

4. An electrolyte absorption component

When a calf is dehydrated and suffering from scours, the digestive system becomes compromised from decreased absorption. For example, sodium cannot be absorbed unless it is linked to absorption of glucose or a neutral amino acid such as glycine.

Acetate and propionate can also improve sodium absorption. The process of absorbing sodium helps rehydrate the calf by replenishing total body fluids.¹

5. Osmolality and gut health

Osmolality is a term used to measure the level of solids in a solution. Look for an electrolyte with a range of 350 to 700 mOsm/L.

“If there is an osmolality greater than 700 mOsm/L, the scours could get worse or the calf could experience abomasal bloat because of the delayed emptying of the stomach,”¹ says Olson.

“Paying close attention to these five areas will make it easy to choose an electrolyte,” says Olson. “A quality electrolyte that meets these standards will help get your calves back on track.”

To learn more about electrolytes, visit calfsolutions.com.

¹ Geof Smith. 2009. Treatment of Calf Diarrhea: Oral Fluid Therapy. Veterinary Clinics of North America Food Animal Practice. 25(1): 55-72.