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A Calva Calf Care Series Product<sup>SM</sup>

## **DEHYDRATION TECH SHEET (1)**

The two primary causes of dehydration in calves are scours and natural cooling (sweating and panting).

### **SCOURS**

Dehydration caused by scours is the number one cause of death in young calves.

The negative affects of dehydration are primarily a loss of water and secondarily a loss of electrolytes (principally sodium & potassium).

Three types of scours (diarrhea) can cause dehydration in calves:

- 1) **INCREASED PERMEABILITY** - Pathogenic organisms (usually viruses) cause inflammation and damage to intestinal lining resulting in increased water movement into the intestine and ultimately excreted through the feces.
- 2) **HYPERSECRETION** - Similar to increased permeability but in this case pathogenic organisms such as e. coli produce enterotoxins that stimulate the cellular pumps to secrete large amounts of fluid into the intestine. When this flow gets beyond the intestinal ability to reabsorb the fluid, diarrhea occurs which results in dehydration.
- 3) **OSMOTIC DIARRHEA** - Occurs when the milk or milk replacer is poorly digested because of damage to intestinal cells by invading pathogens such as Rota and Corona virus.

A young calf that is severely scouring can lose up to 1% of body weight per hour.

### **NATURAL COOLING (SWEATING & PANTING)**

Environmental conditions can cause dehydration in calves:

- 1) **SWEATING** - When the Temperature Humidity Index gets above 90° F (33° C) a calf in shade starts to sweat. Calf sweat contains principally sodium and potassium. Loss of these electrolytes can be up to 6 grams per quart of sweat.
- 2) **PANTING** - When the Temperature Humidity Index gets above 97° F (36° C) a calf in shade starts to pant in addition to sweating.

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### Signs of dehydration:

- 1) 4-6% - No visual signs
- 2) 6-8% - Sunken eyes, tight skin, dry mouth, weak sucking
- 3) 8-10% - Eyes more sunken, dry eyes, nose and mouth, increased pulse, calf depressed
- 4) 10-14% - Calf laid out, will not respond, cool extremities, most likely will die.

### Rehydration Therapy:

The following table can be used to estimate the minimum amount of electrolyte solution to give a 100(45 kg) pound calf.

PERCENT DEHYDRATION	MINIMUM ELECTROLYTE SOLUTION REQUIRED PER DAY
4-6	3 Quarts/Liters
6-8	4 Quarts/Liters
8-10	5 Quarts/Liters
10-14	7 Quarts/Liters

ESSENTIAL COMPONENTS OF AN ELECTROLYTE SOLUTION	USEFUL COMPONENTS OF AN ELECTROLYTE SOLUTION
WATER	Glycine
Sodium	Ascorbic Acid
Potassium	Sodium Citrate
Chloride	
Dextrose	

Dehydrated calves are much less likely to be able to fight off challenges from pathogens.

Electrolytes should be added to all water offered to calves when Apparent Temperature from Temperature Humidity Index Chart is 85° F (30° C) or above.

In most situations, electrolyte solutions should be fed twice a day about 2 hours after or before regular milk feeding.

Calves that do not freely consume the electrolyte solution should be tube-fed.

1) References Available Upon Request