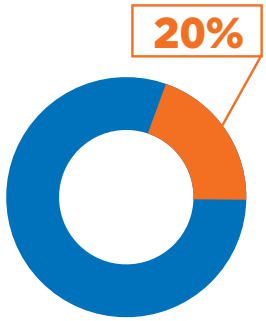
hidramax

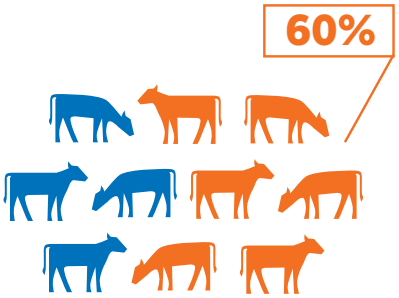
CONCENTRATED SOLUTION OF ELECTROLYTES FOR CALVES

over®
VETERINARY MEDICINE

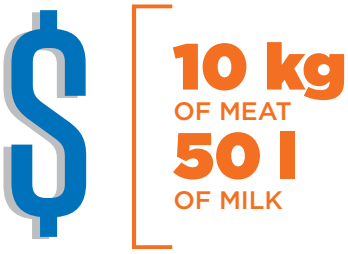
Neonatal diarrhea dehydration is one of the most common causes of mortality in calves during their first months of life. This limits livestock development and causes great economic losses worldwide.



MORTALITY
UP TO 20% OF MORTALITY IN SICK CALVES



MORBIDITY
IT CAN AFFECT 60% OF ARTIFICIAL BREEDING CALVES



OPERATING AND TREATMENT COSTS EQUIVALENT TO 10 KG OF MEAT AND 50 LITERS OF MILK PER SICK ANIMAL

Neonatal diarrhea causes severe consequences for the animal, such as growth retardation and low productive performance. It also generates considerable treatment expenses and often causes death.

Moreover, this kind of diarrhea accelerates the elimination of immunoglobulins, which predisposes the development of other diseases such as pneumonia.

Neonatal diarrhea can affect calves between 12 hours and 35 days old, and is mainly characterized by the excretion of flimsy, liquid, frequent and abundant feces.

TYPES OF DIARRHEA

There are different types of diarrhea affecting calves, the two most common being:

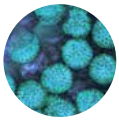
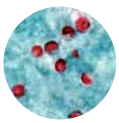
NUTRITIONAL

Factors such as changing milk replacer, transportation, climate, vaccinations, dehorning, among others, expose the animals to stressful situations that trigger this type of diarrhea and cause considerable loss of water as well as dehydration. Therefore, it is important that calves are monitored and eventually treated. If no timely action is taken, the disease can progress to infectious diarrhea.

INFECTIOUS

These diarrheas are caused by common pathogenic microorganisms such as *Rotavirus, Coronavirus, E. coli, Salmonella* and *Cryptosporidium*. These agents cause damage in the intestinal tract because they destroy & detach enterocytes, atrophy the villous and inflame the submucosa.

The infection can occur through contact with other sick or carrier animals, the personnel or the environment (soil, buckets, etc.). Unlike nutritional diarrhea, infectious diarrhea entails a high risk of contagion from sick to healthy calves.

MICROORGANISM	AGE	TYPE OF DIARRHEA	CLINICAL SIGNS	MORBIDITY	MORTALITY
 ***Rotavirus***	4 - 21 days; more frequent: 1 - 6 days	Malabsorption diarrhea, brown or green watery feces with mucus or blood	Depression, salivation: 5 or 6 days	High (90%)	Low (1 to 5%)
 ***Coronavirus***	4 - 18 days; more frequent: 7 - 10 days	Malabsorption diarrhea, yellow feces with mucus and milk clots	Dehydration, acidosis, hypercalcemia	High (90%)	Low (20 to 30%)
 ***Escherichia coli***	1 - 7 days	Hypersecretion diarrhea; yellow, white or bleeding watery feces, depending on the strain	Dehydration, weakness, prostration and death in 6 to 12 hours	High	High (if there is no treatment)
 ***Clostridium perfringens***	7 - 28 days	Hypermobility diarrhea, which is fetid and bloody	Sudden death. Colic and depression	Low	High
 ***Salmonella spp***	10 days to 3 months	Hypersecretion diarrhea, which is fetid, first watery & then bloody, with mucus and mucosa fragments	Sudden death, hypothermia, severe depression, weakness, opisthotonus	Variable	High (>75%)
 ***Cryptosporidium spp***	7 - 30 days	Hypermobility diarrhea, yellow and creamy feces	Depression, tenesmus, anorexia and weight loss	High	Low
 ***Coccidia***	More common in calves older than 3 weeks	Hypermobility diarrhea, loose feces mixed with mucus and blood	Residues of bloody feces in the tail Slight depression without loss of appetite	High	Low

FACTORS PREDISPOSING TO THE DISEASE

POOR PHYSICAL CONDITION OF THE MOTHER DURING PREGNANCY AND CALVING

Undernutrition, high parasite load, dystocia.

DEFICIENT VACCINATION

Inadequate vaccination plan for the mother.

IMPROPER SUPPLY OF COLOSTRUM

Administered after 12 hours in insufficient quantity, low in immunoglobulins and/or contaminated.

INADEQUATE FEEDING OF CALVES

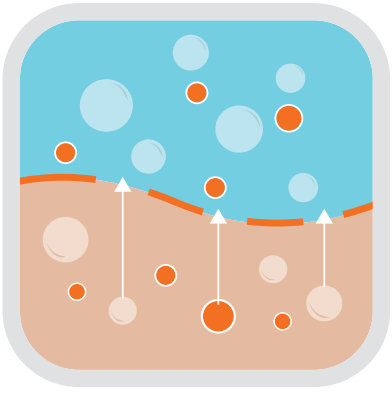
Fermented foods with no vitamins and minerals; overfeeding; abrupt changes in the diet.

UNFAVORABLE ENVIRONMENT

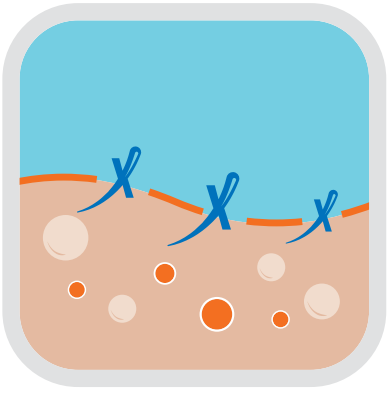
High or low temperatures, inadequate ventilation, excessive humidity, overcrowding, lack of hygiene inside facilities, presence of pathogens and poorly managed calving.

WHAT HAPPENS INSIDE THE CALF'S INTESTINE?

VIRUSES AND BACTERIA STIMULATE THE REACTION OF THE INTESTINAL MUCOSAL CELLS.



THIS PRODUCES A SALT IMBALANCE WHICH CAUSES EXCESS WATER IN THE INTESTINE AND ENDS IN DIARRHEA.



REHYDRATING SOLUTIONS NORMALIZE THE WATER FLOW OF THE INTESTINAL MUCOSAL CELLS.

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DEHYDRATION IN CALVES

Calves can dehydrate in one or two days and lose between 5 and 12% of body water.

As this happens, there appear increasingly significant clinical symptoms such as sunken eyes, low skin elasticity, dry mouth & nose, and cold limbs & ears. These symptoms can cause the animal's death.

Diarrhea in calves also involves the appearance of disease-associated behaviors such as apathy, drowsiness, loss of appetite and thirst, decreased overall activity, changes in the grooming pattern, less interaction with other animals, depression and abdominal pain.

In addition, dehydrated calves are more susceptible to low temperatures and, therefore, frequent tremors can be observed.

PREVENTION AND CONTROL

An effective program to control neonatal diarrhea in calves must be implemented to identify potential risks and correct management-related factors such as the herd's nutrition and hygiene.

TO MINIMIZE THE OCCURRENCE OF THIS DISEASE, THE FOLLOWING SHOULD BE DONE:

- Increase the specific resistance of newborn calves through the vaccination of pregnant females.
- Provide maximum resistance to pregnant cows during the last 60 days of pregnancy through a good nutritional status.
- Reduce the degree of exposure to infectious agents by carrying mothers ready to give birth to paddocks with extended rest, reserved for calving, not recently occupied by other bovines.
- During calving season, avoid those movements of cattle that may affect the intake of colostrum.
- Ensure optimal colostrum supply during the 24 hours following birth.
- Give a good supply of colostrum to the newborn calf, equivalent to at least 5% of its weight, within 6 hours from birth.
- Supply a fluid therapy to the calves in order to replenish fluids and electrolytes, depending on each animal's dehydration degree.
- Separate sick animals in order to prevent both the sickness from being spread and the contamination of drinking troughs and pastures.
- Bury dead animals quickly and in a place away from the herd.
- Perform a laboratory diagnostics to identify circulating pathogens.
- Treat clinical cases with antibiotics according to the results of the antimicrobial susceptibility testing.

TREATMENT

Restoring the calf's normal activity in order to improve the herd's productivity depends upon the application of a timely and efficient treatment based on the knowledge of physiopathology.

First of all, efforts should be made to eliminate the organisms involved in the disease and reduce the chances that other organisms cause a secondary infection while the calf's immune system is weak.

In order to apply a successful treatment, early detection of the clinical signs is needed. To that end, the following factors must be taken into account:

- THE INFECTION SEVERITY
- THE TIME ELAPSED
- THE ORGANISM INVOLVED
- THE ANIMAL'S DEHYDRATION DEGREE

In order to be treated properly, it is important that sick animals are separated from the rest of the animals and moved to clean, warm and dry pens which are protected from inclement weather.

If it is a mild diarrhea, the oral administration of antibiotics, mucosal protective medicines and absorbent medicines may be enough.

Nevertheless, when the infection has passed the intestinal barrier and a septicemia has been declared, the medicines must be administered parenterally.

During the diarrhea initial phase, there is a fast loss of mature enterocytes. Once the infection is established, the bacterial enterotoxins cause the hypersecretion of water & electrolytes from the intestinal cells. In the case of newborn calves, dehydration is almost immediate because the animals lose large amounts of water from the intravascular space to the outside through the intestine. A significant loss of (sodium, potassium and chloride) electrolytes, bicarbonate, immunoglobulins and glucose also takes place and can even produce the death of the animals.

The most important part of the treatment is the restoration of lost fluids & electrolytes. The amount of water required to hydrate a calf is calculated by multiplying its weight by the dehydration percentage. Such amount should be adjusted daily according to the diarrhea severity and the dehydration degree. As a supplement, it is important to administer an oral electrolyte solution containing Na^+, K^+, Cl^+ and HCO_3^- ions, alkalinizing compounds for pH correction (HCO_3^- or bicarbonate equivalents such as citrate, acetate or lactate) and energy sources.

Treated calves increase their overall activity as well as their milk, ration and water consumption during the diarrhea episode. In addition, this health recovery is reflected in productivity improvements, since treated calves increase their growth and reduce their weaning time.

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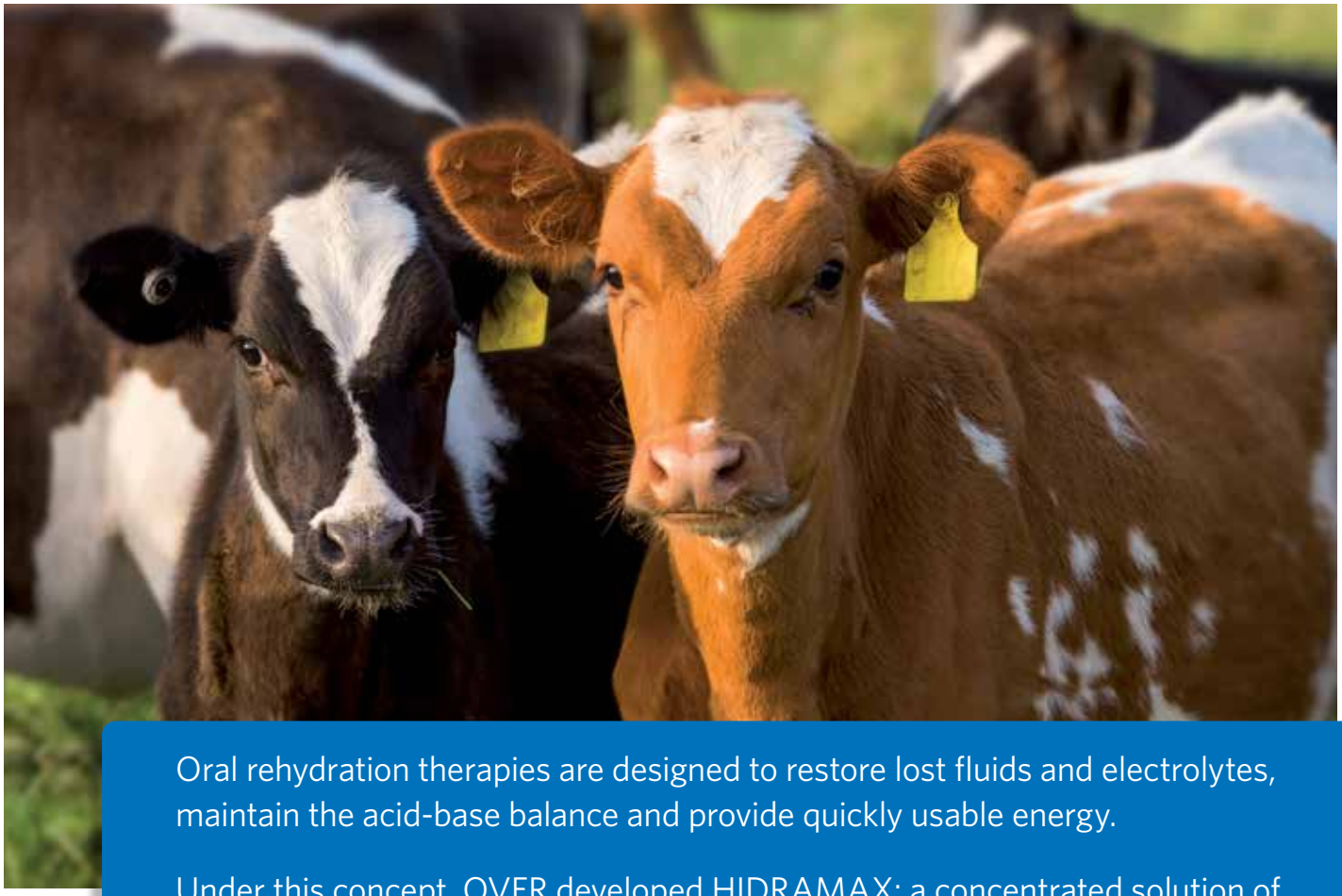

Oral rehydration therapies are designed to restore lost fluids and electrolytes, maintain the acid-base balance and provide quickly usable energy.

Under this concept, OVER developed HIDRAMAX: a concentrated solution of electrolytes and energy to be used orally in calves.

PROTOCOL OF USE IN CALVES

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
HIDRAMAX	HIDRAMAX	HIDRAMAX	HIDRAMAX	HIDRAMAX	HIDRAMAX	HIDRAMAX
BASIC TREATMENT		EXTENDED TREATMENT				

Two daily intakes of HIDRAMAX.

The number of treatment days depends on the animal's dehydration degree.

As a basic therapy, a 2-day treatment is suggested. The treatment can be extended to 7 days.

- ✓ HIDRAMAX quickly replenishes the (sodium, chloride and potassium) electrolytes lost during diarrhea.
- ✓ HIDRAMAX provides quickly usable energy to the calf. It also increases its glucose uptake.
- ✓ HIDRAMAX can be used with milk, milk replacers or water. It is very palatable thanks to its unique flavor with vanilla scent.
- ✓ HIDRAMAX compensates the metabolic acidosis and helps maintain the acid-base balance.
- ✓ HIDRAMAX contains glutamine: an amino acid that accelerates intestinal repair and promotes sodium absorption, thus improving the animal's rehydration.

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ORAL REHYDRATION IN CALVES

DESCRIPTION:
Concentrated solution of electrolytes for calves.

FORMULA:
Every 50 ml, it contains:

Injectable pure glucose	19.5 g
Sodium acetate	18.325 g
Sodium chloride	3.2 g
Potassium chloride	3.2 g
Glutamine	0.215 g
Formulation agents	q.s.

INDICATIONS:
The product is indicated to maintain the electrolyte balance, the acid-base balance and energy levels in breeding calves and young cattle. It is applied orally.

DOSAGE:

1 Dilute the contents of one bottle in 2 liters of milk, milk replacer or water.

2 Administer orally. **HIDRAMAX** has highly palatable flavors that make it easy for the animal to accept it.

WITH VANILLA FLAVOR!

over®
VETERINARY MEDICINE

Alfonsina Storni 680,
(S2447) San Vicente, Pcia. de Santa Fe,
República Argentina.
Phone: + 54 (3492) 470 696 | 086 | 138
Fax: + 54 (3492) 470 196
e-mail: labover@over.com.ar

www.over.com.ar