Stress in young calves: how to overcome this challenge

The first week in the life of a calf, which belongs to the calving phase, is the most critical period. Some 50% of the first year mortality rate occurs during this period, where various stressors strongly influence health.

by Liliana Borges and Melina Bonato, R&D, ICC Brazil.
www.iccbrazil.com

Stress is a response of the animal to a stimulus and when it is associated with negative situations, animal health is affected and reduced performance and productivity are inevitable, especially in the early days of life.

Animals may suffer from different types of stress: psychological (management and new situations) or physical (hunger, thirst, fatigue, injury, or thermal extremes), leading to the onset of disease and a sudden drop in performance.

Establishing immunity

In the first week of life, calves do not have their passive immunity fully established, which makes them susceptible to neonatal diseases commonly found on farms, such as diarrhoea and pneumonia, and this may lead to high mortality rates.

Because of that, nutrition at this stage is key and a decisive factor for successful farming. For example, getting colostrum during the first hours of life provides antibodies to calves. Colostrum has a high concentration of total solids, proteins, and high immunoglobulin levels (IgG, IgA, and IgM), the concentration of which decreases with the lactation period.

Colostrum should be given quickly after birth as immunoglobulins are more efficiently absorbed between 12 and 18 hours.

After 24 hours from birth, the amount that is absorbed by the calf is reduced.

Rumen development

During breastfeeding, solid foods are gradually introduced and are crucial for rumen development, leading the animal to transition from a mono-gastric to a ruminant (polygastric).

Because of this, food management during weaning has a big impact on avoiding stress, digestive problems, and food rejection.

On the market many natural additives can be found which are capable of providing compounds that stimulate the body to respond more efficiently to stressful stimuli imposed in the field. Many of these additives are used to provide immunity support and prevent pathogen contamination, offering an improvement to overall health.

Yeasts are widely used in ruminant nutrition, showing several proven benefits. RumenYeast is a pure Saccharomyces cerevisiae yeast subjected to autolysis, where its internal cellular content is overflown, still containing soluble solids by fermentation of the medium.

The final product consists of vitamins, peptides, free amino acids, and functional carbohydrates, such as MOS and β-glucans.

Commercial tests

Two tests were performed on a commercial farm in Russia with Dutch calves.

The first test was performed with calves from birth to 10 days. Fifty calves were divided into two groups, a control group and a group supplemented with RumenYeast (10g/animal/day). These animals were fed colostrum and milk.

Intestinal disease incidence and survival rates up to 10 days of age, as well as bodyweight gain from birth to two months of age, were analysed.

As shown in Fig. 1, it was observed that RumenYeast supplementation provided a 65% reduction in the

Continued on page 8

Table 1. Bodyweight gain of calves at two months fed with RumenYeast from birth to 10 days old.

Parameters	Treatments	
	Control	RumenYeast
Bodyweight (kg)		
Test onset (birth weight)	38.4±0.38	38.9±1.1
One month old	51.8±0.38	55.6±0.4
Two months old	63.3±0.26	70.2±0.32
Daily average weight gain (g)		
From birth to one month old	430±6	538±21.1
One to two months old	378±14.4	484±22.4

Table 2. Bodyweight gain of calves at two months fed with RumenYeast from 10 days old.

Parameters	Treatments	
	Control	RumenYeast
Bodyweight (kg)		
Start of the test (10 days old)	40.7±1.5	40.4±2.1
One month old	50.4±0.44	53.6±0.68
Two months old	60.6±0.76	68.8±0.66
Daily average weight gain (g)		
One to two months old	340±15.7	507.4±30

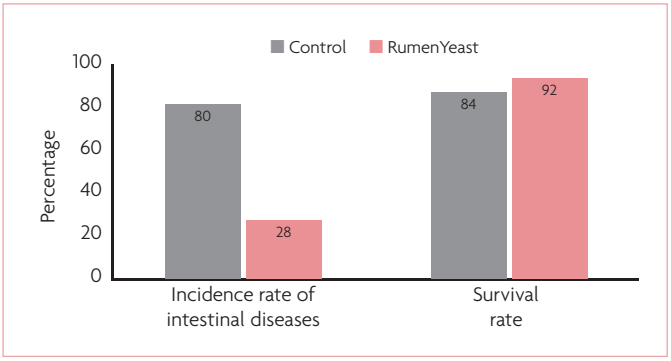

Fig. 1. The incidence rate of intestinal diseases and survival in RumenYeast calves fed from birth to 10 days old.

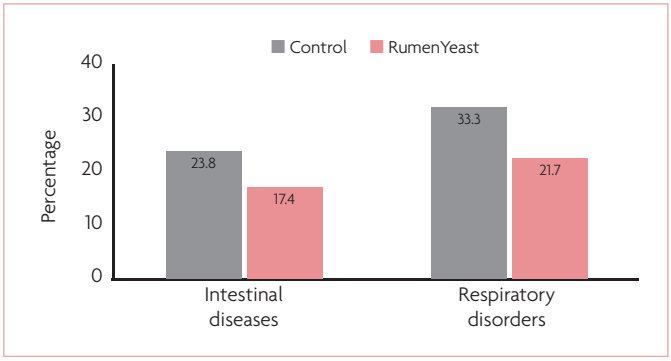

Fig. 2. Incidence rate of intestinal diseases and respiratory disorders (%) during milk intake period (up to the first two months of age).

Continued from page 7
incidence rate of intestinal diseases and a 50% reduction in the mortality rate.

RumenYeast supplementation from birth to 10 days of age provided increased bodyweight gain, with 7.3% more in the first month and 10.9% in the second month of age.

It also led to a daily weight gain greater than the control group – 25% from birth to the first month and 28% from the first to the second month of age (Table 1).

Second test

The second test was performed with calves from 10-30 days of age, which is the transition period from liquid to a solid diet.

Fifty calves were divided into two groups, a control group and a group supplemented with RumenYeast (10g/animal/day).

The animals were infected with rotavirus enteritis but were healed before the start of the test.

The parameters analysed were the incidence rate of intestinal diseases, respiratory disorders and days of disease duration up to two months of age, as well as weight gain from 10 days to two months of age.

Supplementation with RumenYeast reduced the incidence of intestinal diseases by 27% and the incidence of respiratory disorders by 35% (Fig. 2). It also reduced the duration of intestinal and respiratory diseases, and diarrhoea (Fig. 3).

RumenYeast provided a higher bodyweight than the control group by 6.3% in the first month and 13.5% in the second month.

It also led to an average daily gain improvement of 49% compared to the control group (Table 2).

Results

The results of these tests confirm that RumenYeast was effective in reducing stress in the first days of life, which is considered the most critical phase, offering better overall health and, consequently, better performance to these animals.

Ensuring adequate management, nutrition, and health during the first days of life for calves is key to performance, as we can see from the results shown.

Therefore, providing natural additives that offer adequate support to calves so they can better respond to the challenges and stressful stimuli imposed by the field is of the utmost importance in intensive farming systems.

RumenYeast, in addition to being a source of vitamins, peptides, and free amino acids, provides functional carbohydrates such as MOS and β-glucans, conferring great benefits to the nutrition and health of ruminants. ■

References are available from the authors on request

Fig. 3. Incidence rate of intestinal diseases (days) and respiratory disorders (days) during the milk intake period (up to the first two months of age).