

Improving calf vitality – what can we do?

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On dairy farms, one often sees calves with a visible lack of vitality. Poor drinkers, slow rumen development, high medicine and veterinary costs and high mortality rates are facts that are acknowledged by many dairy farmers and that apply to these kinds of problem calves.

Apart from infectious diseases, zootechnical factors can also play a role, as do the amounts of liquid, vitamins, minerals and trace elements given to the calf. This article underlines these non-infectious causes and how to improve a calf's vitality.

Symptoms and treatment

Non-vital calves can often be identified straight after birth. Within two hours after a normal birth, a vital calf is able to take in colostrum via a teat. Less lively calves, however, totally or partially refuse this prime necessity of life, which is so essential to building up resistance. It is often difficult to get these kinds of calves to accept subsequent feeds as well.

The possible causes of this could be:

- A viral or bacterial disorder, a notorious example of which is postnatal E. coli infection.
- A haemoglobin deficiency. Haemoglobin (Hb) is the red blood protein containing iron responsible for transporting oxygen in the blood. Haemoglobin performs an essential function in the blood stream by supply-

Fig. 1. Haemoglobin level of four week old calves (n = 9393).

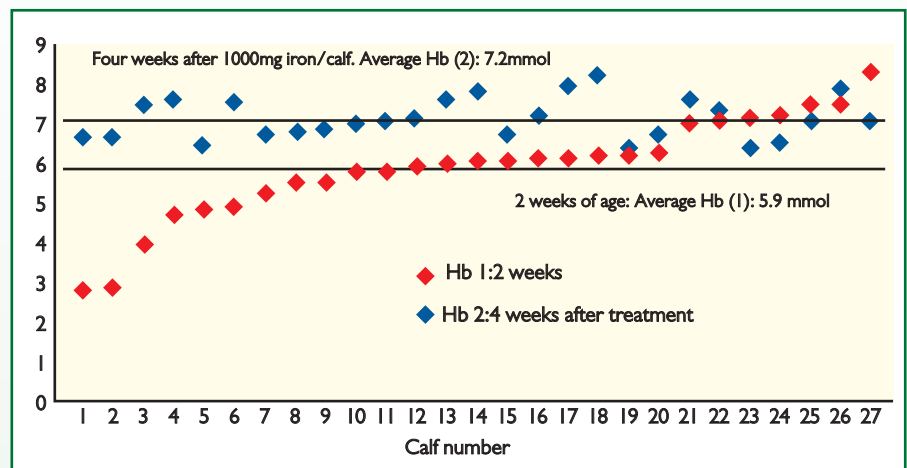
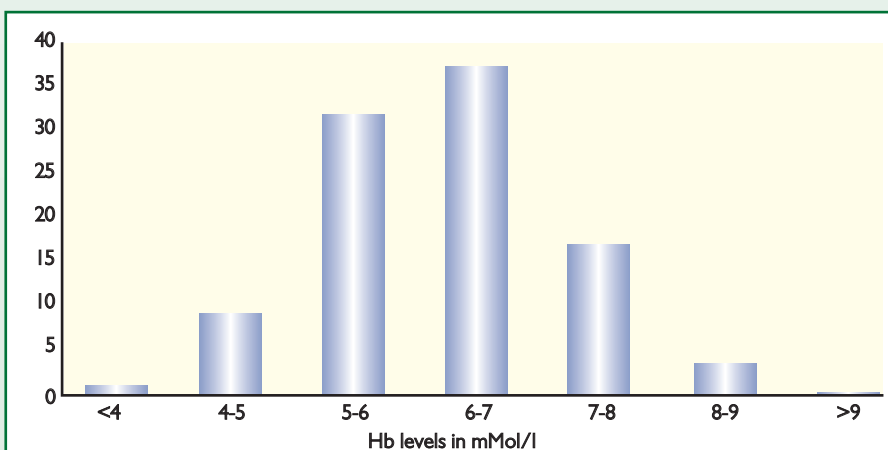


Fig. 2. Development of Hb level after oral treatment.

ing oxygen to the tissues in the body.

Denkavit conduct blood analyses in a large number of young calves bought for veal production.

Results show that over 40% of the calves suffer from a haemoglobin deficiency when they arrived at the pen.

Calves suffering from HG deficiency usually show pallid mucous membranes. These animals are often weak, have poor appetite and retarded growth, show a dull coat and seem more susceptible to all kinds of infectious diseases.

Normally, the Hb level in calves falls in the first few weeks after birth, a process in which the transition from foetal to adult

haemoglobin plays a role. Embryonic red blood cells do not live as long as the erythrocytes after birth.

Newborn calves are inherently low in iron, which is required in large quantities to ensure rapid growth. It is, therefore, vital to give them extra iron to prevent an excessive fall in the Hb level. Research has shown that influencing the Hb level of calves via the feed given to cows in the final stages of pregnancy does not have the desired effect.

Although genetic developments have led to an enormous increase in the production of kilograms of milk, fat and protein, the levels of vitamins, minerals and trace elements have remained the same. The iron content in cow's milk is extremely low. A good milk replacer has added iron which can prevent an overly rapid fall in the Hb level in young calves. However, when the initial level in the calf is already too low, additional iron should be administered orally and/or via an injection.

Dairy farmers are, therefore, advised to give calves extra iron as a standard part of their regimen in the first 10 days of life. Experience in research and in the field has shown that the calf's appetite improves and it becomes more active shortly after treatment with extra iron. Fig. 2 shows the effect of treatment with 1,000mg of extra iron with vitamin B12 on the haemoglobin level measured after four weeks.

- A low level of vitamin E in the blood.

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Blood analysis of calves aged two to four weeks show that extremely low vitamin E levels occur on a regular basis. Measured values of 2-3 μ mol per litre increase the risk of a negative impact on the health and the immune system. A brief course of treatment with high doses of vitamin E rapidly raises the blood level of vitamin E to 6-7 μ mol/per litre.

On farms where animals are weaned early, it is of particular importance to administer enough vitamin E to prevent an excessively rapid fall in vitamin E levels in the blood, even after the milk period. For example, this could be added to the feed concentrate.

Other calves lose their appetite only a few days after birth. Apart from the causes referred to above, the following points may also play a role:

- It is in this period that deficient colostrum intake has its impact. Within two hours after birth, a calf should drink two litres of high quality colostrum. This is essential, not only to ensure the build up of the immune system, but also to guarantee a supply of energy for the young animal.

Immediately after birth, the calf has a negative energy balance. It will lose a lot of body heat, particularly in cold periods. A quick jolt of energy is vital. Repeating the adminis-



Rumen drinking. The result after cleaning the rumen.

tration of first (acidulated) colostrum no later than eight hours after the initial intake can help prevent a lot of problems later on.

- Dirty, undried navel. If a calf is born in a dirty, damp calving stall and its navel is not disinfected, germs can enter through the open navel and penetrate a variety of organs. The risks of infection of the navel, peritoneum, liver and joints when the calf grows older are well documented. A less well known fact is that the health of calves with a wet, mildly infected navel begins to

deteriorate a few days after birth and they start to drink less. Disinfecting the navel straight after birth can prevent this from happening.

- Milk in the rumen. Most rearing calves are fed from a bucket without a teat. It is essential for the milk to be at the right temperature (40-42°C) to ensure that the oesophageal groove reflex works correctly, so that the milk goes directly to the abomasum.

In practice, farmers tend to be less critical with the milk temperature, so that some of the milk gets into the rumen. The same thing happens when calves are given too much milk in one go. After all, the abomasum can only hold about 5% of the body weight. Milk in the rumen will ferment and rot. The calf will feel full and stop drinking properly.

This harmful fermentation process seriously retards the development of both the rumen papillae and the muscle wall in the rumen. This, in turn, has a negative impact on rumen movement and dry matter intake, as well as on the rest of the digestive system. After a while, aberrant fat digestion will result in a dull coat. When these kind of calves are weaned, the vitamin B synthesis in the rumen is far from adequate. A nervous disorder due to a vitamin B1 deficiency after weaning is then hardly surprising.

- Lack of liquid. Drinking water is a prime necessity of life. Newborn calves require about 10% of their body weight in liquid, so heifer calves weighing 40kg need four litres of water. If calves are only given 1.5 litres of milk twice a day without additional cold water, they soon suffer from a liquid deficiency of over 30% a day.

Use of an automatic water dispenser can also cause a liquid deficiency as a result of an inadequate number of programmed litres or a farmer's failure to keep a close eye on the high risk animals.

A calf that 'only' drinks a litre less for three days is quickly down by 20% on its liquid requirement, and if transitional diarrhoea occurs, this water requirement rises by an extra 2.5 to 5% a day.

A daily portion of water with electrolytes and rapidly absorbable carbohydrates prevents liquid deficiency and dehydration. Calves are happy to take this water and they make a far more vital impression as a result. Therefore, Denkvit developed Hydrofort and Vitalcure. ■

Conclusion

Calves that are sluggish, drink their milk poorly and are susceptible to a range of disorders for a short or long period after birth, may be suffering from an infectious disease. However, this syndrome is caused far more often by ineffective calf management, which may be associated with a lack of Hb or vitamin E. The symptoms may also be a result of incorrect colostrum management, a liquid deficiency or the wrong milk administration regimen.

Giving calves the right mixture of vitamins, minerals and trace elements in their milk in combination with additional liquid between normal feeds often results in a surprising improvement. The correct application of the feeding system is essential to maintain vitality in calves.