

Preventative programme to protect the health of newborn calves

A recent ADAS study evidenced diarrhoea/scour as the most common disease in young unweaned calves accounting for 50% of all calf deaths. Diarrhoea may be caused by bacterial, viral and protozoal infections; and quite often it may be a result of mixed infections.

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Other causative factors of calf scour can be inappropriate housing, feeding or stress which increases the animal's susceptibility to infection.

Antibiotic use and resistance

Antibiotic use for bacterial infectious diarrhoea can be very effective, provided a causative micro-organism has been identified and an appropriate antibiotic prescribed to treat it. Antibiotics should be reserved for treatment purposes and not for prophylactic or metaphylactic therapy. Due to the unwarranted and irresponsible use of antibiotics, the natural process of antibiotic resistance has been accelerated.

As a result, there has been a con-

certed effort to reduce the use of antibiotics and antimicrobials within the agricultural industry. Antibiotic use has positively reduced in recent years but greater reductions must be sought. Consequently, non-antibiotic alternatives and good management practices will be at the forefront of achieving such targets, whilst maintaining animal health.

Provita Protect

Provita Protect is the first probiotic in the UK to obtain Marketing Authorisation. To obtain this Veterinary Licence it has undergone many years of rigorous testing to guarantee efficacy, quality, safety and ease of application for the stockman.

Provita Protect should become part of the normal routine for the prevention of scours in young pre-ruminant calves. This preventative programme reduces the cost of subsequent rehydration and antibiotics treatment, time and setbacks to animal health and performance.

Why use a probiotic?

Animals are born with a sterile gut and digestive tract. Colonising the gut with beneficial bacteria as soon as possible after birth will automatically reduce the incidence of infection by pathogens common to farm

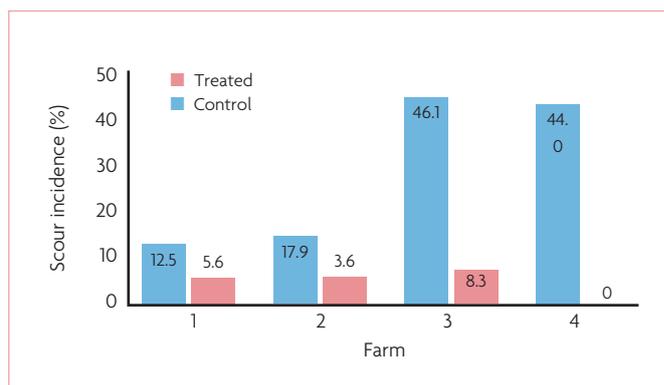


Fig. 1. Percentage of calves with scours.

animals. As animals develop, the digestive tract will naturally encounter populations of both beneficial lactic acid bacteria and potential disease-causing bacteria.

The key to maintaining the health of animals is to ensure a balance in favour of a healthy gut flora. Should a healthy animal suffer stress, the chemical balance of its digestive tract can change, resulting in conditions within the gut which favour pathogens. At this point, an animal becomes susceptible to nutritional and infectious scours and appetite loss, resulting in a rapid loss of body condition and animal performance.

The benefits of using probiotics

Considerable independent trial work has been carried out on the benefits associated with probiotic use in recent years and the rationale behind using probiotics is summarised below:

- **Competitive exclusion in the digestive tract:** Providing high levels of beneficial bacteria interferes with the attachment of enteric pathogens, such as E. coli, to the gut wall i.e. the objective is to crowd out the pathogens and prevent their establishment within the gut.
- **Antimicrobial effects:** Probiotics are known to produce lactic acid and bacteriocins which

have shown an inhibitory effect on some pathogens.

- **Lactic acid production:** As the pH in the gut is reduced through the production of lactic acid, the environmental conditions within the intestine become unfavourable for some pathogens. The more acidic environment encourages increased enzymatic activity which improves digestion.

- **Immune stimulation:** Probiotics may stimulate the body's immune response system against disease and although not yet fully proven, it is thought that anti-toxins are also produced by lactobacilli.

- A probiotic does not build up bacterial resistance or cause side effects.

When to use Provita Protect

- **At birth:** Use as soon as possible after birth to establish a beneficial population of micro-organisms in the digestive tract.

- **Bought-in calves:** Administer to bought-in calves on arrival at the farm. Bought-in calves are subjected to a great deal of stress, including separation from the dam, travel, encountering other calves from a variety of sources and changes in diet.

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Table 1. Effects of Provita Protect on scour incidence.

Farm	Calf source	Breed cross	Sex	Calves with scours (%)	
				Control	Protect
1	Market	Continental x Friesian Hereford x Friesian	Heifers Bull calves	12.5	5.6
2	Market	Limousin x Friesian Hereford x Friesian	Bull calves	17.9	3.6
3	Market	Aberdeen Angus x Holstein	Bull calves	46.1	8.3
4	Home bred	Holstein	Heifers	44.0	0.0

All improvements were significant at p<0.05

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● **Stress:**

Use at times of stress including dietary and housing changes, grouping calves and moving them into rearing accommodation, introduction of calves to milk substitute, before and after transportation and other potential causes of appetite loss.

Newborn calves

Provita Protect contains three specially selected lactic acid forming bacterial strains: Lactobacillus acidophilus strains and an Enterococcus faecium strain. These bacteria are able to survive and multiply within the intestine, providing protection for the animal against less desirable bacteria. By supplying high intakes of these beneficial bacteria, the intestinal well-being of the animal is established and maintained, thereby minimising the incidence of scours in growing calves.

Trial data

Provita Protect has been shown, in independent field trials, to help calves up to the age of 12 weeks resist pathogenic infection, thus

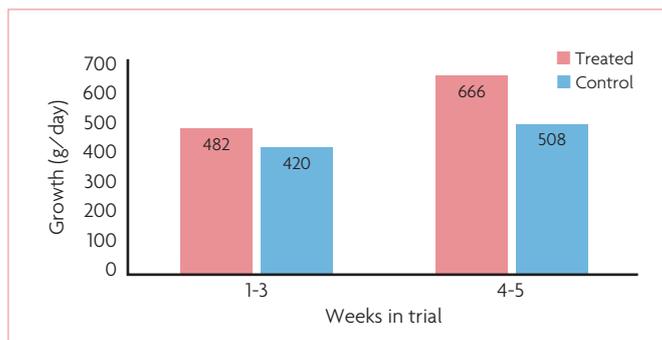


Fig. 2. Growth rates.

avoiding the enteric upsets that cause diarrhoea.

Treatment with Provita Protect has shown a significant reduction in the incidence of scouring in calves, resulting in improved growth rates and body condition.

● Provita Protect provided substantial protection against nutritional scours under a variety of management systems, regardless of whether calves were bucket or teat fed.

● Both home-bred dairy replacements and bought-in calves benefited following treatment with Provita Protect.

● Body condition at five weeks of age showed significant improvement in calves treated with Provita

Protect. Treated calves showed a 7.5% improvement in body condition (significant at $P < 0.05$).

Incidence of scour

At three weeks of age, independent trials carried out by RDT Services Ltd, involving over 200 calves on four different farms, produced the results as shown in Table 1 and Fig. 1.

Growth rate

Provita Protect treated calves encountered a lower incidence of diarrhoea than the untreated calves. By maintaining the health status

among these calves, the setbacks in growth and losses in weight common in scouring calves was prevented. Fig. 2 highlights the improved performance with measurement of growth rates in young calves.

Between weeks 1-3, when the calves were on a restricted milk based diet, the Provita Protect treated calves displayed a 14.8% higher growth rate than the untreated calves. During weeks 4-5 this advantage improved to 31.0% over the untreated animals when an ad-lib diet of concentrates and milk was available.

ADAS trial

In independent trials carried out by ADAS the three strains of lactic acid forming bacteria within Provita Protect were shown, in vitro, to be inhibitory to eight pathogens common to farm animals.

The pathogens tested were: E. coli strains K88 and K99; Salmonella types typhimurium, dublin and enteritidis; Staphylococcus aureus, Clostridium perfringens and Listeria monocytogenes ■

References are available from the author on request