

## ***Cryptosporidium parvum* in Dairy Calves**

Cryptosporidium is a type of parasite known as a protozoa, that is transmitted by the faecal-oral route. Its life cycle is very complicated involving different life stages. It is capable of infecting cattle, sheep, horses and rodents. It commonly occurs in calves aged between 4 days and 4 weeks. The parasite affects the small intestine and the large intestine and causes damage to the mucosal surface. In calves it affects them in the following ways:

- Reduces the ability to absorb nutrients
- Causes fermentation of nutrients in the gut
- Causes osmotic diarrhoea

### **Sources of infection**

The initial cause of the outbreak is often unknown:

- From adult animals (these animals may not show signs of disease, however they can still shed the parasite into the environment. Studies have shown pregnant cows can increase the number of parasites excreted in their faeces).
- From calves that shed the parasite without showing signs
- From other animals including horses, sheep, pets and rodents

### ***Risk Factors***

- Calves that are sick due to other gastrointestinal parasites (such as coronavirus and rotavirus)
- Calves that don't get the adequate amount of good quality colostrum in the first 24 hrs of life
- Calves in the age group of 4 days to 4 weeks

### ***Parasite risk factors***

- Can remain in a cool, damp or wet environment for up to 18 months
- Resistant to most disinfectant
- Survives between the temperatures of 0 to 65 degrees
- Can be transmitted by other animals, other calves and by people (on their clothes, hands etc)

### ***The signs that are seen in calves***

- Moderate diarrhoea that persists regardless of any treatment given
- Reduced feed intake, lethargy, poor weight gain/ weight loss
- Severe dehydration, weakness and collapse is rare
- Spreads rapidly through the seasons calves

The diarrhoea is often self-limiting (lasting 6 to 10 days) and rarely causes death in calves. Deaths generally occur in calves that are suffering from concurrent diseases.

### ***Treatment***

Treatment is supportive and consists of fluid therapy to prevent dehydration. It is important to keep feeding milk to the calves when they are sick. It is recommended to feed calves milk feeds twice a day with an electrolyte feed in the middle of the day, to keep the calves hydrated.

Current commonly used antibiotics are ineffective against cryptosporidium, however they may be indicated to treat for possible secondary bacterial infections.

The relatively new drug called Halocur (active ingredient Halofuginone) is used as a preventative, however it has limited efficacy in calves already showing clinical signs (Diarrhoea).

### ***What to do in an outbreak***

- Try and calve down the cows in a clean environment to reduce faecal contamination of the calf
- Calves should receive 3L of good quality colostrum in the first 2-4 hours of life
- Halocur can be given to the new born calves coming into the calf rearing system. It requires treating **ALL** calves for the first 7 days of life. The cost of treating each calf is between \$13- \$15. The drug is marketed to reduce the severity of the disease in the calves and also reduces the number of parasites shed by calves.
- Isolation of sick calves, until several days after recovery
- Minimise rodent and pet contact with the calves grain and milk supply
- Don't over crowd pens, provide appropriate housing facilities\*, and provide adequate nutrition and water.
- Feed sick calves last to reduce transmission to healthy calves
- "All-in-All-out" type of calving system, with thorough cleaning and disinfection and several weeks drying between batches of calves.

\*It is recommended individual housing arrangements such as huts for each calf, however this is not always possible and not commonly used in Australia.

### ***Disinfectants***

*Cryptosporidium* is particularly resistant to many disinfectants including bleach.

Recommended disinfectants include:

- 6% Hydrogen peroxide
- 5% Ammonium solution
- 10% Formaldehyde (Although we do not recommend this as it is carcinogenic)
- Mixture of ammonium hydroxide and windshield washer fluid containing 37% methanol

Prior to disinfection, the solid surfaces should be cleaned thoroughly with a detergent to remove solid debris.

There is currently no effective measure to disinfect soil surfaces, so we are relying on adequate time between calf batches, drying and sunlight to reduce the number of parasites present.

### ***OH&S Implications***

*Cryptosporidium parvum* is a parasite that can be spread to humans. The people most at risk are those that are immuno-compromised i.e. people who are HIV positive and those who have AIDS, and children. Good hygiene practices need to be undertaken and those people that are at risk should not be exposed to calves.