

TECHNICAL BRIEF

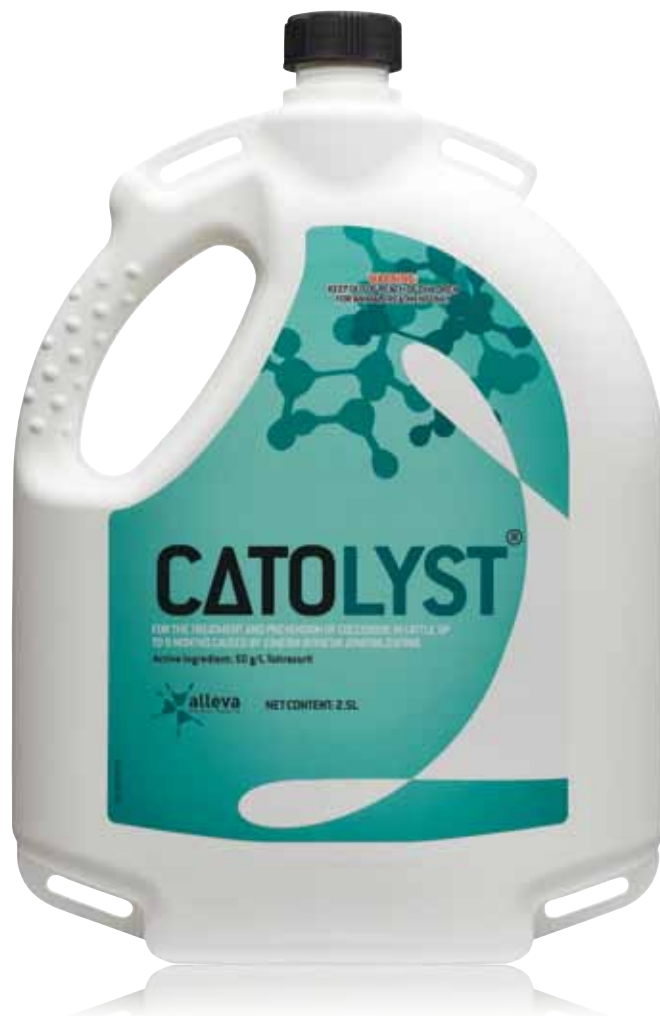
CATOLYST[®]

FOR THE TREATMENT AND PREVENTION OF COCCIDIOSIS IN CATTLE UP TO 9 MONTHS CAUSED BY *EIMERIA BOVIS* OR *EIMERIA ZUERNII*.

Active Ingredients: Toltrazuril (50g/L)

Some facts about coccidiosis

- Coccidiosis is a disease of young calves aged between around 4 weeks to 9 months
- It is contracted when calves ingest coccidial oocysts (the egg stage of the parasite) from an environment contaminated by older cattle or other infected calves
- In ideal conditions the oocysts can survive in faeces and soil for several years
- Outbreaks are often seen in calves around periods of stress such as weaning, moving out of sheds and travel to grazing.
- Coccidiosis may make animals susceptible to secondary bacterial infections and other conditions such as endoparasite infection
- 95% of cases are sub-clinical(1). This means that while animals may not show symptoms such as diarrhoea, they may still have reduced growth and weight gain
- Once clinical signs are seen the intestinal tract of the animal will already have been damaged. This means even with treatment infected animals may never fully recover.



Spotting the signs

Symptoms of coccidiosis include:

- Watery diarrhoea (often contaminated with blood and mucus)
- Straining/raised tails during defecation
- Abdominal pain (kicking at the gut)

- Rapid loss of condition characterised by a rough coat and “pot-bellied” appearance
- Dehydration
- Lack of appetite
- Death of some animals – mainly due to electrolyte loss and dehydration caused by the diarrhoea



Fig 1: Blood stained or dysenteric faeces is often the first sign of coccidiosis (Image courtesy NZVA*)



Fig 2: Animals with coccidiosis often appear with cramping and straining during the passage of faeces and at other times (Image courtesy NZVA*)



Fig 3: Faecal staining of the tail, perineum, hind quarters and hocks is a strong indication of the presence of coccidiosis (Image courtesy NZVA*)

Coccidia lifecycle:

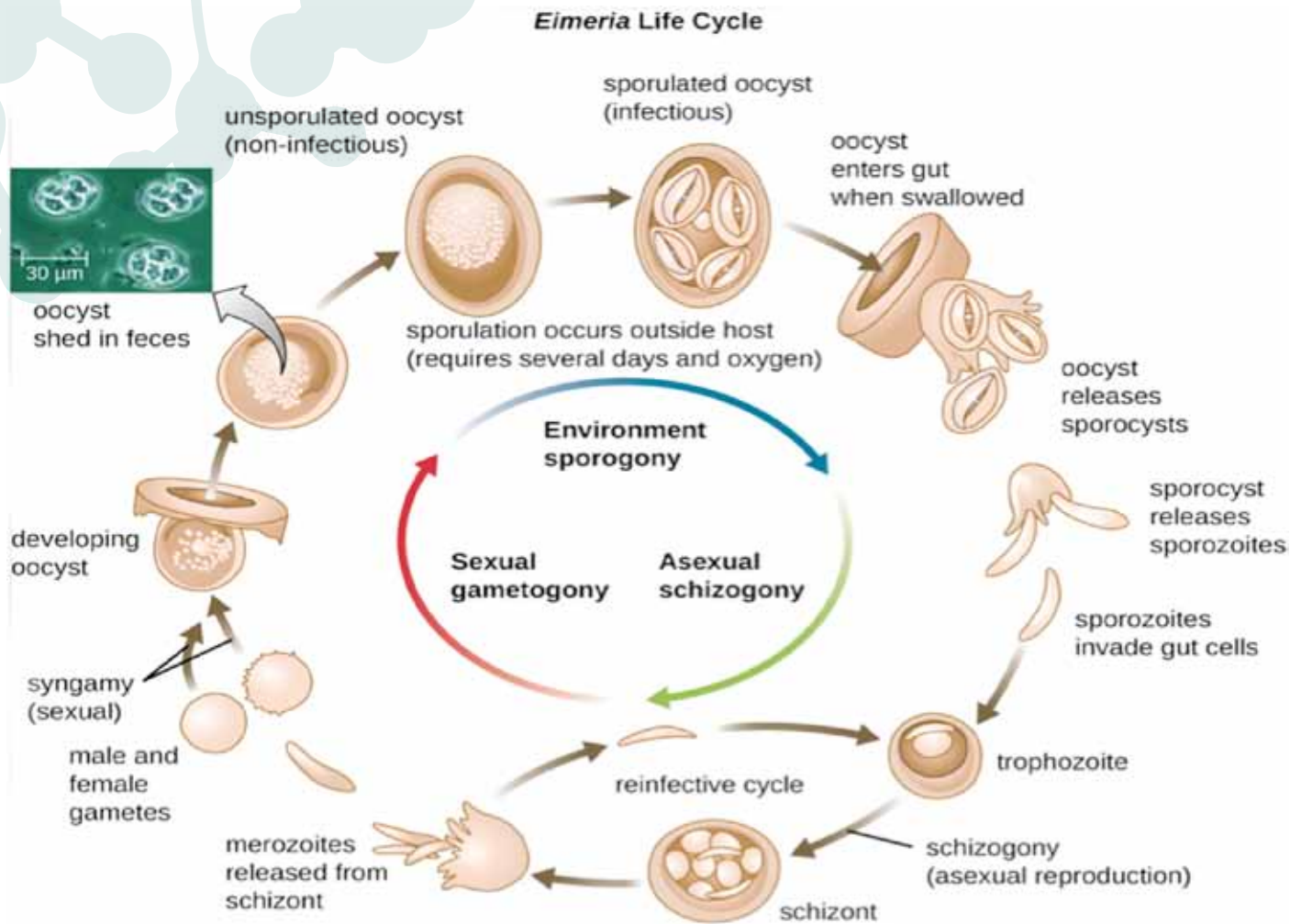


Fig 4: Coccidiosis (Eimeria) Lifecycle (USDA)

Coccidia have a very complex lifecycle. Unsporulated oocysts are released into the faeces. Over a period of days (when conditions are favourable) the oocysts develop into four sporoblasts, each of which then further divides, producing two infective sporozoites (within a sporocyst).

Following ingestion by the calf the sporozoites must leave the confines of the oocyst and sporocyst before infection can proceed. Movement of the muscles of the upper gastrointestinal tract and the digestive enzymes help to make the walls of the oocyst and sporocysts more permeable until eventually they collapse releasing the sporozoites. Once free within the intestine, the sporozoite must then penetrate a cell within the wall of the intestine from where it can initiate the first of two stages of asexual reproduction.

Each sporozoite multiplies to produce a hundred or more merozoites. The second generation merozoites rupture the host cell and invade fresh areas of the gut wall and repeat the asexual reproduction cycle. Within 10-14 days, the parasites will have multiplied by up to a million-fold. By this stage of infection, parts of the gut wall are packed with parasites which then develop into male and female sex cells, or gametes. The female sex cells are fertilised and secrete an oocyst wall around themselves, then drop off the gut wall to be excreted

in the faeces, completing the cycle. Through this reproduction cycle a single sporulated oocyst has the potential to turn into literally millions of oocysts.

The life cycle from ingestion to patency (when oocysts can be detected in faeces) takes 15-17 days for *E. zuernii* and 15-20 days for *E. bovis*. Oocyst production during infection with a single species lasts for 5-12 days, but may be prolonged in multiple species infections.

Given the sheer number of merozoites produced by each oocyst tremendous damage can be done to the intestinal wall. It is this damage which causes the clinical signs of disease.

How prevalent is Coccidiosis in NZ?

Cattle routinely ingest thousands of oocysts each day through faeces, contaminated feed and water, or by grooming their own coat or licking that of another animal. Most cattle are infected with coccidia during their lives(2). Studies of bovine faecal samples in New Zealand have identified the presence of at least 10 species of *Eimeria* (3), with *E. bovis* and *E. zuernii* comprising the majority. These are the most pathogenic of the bovine coccidia, with *E. zuernii* being associated with both acute and chronic types of disease(4).

Coccidiosis treatment and prevention regime

The first line of defence against coccidiosis is good animal management and hygiene. Important steps that can be taken to prevent infection include(1):

- Reducing stocking density
- Moving feed and water troughs regularly
- Preventing faecal contamination of feed and water troughs, by raising or covering
- Increasing (and regularly changing) the bedding to reduce contamination
- Cleaning and disinfecting buildings with products that kill oocysts

When coccidiosis infected animals are identified:

- Isolate affected animals and treat to control the dysentery
- Clean buildings with steam or water blasting and spraying with a product that kills oocysts.
- Move treated animals to uncontaminated areas

CATOLYST® should be used to treat animals showing signs of infection as well those yet to show symptoms. Early treatment of calves will reduce the impact of an outbreak by preventing further intestinal damage in affected animals and preventing non-affected animals from developing diarrhoea.

Preventative treatment

Detecting coccidiosis before symptoms become apparent can be difficult. Apparently healthy animals can pass more than 10 million oocysts per gram of faeces. An animal that is dying of coccidiosis may also die before any oocysts are shed(5). It is therefore better to prevent infection rather than wait for symptoms to appear.

To obtain maximum benefit on farms with a history of coccidiosis, CATOLYST® needs to be given approximately 1 week prior to the expected onset of clinical signs. Treatment of newly weaned calves at the time of meal withdrawal will control coccidiosis associated with weaning.

Be extra vigilant if:

- The property has had problems in previous years
- Contract grazing is being used
- Calves are being raised or grazed in the same area year after year,
- Meal fed calves are being moved on to areas where large numbers of calves have previously grazed and feeding meal is not being continued.

How does CATOLYST® work?

CATOLYST® contains Toltrazuril, a broad spectrum anticoccidial and antiprotozoal drug. It works by interfering with the division of the protozoal nucleus,

the activity of the mitochondria and damages the wall forming bodies in the microgametes. Unlike other coccidial agents such as those used in meal feeds, CATOLYST® is active against all intracellular stages of coccidia.

Because it is effective against both asexual and sexual stages of coccidia it is a true single dose treatment. It also provides sufficient persistence in calves that it can help bridge the period when maternal immunity decreases and before age-related acquired immunity develops(6).

What are the benefits of preventative treatment with CATOLYST®?

Numerous studies have provided evidence that toltrazuril can reduce oocyst output, reduce the number of calves developing diarrhoea and provide weight gains when compared to untreated calves.

New Zealand studies(7) have similarly shown that treatment of calves with toltrazuril at weaning is highly effective at reducing the output of oocysts in faeces and that treatment also resulted in weight gains. Weight gains occurred in animals previously treated with meal containing a coccidiostat and in animals with low oocyst counts prior to treatment.

General Information

Dose Rate: 3ml/10kg (500mcg/kg toltrazuril)

With-holding period: Cattle: meat – 56 days.

Active ingredients: 50g/L toltrazuril

Administration method: Oral

Storage: Store below 25°C

Pack Sizes: 1L, 2.5L and 5L carry packs.

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Alleva Animal Health Limited.

CATOLYST is registered pursuant to the ACVM Act, No. A11469.
EPA Approval No. HSR002038

*Image courtesy of and extracted from: Parkinson TJ, Vermunt JJ, Malmo J (2010). *Diseases of Cattle in Australasia: A Comprehensive Textbook*. New Zealand Veterinary Association Foundation for Continuing Education, Wellington, NZ

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