

Coccidiosis in Cattle

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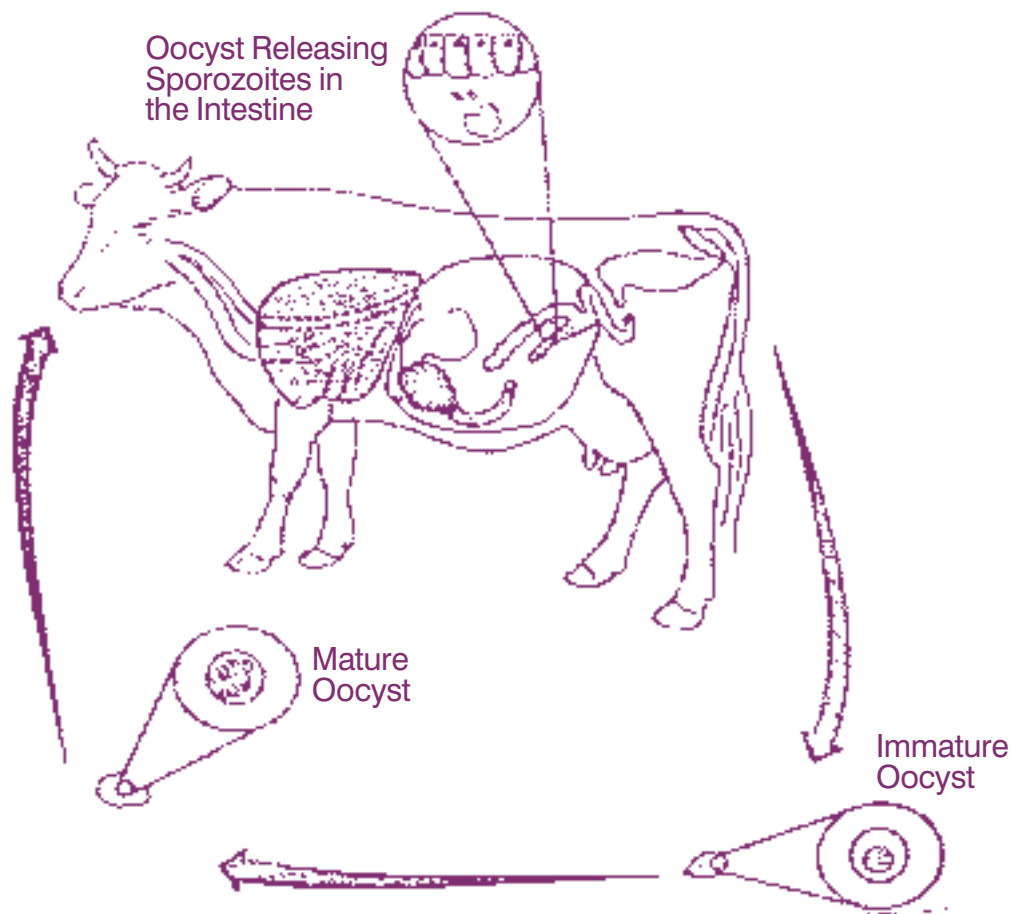
Take Home Message

- ✓ At least nine species of coccidia occur in Alberta cattle but only two, *Eimeria zuernii* and *Eimeria bovis* cause disease (coccidiosis).
- ✓ Most cases of coccidiosis occur during the winter months, but outbreaks may occur sporadically throughout the year.
- ✓ Bovine coccidiosis occurs most frequently in calves six-to-twelve months of age.
- ✓ Calves become infected when placed on pastures or drylots contaminated by older cattle or other infected calves.
- ✓ Mature cattle may become infected when they are taken off pasture and crowded into feedlots or barns.

Life Cycle of Coccidia

Bovine coccidia develop both within the host animal as well as outside. The developmental stages in cattle (**Figure 1**) produce a microscopic egg (called an oocyst) which passes out in the manure. Under proper conditions of temperature, moisture and oxygen, the oocyst develops within three-to-seven days to form a sporulated oocyst infective to other cattle. Each oocyst contains eight bodies (called sporozoites). A sporozoite is capable of entering a cell in the cows' intestine after the oocyst is eaten. Sporozoites divide many times to produce numerous offspring. The numbers of offspring produced depend on the species of coccidia involved. Each offspring in turn may enter another cell repeating the cycle several times, destroying many intestinal cells. This developmental phase lasts for approximately 14 to 16 days and is followed by a phase that produces male and female sex cells. The male fertilizes the female to produce an oocyst that ruptures from the intestinal cell. Millions of oocysts pass in the manure of an infected animal beginning 19-21 days following initial infection.

Figure 1. Life cycle of coccidia in cattle.



Clinical Signs of Coccidiosis

The severity of the disease depends on several factors including the number of oocysts eaten, the species of coccidia present, and the age and condition of the animal. Cattle infected with a few oocysts are only mildly affected. Under crowded conditions large numbers of oocysts are ingested causing severe or fatal infections, particularly in calves.

Coccidiosis is accompanied by diarrhea varying in severity from watery manure to one containing blood (**Table 1**). Blood may appear in the manure after the second or third day of diarrhea. Dehydration, weight loss, depression, loss of appetite and occasionally death may occur. Less severe infections may nevertheless affect the growth and health of an animal. Calves with a light infection usually show no signs of disease, but shed oocysts that accumulate on pastures and yards or in barns so that severe coccidiosis may develop when susceptible animals enter these areas. Coccidia normally have self-limiting infections. Cattle that recover from coccidiosis usually become immune to later infections, but can continue to pass oocysts in the manure, thereby, providing a source of infection for susceptible calves.

Nervous coccidiosis develops in some calves with acute intestinal coccidiosis. The syndrome is usually observed in feedlot operations, especially during severe cold spells. The clinical signs of nervous coccidiosis vary in severity from minor muscular incoordination, loss of balance, to intermittent or continuous seizures.

Are All Cattle Equally Susceptible?

Coccidia occur in all breeds of cattle. Although the disease is seen more commonly in calves six-to-twelve months of age, it may occur in yearlings and adults.

Diagnosing The Disease

Diagnosis is made from a combination of herd history, clinical signs, physical examination of the animal and microscopic examination of manure taken from the rectum of the affected animal. Diarrhea precedes heavy oocyst discharge by 4 or 5 days and may continue after oocyst discharge has returned to low levels (Table 1).

Table 1. Diagnosing Coccidiosis in Cattle

Infection	Fecal Consistency	Oocyst Output	Clinical Signs
Light	normal	low levels	cattle appear normal.
Moderate	watery	absent during the first 5 days of watery feces, followed by high oocyst output.	cattle slightly off, some discomfort.
Severe	diarrhea, thin bloody fluid with mucus or shreds of intestinal epithelium present.	absent during the first 5 days of diarrhea, followed by high oocyst output.	cattle off feed, depressed, dehydrated, hind tail soiled with feces.

Preventing Coccidiosis in Cattle

Good management is the key to controlling coccidia. The primary concern during outbreaks is the potential for spread to other susceptible animals in the herd.

General Principles of Control

- Protect drinking water and feed from contamination with manure.
- Do not feed cattle directly on the ground.
- Drain excessive moisture from pens and provide ample dry bedding. Use well drained pastures.
- Isolate and treat infected animals.

- Keep grazing to a minimum on grasses along the edges of ponds and streams where cattle congregate and overgrazing occurs.

Treating Affected Animals

Outbreaks of coccidiosis in calves and feeder cattle may be handled by mass medication in the feed or water. There are several anticoccidial drugs available which may be used (Table 2).

Table 2. Treating Affected Animals.

Product Name	Manufacturer	Route	Dosage	Frequency / Duration	Withdrawal Time / Key
Treatment Drugs:					
Amprol® 9.6% sol.	MSD/AgVet	Drinking water	0.012%	daily for 5 days	7 days / 3
Amprol® 25%	MSD/AgVet	Feed Mix	500 mg per 50 kg body wt	daily for 5 days	7 days / 3
Cocci-Bol-O Tab®	Hoechst	Bolus	1 bolus per 90 kg body wt	repeat in 24 hrs if necessary at 1 bolus per 180 kg	10 days / 4
Cocci-Bol-O Tab® Jr.	Hoechst	Bolus	1 bolus per 34 kg body wt	repeat in 24 hr if necessary at ½ bolus per 34 kg	10 days / 4
Prophylactic Drugs:					
Amprol® 25%	MSD/AgVet	Feed Mix	250 mg per 50 kg body wt	daily for 21 days	7 days / 3
Deccox®	Rhône-Poulenc	Feed additive	0.5 mg per kg body wt	daily for 28 days	none / 1, 2
Deccox® Plus	Rhône-Poulenc	Feed additive	200 g per 100 kg body wt	daily for 28 days	none / 1, 2
Rumensin®	Elanco	Feed additive	83 g premix per tonne	daily for 28 days	none / 2, 5
			165 g premix per tonne	daily during period of exposure to coccidia	none / 2, 5
			250 g premix per tonne	daily until cattle reach market wt.	none / 2, 5

Key:

1. Do not feed to animals of breeding age.
2. Do not feed to lactating dairy cattle producing milk for food.
3. Do not feed to calves intended for future breeding.
4. Milk taken from treated animals within 96 hr after the last treatment must not be used in food.
5. For use in beef cattle feeds only.

PLEASE READ THE COMPLETE PRODUCT MONOGRAPH BEFORE USING ANY DRUG.