

Coccidiosis

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Species

Most species of birds can be infected with one or more species of the protozoan parasite coccidia. Birds showing clinical signs of infection have coccidiosis. Most species of coccidia are specific to a particular group of birds and don't cross infect other species, i.e. chicken coccidia don't infect ducks etc. Generally coccidiosis is a disease of the digestive system. It is perhaps the most economically important disease of commercial poultry on a global basis.

Status in Canada

Coccidiosis is common in all birds species but particularly important in chickens and turkeys.

Etiology

Coccidiosis is caused by a small, microscopic protozoan parasite. The most important disease-causing species of coccidia belong to the Genus *Eimeria*.

There are 5 species of *Eimeria* that affect chickens in Canada

E. acervulina,
E. necatrix,
E. maxima,
E. brunettii
and *E. tenella*

and several that affect turkeys

E. gallipovonis,
E. meleagridis,
E. adenoides,
E. meleagrimitis

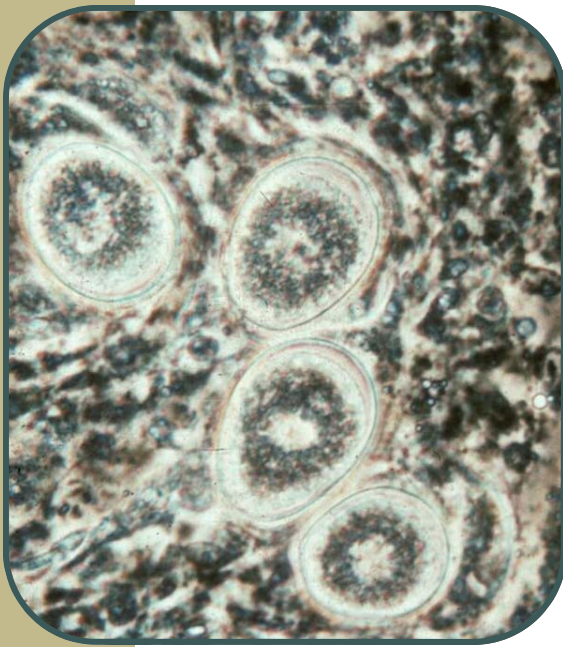
and others.



The Disease

Coccidia have a 2 stage life cycle. The asexual stages cause most of the lesions. Oocysts are passed in the feces. These sporulate (i.e. undergo cell division) in the environment and become infective. It takes approximately 5 days under suitable environmental conditions for the coccidia eggs to become infective. The bird ingests these sporulated oocysts by picking them up from the ground. Inside the intestine the acid and enzymes present break down the protective oocyst wall and tiny sporozoites are released in the gut. These infect the enterocytes (cells lining the intestinal tract) and within these cells they undergo several stages of asexual replication, a process called schizogeny or merogeny. The developing schizonts damage the enterocytes causing diarrhea and depending on the species, severe gut damage. After several cycles of asexual reproduction the coccidia undergo a stage of sexual reproduction that results in the formation of more unsporulated oocysts that are passed in feces.

Different species of coccidia affect different portions of the gut. For example *E. acervulina* affected the upper small intestine and produces mild lesions. *E. necatrix* and *E. maxima* affect mainly mid gut and lesions can be very severe. *E. tenella* affects mainly cecae and colon and can also be severe.



coccidia eggs (oocysts): Unsporulated (above) and sporulated (right) . Note the oocyst on the right now contains 4 sporocysts each containing infective sporozoites. This is the infective form.

Coccidiosis worldwide is likely the most important disease of floor-raised chickens. Even mild damage to the intestinal tract will cause growth slowdown, diarrhea, wet litter, and uneven flocks so even mild infections cause economic loss in commercial operations. Some species of coccidia will cause significant losses from death. Coccidia causes enough damage to the gut lining that secondary infections with the bacterium *Clostridium perfringens* (a disease known as necrotic enteritis .. see necrotic enteritis fact sheet) commonly occur.



Diagnosis

A diagnosis of coccidiosis is made by gross examination of the intestines and the demonstration of coccidial eggs under the microscope in intestinal scrapings or examination of feces from the bird. The species of coccidia can be identified by measurement of the coccidial oocysts. Often the damage caused by the coccidia may appear mild, but the economic losses may be significant from decreased growth rates and poor feed conversion.



Chicken intestine infected with E. tenella. This species causes severe damage and hemorrhage in the cecum of chickens that may result in high mortality.



Chicken intestine infected with E. necatrix. Note the dark portion of the mid portion of the intestine. This portion of the intestine has been severely damaged by the coccidia and contains blood. E. necatrix can cause high death losses.





Treatment

There are numerous drugs that are used to treat coccidiosis. Most commercial poultry producers in North America use routine anticoccidial medications in the feed of growing birds to prevent the disease and many others vaccinate against the parasite. Feed with anticoccidial drugs are available from most feed mills but many smaller backyard or hobby flocks do not buy their feed in sufficient quantities to have a coccidiostat added. Many of the commercial starter rations available for chickens have a coccidiostat added. Make certain to check the label and consult with the feed supplier.

Treatment of an outbreak of coccidiosis is usually done using anticoccidial medication like amprolium added to the drinking water. Consult your veterinarian to confirm the diagnosis and recommend appropriate treatment.

Good litter management, thorough clean-up of manure and good pen sanitation will help reduce the incidence and severity of coccidiosis.



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