

## Coccidiosis

There cannot be many people in the fancy that haven't suffered the symptoms of coccidiosis since the withdrawal of the anti-coccidiostat from the rabbit feeds. It therefore seems opportune to discuss the problem in greater detail.

The disease is caused by a protozoan parasite with a complex life cycle. Wild rabbits can be affected and, theoretically are a potential source of infection to pet rabbits that are fed on grass. Long grass picked by hand is less likely to be contaminated than short grass grazed by large numbers of wild rabbits.

The protozoan parasites are Sporozoa belonging to the Eimeriorina suborder. *Eimeria* are parasites of epithelial cells. They invade the mucosa of the intestine, colon and caecum and the epithelium of various ducts. Infected rabbits void oocysts that require oxygen and a period of several days to become infective. Ingestion of the oocyst releases sporozoites into the duodenum after the oocyst has been broken down by digestive enzymes. The sporozoites invade cells and cause tissue damage as they complete their complex life cycle ultimately to release oocysts into the lumen of the gut. *Eimeria* species are host and site specific. Oocysts can survive for many years in the environment but are susceptible to dry conditions. Recovered rabbits become immune to infection. As many as 14 species of *Eimeria* have been described in the rabbit. All but one species are found in the small intestine, caecum or colon and cause intestinal coccidiosis. One species *Eimeria steidae*, inhabits the epithelial cells of the bile ducts and causes hepatic coccidiosis. There is no cross immunity between the different *Eimeria* species.

### *Intestinal coccidiosis*

*Eimeria magna* and *Eimeria irresidua* are the two most pathogenic coccidial species that affect the intestine of rabbits. Other less pathogenic intestinal species include *E. perforans*, *E. media*, *E. elongata*, *E. neoloporis*, *E. intestinalis*, *E. caecicola* and *E. piriformis*. The development stages are restricted to the

ileum and jejunum but, in heavy infestations overflow into the caecum has been observed. There are two asexual stages and the oocysts appear in the faeces 7 to 8 days post infection. Mixed infections can occur and coccidia are often found in conjunction with other pathogenic agents such as *E.coli*. It is not always clear how important intestinal coccidiosis is during an outbreak of enteritis, although the introduction of a pathogenic species into a susceptible population can prove fatal, especially in young rabbits around the time of weaning. Acute infection causes loss of appetite, weight loss, depression and diarrhoea that can be haemorrhagic. Intussusceptions may be associated with chronic infections. Subclinical coccidiosis results in reduced feed conversion and consequently blockages of the caecum and gut can occur.

### Hepatic coccidiosis

A serious disease in rabbits caused by *Eimeria steidae*. Wild rabbits can be infected and transmission occurs by the ingestion of sporulated oocysts in food that has been contaminated by faeces. Sporulation of the oocysts is required for infectivity and requires at least 2 days outside the host. Oocysts are extremely resistant and can remain viable in soil, on vegetation and fomites for long periods of time. *Eimeria steidae* has a different life cycle to intestinal *Eimeria* species. Ingested oocysts hatch in the duodenum and sporozoites penetrate the intestinal mucosa before being transported to the liver. Either in the blood stream or in macrophages in the lymphatic system. Replication takes place in the mesenteric lymph nodes before transport via the hepatic portal circulation to the liver where they enter the bile duct epithelial cells. Here the life cycle is completed with the ultimate release of oocysts into the bile duct. The prepatent period lasts 15 to 16 days and oocysts are found in the faeces for at least 10-14 days after this. Signs are associated with lesions in the liver and bile ducts, and include weight loss, ascites, jaundice, diarrhoea and hepatomegaly. Weanling rabbits are most commonly affected.

### **Suggested Treatment**

It is important to treat the rabbit as soon as it goes off its food as it will then have the greatest chance of survival. I have found that a dose of 0.5 mls of 24% Borgal (a sulpha based drug) per kg per 24 hours can be very effective.

Feed plenty of hay and fibre and ideally use pellets containing anti coccidiostat. Clean hutches at least once a week and for does and litters more frequently.

Disinfect contaminated hutches with Virkon S or use a blowtorch across the hitch surface to sterilise it.

Some fanciers feed medicated pellets obtainable with a veterinary subscription.