

RABBIT COCCIDIOSIS – AN OVERVIEW

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Introduction

Rabbit population in Kerala is estimated to be 82,157 as per the Livestock Census (1996). This throws light on the awareness and perception gained by the rabbit farmers of our state on the ease and economics of rabbit farming. Rabbits are produced for meat, wool, research purpose and for rearing as pets. They are efficient converters of plant protein to high value animal protein. Rabbits can turn 20 per cent of the proteins they eat into edible meat while it is only 8 to 12 per cent for beef cattle.

These economically sound animals are also susceptible to many infectious diseases. Among the various diseases, coccidiosis is a major protozoan disease of rabbits caused by *Eimeria* spp. It is a disease of young ones where sanitation is poor in the breeding and rearing establishments.

Etiology

Coccidia of importance in domestic animals belong to the genus *Eimeria*. They are intracellular parasites of the intestinal tract except a few which occur in other locations such as liver and kidney. Coccidial infections in rabbits are caused by both intestinal and hepatic coccidians. The intestinal species include *Eimeria magna*, *E. media*, *E. perforans*, *E. coecicola*, *E. piriformis*, *E. intestinalis*, *E. flavescens*, *E. elongata* and *E. matsubayashi* while the hepatic form is caused by *E. steidai*. The studies conducted in Kerala revealed *E. media*, *E. magna*, *E. perforans*, *E. coecicola*, *E. piriformis* and *E. flavescens* as the commonly occurring species.

Life Cycle

Intestinal coccidia

This is divided into three phases viz., sporulation, infection and schizogony, followed by gamogony and oocyst formation. Unsporulated oocysts consisting of a nucleated mass of protoplasm enclosed by a resistant wall are passed to the exterior in the faeces. Under suitable condition of oxygenation, high humidity and optimal temperature of around 27°C the nucleus divides to four sporoblast which transform to sporocysts containing two banana shaped

sporozoites inside. Sporulated oocyst is the infective stage which when ingested by the host results in an infection. Inside the host, the oocyst wall breaks and the sporozoites are released. These enter epithelial cells of intestine and rounds up to trophozoite. After few days, the trophozoite divides by multiple fission to form schizonts consisting of a large number of elongated nucleated organisms known as merozoites. Later these schizonts rupture to release the merozoites which invade the neighbouring cells. Schizogony may be repeated and terminates which the merozoites give rise to male and female gamonts. Fusion of the micro and macrogamete nuclei takes place forming the zygote which encyst to form the oocyst. No further development usually takes place until the unsporulated oocyst is liberated from the body in the faeces. Prepatent period is six to seven days.

Hepatic coccidia

Developmental stages of *Eimeria steidai* occur in the liver. Excystation occurs in the small intestine and the sporozoites penetrate the intestinal mucosa and pass via the hepatic portal blood system to the liver and enter the epithelial cells of the bile ducts. Both schizogony and gametogony occurs during the course of infection in the liver epithelial cells. Prepatent period is 18 days.

Pathogenesis

Heavy infection with coccidian sp. results in destruction of large numbers of epithelial cells with associated inflammation of the mucosa of either the intestine or biliary tract. The intestinal damage caused by coccidia may favour the multiplication of *Escherichia coli* and the resorption of endotoxin. This may lead to endotoxic shock and mortality.

Clinical signs

Intestinal coccidiosis

In domestic rabbitries, coccidiosis often causes a clinical disease characterized by anorexia and high mortality among the rabbits.

Peak mortality occurs about six to eight weeks of life. Incidence of infection is high in young rabbits. Poor weight gain, diarrhoea ranging from mucoid to watery to haemorrhagic, polydipsia and sometimes acute death are seen. Older rabbits may shed coccidial oocysts without expression of any clinical symptoms.

In commercial rabbitries, coccidiosis often occurs in subclinical form characterized by retarded growth rate and reduced feed conversion. Catarrhal enteritis with liquid contents may be present.

Hepatic coccidiosis

Many rabbits infected with *E. Stiedae* shows no clinical signs. In heavily infected rabbits signs noted are due to hepatic dysfunction and blockage of bile ducts. Signs predominate in young rabbits and may include anorexia, debilitation and pendulous abdomen with hepatomegaly noted on abdominal palpation. Mortality is low except in young rabbits.

Diagnosis

The disease may be easily diagnosed by

- (1) observing the clinical signs such as anorexia, retarded growth rate, diarrhoea etc.,
- (2) faecal examination by direct and concentration method to detect the coccidial oocysts,
- (3) necropsy

-the recognition of flat liver lesions and identification of oocysts in the bile, provide diagnostic information for hepatic coccidia.

-Oedematous intestine, inflamed and hyperemic mucosa with greyish white foci on the intestinal mucosa are diagnostic for intestinal coccidia.

Treatment

- Most effective compounds for treatment are the sulphonamide.
- Sulphaquinoxaline/sulphamerazine orally @ 0.05% in drinking water for 10 days.
- Sulphadimethoxime 75 mg/kg given on an intermittent schedule of 3 cycle with each cycle of 3 days medication and seven days off.
- Robenidine 55-66 ppm in feed (CYCOSTAT)
- Toltrazuril 10-15 ppm in outbreaks (BAYCOX)
- Sulphadimidine 150-200 mg/kg for 3 days found to be very effective and widely used.

Control

The best way to get rid of diseases is to prevent them. This is accomplished through a strict preventative medicine program. The biggest key to preventative medicine is sanitation. Following guidelines may be taken into account.

- All cages/wire meshed floors should be disinfected before introducing a new rabbit to a

cage.

- Disinfectants effective against coccidia are 5-10% ammonia solution and 10% formalin. Methyl bromide may be used for fumigation.
- Exposure to 53-54°C kills the oocysts in 10 mts and at temperature higher than that they perish more rapidly.
- Bottoms of cages are to be brushed daily to remove adherent faeces and cleaned and disinfected regularly.
- Feed fresh green/hay
- Disinfect water bottles and feed hoppers once a month.
- Keep rabbits stress free as possible.
- Weanlings should be raised separately from adult
- Use of anticoccidial drugs should be strictly followed (Sulphaquinoxaline 0.025% for 30 days in feed/water).

Thus controlling coccidiosis in populations of susceptible animals is a challenging proposition and heavy reliance is placed on chemicals administered prophylactically. Heavy mortality occurring in young stock during rainy season due to coccidiosis is one of the major constraints responsible for the slow growth of the industry. As such control of coccidial infections assumes paramount importance in a successful and profitable rabbit farming enterprise. □

CII Suggests Reforms to boost Investment in Agriculture

The southern regional council of the Confederation of Indian Industry (CII) has stressed the need for State governments to adopt reforms such as implementing the Agricultural Produce Marketing Committee Act (APMC) for large-scale public-private investment. A study paper released in Kochi by the council, says agriculture and allied activities are not only the largest employment providers but also these sectors make the second largest contribution to the Gross Domestic Product (GDP). Considering its huge stake in society and the economy the sector is in urgent need of farmer friendly policy reforms. The council has suggested that the state governments can try to evolve a three way model involving agricultural scientists in Universities, farmers and the firm to collaborate in marketing and processing the produce. This model will help in the adoption and diffusion of new agricultural techniques.