



ORIGINAL ARTICLES

Study of the Efficacy of Herbal Anticoccidial Agent in Broiler Chickens

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ABSTRACT

An experiment was carried out using 200, day old unsexed broiler chicks to study the efficacy of herbal anticoccidial agent in broiler chickens. Chicks belongs to group I received control diet, group II herbal anticoccidial agent (500g/ton), group III coccidia oocysts and group IV received both herbal anticoccidial agent(500g/ton) and coccidia oocysts. The doses of 50,000 sporulated oocysts were adjusted in 1.0 ml of suspension. 1.0 ml of suspension was inoculated by oral route to the experimental birds on 21st day of age in the groups III and IV. The group (III) showed dullness, anorexia, huddling together, blood mixed droppings and ruffled feathers. The bloody droppings appeared upto 7th day of post infection (dpi). The group IV showed a marked recovery after 7th dpi, when compared to coccidia control group. The severities of clinical signs were less through the period of post infection. It was also observed in the present study that the herbal anticoccidial agent treated birds (group IV) showed significant reduction in oocysts output when compared to birds infected with coccidia alone (groupIII).

Key words: Herbal Anticoccidial agent, coccidia oocysts, oral route, broiler chicks.

Introduction

Coccidiosis is one of the most common protozoan disease affecting poultry, caused by different species of *Eimeria*, of which *E. necatrix* and *E. tenella* are the most common and highly pathogenic, resulting in field out breaks causing great economic loss to the poultry farmers. Various anticoccidial drugs are commonly used as feed additives to prevent coccidiosis. However caecal coccidiosis is a persistent problem in the poultry operation and the expression of caecal coccidiosis is linked to immunosuppression by various agents.

Furthermore, these anticoccidial residues in the poultry products are annoyance to the consumer. Therefore, it is sought that the regulation for usage of anticoccidial drugs should be strengthened gradually. Hence search is on to substitute with indigenous herbal preparations. Hence, the present study was undertaken to study anticoccidial property of herbal anticoccidial agent.

Materials and Methods

A total of 200, day old unsexed broiler chicks were procured from a commercial hatchery and reared under optimal managemental conditions. On seventh day of age the chicks were randomly divided into four groups of 50 chicks each. Chicks belongs to group I received control diet, group II herbal anticoccidial agent (500g/ton), group III coccidia oocysts and group IV received both herbal anticoccidial agent(500g/ton) and coccidia oocysts. Naturally infected birds with caecal coccidiosis were selected during the post mortem. The oocysts were isolated and cultured for further inoculation. The doses of 50,000 sporulated oocysts were adjusted in 1.0 ml of suspension. 1.0 ml of suspension was inoculated by oral route to the experimental birds on 21st day of age in the groups III and IV.

The herbal anticoccidial agent procured from M/S Vet Care India Ltd was incorporated into the feed @ 500g / ton of feed.

The clinical signs, gross and histopathological lesions, fecal oocysts count were studied at different time intervals.

Results and Discussion

The coccidia infected group (III) showed dullness, anorexia, huddling together, blood mixed droppings and ruffled feathers. The bloody droppings appeared upto 7th day of post infection (dpi). The present finding draws ample support from earlier reports made by Misra & Goutam (1970), Clarke (1979) and Panda et al. (1997b).

The groups treated with both herbal anticoccidial agent and coccidia oocysts (group IV) showed a marked recovery after 7th dpi, when compared to coccidia control group. The severities of clinical signs were less

throughout the period of post infection. These findings were similar to those reported by Jaipurkar (2002) and Lipei Guo (2005) and the reduced severity of clinical signs could be attributed to anticoccidial effect of the herbal product.

The gross lesions observed in the caecum of the birds infected with coccidial oocysts (group III) were enlargement, distention with partially clotted or unclotted blood and exudate containing tissue debris on five day of post infection(dpi), it was gradually reduced after seven dpi and was very mild on nine dpi onwards. Caecal wall was greatly thickened because of edema and cellular infiltration with the formation of scar tissue. These findings are in accordance with those reported in caecal coccidiosis by Misra and Goutham (1970), Clarke (1979) and Mc Dougald and Reid (1991). However, these lesions were very mild in herbal anticoccidial group.

The group IV showed an increased mortality to the tune of 16 per cent in the present study. These results were in contrary to the results of Jaipurkar (2002) who reported eight per cent when compared to coccidia control (groupIII) which had a mortality of 14 percent.

It was also observed in the present study that the herbal anticoccidial agent treated birds (group IV) showed significant reduction in oocysts output when compared to birds infected with coccidia alone (groupIII).

Table 1: (Mean±SE) oocysts count in broiler chickens infected with *Eimeria* oocysts and its combination with herbal anticoccidial agent. (x10⁵)

	7 th dpi	9 th dpi	11 th dpi
Group III	9.02 ± 0.135 ^a	2.51 ± 0.71 ^a	1.07 ± 0.03 ^a
Group IV	3.24 ± 0.08 ^d	1.44 ± 0.08 ^{bc}	0.53 ± 0.08 ^{cd}

The mean values bearing common superscript within column did not differ significantly

The intestinal lesions were confined to caecum. The group III showed appearance of second generation schizonts, liberating merozoites and severe haemorrhages along with extensive sloughing up of mucosa on five dpi.

At seven dpi the caecum revealed a large number of second generation schizonts packed with merozoites and liberating of merozoites along with the presence of developing oocysts were observed. In addition, congestion of vessels, multifocal areas of haemorrhages and leukocyte infiltration predominately heterophils with, degeneration and desquamation of crypt epithelium were also noticed. Similarly Mc Dougald and Reid (1991) described the first generation schizonts maturing at two to three days of post infection, heterophil infiltration in the submucosa, second generation schizonts in the lamina propria, appearance of oocysts, macro and microgametocytes on 7th and 9th dpi.

The group which treated with coccidial oocysts and herbal anticoccidial agent (group IV) showed similar histopathological lesions as in group III on 5th dpi but with reduced intensity, along with few developing schizonts and merozoites in the crypt epithelium on 5th dpi. However, hyperplastic changes in crypt epithelium characterized by regenerating epithelium with lymphoblast and numerous mitotic bodies were noticed on 7th dpi, but similar changes were noticed in coccidian alone infected group on 14dpi.

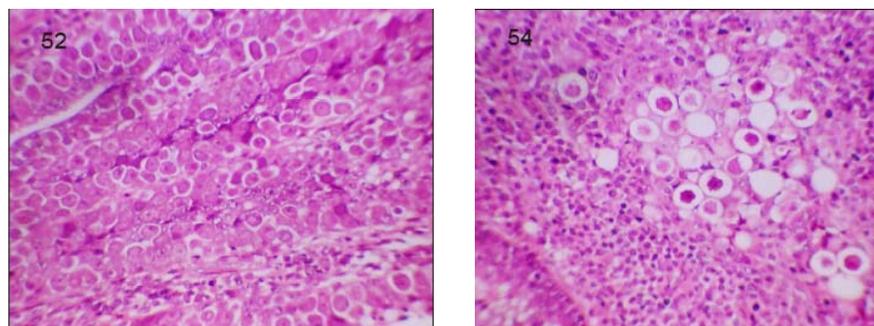


Fig. 1: Cecum showing villi packed with various developmental stages of oocysts in coccidia control group on 7th dpi.

Fig. 2: Cecum showing degeneration and destruction of oocysts in lamina propria in coccidian infected and herbal anticoccidial agent treated group on 7th dpi.

In the present study, early recovery was also indicated by the presence of degenerating schizonts and oocysts on the 7th day of post infection in herbal anticoccidial agent treated group compared to coccidia alone, where in these changes were evident on 14th day of post infection. Hence it can be concluded that the herbal anticoccidial is partially effective in controlling coccidiosis. However, further studies are required to ascertain the effectiveness and economical impact of the herbal anticoccidial usage in the poultry operation.

The efficacy of herbal anticoccidial drug was estimated in chicken infected with 50,000 sporulated *Eimeria tenella* oocysts. The parameters used were clinical signs, gross and histopathological lesions and fecal oocysts count. From the study it was found that herbal anticoccidial drug is partially effective in controlling coccidiosis. However, further studies are required to ascertain the effectiveness and economical impact of the herbal anticoccidial usage in the poultry operation.

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