



## Coccidiosis in commercial chicks: countering with herbal product

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### Abstract

To study the efficacy of herbal anticoccidial product, 200 day-old commercial chicks were assigned to group I (control diet), group II (herbal product (500g/ton), group III (coccidia oocysts) and group IV (received both herbal product (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 IV showed a marked recovery after 7th dpi, when compared to coccidia control group. It was concluded that the herbal product treated birds (group IV) showed significant reduction in oocysts output when compared to birds infected with coccidia alone (group III).

**Keywords:** Coccidiosis; *Aspergillus ochraceus*; broiler chicks

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### Introduction

Coccidiosis is one of the most common protozoan diseases 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.

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 managerial 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 product (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 product was procured from M/S Vet Care India Ltd was incorporated into the feed at the rate of 500g/ton of feed.

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

The data generated from different parameters of experimental study were subjected to one-way analysis of variance (ANOVA) using Graph Pad Prism software as per Snedecor and Cochran (1989).

### Results and Discussion

The coccidia infected (group III) birds showed dullness, anorexia, huddling together, blood mixed

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droppings and ruffled feathers. The bloody droppings appeared up to 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 product 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 through out 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 5<sup>th</sup> dpi. It was gradually reduced after 7<sup>th</sup> dpi and was very mild on 9<sup>th</sup> 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 (group III) which had a mortality of 14 percent.

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

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 5<sup>th</sup> dpi.

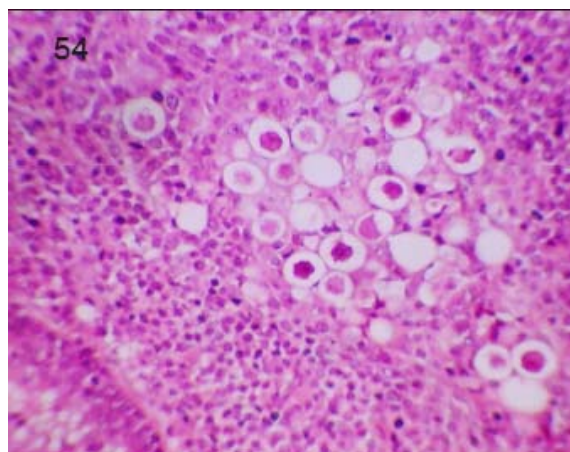
At 7<sup>th</sup> dpi the caecum revealed a large number of second generation schizonts packed with merozoites and liberating of merozoites along with the presence of developing oocysts. In addition, congestion of vessels, multifocal areas of haemorrhages and leukocyte infiltration predominately heterophils 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 7<sup>th</sup> and 9<sup>th</sup> dpi.

The group treated with coccidial oocysts and herbal product (group IV) showed similar histopathological lesions as in group III on 5<sup>th</sup> dpi but with reduced intensity, along with few developing

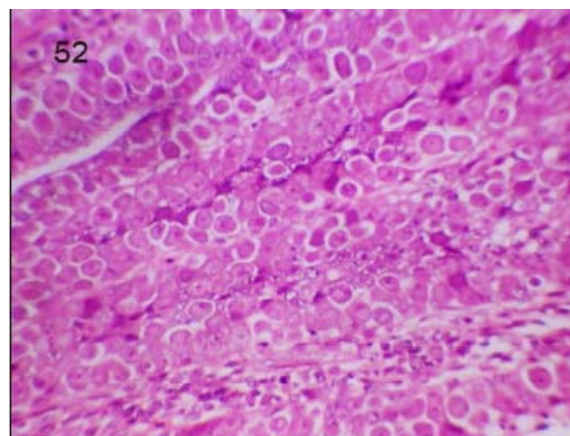
**Table 1: (Mean±SE) oocysts count in broiler chickens infected with *Eimeria* oocysts and its combination with herbal anticoccidial agent. (x10<sup>5</sup>)**

	7th dpi	9th dpi	11th dpi
Group III	9.02 ± 0.135 <sup>a</sup>	2.51 ± 0.71 <sup>a</sup>	1.07 ± 0.03 <sup>a</sup>
Group IV	3.24 ± 0.08 <sup>d</sup>	1.44 ± 0.08 <sup>bc</sup>	0.53 ± 0.08 <sup>cd</sup>

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



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



**Fig 2: Cecum showing degeneration and destruction of oocysts in lamina propria in coccidian infected and herbal product treated group on 7<sup>th</sup> dpi.**

schizonts and merozoites in the crypt epithelium on 5<sup>th</sup> dpi. However, hyperplastic changes in crypt epithelium were characterized by regenerating epithelium with lymphoblast and numerous mitotic bodies were noticed on 7<sup>th</sup> dpi, but similar changes were noticed in coccidian alone in infected group on 14<sup>th</sup> dpi.

In the present study, early recovery was also indicated by the presence of degenerating schizonts and

oocysts on the 7<sup>th</sup> day of post infection in herbal product treated group compared to coccidia alone, where in these changes were evident on 14<sup>th</sup> 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.

From the study it was found that herbal anticoccidial drug is partially effective in controlling coccidiosis.

## References

- Clarke, P.L. 1979. Coccidial infection with *Eimeria tenella* and caecal defecation in chicks. *British Poultry Science*, 20: 317-322.
- Jaipurkar, S.G., Deshpande, P.D., Narlandkar, B.W. and Rajurkar, S.R. 2002. Evaluation of herbal anticoccidials against experimentally induced caecal coccidiosis in broiler chicks. *Indian Veterinary Journal*, 79: 891-895.
- Li Pei Guo LiYun Yu; Zhang Wen Xiang; Fu Zhi Xin; Zhang Xiang Zhai; Chen Li Feng and Zhang Yang Ying, 2005. The efficacy of three herbal anticoccidial drugs against chicken coccidia isolated from Qinhuangdao In China. *Chinese Journal of Veterinary Science*, 25(6): 652-654.
- Mc Dougald and Reid, W.M. 1991. Coccidiosis. In : *Diseases of poultry*, Ninth Edn. East – West Press Pvt. Ltd., Iowa State University Press, Ames, Iowa. Pp: 780-797.
- Misra, S.C. and Goutham, O.P. 1970. Experimental coccidiosis in chicken with the institution of suitable therapeutic measures. *Journal of Applied Poultry Research*, 9: 148-152.
- Panda, D.N., Misra, A., Misra, S.C. and Misra, U.K. 1997. Comparative haematological and clinicopathological changes between *Eimeria tenella* infected and supercox treated broiler birds. *Indian Veterinary Journal*, 74:206-209.
- Snedecor, G.W. and Cochran, W.G., 1989. Statistical methods, 8th Ed., Iowa state university press. Ames.