

# Short Communication

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## COMPARATIVE EFFICACY OF ANTI-COCCIDIAL DRUGS, EIMERIAZOLE, KALORIVAC AND DARVISUL, IN CHICKS SUFFERING FROM COCCIDIOSIS

**Abstract.-** Eimeriazole, a herbal extract was used to control coccidiosis and its efficacy was compared with the two commercially available anticoccidial drugs – Kalorivac and Darvisul. Examination of faeces of infected chicks showed that after treatment, Kalorivac controlled the coccidiosis more effectively. Moreover the feed intake and body weight increased after treatment with these drugs.

**Key words:** Anticoccidial drug, oocyst, *Eimeria*, poultry.

There are seven strains of coccidia, which may infect chickens *viz.*, *Eimeria acervulina*, *E. brunetti*, *E. mitis*, *E. necatrix*, *E. praecox*, *E. tenella* and *E. maxima*. *E. tenella* causes ceecal coccidiosis whereas the other strains cause more damage to the intestine leading to the death of bird. Oocyst is the infective stage of the coccidial parasite which is passed out in the faeces of the infected birds. MSU (*Coccidiosis, protozoan diseases*, Department of Poultry Science, Mississippi State University, <http://www.msstate.edu/dept/poultry/disproto.htm>, 1997) reported that deterioration of oocysts starts soon after 24 hours when the conditions are not favourable for sporulation. However, viable oocysts up to 23 days of age were also found in the bedding material. Mikeopitz (*Poultry facts, biological control of coccidiosis in small poultry flocks*, University of Maine Cooperative Extension Bulletin #2259, <http://www.umext.maine.edu/onlinepubs/htmlpubs/poultry/2259.htm>, 2005) reported 401.91/g litter in a house poorly managed than the one managed in a better way (30.63/g).

Morbidity of 41.4% and mortality of 6.7% has been reported in broilers up to 8 weeks of age

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(*Coccidiosis, E. praecox*, *Quick Poultry Disease Guide*, <http://www.thepoultrysite.com>, 2005). Mahajan *et al.* (*Ind. J. Anim. Sci.*, **64**: 1118-1122, 1994) have reported morbidity of 8.2-10.8% and mortality of 4.8-7.6% in broilers. Overall morbidity due to coccidiosis in broilers was 14.14±0.51% and mortality was 5.71±0.31%.

Coccidiosis is one of the most common diseases in poultry in district Peshawar. The present study evaluates three anticoccidial drugs *viz.*, Eimeriazole, Kalorivac and Darvisul to control this disease.

### Materials and methods

Oocyst were isolated from the gut material of the diseased chicks. The gut contents were preserved in the 2.5% potassium dichromate and centrifuged with saturated sodium chloride or ZnSO<sub>4</sub> solution. The supernatants were discarded and 5 times water was added and kept undisturbed overnight. Then sediment was centrifuged at 1500 rpm for 10 min and processed for sporulation at 32-37°C for 48-72hrs. After sporulation the oocysts were counted by McMaster technique (Anita *et al.*, *vet. Parasitol.*, **136**: 233-242, 2006).

A total of 120 chicks were administered with 10,000 oocysts per bird via oral route. These birds were divided into four groups having 30 birds in each group. A group of 30 chicks was given Eimeriazole (2 g/l) in drinking water thrice daily upto 3 days. The chicks were kept thirsty for one hour before medication. The second group was given Darvisul (2 g/l) in drinking water thrice daily upto 3 days. The third group was given Kalorivac (2 g/l) in drinking water thrice daily upto three days. The fourth group was not given any treatment and it served as control group. The first faecal sample was taken before inoculation of oocyst. After inoculation of oocyst three faecal samples were taken from each group after seven-days interval. These faecal samples were processed for counting of oocysts as described above.

### Results and discussion

Table I shows the effect of the three drugs on the number of oocysts/g of faeces, the weight gained

by the chick and the amount of feed intake by the chicks.

The number of oocysts increased 29 fold the original number after 48 hours and 31.25 fold after 72 hours of infection in control chick. After treatment with Kalorivac this number was 21.56 after 48 hours and 2.31 fold after 72 hours, whereas after treatment with Darvisul it was respectively 27.2 and 2.4 fold, as against 21.43 and 5.2 fold increase after 48 and 72 hours of treatment with Eimeriazole.

**Table I.- Oocysts per gram of faeces, weight gains of chicken and feed intake and after treatment.**

Parameters	Time after treatment (Weeks)	Eimeria-zole	Darvisul	Kalorivac	Control
Oocysts /g faces	0	14	09	16	12
	1	247	247	322	376
	2	300	245	345	348
	3	73	22	37	375
Weekly weight gain (kg)	1	115	091	111	124
	2	297	329	265	323
	3	725	735	726	377
Feed intake (g)	1	2868	2960	2480	2961
	2	4405	4250	3594	2355
	3	5570	5724	5446	2863

It is clear that Kalorivac controlled the coccidiosis more effectively. Mathis *et al.* (*Avian Dis.*, **47**: 463-469, 2003) stated that Toltrazuril completely eliminated all coccidial lesions and dramatically reduced oocyst shedding.

The number of oocysts per gram of faeces decreased in all groups whereas there were an increased number of oocysts in control group after the medication. Similar results were shown by Das (*Ind. J. Indig. Med.*, **10**: 41-46, 1993) with Zycos, a herbal anticoccidial drug.

The feed intake level in all groups was low due to coccidiosis but after two weeks feed intake improved in treated groups, while remained low in the control group. Similar trend was observed in weight gain of the chickens in treated and control groups. Williams and Gobbi (*Avian Pathol.*, **31**: 253-265, 2002) also reported significantly greater final mean weights of vaccinated birds ( $P < 0.001$ ) than those treated with anticoccidial drugs.

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