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Comparative Efficacy of Different Feed Additive Anticoccidials in Broilers

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Abstract: The study was designed to compare the efficacy of different feed additive anticoccidials and coccidiosis vaccines. A total of 240 day-old-broiler chicks were purchased and raised for 42 days under good husbandry and hygienic conditions. The birds were randomly divided into eight groups i.e. A, B, C, D, E, F, G and H comprising of 30 birds each. Group A was uninfected unmedicated control while group B was infected unmedicated control. Groups C, D, E and F were given commercial feed having anticoccidials Coxistac, Sacox, Elancoban and Avatec respectively. Groups G and H were given unmedicated feed and were vaccinated at day 3 and 10. All the groups except that of group A were given primary and challenge doses of infection on day 22nd and 35th. The oocysts count was done on 5th, 6th and 7th day after each infection. The feed consumption and weight gain were recorded weekly. Record of mortality was kept and postmortem of dead birds was also performed. The results revealed that Sacox (salinomycin sodium) as anti-coccidial in feed was significantly better ($P < 0.05$) than all the treatments in terms of weight gain, feed efficiency (FCR), oocyst count and reduction in mortality. The results of other anticoccidials were not satisfactory, while both the vaccinated groups i.e. group G and H performed well in terms of oocyst count and decrease in mortality but their weight gain and feed efficiency were not good.

Key words: Anticoccidials, coxistac, sacox, elancoban, avatec, salinomycin, coccidiosis

Introduction

The increase in efficiency and productivity in the poultry enterprise has greatly been affected by health and management hazards in poultry production. Among the managerial diseases coccidiosis is most important which causes heavy losses to the poultry industry. In Pakistan, economic losses due to this malady are still unknown due to lack of indices. However, in the world, the annual losses directly attributed to coccidiosis amount to hundreds of millions dollars (McDougald, 1985).

Coccidiosis may strike any type of poultry in any

type of facility. Most infections are relatively mild, but because of the potential for the disastrous outbreak and the resulting financial loss, almost all young poultry are given continuous medication with low levels of anticoccidial drugs in the feed, which prevent the infection or reduce chances of outbreak. There are many anticoccidials available in the market and feed manufacturers find it difficult to choose the best one for addition in the ration. The scientists are also now converging their attention towards the immunization of chickens against coccidiosis through vaccination.

The present study was therefore planned to

Table 1: Experimental groups and the respective treatment given

Groups	Trade Name	Active Ingredient	Dose
A	Uninfected Unmedicated		
B	Infected Unmedicated		
C	Coxistac	Salinomycin Sodium 6%	1000 gm/Ton feed
D	Sacox	Salinomycin Sodium 12%	500 gm/Ton feed
E	Elancoban	Monensin Sodium	500 gm/Ton feed
F	Avatec	Lasalocid	660 gm/Ton feed
G	<i>E. tenella</i> vaccine (ETV) (Local vaccine)	Formalin treated coccidia	1000 oocysts/bird
H	Cocci-vac	Live coccidian of diff. Spp.	1 vial/1000 birds

investigate the prophylactic effect of different commercially available feed additive anticoccidials and the vaccines in broiler chicks.

Materials and Methods

Isolation, sporulation and counting of oocysts:

Infected guts were obtained from Disease Diagnostic Laboratory, Poultry Production, 16-Cooper Road, Lahore and were brought to the Parasitology Laboratory, College of Veterinary Sciences, Lahore for further processing. The isolation and sporulation of oocysts was done by the technique given in MAFF (1987). The average number of oocysts per 0.1 ml of mixture was calculated to obtain the total count of oocysts in 1 ml of undiluted stock mixture.

Experimental design: Two hundred and forty (240) day old broiler chicks were purchased from a local hatchery. The chicks were randomly divided into eight groups i.e. A, B, C, D, E, F, G and H, comprising of 30 birds each. The chicks were provided with the same conditions of temperature, humidity, and ventilation. The chicks of groups C, D, E and F were given feed having Coxistac, Sacox, Elancoban and Avatec as anticoccidials, while the feed of groups A, B, G and H was without anticoccidial. The groups and their treatment plan is as shown in Table 1.

The birds in all the groups except those of group A were infected with oral dose of 40,000 sporulated oocysts of mixed coccidian species at the age 22nd and 35th day. During the experimental period of 6 weeks, the parameters on feed consumption, weight gain, feeding efficiency, oocyst count, mortality and postmortem findings were studied.

The data thus collected was subjected to statistical analysis by using two way analysis of variance and means were compared with least significant difference (LSD) test (Steel and

Torrie, 1980).

Results and Discussion

Feed consumption: Mean value of total feed consumption during the experiment are 3535, 3445, 3318, 3353, 3268, 3225, 3337 and 3306 grams for the groups A, B, C, D, E, F, G, and H respectively.

The birds in group A (uninfected unmedicated control) consumed maximum feed as compared to other groups. The results show that there is significant difference ($P < 0.05$) among different groups. The results are supported by Hashmi *et al.* (1994) and Bushel (1982) who reported that coccidiosis resulted in decreased feed intake.

Weight Gain: Mean values of final body weight gain are 1827.6, 1725.8, 1735.4, 1807.6, 1667.5, 1697.6, 1678.0 and 1660.6 grams respectively. Among the infected groups, the weight gain of the chicks of group D (Sacox) was the highest ($P < 0.05$) and weight gain of vaccinated groups and that of Elancoban were the lowest. The results of present study are supported by Chang *et al.* (1982); Jo and Jang (1987); Logan *et al.* (1993) who reported that addition of salinomycin in ration resulted in improvement in weight gain.

Feed conversion ratio: The mean values of feed conversion ratio of chicks in various groups at the end of experiment are 1.93, 2.00, 1.91, 1.86, 1.96, 1.90, 1.99 and 1.99 respectively. The feed conversion ratio of the birds of group D (Sacox) was significantly better ($P < 0.05$) than the other treated groups, while poorest FCR was observed in group B (infected unmedicated control). The results of the present study are in agreement with Chang *et al.* (1982); Conway *et al.* (1995) who reported that salinomycin was superior to the other anti-

coccidials tested, in terms of feed conversion ratio.

Mortality: Mortality was observed in groups B, C, E, F and G, which was 16.67, 13.3, 20, 10 and 3.33 percent respectively. No mortality was recorded in groups A, D and H. The results of study are in agreement with findings of Raether and Bauer (1984) who reported that anticoccidial action of salinomycin was better than that of several other compounds tested in comparative trial.

Oocyst count: Oocyst counting was done for each group by collecting the fecal samples after the 5th, 6th and 7th days of infection. There were no oocysts found in group A, as it was not infected with coccidia. The total oocyst count per gram of faeces recorded during three days, for groups B, C, D, E, F, G and H are 178700, 170900, 190000, 187800, 139600, 21800 and 15700. The results of present study are in accordance with the findings of Chappel (1982); McKenzie *et al.* (1989), who reported that anticoccidial action of salinomycin was better than several other compounds tested in comparative trials. Norton *et al.* (1989) reported similar results that oocyst output was reduced to 70% when the birds were vaccinated.

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