

Evaluation of anti-coccidial vaccines and coccidiostate drugs on growth performance in experimental coccidiosis of broiler chickens

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Abstract

The present study was designed to compare the effect of coccidiostate drugs and coccidial vaccines on performance of coccidian-infected broiler chickens.

Nine hundred and sixty one-day-old broiler chicks from the Ross strain were randomly divided to eight treatment groups that each group contained 3 replicates. The birds of group 1 as negative control and group 2 as positive control did not receive any medicines or vaccines. Treatments 3 and 4 fed diets supplemented with Salinomycine and Diclazoril respectively, but did not immunize. The chickens of groups 5 to 8 immunized with coccidial vaccines (Livacox Q, Paracox 5, Livacox T and Iracoc respectively) by drinking water on day 5 of age. Chicks in treatments 2 to 8 were inoculated with a suspension containing four *Eimeria* species of 26 days of age. Surveillances for coccidian oocysts of feces samples were carried out from 7 to 13 days of post-challenged. Body weight and feed conversion ratios were determined weekly. Our data indicated that using coccidial vaccines and coccidiostate drugs decreased OPG of feces. The highest mean of body weight was related to the chickens treated with Salinimycine. The lowest feed conversion ratio was related to negative control groups. It could be indicated that coccidial vaccines and coccidiostate medicines could decline OPG and improve growth performance of broiler chickens.

Keywords: broiler chickens, coccidiostate, coccidial vaccines

Introduction

From year 1940, control of coccidiosis has been performed by using of anti-coccidial medicines. However, the use of such method was useful, but the drug resistance was always problems for poultry industry (Chapman, 1997).

Development of a vaccine against coccidiosis, an economically important disease that has its greatest impact on the poultry industry around the world, has attracted considerable interest in the past few years. The disease is caused by infection of the intestinal epithelial cells by a protozoan parasite of the genus *Eimeria* (Balbir et al., 1988). Crouch et al. (2003) investigated the efficacy of a live attenuated anti-coccidial vaccine, Paracox-5, administered to 1-day-old chicks by assessing protection against changes in weight gain following virulent challenge. Vaccinated birds were challenged independently 28 days later with each of the component species, and protection was demonstrated against associated reduction in weight gain and lesion formation. An improvement in bird performance, in terms of feed conversion ratio, was observed following vaccination. They demonstrated that Paracox-5 vaccine will protect broiler chickens against the adverse effects on performance induced by *Eimeria* spp.

Materials and methods

The present study was designed to compare the effect of coccidiostate medicines and coccidial vaccines on the performance of challenged broiler chickens with *Eimeria* species. Nine hundred and sixty day-old Ross 208 broiler chickens were randomly assigned to eight treatments. Each treatment contained 3 replicates of 40 chicks. Treatment 1 and 2, as negative and positive control did not receive any coccidiostates or coccidial vaccines. Treatment 3 and 4 fed diets supplemented with Salinomycine and Diclazoril respectively, but did not immunize. The chickens of groups 5 to 8 immunized with coccidial vaccines (Livacox Q, Paracox 5, Livacox T and Iracoc respectively) by drinking water on day 5 of age. Chicks in treatments 2 to 8 were inoculated with a suspension containing four *Eimeria* species of 26 days of age. Surveillances for coccidian oocysts of feces samples were carried out from 7 to 13 days of post-challenged, for determent of oocysts per gram (OPG) of feces. Body weight and feed conversion ratios were determined weekly.

Results and discussion

Table 1. The effect of different anti-coccidial vaccines and coccidiostate medicines on oocysts per gram feces (OPG) in broiler chickens that challenged with four *Eimeria* species.

Groups / Days	OPG of chickens in post-challenged days						
	7	8	9	10	11	12	13
Negative control	0	0	0	0	0	0	0
Positive control	13500	17604	17841	7321	6522	6023	2315
Salinomycine	1779	3188	2791	2440	1919	867	420
Diclazoril	9	13	55	0	143	1	0
Livacox Q	2614	6133	4682	3932	3642	34	58
Paracox 5	5080	6788	7178	3523	2375	75	82
Livacox T	7981	3690	6991	1248	2433	286	288
Iracoc	10704	10673	13787	5844	1650	640	277

Table 2. The effect of different anti-coccidial vaccines and coccidiostate medicines on growth performance of broiler chickens that challenged with four *Eimeria* species.

Groups / days	Age of chickens			
	14	28	42	49
Body weight				
Negative control	269	972	2145	2661
Positive control	291	1015	2178	2772
Salinomycine	291	1049	2318	2966
Diclazoril	281	963	2149	2809
Livacox Q	269	898	2066	2743
Paracox 5	272	946	2064	2668
Livacox T	278	927	2049	2668
Iracoc	288	963	2128	2797
Feed conversion ratios				
Negative control	1.40	1.70	1.81	1.89
Positive control	1.45	1.69	1.86	1.98
Salinomycine	1.52	1.77	1.82	1.91
Diclazoril	1.46	1.80	1.87	1.97
Livacox Q	1.67	1.87	1.94	1.99
Paracox 5	1.52	1.82	1.95	2.02
Livacox T	1.52	1.83	1.91	2.06
Iracoc	1.52	1.80	1.90	1.98

Our data indicated that using coccidial vaccines and coccidiostate drugs significantly ($P < 0.05$) decreased oocysts per gram of feces (Table 1).

The highest mean of body weight was related to the chickens treated with Salinimycine with significant differences in body weight between treatments. The lowest feed conversion ratio was related to negative control (non-challenged) birds (Table 2).

It could be concluded that coccidial vaccines and coccidiostate drugs could significantly decrease OPG and improve growth performance, partially in coccidian-infected broiler chickens.

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