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Comparative efficacy of anticoccidial preparations in experimental eimeriosis in fowl

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Abstract

The data of efficacy of coccidiostatics of toltriox, cigro, amprolin and its combination with vitamin complex in experimental eimeriosis in birds have been presented.

Keywords: Poultry, hen, eimeriosis, protozoosis, immunity, weight increase, preservation, anti eimeriosis index, preparation, coccidia, invasive intensity, lomann-lcl classic chicken cross

Introduction

The problem urgency. The problem urgency is considered because, Eimeriosis is one of the most widespread protozoosis among birds. Poultry farming undergoes great economic waste due to eimeriosis which includes fowl-plague, decrease of production, additional feed expenditures on production unit and large expenditures on carrying out veterinary sanitary measures [7].

The basic mean of coccidiosis prophylaxis, particularly of boiler chickens are anticoccidial preparations which suppress the development of parasite on different stages of endogenic cycle [1, 2]. However, it should be acknowledged that coccidiosis prophylaxis with late employment of anticoccidial preparations undergoes essential difficulties which are first of all associated with agent's resistance development to employed preparations [3, 4, 5]. The parasite is able to produce resistance to any anticoccidial preparation and cause the situation when coccidia adapted to all known preparations will appear in poultry farm. The phenomenon of coccidic adaptation to anticoccidial preparation makes it necessary to search for new preparations and to develop prophylactic methods in order to prevent the development of rapid adaptation of coccidia to medical substances [6].

The aim of the research. The main purpose of the research is to find effective eimeriostatics which are employed in poultry farming all over the world and introduce them into practice for chemoprophylaxis of hen coccidiosis:

The tasks of the research

- To study eimeriosis spread in poultry forming and to find specific active coccidiostatics;
- To clear up the activity of various coccidiostatics during examination to carry out coprological and path morphological study;
- To determine specific features and virulence of eimerium agent;
- To develop new means, methods of treatment and chemoprophylaxis of hen eimeriosis.

Material and methods

The research work was carried out of "Lomann-LCL classic" chicken cross, grown in the conditions excluding their spontaneous infection with eimeria. Of selected fowl, 6 groups with 50 heads in each have been formed.

14 days chickens were infected with spare oocysts of mixed culture (E. acervulina-250 000, E.maxima – 20 000, E.tenella – 50 000) having titled beforehand in LD dose₅₀₋₇₀. The first group of chickens was not infected (healthy control); the second one was infected but not treated (infected control), the third one underwent infection from the first day with employment of toltriox, 1 ml with water during 2 days, the fourth one with amprolin-300 using 1000 mg/2,5 l dose with water during 5 days, the fifth one with amprolin-300 in combination with vitamin complex of rex vital amino acids in doses 1000-600 mg/2,5 l with

water accordingly during 5 days, the sixth one with cigo in 500 mg/kg dose with feed but during the whole experiment. Antieimeric activity of every preparation was evaluated separately and in combination with vitamins according to their preservation, weight increase, anti eimeriosis index (AEI) and also according to their effect on antiemetic immunity formation. The invasive intensity was determined on 5th, 7th, 10th, 15th, and 20th day after first infection.

The results of the research

During the whole experiment there were no clinical signs of eimeriosis in experimental groups. With this the group receiving different doses in different terms revealed 100% of preservation, body weight increase as 256, 0 – 257,0 –

259,0 – 241,0 % and AEI achieved 194,0 – 194,1 – 195,4 – 189,0 scores.

In fowl of the 2^d group (infected control) preservation made 32 %, body weight increase – 36, 0%, AEI – 45, 2 scores (table.1).

Among the infected untreated chicken groups (the 2^d group) clinical signs of eimeriosis were observed on the 3^d–4th day of the experiment. It was marked by presence of severe thirst and refusal of feed and huddling together in one place on the 5th – 6th day, fluid excrements with admixture of flood and cattle plague that made 34 head. In autopsy of the fallen chickens path morphological changes in the internal organs specific for birds eimeriosis were revealed.

Table 1: Comparative evaluation of eimeriosis chemoprophylaxis

No	The name of groups	The name of preparation	Dosage	The number of chickens in the group	Average weight of one head at the beginnings of the experiment (g)	Preservation (%)	Average weight of one head at the end of the experiment (%)	Weight increase (%)	AEI (200 score)
1.	Not infected control	-	-	50	89	100	331	272,0	200
2.	Infected control not treated	-	-	50	90	32	118	36,0	45,2
3.	Experimental	Toltrax	1ml/l with water	50	88	100	313	256,0	194,1
4.	Experimental	Amprolin	1000 mg/2,5 l	50	89	100	318	257,0	194,0
5.	Experimental	Amprolin-300 rex vital aminoacids	1000 mg 2,5 + 0,3 ml/l with water	50	89	100	320	259,0	195,4
6.	Experimental	Cigro	500 mg /kg with feed	50	91	100	310	241,0	189,0

The indicator of preparations efficacy in combination with and also their effect on formation of immunity in that disease is provided by reproductive ability of eimeria

oocysts. In our experiment oocysts were isolated in all infected chickens practically during the whole experiment (tabl.2).

Table 2: Efficacy of antiemetic preparations in eimeriosis of chickens (oocysts amount in 1 gr. of droppings, 1.000 specimen.)

No	The name of groups	Term of the research 24 hours				
		5	7	10	15	20
1.	Not infected control	-	-	-	-	-
2.	Infected control not treated	1,239	1,825	301	48	6
3.	Experimental Toltrax	208	344	32	4	1
4.	Experimental Amprolin	261	453	44	5	1
5.	Experimental Amprolin-300 rex vital aminoacids	242	438	40	4	1
6.	Experimental Cigro	310	302	27	4	1

In order to clear up the effect of chemoprophylaxis using toltrax, amprolin-300 and its combinations with vitamins and cigo to form antiemetic immunity, on the 21st day after the first infection, chickens were repeatedly infected by oocyst mixture of the same kind with dosage of 2 LD₁₀₀ (table №3). In the result it was established that in the birds of control, not infected group clinical signs of eimeriosis

were observed on the 5th – 6th day and preservation made 18%.

The birds which received toltrax, amprolin -300 and amprolin -300 in combination with rex vital aminoacids did not show clinical signs of eimeriosis and their preservation increased to 100%. In the birds which received cigo safety made 54%.

Table 3: The effect of anticoccidial preparations on formation of antiemetic immunity in birds' body

No	The name of groups	The name of preparation	The number of chickens in the group in repeated infection	Head plague due to eimeriosis	Preservation (%)
1.	Not infected control	-	50	41	18
2.	Infected control not treated	-	16	-	100
3.	Experimental Toltrax	Toltrax	50	-	100
4.	Experimental Amprolin	Amprolin	50	-	100
5.	Experimental Amprolin-300 rex vital aminoacids	Amprolin-300 rex vital aminoacids	50	-	100
6.	Experimental Cigro	Cigro	50	23	54

It was established that in birds of the control not infected group preservation made 18 % and 54% in those which received cigo. In the rest of groups clinical signs of eimeriosis were absent, preservation increased to 100%.

Conclusion.

1. Eimeriosis spread in hens mainly depends on the type of their care and feeding with this the degree of extensity and intensity of invasion is different.
2. In using amprolin+rex vital amino acids against eimeriosis chickens eat much better. Safety made to 100%, increase of mass made 25% and anti eimeriosis index made 195, 4 scores.
3. For prophylaxis and treatment of eimeriosis birds, employment of eimeriostatics in combination with vitamins is more effective than each preparation separately. With this, the body weight and anti eimeriosis index significantly increase and oocyst reproduction decreases 2-3 time.
4. Therefore, preparations of amprolin+rex vital with combinations, in the dosage of 1000 mg/2,5+0,3 mg/l accordingly, with water during 5 days do not produce unfavorable effect on immunity formation and provide high preservation for chickens. So, it can be used both in broiler farming and in repair young birds.
5. Cigo prevents immunity formation against eimeriosis. Proceeding from this it can only be used for prevention of the disease in broiler direction.

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