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THE DYNAMICS OF HEMATOLOGY INDICES CHANGES IN CHICKEN INFESTED BY ECTOPARASITS AT THE INITIAL STAGE AND AFTER ANTIPARASITE TREATMENT

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SUMMARY

The mix invasions with ectoparasits (biting lices, fleas, gamasid mites) in chickens causes the decrease by 27,5% of the erythrocytes number, the decrease by 29,1% of trombocytes and 16,6% of hemoglobin in the blood of infested birds. The status of these infested chickens is characterized by their significant poisoning, anemia and hemorrhages in the focus of parasites.

The pathogenic influence of parasites conglomerates on the body of the infested host is a continuous stressogenic factor that affects its well-beings, including the provoked immunological alterations and negative morphological and physico-pathological changes (9).

There were demonstrated that nowadays the population of animals in general and animals serving as hosts at the individual level are infested not with one, but many species of parasites. The phenomenon of poliparasitism is characteristic for numerous populations of animals, especially cattle, sheep, pigs and birds (1, 3). The dynamics of changes in body infested with poliparasite invasions differs of that occurred in the monoinvasion condition. In all cases the pathogenic influence of parasites related to system parasite-host is quite complex: mechanic, toxic, chemic, allergic, repercussive, poisoning, infestation and immune-modulating effects. The infested host is influenced by the whole complex of parasites conglomerates which structures and components interact with each other, augment its potential via synergism or inhibiting each other. During the process of poliparasite invasion, the body of the infested animal reacts with forming the complex interactions manifested through morphological and functional changes in organs and its functional systems (2, 4).

1. MATERIALS AND METHODS

In order to study the influence of the parasites on the hematological indices: number of erythrocytes, quantity of hemoglobin (Hb), mean corpuscular hemoglobin (HEM), average concentration of erythrocyte hemoglobin (CHEM), the average volume of erythrocytes (VEM), number of trombocites (PLT), the average volume of trombocytes (VTM)), the evolution of the pathogenic process caused by poliparasites have been studied as well as the variation of these indices at the initial stage of infestation, at the 7-th and 14-th days after antiparasite treatment, with vegetal origin preparation – Ectostop P 5%.

The study have been conducted on 20 chickens as of 4 months belonging to rase *Silver Adler*, devided into 2 equal groups: Group I – control group (not infested); Group II – infested with mole mites (*Cuclotogaster heterographus*, *Eomenacanthus stramineus*, *Goniocotes gallinae*, *Goniocotes maculatus*, *Goniodes dissimilis*, *Lipeurus caponis*, *Menopon gallinae*, *Menacanthus cornutus*, *Menacanthus pallidulus*), flea (*Ceratophylus gallinae, C. hirundinis*) and acarids (*Dermanyssus gallinae, D. hirundinis*). The birds have been examined clinically and parazitologically (coprology, internal examination) in order to diagnosticate the eventual the diseases that may modify the results of the experiment. The chickens before and during the experiment and investigations had the similar food ration, and the nutritive calories amount corresponded to energetic consume and age. The blood tests have been collected in the morning, before feeding, with use of anticoagulant EDTA.

The blood study have been realized by automatic device, model PCE-210 (ERMA INC) applying the classical methods (5, 7, 10)**.** The obtained data have been statistically processed with calculation of variability parameters of arithmetical mean (M) and mean error (m). The statistical correlation (P) among average values of the studied parameters in both Groups have been calculated while applying Student t-test (8).

2. RESULTS AND DISCUSSIONS

The parasites exert a strong pathogenic influence on its host, causing the pervasive morphological and physiological changes in infested organs and tissues affecting negatively the physiological status of the whole organism. The integrity of the hosting organism is infringed on the macroscopic as well on the micro-structural levels. The

integral parts of the cells, including membrane and nucleus, are subject of modification, similarly to the chemical processes of immune system. The profound changes take place on the enzymatic level, related to ribonucleic, deoxyribonucleic acids etc. Under the condition of poliparasitism, the relation parasite-host is the rapport between hosting organism with the whole poliparasitic complex and each parasite in particular, which is also manifested as an integral dialectic whole. A relatively cumulative influence of the whole parasite complex on the hosting organism is taking place, more or less synergic or antagonist. The experiences with artificial infestation of birds by various parasites (biting lice, acarians, ascarids, coccidium) may cause essential changes in the hematological indexes **(**2, 6**)**

The results of the conducted study revealed that the number of erythrocytes at the initial stage of the experiment in Group II (infested) was 27,5% lower comparing with Group I (healthy); on the 7th day this index had a positive non-significant dynamics compared to the initial stage and at the end of experiment (14-th day) and was correspondingly 27,9 % increase compared with initial value, but is lower with 8,4% reported to the Group I (table 1).

Table 1

The dynamics in variation of the hematological indexes in chickens infested by biting lices, fleas, gamasid mites

Research evidence	I st Group			II nd Group		
	Research period, days					
	Initial	7		Initial	7	
Erythrocytes, 10^6/ul	3,06±0,14	3,02±0,17	3,10±0,13	2,22±0,09	2,32±0,08	2,84±0,05
Hb, g/dl	10,0±0,36	10,04±0,25	10,44±0,34	8,34±0,39	8,61±0,62	9,78±0,30
HEM, pg	40,62±0,64	41,12±0,13	41,40±0,70	37,76±0,79	38,70±0,93	40,48±0,66

Research evidence	I st Group			II nd Group		
	Research period, days					
	Initial	7		Initial	7	
CHEM, g/dl	41,82±0,03	41,32±0,77	41,36±0,47	37,92±0,80	39,76±0,95	40,16±0,45
VEM,	109,14±0,9	110,94±0,	109,80±	92,80±0,	96,76±0,	99,60±0,

μm^3	8	41	0,83	65	18	71
PLT, 10^3/ul	25,36±0,98	25,66±0,15	25,78±0,74	18,00±0,67	19,32±0,69	24,78±0,45
VTM, μm^3	10,02±0,48	10,00±0,50	10,08±0,2	8,32±0,35	9,08±0,15	9,30±0,14

The quantity of hemoglobin at the initial stage of experiment in Group II was decreased by 16,6% compared to Group I. At the next stage of the experiment, on the 7-th day it was decreased by 14,3 % and at the end of experiment (14-th day) it was diminished by 6,4% compared to healthy birds. The study allowed to establish the values variation of mean corpuscular hemoglobin (HEM) that at the initial stage in Group II registered a 7,1% decrease, at the 7-th day it was decreased by 5,9% compared to Group I, and at the 14-th day a 2,7% decrease have been registered as compared to the Group I. The average concentration of erythrocyte hemoglobin (CHEM) at the initial stage was decreased by 9,4% comparing to Group I.

After 7 days this index has decreased by 3,8%, and on the 14-th day it was smaller by 3,0% comparatively with such in the healthy group of birds. In the same time, a diminished by 15% level of the average volume of erythrocytes (VEM) have been registered in Group II compared to Group I, that at the 7-th day drops up to 4,2% compared with the initial value, and at the final stage of the experiment the 9,3% decrease compared to healthy birds have been registered.

Number of trombocytes (PLT) and the average volume of trombocytes (VTM) in the infested Group speaks about the negative evolution of this index - 29,1% at the initial stage and 27,0% at the final stage of experiment, after using of the antiparasitar treatment with Ectostop P 5% preparation, increasing with 37,6% and correspondingly with 11,7% lower compared to the initial stage.

In this way, the hematological indexes reveals a pronounced poisoned status of chickens from Group II (infested) caused by mix invasions (mole mites (*Cuclotogaster heterographus*, *Eomenacanthus stramineus*, *Goniocotes gallinae*, *Goniocotes maculatus*, *Goniodes dissimilis*, *Lipeurus caponis*, *Menopon gallinae*, *Menacanthus cornutus*, *Menacanthus pallidulus*), flea (*Ceratophylus gallinae, C. hirundinis*) and acarids (*Dermanyssus gallinae, D. hirundinis*), in its turn causing reduce of number of erythrocytes, quantity of hemoglobin, mean corpuscular hemoglobin, average concentration of erythrocyte

hemoglobin, the average volume of erythrocytes, number of trombocites, the average volume of trombocytes.

3. CONCLUSIONS

3.1. The mix invasions with ectoparasites (biting lices, fleas, gamasid mites) provoke in the bodies of the infested birds the diminished number of erythrocytes, of hemoglobin quantity that serves for establishment of the severity of the anemia and initiating anti-anemia treatment.

3.2. Application of the antiparasitar treatement with vegetal origin preparation – Ectostop P5% has an antiparasitar effect of 95-100% and causes the increasing number of erythrocytes, quantity of hemoglobin, mean corpuscular hemoglobin, average concentration of erythrocyte hemoglobin, the average volume of erythrocytes, number of trombocites, the average volume of trombocytes.

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