

The data got allow us to make the conclusion that helminthic invasion is not a separately taken pathology, but represents a difficult system complex appearing as the result of host body affect with helminths and is accompanied with animals' immune status changes. That is why it is necessary to include the preparations decreasing the sensibilizing action of helminthic invasion on the host body and increasing the synthesis of immunoglobulin of class A into helminthism treatment schemes additionally alongside with anthelmintic agents.

The article is admitted to the International Scientific Conference «Problems of national educational standards' international integration», France, Great Britain, 2007, April 20-27; came to the editorial office on 16.11.06

GENERAL ADAPTATION REACTION OF ERYTHROCYTIC BLOOD POPULATION OF BIRDS AT PHOTODESYNCHRONOSE

Lipunova E.A.
Belgorod State University
Belgorod, Russia

The erythrocytic membrane penetration (EMP) and sorption capacity (ESC) are the objective characteristics for the estimation of structural and functional state of the membrane apparatus of a body as a whole, considering a high correlation of property changes of blood cells' membranes and internals at extreme exposures of different intensity. The aim of the research is to study birds' EMP and ESC states when adapting to photodesynchronose.

The work was carried out on 15 cockerels of "Isa Brown" cross. Photodesynchronose was created by a photo-modeling method according to 3-days inversion of light exposure in the light status of photoperiod 12:12 (from 8 a.m. till 8 p.m. – a night imitation, from 8 p.m. till 8 a.m. – a day imitation) with the following birds' change-over on natural light status. The blood was taken on 1,3,7,15,23 and 29th day after chronophysiological loading. EMP was evaluated on the urea intensity to penetrate through cell membranes; ESC – on membrane sorption of methylene blue;

plasmatic (ectoglobular) hemoglobin (PH), blood glucose level, osmotic fragility and acid

fastness of erythrocytes – by means of traditional in clinical and veterinarian hematology methods.

In the background survey the average percentage of erythrolysis (APE) and the average percentage of hemolysis in the area of urea concentration 55:45 and 60:40 were accordingly $4,06 \pm 1,68$ and $4,10 \pm 2,39$. On the first and third days of rehabilitation period EMP was highly increased – APE was 4,9 and 6,5 fold higher the control level accordingly. Simultaneous ESC decrease we consider as a tendency. The PE increase – up to $1,99 \pm 0,35$ and $1,26 \pm 0,19$ g/l⁻¹ (in the control $0,68 \pm 0,13$ g/l⁻¹, $p < 0,01$) – witnesses the damageability of membraness. Hemoglobin breakdown products, being a powerful prooxidant, initiate lipid peroxidation (LPO) and, causing membrane ruptures, provoke EMP increase. Erythrocytic membrane structures' destabilization leads to their functional inadequacy and hypoxia. The glucose concentration in blood decreases up to $7,40 \pm 0,15$ and $6,88 \pm 0,08$ mmol/l⁻¹ ($p < 0,001$). On the seventh day a hyperglycemic rising ($9,88 \pm 0,28$ mmol/l⁻¹) is marked, EMP and PE are higher the control level, and the sorption capacity is lower by 17,5 % ($p < 0,01$). In two weeks the glucose concentration in blood is $11,27 \pm 0,47$ mmol/l⁻¹ and the APE and PE tend to decrease; on the 23, 29 days the studied parameters approach the background ones. The evolution of regenerative processes in erythrocytic population is reflected in the differential acid erythrograms. On the first week of the stress aftereffect the functional erythron activity increases, the population of old cells with decreased resistance grows, and a specific shift of red cell distribution resistance erythrogram to the left is marked, that witnesses the resistance decrease and erythrolysis intensification. The right wing rising and the hemolysis time increase up to 6 min on the 15 day of the adaptation period – is the sign of the population's rejuvenation. On the 23 day the right shifted erythrogram becomes tricrotic and stretched to 8-9 min; on the 29 day the acid resistance increases, the erythrogram profile approaches the background one, however, in the erythrocytic population the lot of cells with hidden structural membrane failures is still high – up to 84,7 % red cells hemolyzes in the critical resistance point (0,55 % NaCl) and up to 21,0 % - in the autohemolysis point (0,70 % NaCl). The stressor reaction and the

associated with it hypoxia are fraught with metabolic disorder and endogenic intoxication of a body. At metabolites' over accumulation in blood plasma the toxic loading on cells' membranes increases, their receptors are blocked, and the sorption capacity decreases.

So, photodesynchronose provokes at birds the development of general adaptive syndrome of

erythrocytic population manifested with EMP, PE increase and ESC decrease.

The article is admitted to the International Scientific Conference " Higher School Research ", Spain, Morocco, Tenerife, Madera – cruise, 2006, December 2-12 ; came to the editorial office on 29.10.06