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BLOOD METABOLIC COMPONENTS AT TWO EGGS HYBRID HENS

COMPONENŢI METABOLICI SANGVINI LA DOI HIBRIZI OUĂTORI DE GĂINĂ

PAŞCALĂU SIMONA*, OROIAN T.*, OROIAN R.G.*

** Faculty of Animal Sciences and Biotechnologies, Cluj-Napoca, România*
e-mail: simona_pascalau@yahoo.com

Starting with the hypothesis that there can't be obtained superior quantitative and qualitative productions from hens with an improper health condition, we present in this paper the biological material health condition, observing the physiological status after the analyses of some blood components. The analyzed biological material was represented by two eggs hybrid hens: Roso SL inland hybrid and Shaver 579 imported hybrid. There were organized two experimental lots, including 100 heads for each hybrid and we collected samples for laboratory analyses from a number of 34 individuals, randomly chosen. We made analyses for: blood glucose (mg/dl), Total lipids (mg/dl), Total proteins (g/dl), Erythrocytic volume (VEM), Erythrocytic haemoglobin (HEM), Haemoglobin concentration (CHEM). The obtained data after the laboratory analyses were statistical interpreted, with the establishment of medium values and dispersal indices for the analyzed parameters. The blood glucose values of 223.60 ± 7.07 mg/dl at Roso SL hybrid and of 244.00 ± 1,88 mg/dl at Shaver 579 hybrid, the values of total lipids, of 516.30 ± 18.67 mg/dl for Roso SL hybrid and 578.70 ± 21.13 mg/dl for Shaver 579 hybrid, the values of total proteins of 3.70 ± 0.17 g/dl at Roso SL hybrid and 3.42 ± 0.07 g/dl at Shaver 579 hybrid are situated in the normal limits. The medium values and dispersal indices for the studied traits are situated on the middle speciality literature values and indicate a good hen's health condition. The data obtained after the analyses are showing the fact that the two hybrids (Roso SL and Shaver 579) are appropriate for a good eggs production and for the maintaining of the egg period plateau for a long period of time.

Key words: blood metabolic components, hen hybrids.

Introduction

For the obtaining of appropriate quantitative and qualitative eggs productions, there is a need of ensuring optimal technological parameters (hygiene and alimentation) and hens with a very good physiological status, who can respond to the exploitation requests.

Among all the different nutritive substances (carbohydrates, lipids, proteins), the carbohydrates are providing the biggest energetic quantity, up to 50 – 70 % from the total energy, so the carbohydrates role is a energetic one.

The most of the lipids are deriving from food, so a placing between normal physiological limits indicates a proper nutrition system, with a balanced portion, which corresponds to the production demands.

Total blood proteins have values correlated with age, breeding and nutrition factors.

Materials and Methods

The biological material studied, included two eggs hybrids, Roso SL inland hybrid, a calm hen, resistant at diseases, at microclimate and nutritional stress, well adapted at batteries breeding and exploitation conditions and Shaver 579 imported hybrid. These hens are responding very well, from the production point of view, to the batteries exploitation intensive system.

For estimating the hybrids physiological status, we made laboratory analyses regarding blood organic components (carbohydrates, lipids, proteins), as well as regarding erythrocytes derived parameters (erythrocytic volume, erythrocytic haemoglobin, erythrocytic haemoglobin concentration) at a number of 34 individuals from each lot, at the age of 45 weeks. We analyzed the hens at 45 weeks because this age is a referential one and represents the plateau period of laying eggs curve.

The studied biologic material was kept in the same conditions and nutrition system. The results obtained were statistical analyzed using Student test.

Results and Discussions

The medium values and the variability of blood metabolic components are shown in tables 1 – 6.

Table 1

The average and dispersal indices for the glycaemia parameter (mg/dl)

Hybrid	n	x ± sx	s	V%	Roso SL		
					d	sd	t
Roso SL	34	223.60 ± 7.07	22.34	9.99			
Shaver 579	34	244.00 ± 11.85	37.46	15.35	20.400	7.480	2.727**

Table 2

The average and dispersal indices for total lipids parameter (mg/dl)

Hybrid	n	x ± sx	s	V%	Roso SL		
					d	sd	t
Roso SL	34	516.30 ± 18.67	59.05	11.44			
Shaver 579	34	578.70 ± 27.13	85.79	14.73	62.400	17.861	3.494***

Table 3

The average and dispersal indices for total proteins parameter (g/dl)

Hybrid	n	x ± sx	s	V%	Roso SL		
					d	sd	t
Roso SL	34	3.70 ± 0.17	0.54	14.54			
Shaver 579	34	3.42 ± 0.07	0.23	6.82	-0.280	0.101	2.782**

Table 4

The average and dispersal indices for erythrocytic volume parameter

Hybrid	n	x ± sx	s	V%	Roso SL		
					d	sd	t
Roso SL	34	106.11± 1.07	2.4	2.26			
Shaver 579	34	105.90 ± 0.67	1.49	1.41	-0.210	0.484	0.433 ns

Table 5

The average and dispersal indices for erythrocytic haemoglobin parameter

Hybrid	n	x ± sx	s	V%	Roso SL		
					d	sd	t
Roso SL	34	39.28 ± 0.72	1.61	4.09			
Shaver 579	34	39.47 ± 0.51	1.13	2.87	0.190	0.337	0.563 ns

Table 6

The average and dispersal indices for haemoglobin concentration parameter

Hybrid	n	x ± sx	s	V%	Roso SL		
					d	sd	t
Roso SL	34	36.20 ± 0.49	1.1	3.03			
Shaver 579	34	36.05 ± 0.79	1.76	4.88	-0.150	0.356	0.421 ns

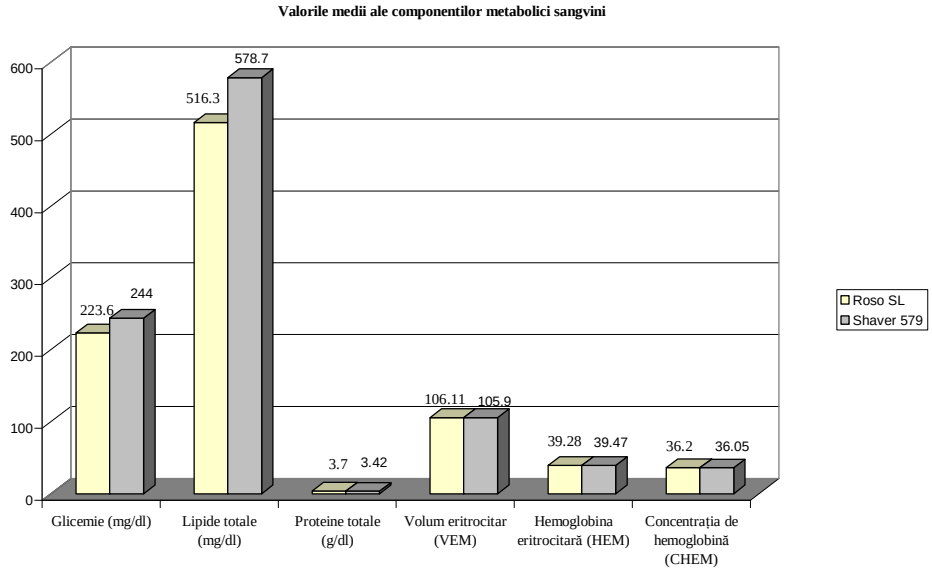

Figure 1. Medium values for blood metabolic components at Roso SL and Shaver 579 egg hybrids

The blood glucose values (table 1) of 223.60 ± 7.07 mg/dl at Roso SL hybrid and of 244.00 ± 11.88 mg/dl at Shaver 579 hybrid are situated in the speciality literature limits of 221 – 273 mg/dl (Gh. Băltan, 1990). The differences are distinct significant in favour of Shaver 579 hybrid. The variation coefficient values for this trait are almost double at Shaver hybrid in comparison with the other hybrid, but are situated between the limits of 8.70 – 18.31 (Băltan, 1990).

The total lipids (table 2), with medium values of 516.30 ± 18.67 mg/dl for Roso SL hybrid and of 578.70 ± 21.13 mg/dl for Shaver 579 hybrid are situated in the normal limits. Shaver 579 hybrid has superior values, very significant statistical comparative to Roso SL hybrid.

The blood medium protein level at Roso SL hybrid (table 3) is 3.70 g/dl, a superior value with 0.280 g/dl comparative to Shaver 579 hybrid, a distinct significant statistical value.

The values of erythrocytic medium volume (VEM) of 106.11 ± 1.07 at Roso SL hybrid and of 105.90 ± 0.67 at Shaver 579 hybrid, the haemoglobin medium content of an erythrocyte (HEM), of 39.28 ± 0.72 at Roso SL hybrid and of 39.47 ± 0.51 at Shaver 579 hybrid, as well as the haemoglobin medium concentration (CHEM) of 36.20 ± 0.49 at Roso SL hybrid and of 36.05 ± 0.79 at Shaver 579 hybrid are indicating close values between the two types of hybrids and insignificant statistical differences (tables 4, 5 and 6).

Conclusions

The analysis of blood parameters in correlation with hens physiological and performance status allow the following conclusions:

1. The distinct and very significant differences in favour of Shaver 579 hybrid regarding the blood glucose and total lipids level indicate metabolic differences between the two types of hybrids, found in the performance quantitative and qualitative eggs production differences.
2. The same difference between hybrids regarding the plasmatic proteins quantity level, but in favour of Roso SL hybrid, confirms the metabolic differences between the two hybrids.
3. The insignificant differences between the erythrocytic volume, erythrocytic haemoglobin and erythrocytic haemoglobin concentration of the two types of hybrids confirm their belonging to the same species and breed group.
4. Their blood values are convincing us that the two hybrids (Roso SL and Shaver 579) are proper for the obtaining of a good egg production and for the maintaining of a plateau laying eggs period for a longer time.

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