THE QUALITY OF IMPACT OF BIOR AND BUTOFAN REMEDIES ON SOME PARAMETERS OF PROTEIN METABOLISM IN MUSCLE TISSUE AND PRODUCTIVITY IN ADULT QUAILS PUT UNDER RECONDITIONING

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Abstract: *Quail farming is a new branch of the animal husbandry sector, providing consumers with quality dietary products. In this context, the study of the bioactive remedies: BioR and Butofan on the health and productivity of quails is of great interest. Our study was conducted on 3 groups, 50 quails each, for a period of 50 days. Birds of 2 groups were administered BioR and Butofan twice consecutively. BioR remedy administered to adult quails placed under reconditioning does not affect basal metabolism but on the contrary exerts a beneficial effect on the development of protein metabolism. BioR remedy administered to adult quails placed under reconditioning, has a beneficial effect on the metabolic processes in muscle tissue, greatly contributing to the optimization of the essential parameters of protein metabolism: total protein, albumin, creatinine, urea.*

Key words*: BioR remedy, Butofan remedy, quails, total protein, productivity*

INTRODUCTION

Quail farming is a new branch of the animal husbandry sector, providing consumers with quality dietary products. In this context, the study of the bioactive remedies: BioR and Butofan on the health and productivity of quails is of great interest. Our study was conducted on 3 groups, 50 quails each, for a period of 50 days. Birds of 2 groups were administered BioR and Butofan twice consecutively. The quails were permanently monitored, body temperature, respiratory movements were determined, blood samples and muscle tissue - collected. It has been established an increase of albumin and creatinine in muscle tissue compared to the beginning of the study, and to the control group, by 32, 6-34, 0%, considered a positive result. [10,11]

The level of urea in birds treated with BioR, at the first stage of study, was higher by 19,7%($p < 0,05$) compared to the control group, this dynamic persisting also at the end of the study, compared to control group and to the group treated with Butofan.[11,12]

MATERIALS AND METHODS

In the study were selected 150 quails at the end of the laying cycle, they were divided into 3 groups of 50 birds each. The tested remedy was administered intramuscularly to the quails two times consecutively at the beginning of the study and secondly at 14 days after the first administration at a dose of 0.5 ml / head. Another experimental group was administered the alternative product Butofan to compare the obtained results. Birds of the control group received 0.5 ml of solution NaCl of 0.9%. The pattern of administration of the tested remedies is shown in Table 1.

Table 1.

The pattern of administration of BioR and Butofan remedies to adult quails placed under reconditioning

Groups of animals	Number of birds	Dosage and administration regimen, ml / head		Way of administration
		1 administration (at the beginning of the study)	2 administration (at 14 days after the first administration)	
CG	50	0,5 ml 0,9% sol. NaCl	0,5 ml 0,9% sol. NaCl	intramuscular
EG-1	50	0,5 ml BioR	0,5 ml BioR	
EG-2	50	0,2 ml Butofan	0,2 ml Butofan	

The quails included in the experience were identical in body weight, age, physiological status, and were placed under the same conditions. The birds were continuously monitored and clinically investigated during the study.

RESEARCH RESULTS

The data obtained on the impact of BioR and Butofan on some protein metabolism indices in muscle tissue when administered to adult quails for reconditioning are fully reported in Table 2.

Table 2.

The influence of BioR and Butofan on some protein metabolism indices in quail muscle tissue (M±m)

Significance	The beginning of the study	Birds groups		
		CG	EG 1	EG 2
Total proteins, g/l	40,41±0,84	45,56±1,53*	48,00±4,15	42,66±0,92
1 harvesting		42,46±0,63	41,80±1,32	40,88±0,39
2 harvesting				
Albumins, g/l	16,37±0,34	18,33±0,84	17,30±0,83	17,53±0,80
1 harvesting		15,69±0,43	16,30±0,64	16,54±0,57
2 harvesting				
Creatinine, μM/l	1,98±0,17	2,07±0,25	1,96±0,68	2,30±0,35
1 harvesting		1,44±0,31	1,91±0,28	1,93±0,24
2 harvesting				
Urea, mmol/l	112,48±8,26	125,84±11,84	101,08±2,09	168,12±6,64*
1 harvesting		263,10±77,78	158,70±18,51	202,38±17,12
2 harvesting				

Note: *p<0,05, **p<0,01

Table 2 shows that total proteins have a growing trend in all quail groups considered in this research. The increase in total muscle protein in the first investigation in intact birds in the control group reached 45.56 ± 1.53 g / l, which is more than 12.7% compared to the values of this parameter at the beginning of the research , with a significant difference (p <0.05). This trend of total protein growth is also found in EG 1, treated with the BioR remedy and averages to 48,00 ± 4,15 g / l and is 18,8% higher than the data reported at the beginning of the investigation and by 5.3% respectively against these values already in the control group at the first harvest, but with no statistical significance. In EG 2 treated with Butofan remedy this parameter is on the average 42.66 ± 0.92 g / l, which is higher by 5.6% against the indices found at the beginning of the research and on the contrary by 6.4% compared to the control group values and 11.1%, respectively, compared to EG 1, also at the first investigation, but

with no significant differences. At the end of the study, the total protein values in the muscle tissue of quail in all three groups under study show a clear decreasing trend in EG 1 treated with BioR, which is by 12.9% compared to the first harvest in the same group. The content of total protein in muscle decreases in EG 2 by 4.2% compared to the same values in the same group but only at the first investigation, being also lower by 3.7% compared to the control group and by 2.2% in EG 1 treated with the BioR remedy.[10,15]

The albumin level values in muscle tissue at first harvest constitute 18.33 ± 0.84 g / l, thus increasing by 12.0% relative to the beginning of the study. At this stage of investigation, the albumin level in the muscles in EG 1 and EG 2 increased by 5.7% and 7.1%, respectively, compared to the data reported at the beginning of the study, but they were lower than in the control group. [15,16, 13] Thus, this index is lower by 5.6% in EG 1, treated with BioR and is also lower respectively by 7.1%, in EG 2, treated with Butofan against the values of the control group, also at the first investigation. At the end of the study, there is a clear tendency of albumin decrease in muscle tissue. In EG 1 treated with BioR remedy albumin level decreased by 5.8% compared to the values reported in the same group at the first investigation. At the same time, it is significant that at the end of the study the group treated with the BioR remedy is higher by 3.9% compared to the values of the control group. The same situation is observed in the Butofan group, where this index is higher by 5.4% compared to the control group at the end of the study.[16, 13, 4]

As to creatinine, only a slight upward trend in creatinine in muscle mass in the control group was observed by 4.5% compared to baseline indices reported at the beginning of the study. Thus, BioR remedy administered to quails (EG 1) maintained creatinine values in muscle at the values reported at the beginning of the study, but they were lower by 5.3% relative to the control group values at the first investigation. At the same time, this index in quails treated with Butofan increased by 16.2% compared with the beginning of the study and by 11.1% against the control group values. Thus, at this investigation period the studied parameter decreased by 1.4 times against the values recorded at the first investigation. The level of this metabolite of protein metabolism in EG 1 treated with the BioR remedy remained virtually the same, indicating only a slight downward trend - by 2.6% compared to the same values recorded in this group at the first investigation. [10,5,14]

It is significant that the analysis of this parameter among the studied groups revealed the beneficial effect of the BioR remedy on the protein metabolism over the entire experimental period, the parameter which in this experimental group is 32.6% more than in the control group at the end of the study, but without statistical significance.[11, 2] It is remarkable that at this late term of investigation the creatinine level in muscle tissue in EG 2 treated with Butofan remedy is also 34.0% higher than in the control group at the end of the investigation.[11, 12]

The value of urea in the pectoral muscles in quails at the first investigation is 11.9% higher than the values reported at the beginning of the study. Significant increase of urea in muscle is attained in the birds treated with the alternative Butofan remedy in EG 2 and is 1.5 higher than at the beginning of the study, with high significant depletions ($p < 0.001$). In the Butofan group (EG 2), this index is also 33.6% higher than the control group values at the first investigation, with a statistically significant difference ($p < 0.05$). At the first investigation, the urea content in muscle in EG1 (with BioR) is at the lowest level and constitutes 101.08 ± 2.09 mmol / l on the average. In their turn, these values are lower by 10.1% compared to the beginning of the study and, at the same time, are lower by 19.7% relative to the control group values at the first harvesting ($p < 0.05$). At the end of the study, there was an increase in urea in the groups of birds treated with both remedies considered in the study. Thus, this increase in EG 1 treated with the BioR remedy increased by 1.6 times or by 57% over the values reported

in the BioR treated group at the first investigation. In group (EG 2) the urea increased only by 20.4% compared to the values reported in the same group at the first investigation.

The impact of BioR and Butofan remedies on quail productivity

As stated, one of our tasks has also been to investigate the body mass in the studied quails. [11, 12, 3] In this study, the body mass values of the quails treated with BioR and Butofan are quoted in Table 3.

Table 3.

Body mass values for quails and their viability when treated with BioR and Butofan remedies

Specifications	CG	EG 1	EG 2
Body mass at the beginning of the study, g	300,96	296,37	297,74
Body mass at the end of the study, g	284,50	291,16	288,98
Difference at the beginning /end of the study, g	-15,5	-5,21	- 8,76
Number of birds at the beginning, head	50	50	50
Number of birds at the end, head	36	38	36
Livestock viability, %	92,0	96,0	92,0

Note: there were slaughtered 10 birds in each group which was taken into account in determining the viability

From the analysis of the data presented in Table 3 it is clear that the dynamics of the body mass at the end of the study was negative, evidenced by the diminution of this zootechnical parameter. [11, 6, 7] Thus, the body mass in CG is 284.50g, decreasing by 15.5g compared to the beginning of the study. The same trend was also observed in experimental groups 1 and 2 with 5.21g and 8.76 g, respectively, relative to the beginning of the study in the respective groups. [12, 9, 1, 8] The viability in EG1 treated with BioR was 96.0% versus to 92.0% in both CG and EG 2 treated with Butofan.

CONCLUSIONS

1. BioR remedy administered to adult quails placed under reconditioning does not affect basal metabolism but on the contrary exerts a beneficial effect on the development of protein metabolism.

2. BioR remedy administered to adult quails placed under reconditioning, has a beneficial effect on the metabolic processes in muscle tissue, greatly contributing to the optimization of the essential parameters of protein metabolism: total protein, albumin, creatinine, urea.

3. The confrontation of BioR and the alternative product Butofan, both administered to adult quails placed under reconditioning, revealed a better intervention of BioR remedy on protein metabolism at the level of muscle tissue compared to the alternative remedy Butofan.

4. To improve the health and protein metabolism in adult quails at the end of the laying cycle and placed under reconditioning, the regimen and the optimal dose of BioR was of 0.5 ml / head, intramuscularly 2 times consecutively: on the day of reconditioning and the second time over 10-14 days after the first administration of this biologically active product.

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