THICK ALBUMEN HEIGHT OF EGGS FROM TWO HYBRIDS MOLTED HENS

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Abstract

Molting could be initiate on different ways, but methods with application of restriction of feed and water, are the most popular because of it's simplicity and practice. Eggs produced in second egg laying cycle had larger weight, shell quality is weaker, laying intensity may be about 92-94% from the first cycle and feed conversion is higher for about 10%.

The aim of this investigation was to establish the influence of artificial molting on albumen height from produced eggs of laying hens from two genotypes ISA Brown 88 weeks and Hisex Brown 91 weeks old, in specific points in molting period.

During the preparing period of molting procedure the albumen height was 7.26 mm (group 1) and 7.15 mm (group 2), during the stress period there was reduction in both groups and the albumen height decreased for 9.09% and 14.68% in group 1 and 2. During the second egg laying cycle it was established the increasing of albumen height on 8.38 mm and 8.61 mm in ISA Brown and Hisex Brown hens, respectively.

The same tendency was establish in Haugh units (HU) in both experimental groups. During the preparing period the value of Haugh units was 82.24 (group 1) and 81.78 (group 2). During the stress period the value was decreasing for 3.16% and 5.31% in group 1 and 2, respectively. The increasing of Haugh unit's value was establish during the second egg laying cycle and it was 88.22 and 89.39 units in ISA Brown and Hisex Brown laying hens, respectively.

On the base of the obtain results of albumen height and Haugh units it can be concluded that in the second egg laying cycle the quality of eggs was increasing.

Key words: *albumen height, Haugh units, eggs, molted hens.*

Introduction

Molting method may to be initiated with different procedures, but the procedure with feed restriction and water restriction are highly accepted because of its simplicity and practical use.

Decision for induced molting depends of economical factors in the region. For example, if the costs during the molting which last 12 weeks are lower of the costs for raising a new flock 18 weeks old, it is time to use the artificial molting procedure. There must to involve the reasons that in the second egg laying cycle, eggs are bigger, shell quality is weaker, lower number of eggs, live weight gain of laying hens is more then 200-300g and higher feed consumption per egg (Etches R.J., 1996).

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Some researchers (Bell, D. 1976; Bell D. 1979; Bell D. 1984; Matsoukas J. 1980; Brake J. 1979) reported that high influence for successful second egg laying cycle has genotype of hens. Some genotypes (White Hyline, Brown Hyline) in the second egg laying cycle during 10 months laid eggs with strong shell as in the first cycle and about 200 eggs per hen.

The objective of the current study were to determinated the relationships among egg quality characteristics in different periods of pre molt and post molt eggs of two different genotypes laying hens.

Material and methods

Influence of artificial molting on height of thick albumen of produced eggs are analyzed and conducted experiment with two hybrid hens (ISA Brown and Hisex Brown), 88 weeks and 91 weeks aged, respectively. Hens were housed 4 per cage for the molting procedure.

Nutrition in the second egg laying cycle was with special program. In the special nutrition program was performed 3 feed mixtures: molt 1 (during the molting period), molt 2 (for laying start) and pick 1 (for stabilized and reaching the pick and stability of laying). Programming of feed mixtures was done with simplex method of linear programming.

In Table 1 was presented the nutrition value of feed mixtures for experimental nutrition.

Table 1. Nutritive value of feed mixture

Nutritive value	Type of feed mixture		
	Molt 1	Molt 2	Peak
1. Dry matter, %	91.01	88.76	88.55
2. M. energy kcal/ kg	2770.0	2750.0	2750.0
3. Crude proteins, %	15.50	16.00	15.60
4. Crude fat, %	3.68	4.68	3.64
5. Crude fiber, %	3.68	3.47	3.13
6. Total ash, %	8.55	10.78	10.97
7.Lysine, %	0.80	0.84	0.76
8. Methionine, %	0.47	0.38	0.36
9. Calcium, %	2.80	3.60	3.80
10. Phosphorus, %	0.50	0.50	0.38
11. Sodium, %	0.25	0.22	0.20
12. Chlorine, %	0.15	0.14	0.14

Height of thick albumen was measured with micrometer and expressed in mm. Haugh units were calculated from records of egg weight and albumen height as an indicator of interior egg quality (Wu G. et al. 1994).

The obtain results was statistically determinated according to the procedure of Snedecor et al. (1989).

Results and disscussion

Evaluation of egg quality was performed with albumen height and Haugh units. During the preparing period albumen height in the first experimental group (ISA Brown) was 7.26 mm. During the starvation period the height was decreased for 0.66 mm, but during the second egg laying cycle the height was increased and reached the value of 8.38 mm. The decreasing of albumen height during the stress period shown in

relative number was 9.09% and 26.97% increasing of during the second egg laying cycle. This tendency was measured also with the Haugh units.

Table 2. Thick albumen height and Haugh units of eggs during experimental period

	Thick albumen height, mm	Haugh units
Experimental group 1 (ISA Brown)		
1. Preparing period	7.26	82.24
2. Stress period	6.60	79.64
3. Resting period	–	–
4. Egg laying period		
– from 5 to 8 weeks	8.33	88.04
– from 9 to 12 weeks	8.00	86.29
– from 13 to 16 weeks	8.45	88.38
– from 17 to 20 weeks	8.75	90.18
Average	8.38	88.22
Experimental group 2 (Hisex Brown)		
1. Preparing period	7.15	81.78
2. Stress period	6.10	77.44
3. Resting period	–	–
4. Egg laying period		
– from 5 to 8 weeks	8.83	91.27
– from 9 to 12 weeks	8.00	86.83
– from 13 to 16 weeks	8.71	89.12
– from 17 to 20 weeks	8.89	90.34
Average	8.61	89.39

During the preparing period Haugh units were 82.24, and then were decreased on 79.64 during the stress period, which in relative numbers means 3.16%. In the second egg laying cycle was increased for 10.77% average and reached 88.22 units. From the obtain results during the second egg laying cycle the egg quality was increased as an evaluation of height albumen and Haugh units.

The similar tendency was shown in the second experimental group (Hisex Brown). During the preparing period the height of albumen was 7.15 mm and 6.10 mm during the stress period which in relative numbers the decreasing was 14.68%. During the second egg laying cycle the height of albumen increased and reached the 8.61 mm value. This positive tendency in relative numbers was 41.15%.

In figure 1 was presented the value of albumen height during the experimental periods in two different experimental groups.

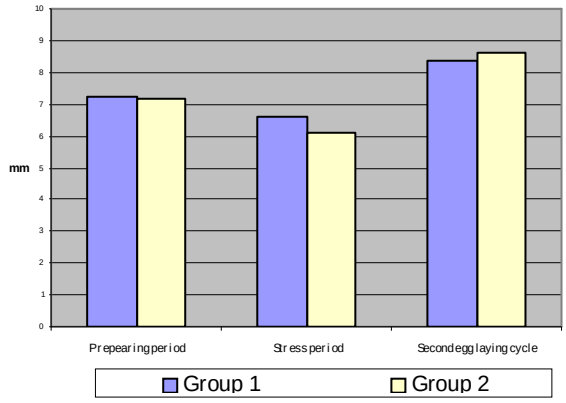

Figure 1. Changes of thick albumen height during the experiment

The Haugh units value following the same tendencies. During the preparing period the Haugh units was 81.78, during the stress period was decreased for 5.31% in the second group and reached 77.44. The positive tendency during the second egg laying cycle was increasing about 15.43% in the second group. These all changes are significantly on $P<0.01$ level and we report that the egg produced in the second egg laying cycle was with better quality

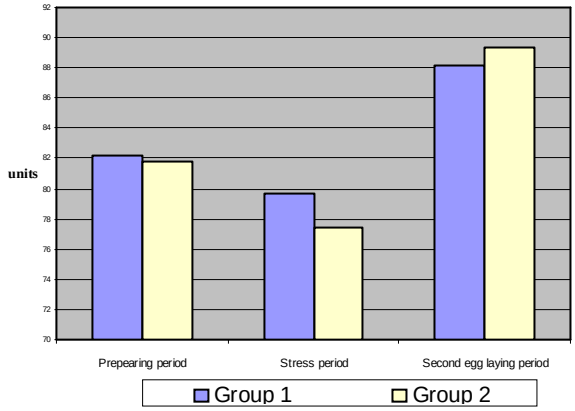

Figure 2. Changes of Haugh units during the experiment

The results which used for evaluation of the albumen quality in prestress period, during the stress and during second egg laying cycle present the same tendencies. Albumen quality during the stress period was decreased, but in the second egg laying cycle was increased on the better level then in the first egg laying cycle.

It is important to report that in the second egg laying cycle are produced eggs with better albumen quality then in the end of the first egg laying cycle (preparing period). The similar tendencies in own investigations about albumen quality and Haugh units reported Len R.E. (1964); Nordstrom J.O. (1980); Lee K. (1984) and Ali A. (2010).

Conclusions

On the base of the results obtained from the investigations conducted with aim to establish the effect of induced molting of old hens of two genotypes on the thick albumen height and Haugh units, may we conclude the following conclusions:

During the preparing period the thick albumen height was 7.26mm (group 1) and 7.15mm (group 2), during the stress period in the both group the thick albumen decreased for 9.09% and 14.68% in group 1 and 2, respectively. In the second egg laying cycle the positive tendencies was monitored and was 8.38mm and 8.61mm in group 1 and 2, respectively.

The same tendency was established about Haugh units in the two experimental groups. During the preparing period the value of the Haugh units was 82.24 (group 1) and 81.78 (group 2). During the stress period the value was decreased for 3.16% and 5.31% in group 1 and 2, respectively. The increasing of the value of Haugh units was established during the second egg laying cycle and it was 88.22 and 89.39 units in the first and second group, respectively.

On the base of the obtained results about thick albumen height and Haugh units we may to conclude that in the second egg laying cycle the quality of the produced eggs was increasing.

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