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Clinical and Homatological Indications of Local Bulls Examined by Different Methods

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Abstract: The article provides detailed data on changes in the clinical and morphological indicators of the blood composition of castrated and uncastrated local bulls at different ages and depending on the seasons.

Keywords: Castrated, uncastrated, number of breaths, heartbeats, body temperature, red blood cells, white blood cells, hemoglobin, metabolism, meat productivity, seasons, and age periods.

Introduction: The relevance of the subject. The global consumer market is currently experiencing an increasing demand for meat and meat products. The high demand for meat and meat products requires intensive and efficient methods of fattening livestock. In particular, the feeding of livestock with various biologically active substances to accelerate fattening during fattening affects the quality of the meat produced. As a result, the needs of consumers for high quality meat products are not fully covered. Castration of animals intended for fattening is one of the important measures in improving the quantity and quality of the meat of agricultural animals [1; 87-90p; 2; 25p; 3; 8-13p.].

The meat of castrated cattle is fat, soft, and does not have a specific unpleasant smell and taste. Castrated animals lose excess movements, which makes them easier to use and care for [10; 56p; 11; 5p; 12; 65-68p.].

In order to develop effective methods of meat production, many scientists have conducted dozens of studies on the formation of meat characteristics in the Simmental breed in its pure form and in its offspring obtained from crossing it with other breeds [4; 26 p; 5; 5-8p; 6; 159p; 7; 152p; 8; 82-85p; 9; 33-35p.].

Leading scientists from many countries of the world are conducting research on creating economically efficient and optimal technologies for fattening agricultural animals, including bulls, further increasing the efficiency of the beef cattle industry, increasing the quantity and improving the quality of the meat produced.

As one of the important measures of sustainable development of beef cattle breeding in our republic in the next years, including increasing the source of income of the population, large-scale production of high-quality meat at a low cost is considered one of the urgent tasks. Expanding the scope of scientific research in this area is of particular importance.

Thus, increasing the meat productivity of cattle and solving the problem of high-quality meat production, intensive breeding and feeding of cattle, use of efficient methods of fattening, increasing the income of the population due to the increase in the productivity of local bulls in the households of the population, increasing the number of new and productive livestock, using their meat productivity at a high level of genetic potential, a large amount of meat and high issues of growing protein products are the current problems of today.

The purpose of the research. The purpose of the research is to increase the productivity of meat and improve the quality of meat by breeding local bulls in the conditions of meat-growing entities (farms, farmers and private farms).

METHODS

In the course of scientific research, the data obtained by zootechnical, biological and statistical methods were determined and processed by computer according to the methods of (E.K. Merkureva, 1970).

Scientific research work was carried out at the

experimental farm of the Research Institute of Livestock and Poultry.

RESULTS

In the evaluation of the general physiological state of local bulls that have been slaughtered and not slaughtered in different ways in the experimental groups, it is important to study their clinical parameters. In the research, the clinical parameters of the bulls in the experimental groups: body temperature, heart rate and respiration rate were studied, and their physiological state was evaluated (Tables 1-2).

1-Table.

Variation of clinical parameters of 6-15-month-old bulls in the experimental groups by seasons

Indicators	Group I		Group II		Group III		Group IV	
	X±Sx	Cv, %	X±Sx	Cv, %	X±Sx	Cv, %	X±Sx	Cv, %
6 months old, Spring (April)								
Body temperature, °C	38,3±0,15	1,23	38,2±0,14	1,17	**38,3±0,18	1,52	**38,1±0,23	1,89
Heart rate, minute/beat	64,8±0,94	4,59	65,0±1,22	5,94	*65,1±1,16	5,63	64,9±1,11	5,41
Number of respirations, minute/time	27,9±0,55	6,20	**28,2±0,63	7,05	27,8±0,65	7,35	27,8±0,59	6,74
9 months old, Summer (July)								
Body temperature, °C	38,6±0,27	2,22	38,7±0,29	2,39	38,3±0,24	1,96	38,6±0,24	1,95
Heart rate, minute/beat	66,0±0,92	4,40	66,4±0,50	2,38	**67,1±0,59	2,76	66,8±0,74	3,51
Number of respirations, minute/time	28,6±0,50	5,52	*28,4±0,58	6,47	29,0±0,49	5,39	28,5±0,45	5,03
12 ойлик, Куз (октябрь)								
Body temperature, °C	38,2±0,23	1,92	38,4±0,22	1,80	*38,0±0,23	1,86	38,2±0,27	2,22
Heart rate, minute/beat	63,3±0,93	4,65	63,2±0,87	4,34	64,0±0,86	4,23	*63,1±0,66	3,29
Number of respirations, minute/time	26,1±0,53	6,37	26,0±0,54	6,54	26,6±0,50	5,93	**26,8±0,44	5,22
15 months old, Winter (January)								
Body temperature, °C	38,1±0,30	2,48	38,1±0,26	2,16	38,2±0,25	2,04	**38,1±0,20	1,66
Heart rate, minute/beat	61,8±0,61	3,13	**62,0±0,79	4,02	62,1±0,74	3,75	61,9±0,59	2,99

Number of respirations, minute/time	25,5±0,54	6,73	26,0±0,52	6,28	*25,8±0,63	7,71	25,9±0,55	6,68

*P<0,05; **P<0,01; *** P<0,001;

2-Table.

Changes in the clinical parameters of 18- and 21-month-old bulls in the experimental groups by seasons

Indicators	Groups							
	I		II		III		IV	
	X±Sx	Cv, %	X±Sx	Cv, %	X±Sx	Cv, %	X±Sx	Cv, %
18 months old, Spring (April)								
Body temperature, °C	38,2±0,27	2,21	38,1±0,21	1,78	*38,3±0,21	1,74	38,1±0,22	1,84
Heart rate, minute/beat	65,8±1,01	4,85	**65,1±0,67	3,27	66,1±0,91	4,36	65,9±0,67	3,23
Number of respirations, minute/time	27,1±0,57	6,61	28,1±0,75	8,46	28,5±0,52	5,79	*27,9±0,55	6,20
21 months old, Summer (July)								
Body temperature, °C	38,8±0,40	3,23	38,9±0,23	1,84	38,8±0,25	2,02	38,7±0,31	2,50
Heart rate, minute/beat	69,0±0,95	4,37	70,0±0,70	3,16	70,1±0,78	3,52	**69,8±0,79	3,56
Number of respirations, minute/time	29,9±0,53	5,56	30,1±0,46	4,81	*30,3±0,45	4,68	29,5±0,52	5,59

*P<0,05; **P<0,01; *** P<0,001;

As shown in Tables 1-2, the body temperature, heart rate, and respiratory rate of local bulls in the control and experimental groups were within normal limits, depending on the season and age. According to the results of the study, the level of reliability of the change in clinical indicators of bulls by season in the control and experimental groups II, III, IV at the age of 6 to 21 months was **P<0.01 units. It also shows that the clinical indicators of all groups of bulls in the summer season were higher than in the winter, spring and autumn seasons, which indicates that the metabolic processes in the body of the bulls are slightly higher due to the influence of the hot air temperature in the summer season. Due to the fact that the bulls in the

experiment belong to the local breed and were born and cared for in the conditions of our republic, there was no significant difference between the groups in terms of clinical parameters. This indicates that local bulls are resistant to natural climatic conditions of the republic.

The study of blood indicators is of particular importance in assessing the general physiological state of bulls, the process of metabolism in their bodies and the level of feeding. Blood is in constant motion in the body, flows through tissues and organs, washes it and actively participates in the vital activities of cows. Blood performs a number of vital functions in the body: nourishing cells, breathing, protecting them, maintaining water balance in tissues, maintaining body temperature, and others. Blood is functionally related to the growth and development of animals and their productivity indicators, ensuring the vitality of all cells in the body. That is why hematological parameters of blood composition are of great importance in the study of the interior of bulls and its evaluation. The composition of the blood varies depending on the age of the bulls, their physiological state, feeding conditions, season, etc. In a healthy organism, all random variations in blood composition are controlled by neurohumoral systems. Also, various influences on the organism are reflected in the blood composition, that is, its composition changes in a positive or negative direction. In the study, the morphological composition of the blood composition of the bulls in the experimental groups was studied (Table 3).

3-Table

Hematological parameters of blood composition of local bulls in experimental groups

Blood indicators						
	Erythrocytes (mln/ml³)		Leukocytes (min/ml³)		Hemoglobin (g/%)	
Standard,±	6,5 (5,5-8,5)		7,0 (4,5-12,0)		12,0 (10,0-14,0)	
Groups	X±Sx	Cv,%	X±Sx	Cv,%	X±Sx	Cv,%
During the 90 days of the experiment						
I-control group (not treated)	6,15±0,32	16,43	7,39±0,63	27,05	10,30±0,15	4,69
II-experimental group (surgically tested)	*6,68±0,34	16,06	8,21±0,32	12,32	11,03±0,32	9,31
III-experimental group (tested by tying with rubber)	*6,85±0,31	14,22	8,32±0,36	13,76	*12,11±0,48	12,58
IV-experimental group (tested by clamp method)	**7,51±0,17	6,99	*8,51±0,22	8,22	12,35±0,41	10,46
During the 540 days of the experiment						
I-control group (not treated)	6,25±0,26	13,39	8,26±0,55	21,19	10,32±0,15	4,59
II-experimental group (surgically tested)	6,88±0,22	10,28	8,35±0,61	23,29	11,22±0,33	9,18
III-experimental group (tested by tying with rubber)	7,48±0,21	8,75	**9,21±0,51	17,68	**12,10±0,48	12,59
IV-experimental group (tested by clamp method)	*8,12±0,09	3,45	**10,12±0,48	15,09	*12,27±0,44	11,25
During the 630 days of the experiment						
I-control group (not treated)	6,89±0,29	13,15	8,66±0,47	17,17	11,52±0,45	12,39
II-experimental group (surgically tested)	7,15±0,31	13,59	9,15±0,43	14,93	12,22±0,36	9,43

III-experimental group (tested by tying with rubber)	*7,86±0,14	5,59	9,88±0,39	12,63	12,45±0,39	9,91
IV-experimental group (tested by clamp method)	8,25±0,07	2,75	**11,59±0,22	6,12	**13,57±0,18	4,28

*P<0,05; **P<0,01; ***P<0,001;

According to Table 3, on the 90th day of the experiment, the average number of erythrocytes in the blood of bulls in group I (control) was 6.15 million/ml³, this indicator was 6.68 million/ml³ in group II, 6.85 million/ml³ in group III and 7.51 million/ml³ in group IV. This indicator was higher in comparison with uncastrated bulls in the control group than in their counterparts castrated by various methods: in group II by 0.53 million/ml³ (7.9%), in group III by 0.70 million/ml³ (10.2%), in group IV by 1.36 million/ml³ (18.1%).

On the 540th day of the experiment, the average number of erythrocytes in the blood of bulls in group I (control) was 6.25 million/ml³, this indicator was 6.88 million/ml³ in group II, 7.48 million/ml³ in group III and 8.12 million/ml³ in group IV. This indicator was higher than that of uncastrated bulls in the control group compared to their counterparts castrated by various methods: in group II by 0.63 million/ml³ (9.2%), in group III by 1.23 million/ml³ (16.4%), in group IV by 1.87 million/ml³ (23.0%).

By the end of the experiment, i.e. on day 630, the average number of erythrocytes in the blood of bulls in group I (control) was 6.89 million/ml³, this indicator was 7.15 million/ml³ in group II, 7.86 million/ml³ in group III and 8.25 million/ml³ in group IV. This indicator was higher than that of uncastrated bulls in the control group compared to their counterparts castrated by various methods: in group II by 0.26 million/ml³ (3.6%), in group III by 0.97 million/ml³ (12.3%), in group IV by 1.36 million/ml³ (16.5%). Also, the number of leukocytes in the blood of bulls in the experimental groups was higher than that of uncastrated bulls in the control group by 90 days of the experiment compared to their counterparts in the different methods: in group II by 10.0%, in group III by 11.2%, in group IV by 13.2%. The number of leukocytes was higher than that of uncastrated bulls in the control group by 540 days of the experiment compared to their counterparts in the different methods: in group II by 1.1%, in group III by 10.3%, in group IV by 18.4%.

Also, the number of leukocytes on the 630th day of the experiment was higher in the control group than in the control group, which was inseminated by different methods, by 5.4% in group II, by 12.3% in group III, and by 25.3% in group IV.

Similarly, the hemoglobin content in the blood of bulls in the experimental groups was higher on the 90th day of the experiment than in the control group compared to their unsprayed counterparts, respectively: in group II by 6.6%, in group III by 14.9%, and in group IV by 16.6%. It was found that the hemoglobin content in the control group compared to their unsprayed counterparts, respectively: in group II by 8.0%, in group III by 14.7%, and in group IV by 15.9%. By the end of the experiment, on day 630, it was found that hemoglobin levels were higher than those in the control group by 5.7% in group II, 7.5% in group III, and 15.1% in group IV, respectively.

CONCLUSION

In conclusion, the clinical condition and morphological blood composition of local bulls in all groups were within the normal range, but this indicator was higher in castrated bulls than in uncastrated bulls. There was no significant difference between groups in the amount of blood elements, only in the bulls in the clamp-castrated group these indicators were higher than in their peers at all times and showed that castration with a “painless” and harmless clamp-castration was effective.

Also, a slight fluctuation of these indicators relative to each other had a positive effect on the body of bulls fed on the basis of a complete ration. It indicates that the process of metabolism in them is accelerated.

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