

Mussabayeva S.B., Kenzhetay N.T., Serikbayeva A.D.

ISOLATION OF LACTOFERRIN FROM MARE'S MILK

Abstract

Lactoferrin from mare's milk was isolated by ion-exchange chromatography.

Key words: Mare's milk, lactoferrin, ion-exchange chromatography.

UDK 636.2.033

Nurgazy K.Sh., Nurgazy B.O., Iskakova Zh.A.

Kazakh national agrarian university

GROWTH AND DEVELOPING PECULIARITIES OF BEEF CATTLE BULL-CALVES IN DIFFERENT GENOTYPES IN CONDITIONS OF LLP "AGROFIRMA" DINARA- RANCH"

Annotation

The article presents the results of the influence of paratypic factors on the variability of the live weight of young animals in all age periods in different genotypes of beef breeds of cattle. In the article given the comparative estimation of variability of live weight and intensity of growth and development of young animals from birth to 20 months of age of Kazakh white-headed, Hereford breeds and their hybrids.

Keywords: growth, development, breed, Hereford, Kazakh white-headed, live weight, young, measure, index, increment.

Introduction

For Kazakhstan a favorable market situation develops, allowing to significantly increase the export of beef to foreign markets. This is due to the presence of such natural competitive advantages of the country, as favorable natural and climatic conditions, the availability of pastures (180 million ha), the proximity of large sales markets. In addition, livestock is the native craft of the indigenous population.

The level of beef production and the quality of beef are determined by genetic potential cattle and environmental conditions: mainly by the level of feeding and technology of maintenance.

In modern conditions of management, the receipt and rational use of highly productive animals is a promising direction in the development of beef cattle breeding. A topical issue is the development of methods for feeding young animals using cheap feed of natural pastures. The greatest effect can be obtained with pasture fattening of the young stock. In beef cattle breeding, the intensity of growth and development of young animals is one of the most important criteria in working on improving the breed, since, in the final analysis, determines beef productivity and in the main breeding feature.

Cattle type meat combines well the growth and fattening, much earlier than the animals of the dairy and combined directions reaches the delivery condition and at a younger age gives ripe meat.

The process of animal growth is influenced by numerous genetic and non-genetic factors that manifest themselves both in the prenatal and postnatal periods of development, affecting both the level of meat productivity and the quality of beef [1].

In the production of beef in beef cattle breeding, two stages can be distinguished: the cultivation of calves on the suck-in and after the withdrawal period. This is the most acceptable and characteristic for the industry way of cultivation, ensuring the safety of the livestock of newborn young and its productivity. In the farms of the pedigree assignment by age, the growth and development of the young, its evaluation and the class of parents are determined [2].

Methods of research

The object of the study was cattle of beef direction, owned by LLP "Agrofirma" Dinara-Ranch "of Balkhash district, Almaty region. Animals were imported from the northern regions of Kazakhstan (Kazakh white-headed - KWH), from the USA and Canada (Hereford- HF). Three groups were formed: I group - KWH, II group - HF, III group of cross-breeding (F1). Evaluation of growth and development of young animals is carried out based on the results of studying the parameters of live weight in different age periods, the average daily weight gain, the relative growth rate in individual age periods and the definition of the coefficient of increase in body weight with age.

The youngest in terms of age was determined the following measurements: height at the withers, height in the sacrum, oblique length of the trunk (stick), chest girth behind the shoulder blades, chest depth, width of the chest behind the shoulder blades, width in makhloks, girth of the pastern. On the basis of measurements, the indices of their physique are calculated: long-length, stretched, hip-thoracic, thoracic, knocked down, overgrown, bone, massive, meaty, broad-cubed, compact [3, 4].

Results of the study

In this regard, we carried out a comprehensive assessment of the economic and biological characteristics and meat production of the gobies of the Kazakh white-headed (Group I), Hereford (II group) and their hybrids (Group III $\frac{1}{2}$ Hereford x $\frac{1}{2}$ Kazakh white-headed) with feeding and final intensive stabling.

Feeding and maintenance of bull-calves. In the suckling period, young animals grazed their mothers on pasture. After weaning from mothers at 6 months of age, the bulls of all groups were transferred to the feeding site, where they were kept in the same enclosure under the same feeding conditions. The contents of the young were loose on a deep, non-replaceable litter. In the summer, animals grazed pasture, and in 18 months. were transferred to the site for final fattening.

The analysis showed that due to uneven eating and intergroup differences in live weight, feed consumption by groups of bull-calves had distinct differences (Table 1).

Table 1 – Consumption of feed and nutrients by young bulls for the period of growing from birth to 20 months age (per animal), kg

Indicator	Group		
	I	II	III
Milk	1127	1283	1255
Hay	883	929	965
Senage	586	644	599
Silage	4320	4378	4842
Green fodder	2397	2479	2540
Concentrates	1485	1565	1574
The feed contains:			
dry matter	4117	4368	4435
feed units	3932,4	4204,0	4241,9
exchange energy, MJ	42209	44926	45513
digested protein	421,5	450,6	454,6

Digest protein per 1 fodder unit, g	107,2	107,2	107,2
Concentration of exchange energy in 1 kg of dry matter (KOE), MJ	10,3	10,3	10,3

At the same time, the largest consumption of feed was the young stock. Suffice it to say that during the period of growing from birth to 20 months. its advantage over the peers of the Kazakh white-headed breed in the consumption of feed units was 7.8%, the exchange energy 3304 MJ, digestible protein 33.1 kg, and over the Hereford 1%, 587 MJ and 3.99 kg respectively.

It is characteristic that, for all the time of cultivation, and for individual periods of experience, intergroup differences in the structure of the diet were significant. The level of feeding in all cases provided the needs of a growing body of bull-calves [5,6].

The general tendency was an increase in the proportion in the structure of the ration of feeding concentrated fodders. In general, during the period of growing from birth to 20 months. the share of concentrates was 37.1-37.7%, which contributed to the development of young enough high level of meat production.

Features of weight and linear growth. The living weight of the young and the intensity of its growth are determined by various factors. Under the same environmental conditions, the productive qualities of animals are determined by their genetic capabilities. This is confirmed by the experimental data obtained by us. Their analysis indicates intergroup differences in live weight already in newborn young animals (Table 2).

Table 2 – Dynamics of live weight of bull-calves, kg

Age, month	Group					
	I		II		III	
	$(\bar{X} \pm m_x)$	C_v	$(\bar{X} \pm m_x)$	C_v	$(\bar{X} \pm m_x)$	C_v
newborns	25,8 \pm 0,56	8,44	29,6 \pm 0,73	9,54	27,8 \pm 1,02	14,27
4	112,4 \pm 3,14	10,82	128,3 \pm 4,31	13,02	125,5 \pm 4,29	13,24
6	177,2 \pm 3,74	8,17	195,4 \pm 4,97	9,86	191,3 \pm 4,23	10,58
8	239,4 \pm 4,36	7,05	261,4 \pm 5,29	7,83	264,2 \pm 4,66	6,83
12	314,4 \pm 5,79	7,13	347,2 \pm 7,04	7,85	352,6 \pm 5,65	6,20
15	420,2 \pm 6,65	6,13	456,7 \pm 7,59	6,43	465,0 \pm 7,05	5,88
18	445,8 \pm 9,21	7,16	485,1 \pm 10,12	7,23	494,3 \pm 9,68	6,78
20	490,9 \pm 11,55	7,06	538,0 \pm 12,53	6,99	550,0 \pm 12,84	7,00

In this case, the largest indicator had the bulls of the Hereford breed. Their advantage over purebred peers of Kazakh white-headed breed was 3.8 kg (14.7%, $P < 0.05$), spacing by 1.8 kg (6.5%, $P > 0.05$).

At 6 months of age, the crosses outperformed their peers in the Kazakh white-headed breed by 14.1 kg (8%, $P < 0.01$), but less than Hereford (4.1%, $P > 0.05$).

In the postweaning period, the predominant influence of the genotype on the manifestation of meat qualities was noted. Since the age of 8 months, there has been a manifestation of heterosis in living weight. The index of heterosis at this age was low and was 101.1%, at 12 months. - 101,6%, in 18 months. - 101.9% and 20 months. - 102.2%.

The insignificant value of the heterosis index for the live mass is due to the high quality of the breeds participating in the crossing. Kazakh white-headed breed is characterized by low live weight, precocity, while Herefords are a breed of a large-sized type, has large and long body size. In all cases this led to a lower level of live weight among the bulls of the Kazakh white-headed breed. Suffice it to say that at the age of one year they were 32.8 kg (10.4%, $P < 0.01$) less

than the 38.3 kg (12.2%, $P < 0.01$) for the Hereford peer group, at 18 months. respectively 39.3 kg (8.8%, $P < 0.01$) and 48.5 kg (10.9%, $P < 0.001$), at 20 months. - 47.1 kg (9.6%, $P < 0.01$) and 59.1 kg (12.0, $P < 0.01$).

The maximum value of the daily average gain of live weight was also different from the bulls of Hereford breed (table 3). Thus, their advantage on the average daily gain of live weight over peers of Kazakh white-headed breed in the period from birth to 6 months was 80 g (9.5%, $P < 0.01$), and with impurities - 13 g (1.4%, $P > 0.05$).

Table 3 – Average daily gain of bull-calves live weight, g

Age, month	Group					
	I		II		III	
	$(\bar{X} \pm m_x)$	C_v	$(\bar{X} \pm m_x)$	C_v	$(\bar{X} \pm m_x)$	C_v
0-6	841±12,4	11,23	921±11,2	12,80	908±13,1	7,92
6-8	691±19,0	10,29	726±19,4	10,02	809±19,3	8,91
8-12	833±30,2	13,57	960±33,9	13,20	982±29,2	11,12
12-15	705±15,8	8,41	730±22,2	11,35	749±24,5	12,20
15-18	829±29,7	11,90	939±31,8	11,27	974±20,9	7,13
18-20	678±56,8	23,73	865±36,5	11,94	909±43,7	13,59
6-15	736±11,5	5,86	792±13,2	6,22	829±14,4	6,48
6-18	757±18,2	7,97	809±13,3	5,47	848±16,9	6,63
6-20	739±11,8	4,53	811±12,0	4,20	840±16,4	5,51
0-18	773±13,6	6,60	837±15,3	6,82	857±14,1	6,13
0-20	767±16,5	6,10	845±18,9	6,36	867±19,6	6,39

In the postweaning period, the decrease in the daily average gain of live weight in purebred Herefords was 195 g (26.8%), 99 g (12.2%) and 150 g (21.7%) Kazakh white-headed peers.

In a later age period (8-12 months), an increase in the intensity of growth in bull-calves of all groups was observed. At the same time young growth of Kazakh white-headed breed was inferior to Hereford peers according to the average daily gain of live weight in the analyzed age period by 127 g (15.2%, $P < 0.05$), 149 g (17.9%, $P < 0.01$).

After transferring into summer pasture content, the growth rate of youngsters of all groups decreased, the bulls of Kazakh white-headed breed were characterized by a minimum level. The advantage of the youngest groups II and III on the indicator under study during feeding was 25 g (3.5-6.2%, $P > 0.05$).

After transferring into winter stall maintenance and the organization of final fattening, the intensity of growth of castrates increased significantly. At the same time, after 18 months of age, despite the high level and usefulness of feeding, the average daily weight gain in young animals of all groups decreased. This is due to the intensification of fat loss in the body of bull-calves. In general, for the entire period of cultivation, the largest level of daily average gain in live weight was mixed, the smallest - bulls of Kazakh white-headed breed, the Herefords occupied an intermediate position. Thus, the advantage over the Hereford coeval from born to the age of 20 months was 22 g (1.6%, $P < 0.05$) by the average daily weight gain, over the bull-calves of the Kazakh white-headed breed is 100 g (13%, $P < 0.05$). In turn, the Hereford bull-calves exceeded the coevals of the Kazakh white-headed breed by the size of the studied indicator was 78 g (10.2%, $P < 0.05$).

It was found that in the suckling period (from birth to 6 months), the least relatively growth rate was characterized by Herefords. In coevals of Kazakh white-headed breed and crossbreeds, the value of the studied indicator was higher and was on the same level. After weaning in separate age periods, the Herefords outnumbered Kazakh white-headed coevals on relatively growth rates, but in all cases they conceded to the crossbreed. The coefficient of increase in live weight also establishes certain intergroup differences.

The study of the features of the constitution of young animals made it possible to establish that both purebred and crossbreed youngs differed with harmonious constitution and had well expressed meat forms. At the same time, the differences were manifested at an early age. At the same time, the maximum size of all the measurements was characterized by the bulls of Hereford breed, and the minimum - Kazakh white-headed coevals, and the crosses occupied an intermediate position, approaching on the main measurements to Hereford. It is enough to note that the bulls of the Kazakh white-headed breed were inferior to Hereford in height at the withers by 10.8 cm (9.1%, $P < 0.01$), the height in the sacrum was 11.7 cm (9.5%, $P < 0.001$), the oblique length of the trunk is 9.8 cm (7.2%, $P < 0.01$), the girth of the chest behind the blades is 6.4 cm (3.5%, $P < 0.001$), the girdle is set to 4.9 cm 4.4%, $P < 0.01$).

Differences in depth and breadth measurements, widths in mammals and hip joints, girth of the pastern were insignificant and statistically unreliable.

A similar pattern persisted at 6 and 12 months of age. From 17 months the tendency of superiority in the main measurements of the young stock was noted.

At the same time, the advantage of hybrids over Herefords was minimal, while Kazakh white-headed coevals were inferior to them. Suffice it to say that at the age of 20 months the crosses exceeded the group I coevals in height by 11.3 cm (9.6%, $P < 0.001$), the height in the sacrum by 12 cm (9.8%, $P < 0.001$), the oblique length of the trunk is 11.8 cm (8.7%, $P < 0.001$), the girth of the chest behind the blades is 10 cm (5.4%, $P < 0.01$).

Certain intergroup differences have also been established in terms of the intensity of growth of individual body measurements. In this case, the height at the withers and the sacrum, as well as the girth of the pastern, were characterized by the lowest value of the increase coefficient with age in animals of all genotypes. Measurements that characterize the development of the chest and pelvis, as well as the oblique length of the trunk, have increased to a greater extent than high-attitude ones.

Characteristically, the coefficient of increase in the width of the chest behind the shoulder blades, the width in the mammals and the hip joints, and also the grasp of the chest behind the shoulder blades was greatest in the young of all groups.

In the newborn youngest, the smallest size of the indexes was characterized by bull-calves of Kazakh white-headed breed. For example, they were inferior to hereford peers in terms of the index of confusion by 2.8-3.5%, massiveness by 3.6-4.4%, meatiness by 1.1-2.1%, and differed by a greater by 3.9-5.9% of the value of the complex index. For the rest of the indexes, although there was a tendency for the superiority of the bulls of the Hereford breed and its hybrids, the difference in their favor was insignificant.

It was found that, in view of the unequal growth rate of the peripheral and axial sections of the skeleton and musculature, the nature of the changes in the indexes of the physique of the young with age was not the same. So, regardless of pedigree affiliation, the value of the indices of stretch, boneiness, massiveness, confluence, meatiness, deep-chestedness, broad-chestedness, broadnesses increased, and indices of pereroslost, long-tailed, complex decreased (Table 4).

Table 4 – Indexes of the buildup of bull-calves in 20 months, %

Indexes	Group					
	I		II		III	
	$(\bar{X} \pm m_x)$	C_v	$(\bar{X} \pm m_x)$	C_v	$(\bar{X} \pm m_x)$	C_v

Longitude	47,8±0,53	3,55	44,8±0,53	3,55	46,9±0,47	2,84
Stretches	114,7±0,29	0,76	114,7±0,29	2,44	113,3±1,00	2,50
Coxal-chest	94,3±1,40	1,48	94,6±0,34	3,01	94,8±0,66	1,97
Thoracic	65,1±0,81	3,72	65,4±0,73	2,21	65,7±0,93	4,02
Failures	136,0±0,22	0,49	134,2±0,44	1,88	131,0±0,63	1,36
Overgrowth	103,6±0,25	0,71	103,8±0,50	1,92	104,6±0,72	1,95
Bone content	17,8±0,12	1,97	18,8±0,14	1,28	18,5±0,77	2,73
Massiveness	155,9±0,52	0,99	157,4±0,48	2,14	158,4±0,92	1,76
Meatiness	93,5±0,47	1,51	94,0±0,42	1,88	94,5±0,44	1,32
Broadness	34,8±0,56	4,80	35,4±0,38	1,28	33,8±0,52	4,38
Complex	138,2±1,00	2,18	140,4±1,38	3,48	144,5±0,70	1,38
Deep severity	55,2±0,53	2,88	54,2±1,12	2,11	53,1±0,47	2,51
Widespread difficulties	35,7±0,77	6,48	35,4±0,48	2,41	34,9±0,65	5,30

At the same time, the established differences in the size of individual body build indexes at an early age were also preserved in later age periods, although the difference was less significant.

Conclusions

Thus, the analysis of the received materials testifies that young growth of all groups in the concrete conditions of the environment normally grew and developed. In this case, the youngest of all groups differed in proportional physique and fairly well-expressed meat forms. This was especially characteristic of bull-calves of Kazakh white-headed breed and hybrids.

Despite the observed fluctuations in the average daily weight gain due to the influence of paratypic factors on the young growth organism and the different rates of response of bull-calves of different genotypes to their changes, as well as the influence of the pubertal period and the peculiarities of puberty and the development of reproductive function, the young growth of all groups normally grew and developed.

In general, the bull calves of different groups have a different pattern of changes in body weight, growth rate, relative growth rate, and the increase in live weight with age. At the same time, the hybrid and Hereford bulls were the preferred ones for the complex of these indicators.

References

1. Нургазы К.Ш., Кайруллаев К.К. и др. Рост и развитие молодняка мясных пород крупного рогатого скота разных генотипов в условиях Южного Прибалхашья// Весник.-г.Семей, 2016, с.193-195.
2. Нургазы К.Ш., Досымбеков Т., Нургазы Б.О. Условия выращивания племенного молодняка разных пород мясного скота в племзаводе агрофирмы «Dinara Ranch»// Научный журнал Исследования, результаты, № 4, 2010, с.73-76.
3. Меркурьева Е.К., Шангин-Березовский Г.Н. Генетика с основами биометрии. - М.: Колос, 1983. - 400 с.
4. Лакин Г.Ф. Биометрия – М., 1990.-352 с.
5. Самоделкин А.Г. и др. Влияние кровности по герефордской породе на рост и развитие помесных бычков// Зоотехния. 2009, №5, с.22-23.
6. Гуллиев Б.Х. и др. Химически консервированный силос в рационах бычков при выращивании их на мясо// Вестник с/х науки Казахстана, 2008, №10, с.32-33.
7. Нургазы К.Ш., Нургазы Б.О. и др. Особенности роста и развития молодняка мясных пород крупного рогатого скота разных генотипов// VII международная научно-практическая конференция «Актуальные проблемы науки XXI века» сборник статей 2-часть. Москва, 2016, с. 126-130.

8. Нургазы К.Ш., Атайбеков Б., Нургазы Б.О., Досымбеков Т. Оңтүстік Балхаш өңірінде әртүрлі тұқымды ірі қара мал төлінің өсіп даму ерекшеліктері // Ғылыми журнал Ізденістер, нәтижелер №3, Алматы – «Агроуниверситет», 2009, 45-46 бет.

Нұрғазы Қ.Ш., Нұрғазы Б.Ө., Искакова Ж.А.

ЖШС «АГРОФИРМА DINARA-RANCH» ЖАҒДАЙЫНДА ӘРТҮРЛІ ГЕНОТИПТІ ЕТТІ ІРІ ҚАРА МАЛ БҰҚАШЫҚТАРЫНЫҢ ӨСУ, ДАМУ ЕРЕКШЕЛІКТЕРІ

Аңдатпа

Мақалада етті тұқымды ірі қара малдың әртүрлі генотипке жататын бұқашықтарының тірі салмағының өзгергіштігіне паратиптік факторлардың әсер етуі келтірілген. Қазақтың ақбас, герефорд тұқымдары және будандары бұқашықтарының туылғаннан 20 айлығына дейінгі тірі салмағы мен өсу, даму қарқындылығының динамикасына салыстырмалы баға берілген.

Кілт сөздер: өсу, даму, тұқым, герефорд, қазақтың ақбас, тірі салмағы, бұқашықтар, өлшемдер, индекс, өсім.

Нургазы К.Ш., Нургазы Б.О., Искакова Ж.А.

ОСОБЕННОСТИ РОСТА, РАЗВИТИЯ БЫЧКОВ МЯСНЫХ ПОРОД СКОТА РАЗНЫХ ГЕНОТИПОВ В УСЛОВИЯХ ТОО «АГРОФИРМА «DINARA-RANCH»

Аннотация

В статье приведены результаты влияния паратипических факторов на изменчивость живой массы бычков у разных генотипов мясных пород крупного рогатого скота. Дана сравнительная оценка динамики живой массы и интенсивности роста и развития бычков казахской белоголовой, герефордской пород и их помесей от рождения до 20-ти месячного возраста.

Ключевые слова: рост, развитие, порода, герефорд, казахская белоголовая, живая масса, бычки, промер, индекс, прирост.

УДК 636.2.034

Омбаев А.М., Бегалиева Д.А., Алентаев А.С., Баймуканов Д.А.

*Научно-инновационный центр животноводства и ветеринарии, г. Астана
Казахский научно-исследовательский институт животноводства и кормопроизводства,
Казахский национальный аграрный университет, г. Алматы*

*ИНТЕНСИВНЫЕ ТЕХНОЛОГИИ НАПРАВЛЕННОГО ВЫРАЩИВАНИЯ МОЛОДНЯКА МОЛОЧНЫХ ПОРОД В АКМОЛИНСКОЙ И АЛМАТИНСКОЙ ОБЛАСТЯХ

Аннотация

Установлено, что с 4-го дня жизни и не позднее, чем с 10-12-дневного возраста телятам можно давать высококачественные комбикорма-стартеры. Стартер с высокой энергетической ценностью содержит 16-18% сырого протеина или 20% протеина в том