



Use Of "Imnamak" Nutritional Supplement In Cattle Feeding

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Article History	Abstract
Received: 12 September 2023 Revised: 17 December 2023 Accepted: 26 December 2023	<p>This article presents information on the results of using the "Imnamak" nutritional supplement produced in Uzbekistan in feeding Holstein cattle. Improved appetite and positive changes in ethological parameters related to nutrition were found in cattle given this drug.</p>
CC License CC-BY-NC-SA 4.0	<p>Keywords: nutrition, food supplement, ration, behavior, adaptability, mobility, traction, activity index, flexibility, productivity.</p>

INTRODUCTION

The livestock sector plays an important role in providing the world's population with food products, especially protein obtained from animal husbandry. Creation of productive breeds, maintenance of breeding cattle, improvement of quality and improvement of product production technologies are urgent tasks in the livestock sector. Holstein cattle were created in the USA and Canada and are widely distributed due to their high milk yield, good adaptability, and compliance with the requirements of industrial technology.

The growth, development and high productivity of agricultural animals are largely related to their complete nutrition, and the increase in productivity leads to an increase in the demand for the nutritional value and quality of feed. In recent years, the use of nutritional supplements in feeding animals is widely used.

Food additives are products that are not considered drugs, are of plant, animal, microbiological, mineral and synthetic origin added to the ration of animals for the purpose of ensuring their physiological activity, preventing diseases, increasing growth, development and productivity, improving their vitality and increasing the taste, assimilation and technological properties of nutrients. Currently, many types of these products are produced. One of such products is the drug "Imnamak" produced by the private company "Bibinor", which is a part of the "Uzfarmsanoat" State Joint-Stock concern. It includes lick salt, immunophoric complex drug, Dorogov antiseptic stimulant (ASD 2 fraction), peppermint oil (menthol), bran and other fillers.

The purpose of the research is to study the effectiveness of using nutritional supplements in growing Holstein female bodies intended for herd replenishment.

Object and method of research. Researches were carried out on Holstein cattle bred at the farm "Karpat-ola Chashmasi" in Yakkabog District, Kashkadarya Region.

In the farm, three groups of 12-month-old Holsteins imported from Germany were formed in the style of pairs of analogs, and 15 heads were included in each group. The first group (control) is based on a balanced diet composed of available nutrients on the farm; From the age of 12 months, 30 grams of "Imnamak" nutritional supplement per head was added to the main diet of the second group for one month, and 30 grams of "Imnamak" drug was added to the diet of the third group for one month, and the heifers in this group had 7 - actively massaged in 8 months.

Due to the absence of natural or artificially organized pastures on the farm, the experimental animals were kept in the barn of the farm throughout the year.

In the summer period, they were kept in covered pastures, in the winter period, mainly at night, in closed barns, and during the day, they were cared for in covered pastures. Feed consumption during this period was determined by the control feeding method every 10 days based on the difference between the amount of feed given and the amount of residual feed.

In the summer season, the main fodder is alfalfa and leguminous crops blue mass and concentrate fodder, and in the winter season, the animals were fed based on balanced rations of alfalfa hay, wheat straw, corn silage, haylage, semi-sweet beets and concentrate fodder.

The main vital activity of the experimental animals - ethological indicators were studied at the age of 12, 15, 18 months and at the age of the first birth. Behavioral indicators of animals were determined by the method of V.I. Velikjanin [3] by observing six hours a day for three days. The general activity index was taken as the main indicator of ethological activity of animals and it was calculated according to the following formula [2]:

$$GAI = \frac{\sum FCSS+TT+TCLP}{360},$$

Here:

UFI - general activity index,

TFCSS - time of food consumption in a standing state, minutes,

TCSS – the time of chewing in standing state, minutes,

TCLP - the time of chewing in the lying position, minutes,

360 is the total number of minutes in six hours.

The data obtained as a result of the experiments were subjected to biometric processing by calculating the average arithmetic value and its error, the mean square deviation, the coefficient of variation (variation) based on the requirements of variational statistics developed by N.A.Ploxinsky [10] and E.K.Merkure [9]. The reliability level of differences between groups was determined using the Student's table. Processing of the received digital data was carried out using a personal computer and the Microsoft Excel 97 SR-1 program.

Research results. It is known that regulation of rations structure and nutrition, micro and macro elements, vitamins during cattle breeding is one of the main criteria for raising high-yielding cows.

The system of rational breeding of young cattle should be established taking into account their biological characteristics, ensuring that they have a strong constitution in the future, growth and development at the standard level, and the formation of high productivity indicators.

Based on these requirements, experimental cattle feeding rations were developed taking into account the available capabilities of the farm.

12-month-old Holstein females were brought from Germany in October 2020 to the "Karpat Ola Chashmasi" farm, where the experiment was conducted. At this time, cattle feeding on the farm was organized on the basis of winter ration. Taking into account the existing opportunities in the farm, high-quality alfalfa hay, crushed

wheat straw, corn silage, silage and semi-sweet beets were added to their diet in order to normalize the ratio of sugar and protein in the diet. Control feeding was carried out once every month, and the amount of food consumed was determined based on the difference between the amount of food given and the amount of residual food and recorded in the journal.

From the age of 12, the calves in the experimental groups were given 30 grams of "Imnamak" nutritional supplement per day (per head) mixed with the medicine in Omuk for 30 days.

It was observed that there were intergroup differences in food consumption (Table 3). In particular, the intake of coarse feed in experimental group I compared to the control group was 14.0 kg or 5.3 feed units in the period up to 12-15 months; 19 kg or 7.8 per unit of feed during the growing period up to 15-18 months; corn silage 213 kg or 47.2 feed units and 270 kg or 59.5 feed units respectively; total was 119.6 feed units or 14.0% higher during the 12- to 18-month-old rearing period.

In the second experimental group, 114.9 food units (13.5%) were consumed more than the control group, mainly due to the consumption of coarse and juicy foods.

This indicates that the digestive processes in the bodies of the experimental groups were faster than those of the control group.

13.9-14.3% of the ration was made up of raw forage, 54.4-58.6% of juicy forage, and 27.5 - 31.3% were fortified foods of the ration.

It should be noted that the percentage of strong food was less (27.5 - 27.6%) due to the consumption of more coarse and juicy foods in the diet of the experimental groups given "Imnamak" food supplement compared to the control group.

On average, 104.4 - 104.9 grams of digestible protein corresponded to each nutrient unit in the body's diet.

The heifers in the experiment calved in early January 2022, and the first calving cows were fed winter ration for 125 days. Intergroup differences in feed consumption during this period were determined by control feeding (Table 2). In particular, in experimental group I, the consumption of roughage was 24.8 feed units, corn silage was 25.3 feed units more than the control group, no differences were found in the consumption of other feeds; in total, 50.1 feed units (3.8%) were consumed more in the winter period.

In the second experimental group, 30.1 respectively compared to the control group; 38.9 and 69 (5.2%) feed units were consumed more. Also, 18.9 feed units (1.4%) were consumed more in experimental group II compared to experimental group I.

Rough fodder made up 17.9 - 19.1%, juicy fodder - 50.8 - 51.0%, and solid fodder - 29.9 - 30.4% in the winter ration of cows.

The summer ration of cows mainly consisted of alfalfa and corn mass (69.4-71.2%) and forage (28.8-30.6%). In the summer season (180 days), on average 1940.4 - 2059.2 food units are consumed per head of cow, which corresponds to 10.78-11.44 food units per day. 103-105 grams of digestible protein were consumed per food unit.

In the second experimental group, 30.1 respectively compared to the control group; 38.9 and 69 (5.2%) feed units were consumed more. Also, 18.9 feed units (1.4%) were consumed more in experimental group II compared to experimental group I.

Feed consumption during the growing period of experimental bodies, kg (on average per head)

Food type	Groups								
	Control			1st experience			2nd experience		
	Quantity, kg	Energy feed unit	Share in the diet, %	Quantity, kg	Energy feed unit	Share in the diet, %	Quantity, kg	Energy feed unit	Share in the diet, %
In the period of 12-15 months									
1	2	3	4	5	6	7	8	9	10
Alfalfa hay	71	31,2	7,4	81	35,6	7,5	85,5	37,6	7,9
Wheat straw	60	13,2	3,1	64	14,1	3,0	64	14,1	3,0
Corn silage	957	210,5	49,6	1170	257,5	54,0	1159	254,9	53,6
Half a sugar beet	270	40,5	9,6	270	40,5	9,5	270	40,5	8,5
Soft feed	117	128,7	30,3	117	128,7	27,0	117	128,7	27,0
"Imnamak"		-	-	0,9	-	-	0,9	-	-
Total feed unit	x	424,1	100,0	x	476,4	100,0	x	475,8	100,0
Digestible protein	x	44,5	-	x	50,5	x	x	50,2	x

Table 1 continues

Food type	Groups								
	Control			1st experience			2nd experience		
	Quantity, kg	Energy feed unit	Share in the diet, %	Quantity, kg	Energy feed unit	Share in the diet, %	Quantity, kg	Energy feed unit	Share in the diet, %
In the period of 15-18 months									
Alfalfa hay	146	64,2	15,0	162	71,3	14,4	162	71,3	14,5
Wheat straw	61	13,4	3,1	64	14,1	2,8	64	14,1	2,9
Corn silage	723	159,0	37,1	993	218,5	44,0	975	214,4	43,5
Half a sugar beet	360	54,0	12,6	360	54,0	10,9	360	54	11,0
Soft feed	126	138,6	32,2	126	138,6	27,9	126	138,6	28,1
Total feed unit	-	429,2	100,0	-	496,5	100,0	-	492,4	100
Digestible protein	-	44,6	-	-	51,6	-	-	51,2	-
In the period of 12-18 months									
Alfalfa hay	217	95,5	11,2	243	106,9	11,0	247,5	108,9	11,2
Wheat straw	121	26,6	3,1	128	38,2	2,9	128	28,2	2,9
Corn silage	1680	369,5	43,3	2163	476,0	48,9	2134	469,3	48,5
Half a sugar beet	630	94,5	11,1	630	94,5	9,7	630	94,5	9,8
Soft feed	243	267,2	31,3	243	267,3	27,5	243	267,3	27,6
"Imnamak" drug	-	-	-	0,9	-	-	0,9	-	-
Total feed unit	-	853,3	100,0	-	972,9	100,0	-	968,2	100
Digestible protein	-	89,1	-	-	102,1	-	-	101,3	-

Rough fodder made up 17.9 - 19.1%, juicy fodder - 50.8 - 51.0%, strong feed fodder - 29.9 - 30.4% in the winter diet of cows.

The summer ration of cows consisted mainly of alfalfa and corn blue pulp (69.4 - 71.2%) and soft fodder (28.8 - 30.6%). In the summer season (180 days), on average, 1940.4 - 2059.2 feed units are consumed per cow, which corresponds to 10.78-11.44 feed units per day. 103-105 grams of digestible protein was consumed per feed unit.

Cows in the first experimental group consumed 360 kg or 79.2 units of feed compared to the control group. Also, consumption of blue mass in experimental group II was higher by 540 kg or 118.8 feed units compared to the control group, and by 180 kg or 39.6 feed units compared to experimental group I.

4.1% compared to the control group in experimental group I in the summer season; In experimental group II, 6.1% more feed units were consumed.

Cows in the second experimental group consumed 2.0% more feed units compared to the first experimental group.

During a total of 305 days of lactation, cows in experimental group I had 129.3 feed units (4.0%) compared to the control group; 187.8 feed units (5.8%) were used more for cows in the II experimental group. In the second experimental group, the total feed unit consumption of cows was 58.5 feed units (1.7%) more than in the first experimental group.

Due to the lack of natural pastures on the farm, the experimental cattle were kept in barns on the farm throughout the year. In the summer season, the cattle are kept in covered pastures, and in the cold days of the winter season, the cattle are kept in closed buildings. Natural and artificial lighting, temperature and air exchange in the buildings meet the requirements of zoohygienic standards.

The farm has a feed shop, where it is possible to prepare feed for cattle consumption (grinding, mixing, steaming).

Table 2 Feed consumed by experimental cows during 305 days of lactation, kg (average per head).

Food type	Groups								
	Control			1 st experiment			2 nd experiment		
	Quantity, kg	Energy feed unit	Share in the diet, %	Quantity, kg	Energy feed unit	Share in the diet, %	Quantity, kg	Energy feed unit	Share in the diet, %
During the winter season (125 days)									
Alfalfa hay	437	192,3	14,7	475	209,0	15,3	287	214,3	15,5
Wheat straw	188	41,4	3,2	225	49,5	3,6	225	49,5	3,6
Corn silage	2510	552,2	42,1	2625	577,5	42,5	2687	591,1	42,8
Half a sugar beet	750	112,5	8,6	750	112,5	8,3	750	112,5	8,2
Cotton wool	125	137,5	10,5	125	137,5	10,1	125	137,5	10,0

Soft feed	250	275,0	20,9	250	275,0	20,2	250	275,0	19,9
Total in the season	x	1310,9	100,0	-	1361,0	100,0	x	1379,9	100,0
During the summer season (180 days)									
Alfalfa blue mass	3780	831,6	42,9	4140	910,8	45,1	4230	930,6	45,2
Corn blue mass	2340	514,8	26,5	2340	514,8	25,5	2430	534,6	26,0
Soft feed	540	594,0	30,6	540	594	29,4	540	594	28,8
Total in the season	x	1940,4	100,0	-	2019,6	100,0	-	2059,2	100,0
Total feed unit in lactation	-	3251,3	-	-	3380,6	-	-	3439,1	-
Digestible protein	-	334,8	-	-	344,7	-	-	350,9	-

Ethological indicators of experimental animals. One of the important factors for the rapid development of production in the livestock sector is the creation of favorable feeding conditions, taking into account the biological needs of animals. The work carried out in this regard requires in-depth knowledge of their character traits and vital needs.

The results of many scientific studies show that filling the herd of cattle with cattle that are clean and at the same time have strong feed consumption reflexes creates the basis for the strengthening of these characteristics in the next generations and the creation of easy-to-manage cattle herds [8].

Characteristic features of animals are a function that determines their adaptation to external environmental conditions. In the process of growing them, adaptation to certain feeding conditions is formed in animals based on biological needs. Accordingly, the main character traits are formed in animals [11].

Taking into account these aspects, the main behavioral indicators of experimental animals were studied (Table 3).

As can be seen from the data in the table, as the age of cattle increases, their main life processes and character traits change and become more complicated. In particular, from 12 months to 18 months, the time spent in an upright position decreased with age: in the control group, this decrease was 23.7%, in experimental group I - 22.8%, and in experimental group II - 22.9%. Correspondingly, the time spent in the lying position increased: at the age of 18 months, the time spent in the lying position compared to the age of 12 months was 53 minutes (38.9%) in the control group, 52 minutes (39.4%) in the experimental group I, 52 minutes (39.4%) in the experimental group II Increased by 52 minutes (39.0%).

It should be noted that the time spent in a standing position was longer in the bodies of the experimental groups compared to the control group, and the time spent in the lying position was less.

It is known that the duration of the body's rest period is related to the optimal feeding regime. During rest, all movements in the animal are significantly limited, the reaction to external influences slows down, and it takes a comfortable (comfort) position for itself, for example, it rests by choosing a place with the front side of the body slightly raised.

Table 3 Dynamics of behavioral changes of animals depending on age, minute, $\bar{X} \pm S\bar{x}$ (n = 5)

Indicators	Groups		
	Control	1 st experiment	2 nd experiment
12 months old			
Standing, total	224±0,53	228±0,62	227±0,58
Sh.j. feed intake	92±0,38	96±0,42*	95±0,45
Mastication	41±0,29	45±0,32*	44±0,34
In lying position, total	136±0,63	132±0,65	133±0,64
Sh.j. Mastication	78±0,39	80±0,32	80±0,36
Sleep	49±0,23	50±0,26	49±0,27
General activity index	0,586±0,01	0,613±0,02	0,608±0,01
15 months old			
Standing, total	183±0,57	189±0,70	188±0,64
Sh.j. feed intake	101±0,36	105±0,39*	106±0,38*
Mastication	46±0,27	51±0,26*	50±0,27*
In lying position, total	177±0,39	171±0,52	172±0,46
Sh.j. Mastication	81±0,30	84±0,34*	83±0,32*
Sleep	52±0,24	51±0,22	50±0,23
General activity index	0,633±0,008	0,667±0,007*	0,664±0,008*
18 months old			

Standing, total	171±0,76	176±0,69	175±0,72
Sh.j. feed intake	103±0,48	108±0,51*	107±0,49*
Mastication	60±0,23	68±0,29**	67±0,28**
In lying position, total	189±0,68	184±0,72	185±0,60
Sh.j. Mastication	91±0,38	97±0,48**	96±0,43**
Sleep	63±0,36	60±0,42	61±0,38
General activity index	0,705±0,02	0,758±0,01**	0,750±0,01**
At the age of the first child			
Standing, total	201±0,52	206±0,60	207±0,58
Sh.j. feed intake	81±0,16	83±0,15*	82±0,17*
Mastication	116±0,48	120±0,51*	121±0,53*
In lying position, total	159±0,44	154±0,42	153±0,43
Sh.j. Mastication	73±0,58	77±0,64*	78±0,66*
Sleep	35±0,36	32±0,48	32±0,54
General activity index	0,750±0,003	0,778±0,004*	0,780±0,005*

Note: *P<0,05; **P<0,01

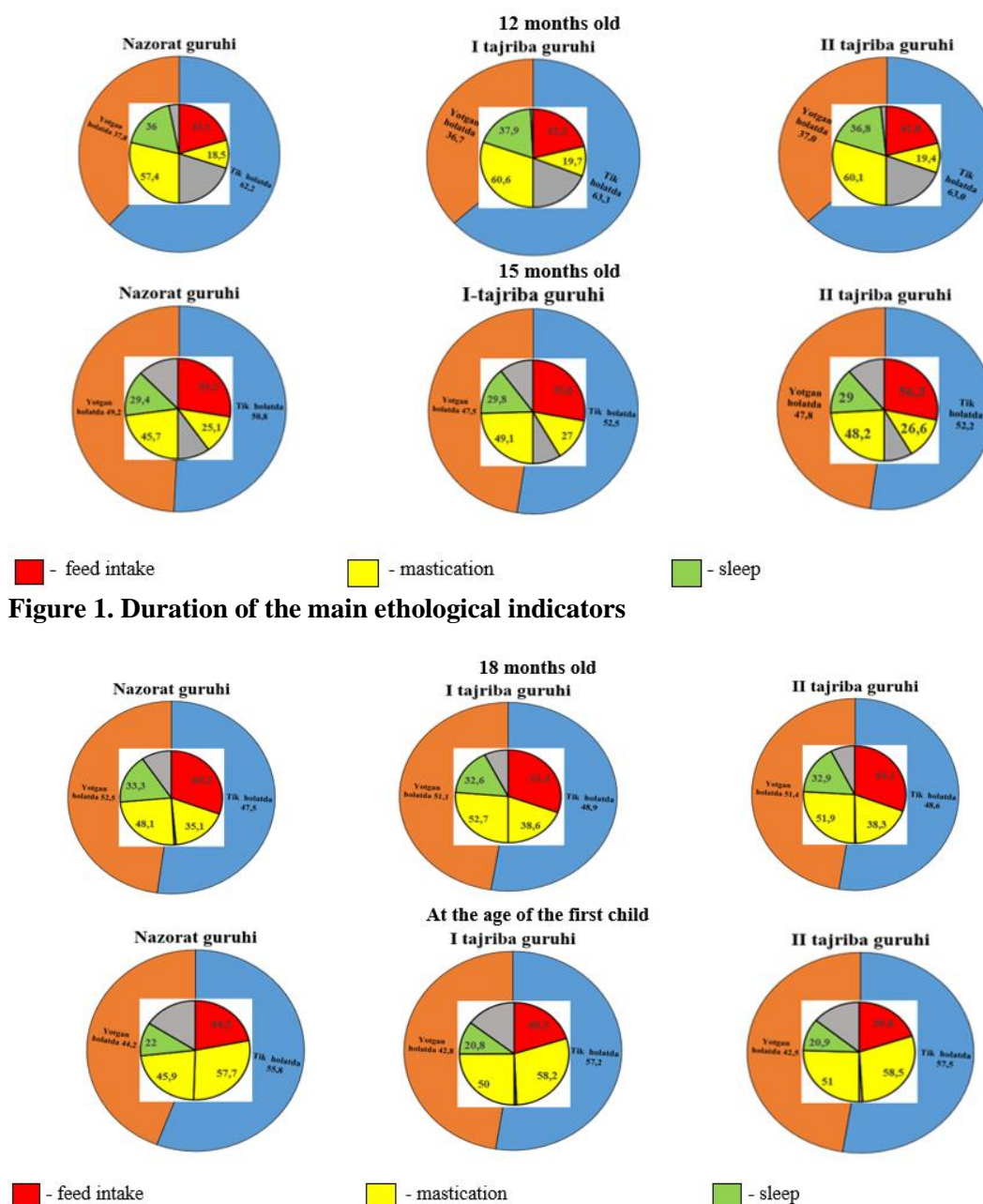


Figure 1. Duration of the main ethological indicators

Continued from Figure 1. Duration of the main ethological indicators

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In experimental groups receiving "Imnamak" nutritional supplement, the times of food intake, standing rumination and lying rumination were greater in all periods compared to the control group. These movements include bodies in experimental group I compared to bodies in the control group at the age of 12 months for 10 minutes (4.7%), bodies in experimental group II for 8 minutes (3.8%); At 15 months, they spent 12 minutes (5.2%) and 11 minutes (6.3%) more, respectively. This indicates that the experimental animals were in a more active state compared to the control group, and their digestion processes were faster. The intergroup differences were at a reliable level ($P < 0.05$ and $P < 0.01$).

After giving birth to heifers, the time of being in an upright position in first-born cows was 30 minutes (17.5%) in the control group, 30 minutes (17.0%) in the experimental group I compared to 18 months; In experimental group II, it increased by 32 minutes (18.3%), and the time spent lying down was 18.9, respectively; decreased by 19.5 and 20.9%.

It should be noted that the cows in the experimental groups had higher activity compared to the control group. The time spent on feeding, standing and lying rumination was 10 minutes (3.7%) more in experimental group I cows compared to the control group, and 11 minutes (4.1%) more in experimental group II ($P < 0.05$).

As the age of cattle increased, the total activity index increased in all groups. This indicator increased by 0.164 units (27.9%) in the control group, 0.615 units (26.9%) in the experimental group I and 0.172 units (28.3%) in the experimental group II compared to the 12-month-old cows.

The total activity index was higher in the animals of the experimental groups compared to the control group in all growing periods. The general activity index at the age of 12 months was 0.027 units (4.6%) in the bodies of the experimental group I compared to the control group, 0.022 units (3.7%) in the experimental group II; 0.034 units (6.0%) and 0.031 units (4.9%) at the age of 15 months, respectively; 0.053 units (7.5%) and 0.045 units (6.4%) at the age of 18 months; In cows of I calving age, it was higher by 0.028 units (3.7%) and 0.030 units (4.0%). Differences between indicators are at a reliable level ($P < 0.05$ and $P < 0.01$).

Summary. The introduction of "Imnamak" nutritional supplement at the rate of 30 grams per day for 30 days from the age of 12 months to the ration of the bodies intended for filling the herd ensures their consumption of roughage and other bulky feed, improves their ethological indicators related to nutrition, their overall general activity is at a high level, industrial technology that adapts well to the conditions of the yuvosh, at the same time has a positive effect on the formation of a herd of active cattle.

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