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Etiology and Prevention of Hypovitaminosis D in Calves

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ABSTRACT

In this article in Shakhrisabz district of Kashkadarya region The results of the etiology and prevention of D-hypavitavinosis disease in 4-month-old kora-ola calvis at the "Gayrat Chorva Nasl"farm are presented. Calves in the experiment were fed monociphosphate missulfate in addition to their for 60 days. In addition,multivit plus menirelage drug was injecned between the muscles.Clinical examinations were conducted 1 time in 20 days.

Development of animal husbandry, turning it into a profitable industry, thereby increasing the quality and quantity of livestock products is one of the integral parts of modern agrarian policy. Internal non-infectious diseases of young animals are one of the main obstacles to achieving economic efficiency in animal husbandry. Among them, D-hypovitaminosis disease is common in calves of breeding age, causing great economic damage to livestock farms.

Relevance of the topic. The analysis of the literature data shows that the spread, etiology, diagnosis of D-hypovitaminosis of calves in our Republic, its connection with the natural resistance of the body, and effective measures for the treatment and prevention of the disease have not been fully studied. For this reason, there is a need to improve the methods of preventing D-hypovitaminosis in calves in specialized livestock farms. Vitamin D deficiency is common among calves of growing age, with incidence rates as high as 20% on some farms. Improving methods of prevention of D-hypovitaminosis among such calves is an urgent problem.

Inspection methods and materials. The experimental part of the scientific research was carried out at the farm "Ghayrat Chorva Nasl" in Shakhrisabz District, Kashkadarya Region. 10 heads of 4-month-old black-bred calves on the farm were separated based on the principle of "similar pairs" and divided into two groups of 5 calves each, the first was designated as the experimental group and the second as the control group.

In order to prevent hypovitaminosis D, the calves in the experimental group were given 10 grams

of monocalcium phosphate and 60 mg of copper sulfate per calf per day for 60 days, and 5 ml of multivit plus mineral drug were injected intramuscularly every 10 days.

Clinical examinations were conducted once every 20 days. Appetite, body temperature, heart rate and breathing rate in 1 minute, movement of the large abdominal wall in 2 minutes, skin and skin covering, condition of mucous membranes were checked. To determine and analyze the level of metabolism in the animal body, blood was taken from the jugular vein of each calf into 2 test tubes, and 0.5 ml of heparin was added to one of the test tubes to prevent blood clotting. The number of erythrocytes in the blood (Goryaev counting grid), hemoglobin (Sali hemometer), glucose (color reaction with ortho-toluidine), total protein in blood serum (Refractometric method), alkaline reserve (I.P. Kondrakhin method) Calcium (Vichev and Korakashev method), inorganic phosphorus (by the method of Koromislov V.F and Kudryavieva L.A) was examined. The daily increase in body weight was determined by individual weighing.

Analysis of the obtained results: In order to study the level of satisfaction of the needs of the calf's body for nutrients and vitamins, a zootechnical analysis was conducted on the composition and nutritional content of the calf's ration. Data from the literature (Dalakyan V.P., Rakhmanova Sh.T., 1986) and veterinary laboratory data were used to determine the amount of nutrients, digestible protein, sugar, carotene, calcium, phosphorus, and fiber.

Calves are mostly kept in one place on the farm "Ghairat Khorva Nasl". Active diet for calves, sunlight is not enough, although calves should be raised in the open air for 3-4 hours a day. Calves are hand-fed three times a day. Watering is done with the help of watering cans.

It was found that the ration of the calves is of the silage-sage type. Maize silage made up 26.7% of the ration, alfalfa silage - 35.7%, wheat straw - 26.7%, and mixed fodder - 10.7 % , and the total nutrition was 1.86 oz. units. Compared to the standards of nutrition, the nutritional value of the ration is 0.64 oz. unit, 44.6 g of digestible protein, 131.0 g of sugar, 76.5 g of carotene, 1.3 g of phosphorus, and 11.5 g of calcium and fiber. An excess of 587 grams was found. (Table 1)

Table 1. In experience calves ra ts ion.

Foods	Amount	Few. unit	Digestive protein , g	Sugar , g	Carotene, mg	Kal ts iy,g	Phosphorus, g	Kletchatka, g
Wheat straw	1.5	0.36	5.4	-	4.6	2.6	1.8	228
Alfalfa senaji	2, 0	0.65	1 5 5	1 7.5	52.5	18.5	3.8 _	220
Ma k ka silage	1.5	0, 4 0	18	5 9	26 , 4	1 0 , 1	3.20	190
Amishta feed	0.6	0, 45	9 6.2	48, 0	-	1.3	4 , 4	-
Ra ts ion	5.6	1 , 86	274.6	1 24 , 5	83.5	32 , 5	13 , 2	6 38
The norm		2.5	3 20	2 40	1 6 0	2 5	14.5	1 2 25
Difference , +,-		-0.64 _	- 44 , 6	-1 31	- 76 , 5	+ 11 , 5	-1.3	+ 587

Sugar-protein ratio -0.45; _ phosphorus-cal ts iy ratio - 0.41

The carbohydrate part of the diet was characterized by a deficit of sugar and an excess of kletchatka compared to the nutritional standards. It was also found that protein and energy components were not in proportion to each other, that is, the sugar-protein ratio in the diet was 0.45 instead of 0.8:1. The macronutrient part of the diet was characterized by an imbalance of their ratios due to the excess of calcium and the deficiency of phosphorus. The ratio of phosphorus to calcium was 0.41:1 (norm - 1:2).

Changes in the clinical and physiological parameters of the calves during the experiments are presented in Table 2. As can be seen from the table, the body temperature, respiration and pulse

number of the calves in the experimental group did not change much compared to the initial values by the end of the experiment, but the number of contractions of the large abdominal wall in 2 minutes increased from 3.6 times to 4.0 times at the beginning of the experiments.

Although the body temperature of the control group calves remained almost unchanged during the experiments, other clinical parameters were observed to deteriorate compared to the initial values.

The number of breaths per minute in the animals of the experimental group was on average 37.0 times at the beginning of the tests, and by the end of the experiments, this indicator was equal to 28.6 times on average, that is, it was found that the number of breaths decreased by an average of 8.4 times. The number of pulses per minute in the animals of the experimental group was 78.6 beats on average at the beginning of the tests, and it was found that this indicator decreased during the experiments, that is, by the end of the experiments, it was 68.2 beats on average.

The mean contraction of the large abdominal wall movement at 2 minutes was also noted to be reduced in the control calves and averaged 3.3 by the end of the experiments, which was a 0.4-fold decrease compared to the beginning of the experiments.

We explain that the rate of breathing increased by an average of 2.0 times for 1 minute in the animals of the control group is due to the fact that the animals' diet is of the silage-sage type, the lack of carbohydrate foods in its composition, the violation of the calcium-phosphorus ratio, and therefore the increase in the demand for oxygen in the body due to the occurrence of hypoxia. During the experiments, the calves of this group were characterized by the observation of clinical signs characteristic of vitamin and mineral metabolism disorders, such as a decrease in the gloss of the skin, whiteness of mucous membranes, failure to grow and develop, enlargement of joints , and deformation of the spine.

Table 2. Clinical indicators of calves in the experiment.

Groups	Check time	breath the number is [1]	Pulse [1]	Body temperature , ^{0}C	Rumina ts iya [2]
t _	10. 09.22 y.	3 7 .0	78.6	38, 7	3, 6
	30. 09. 22 years	35.4	72.8	38, 4	3.7
	20.10. 22 years	30.4	71.8	38.8	3.9
	1 4 . 11 . 22 years	28.6	68.2	39.0	4.0
n torture	1 0 .09. 22 years	35 , 8	7 7 , 8	38, 5	3.7
	30. 09 . 22 years	36.0	79, 8	38 2 8	3, 7
	20.10. 22 years	35,8 _ _	81,4 _	39.0	3, 3
	1 4 . 11 . 22 years	37,8 _ _	80,8 _	39, 7	3, 3

Some morphobiochemical indicators of the blood of the experimental calves were characterized by the same indicators in the experimental and control groups before the start of the experiments, while the deterioration of the morphobiochemical indicators in the calves of the control group was noted until the end of the experiments.

By the end of the experiments, compared to the initial parameters, the number of erythrocytes in

the blood of the calves in the experimental group increased by 1.16 million/µl, hemoglobin – 18.8 g/l, glucose – 0.81 mmol/l, total protein – 3.6 g/l, an increase in alkaline reserve - 4.1 volume% SO_2, calcium by 0.3 mmol'/l, and inorganic phosphorus by 0.33 mmol/l was noted. The increase in the number of erythrocytes and the amount of hemoglobin in calves of this group indicates hemopoiesis, and the increase in the amount of glucose, total protein, calcium and phosphorus indicates the improvement of metabolism in the body.

By the end of the experiment, the average number of erythrocytes in the control group was 0.34 million/µl, hemoglobin was 4.3 g/l, total protein was 1.8 g/l, and alkaline reserve was 0.2 vol.%. A reduction of SO_2, inorganic phosphorus by 0.18 mmol/l was noted. We explain the worsening of blood morphobiochemical indicators in calves of this group by the deterioration of the needs of the calf's body in terms of nutrients, vitamins and minerals, and the breakdown of metabolism.

Table 3. Morphobiochemical indicators of the blood of experimental calves.

Groups		Erythrocyte, million/µl	Hemoglobin, g/l	glucose, mmol/l	General protein, g/l	Alkaline reserve, volume %SO_2	Kal'tsiy mmol ' /l	Inorganic phosphorus mmol ' /l
experience a	A	4, 72 ±1, 6	8 5, 4±2, 0	1 .84 ±0.06	6 8 ,4±1,3 2	4 0 .7±1.2 2	2.75+0.0 8	1.43+0.07
	B	5.8 8 ±1.7	10 4 , 2 ±1.2	2, 6 5±0.05	7 2.0 ±1.3 0	4 4 ,8±1,16	3.05+0.0 7	1.76+0.05
Control	A	4.8 0 ±1.2	85.7±1.6 4	1, 8 6±0.05	6 8 .7±1.2 0	4 0 .6±1.5 0	2.72+0.0 6	1.41+0.04
	B	4.4 6 ±1.0	8 1 , 4 ±1.15	1, 9 5±0.06	6 6 .9±1.7 0	4 0 , 4 ±1.1 6	2.74+0.0 9	1.23+0.06

: A- checks at the beginning B- checks at the end .

the experiments , by the end of the experiments, the body weight gain of the calves in the experimental group was higher than that of the calves in the control group. The body weight of the calves in the experimental group was on average 27.1% higher than the body weight of the calves in the control group.

Table 4. Changes in body weight of calves in the experiment .

Groups	Body weight at the beginning of experiments, kg	Body weight at the end of the experiments, k g	Body of weight daily increase , g	Control to the group relative to
Experience	48 , 4 ±1.4 0	66.5 ± 2.10	3 0 2±2 0 .4	1 27.1
Control	48 , 2 ±1.1 4	61.3 ± 1.88	2 18 ±1 4 .6	100

The results of studies conducted on calves showed that their rations are low in nutrients, lack digestible protein compared to the standard of feeding, very low sugar-protein ratio and calcium-phosphorus ratio, hypohemoglobinemia, hypoproteinemia, and a decrease in alkaline reserves in the blood, i.e. acidosis. As a result of the clinical examination, the first clinical signs of the diseases, which are mainly caused by vitamin and mineral metabolism disorders, were noted in the calves: stunted growth and development, thickening of the skin coating, decreased gloss, change in appetite, whiteness of the mucous membranes, movement of the incisors, and absorption of the last tail vertebrae.

Conclusions.

1. The main causes of hypovitaminosis D in calves are an excess of acidic and fiber-rich foods, low levels of nutrients, low ratio of sugar-protein and calcium-phosphorus in the diet, insufficient breeding grounds for calves.
2. Hypovitaminosis D disease in calves is accompanied by clinical signs such as changes in appetite, paleness of mucous membranes, loss of glossiness of the skin, hypotonia of the pre-gastric sections, failure to grow and develop, enlargement of joints, absorption of the last tail vertebrae.
3. In order to prevent the disease of hypovitaminosis D in growing-age calves, in addition to the diet for 60 days, 10 g of monocalcium phosphate, 60 mg of copper sulfate and 5 ml of the "Multivit plus meniral" drug are injected into the muscles every 10 days . gives a good result.

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