

UDC 577.16: 636.2: 546.18.46

**THE PROVIDING HEIFERS OF 5–6 AND 8–9 MONTHS AGE
BY VITAMIN D DURING THE WINTER PERIOD**

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The provision of farm animals, including cattle with Vitamin D is conducted in two ways: exogenous (from feed and with the additional administration of vitamin preparations) and endogenous (synthesis in the skin by influence of ultraviolet irradiation from 7-dehidroholesterol). However, the process of adoption, transformation and manifestation of the functional activity of vitamin D are complex and depends on several factors, including: age, species, breed, composition and nutritional value of the ration, the clinical condition of the body, and so on. This the main reason of relevance of the research aimed on studying the characteristics of vitamin D supplement on the body of young cattle in different periods of growth and development.

The aim of this study was to establish the vitamin D provision in heifers of age 5–6 and 8–9 months detected by concentration of 25-OH D₃, parameters of mineral metabolism in blood and analysis of the composition and nutritional value of feed rations.

During the analysis of the compound and ration of heifers of age 5–6 months during winter housing period, found that the ratio meets their needs in exchange energy for 7.35 MJ more than normal or a percentage rate of 22.29 %. Also found higher content of the digestible protein on 5.87% from the demand, crude fiber — 5.75 %. However, the content of crude fat in the ration was higher than necessary to 102.0 g, that is 40.80 % in percent ratio. The provision of Vitamin D in heifers was lower than necessary to 748.0 IU, corresponding to 34.45 % in percent ratio. The content of vitamin A was also lower for 66.67 % than necessary, on the opposite side, vitamin E, — higher by 52 %.

The performed research reported that the content of the active metabolite of vitamin D₃ — 25-OHD₃ in the blood serum of heifers 5–6 months age was within 15.02–18.56 nmol/L. This marked a low level of total calcium in serum of heifers and fraction of ultrafiltrated calcium was 62–63 %. In addition, the level of inorganic phosphorus ranged from 1.58 to 1.65 mmol/L. The activity of total alkaline phosphatase in serum of heifers in this age group was 143–157 U/L.

During the evaluation of composition and nutritional value of the ratio of heifers 8–9 months age, found that it meets their needs in exchange energy for 9.29 MJ more than normal. At the same noted the deficiency in dry matter for 704.0 grams than necessary or 11.73 % in percent ratio, crude fat — 105.0 g (37.50 %), starch — 28.75 (4.87 %) and sugar — 12.85 g (3.13 %). Sugar-protein ratio is 0.88. The provision of heifers with Vitamin D was lower than necessary for 36.99 %, and vitamin A — at 77.38 %. The content of vitamin E in the feed was higher on 75.52 %.

Under those conditions of detention and feeding, the content of 25-OHD₃ in serum of heifers of age 8–9 months was 20.62–24.02 nmol/L and was higher in comparison to its value in the blood of heifers of age 5–6 months. The content of calcium in serum of heifers was 2.28–2.35 mmol/L, and part of it's ultrafiltrated fraction was 56 % of the total. The content of inorganic phosphorus and magnesium in the blood serum of heifers was 1.74–1.78, 0.842–0.846 mg/dL, respectively. The activity of alkaline phosphatase in serum was within the 108.54–115.42 U/L and was lower in comparison to the value of serum in heifers of age 5–6 months. The proportion of bone isoenzyme of alkaline phosphatase in serum heifers of age 8–9 months was approximately 79 %, and intestinal isoenzyme ALP — 21 % of total alkaline phosphatase activity.

In general, the vitamin D provision in heifers of age 5–6 and 8–9 months and manifestation of its functional activity depends on the composition and nutritional value of the diet and physiological characteristics of the animal.