

UDC 363.2:577.115.16 : 546.41.18

**THE SEASONAL DYNAMICS OF 25-HYDROXYCHOLECALCIFEROL IN BLOOD OF COWS
IN NATURAL-GEOGRAPHICAL AREAS OF PODILLYA**

L. L. Yuskiv, Ph.D., Senior Research
l_yuskiv@inenbiol.com.ua
Institute of Animal Biology NAAS

The recent studies have found that the degree of availability of vitamin D in cattle organism is associated with the risk of many diseases. The issue regarding the optimal level of vitamin D in the body of dairy cows in lactation period on various factors and ways of its correction. In addition, today there are no information about the safe dose of additional vitamin D injection for cows in different geographical areas, not only in Ukraine but also in other European countries, as very little is known about the actual content of vitamin D in food, its loss during prolonged storage, and genetic ability of cows to accumulate vitamin D in the liver and adipose tissue when exposed to sunlight during the grazing period.

The aim of the study was to investigate status of vitamin D in high-yielding cows of the Ukrainian Black-and-White dairy breed at different times of the year, which were held at the State Enterprise «Experimental Facility» «Pasichna» Institute of forages and agricultural skirts NAAS of Ukraine, located in the natural geographical areas of Podillya.

Vitamin D provision rate of an animal organism is detected by 25-OHD₃ concentration in blood — the main form of vitamin D₃, that circulates in the blood and is a precursor in the synthesis of other active metabolites.

On the basis of studies in different seasons for cows at the 4th months of lactation, we found that in summer, during the grazing cows on pasture, the concentration of 25-hydroxyvitamin D₃ in the blood of cows was the highest and was 130.58 ± 10.81 nmol/l. In autumn this concentration was lower at 2.66 times, compared to the summer. The lowest concentration of 25-OHD₃ in the blood of cows observed during the winter housing period (38.58 ± 3.04 nmol/l). The animal fed a balanced diet during the winter housing period and they had every day active exercise lasting 1–2 hours, depending on weather conditions.

Against the background of changes in the concentration of 25 OHD₃, we found changes in the concentration indices of mineral metabolism in the blood of cows in different seasons. The total calcium concentration was high in summer and winter seasons and lowest — in the autumn (2.69 ± 0.10 mmol/l). The content of inorganic phosphorus in the blood of cows was highest in the summer and was $2,04 \pm 0,06$ mmol / l, and the lowest - in the the autumn. Our studies have established minor differences in the concentration of magnesium in the blood of cows in different seasons. At the same time, at the highest level 25 OHD₃, the activity of alkaline phosphatase in the blood of cows was lowest in the summer and was 62.74 ± 5.69 U / l.

Thus, reducing of the D-vitamin status in cows during the winter housing period indicates that cows are able to deposit this vitamin a limited period of time. The levels of 25-hydroxycholecalciferol in blood of high-yielding cows for 4 months of lactation was within physiological norms which probably relates to sufficient vitamin D in feed natural-geographical areas of Podillya and genetic ability of the organism to accumulate of vitamin D in the liver and adipose tissue during the grazing period by exposure to sunlight.