

Influence of the improved formulas of premixed on quality of foremilk and milk of cows

Goal. To study the influence of improved author's formulations of premixes (feed additives) on the quality of colostrum and milk. **Methods.** The control group of animals fed premix P60-1, and experimental - premix by the author's recipe, which eliminated the deficit of macro- and trace elements in the main diet. **Results** The efficiency of application of premixes in cattle feeding for an imbalance in the diet of trace elements and mineral substances was investigated. **Conclusions** Improved recipes of premixes have a positive effect on the quality of colostrum and milk of cows.

Key words: feed, diet, premix, cow, colostrum, milk.

Milk and milk are the main feed that provides the vital functions of newborn calves. Its chemical composition varies especially during the first 3 to 6 days after cows breeding, and during the lactation the ratio of nutrients in milk becomes optimal. Qualitative indicators of colostrum depend on the structure of the diet and, above all, on its biological value. The imbalance of even individual components in it dramatically reduces the healing properties of colostrum and milk [2].

Unfortunately, in many agroformations, the deficit of macro- and trace elements in cows rations reaches 40 - 45% [8]. In order to eliminate it, in practice, premixes (feed supplements) of domestic and foreign productions are used, the structure of which generally does not take into account the biochemistry of blood of cows and the chemical composition of feeds, therefore their efficiency is low [6].

Based on the modern advances in biological science, we developed a methodology for preparing formulations of premixes and feed additives, which fundamentally differs from the known [3]. It involves the mandatory study of blood, feed and inclusion in premixes **Keywords: feed, diet, premix, cow, colostrum, milk.** (additives) only those components and in the amount that is lacking in the diet (and organisms) to ensure normal animal health [7].

The purpose of the research is to study the effects of improved author recipes of premium (feed additives) on the quality of colostrum and milk.

Materials and methods of research. To find out the effectiveness of the premix formulations in the agricultural company "Naukova" of the Dnipropetrovsk region. 2 groups of Holstein breed of full-fat cows (15 heads) were formed by the analogue method by age, the order of lactation, the period of constitution, productivity (5500 - 6500 kg of milk with fat content 3.8 - 3.9%). The feeding, maintenance and operation conditions in the preparatory and experimental periods were identical. However, the control group of animals agreed to take premix P60-1, and the experimental one was the premix on the author's recipe, which eliminated the deficit of macro- and trace elements in the basic diet.

Research results. Analysis of composition of milk of cows of 15 - 20-day vigor in the beginning of the experiment, it is evident that in both groups the content of protein, γ - and immunoglobulins in it, fat, dry matter, calcium and phosphorus did not have any significant differences [9].

The chemical composition of colostrum in the first form was characterized by an increase in the protein by 4 times ($P < 0.01$). In experimental animals, the absolute index was higher than in the control group by 13%. In the next 3 days there was a sharp and reliable ($P < 0.01$) decrease in the level of protein in the colostrum of cows of both groups and until the 20th day of lactation its contents reached the baseline level. Three days after the decrease, the protein content remained high and in the experimental group it was up by 38%.

However, the level of protein in the control group decreased more. Significant differences in protein content in groups survived until the 20th day of lactation ($P < 0.01$) (Table 1).

The content of γ -globulins in the first trustee against the test increased in both groups - in the control group in 49, in the experimental group - in 59 times. In the following days there was a sharp decrease in their level. However, in the experimental group, this process was less intense, and by the end of the experiment, the concentration of γ -globulins remained higher than in the control group several times.

In the first days of immunity, immunoglobulins in the mole of cows of both groups are at one level [1]. In the first truss of colostrum, they were in control at 19, and in experimental - 25 times more than in milk ($P < 0.01$). During lactation there was a gradual natural decrease in their level in both groups [8], but with varying intensity of intensity - by the 20th day after calving in the control group - at 35, in the trial - by 10 times.

A comparative analysis of the content of colostrum and milk of the total protein, γ - and immunoglobulins indicates that their concentration is particularly high on the day of calving, so that the cow in the first days of calving gives him a large number of specific proteins that provide humoral protection from pathogenic influence of factors of the external environment. Indicators of protein metabolism in colostrum and milk fully correspond to the results of protein metabolism in blood [10] and exceed the intensity in the group of cows that received premix with an improved formulation. In the first molar, the concentration of fat in both groups is higher than in milk at the beginning of the experiment, but in the experiment it is greater than 1.5, and in the control it is only 1.3 times.

Starting from the 3rd day after calving, the fat content of colostrum and milk decreased. However, this process took place in the control group more sharply and already on the 5th-6th day the given indicator was at the initial level, and in the research - smoothly, and even on the 20th day the fatness was above the initial period by 14%. The comparative analysis of serum lipids and fat content in colostrum and milk proves that between these indicators, according to the nature of the logical changes, is full compliance. Glycerin and fatty acids are mainly fed into the mammary gland of cows from the blood and to a lesser extent, they are synthesized in the tissues of udder. Therefore, lipid changes in blood and milk fat in colostrum and milk occur simultaneously. Under the influence of the author's premix, the process of fodder formation is more intense.

The dry substance of colostrum and milk is an important component in the development of the formation processes in the body of young animals, since it contains proteins, carbohydrates, fats, minerals. Its concentration changes both under the influence of the physiological state of the cow (exclusivity) and premixes (the full value of feeding). In colostrum, the first tastes are the largest amount of dry matter. As to the beginning of the trial, its concentration in the experimental group increased in 2, and in the control - only in 1,7 times ($P < 0,05$).

The effect of increasing the calcium content in the mammary gland is particularly pronounced during the first 3 days after calving. Compared to the initial level, its number has increased in 2, and in the control - in 1,3 times. Subsequently, its concentration gradually decreased in both groups and until the 20th century stabilized.

Changes in the content of phosphorus in colostrum were similar in nature: the first 3 days - it increased (in the experimental group +1.8, in the control +1.5 times), and by the 10th day it stabilized within the limits of the beginning of the experiment. Phosphorus is more important in the formation of the mineral base of the skeleton, is part of the DNA molecules and RNA, which are the material substance of the genetic code, and also includes as a structural element in the macron-energy system (ATP, ADF, AMF, etc. .) that provides energy accumulation and is a structural component of phospholipids necessary for the normal functioning of the central nervous system as a whole. Calcium is directly related to the mineralization of the skeleton, maintenance of homeostasis and also the normal functioning of the central nervous system. Consequently, the high content of these elements in colostrum and milk, due to premixes, will contribute to the quick completion of the functional development of the calf's body.

At the beginning of the study, in both groups of cows, the content of trace elements in colostrum and milk was the same and was at the lowest level compared with their concentration in the first 20 days after calving (Table 2). In colostrum, the first infusion, the content of cobalt in the control group increased by 6%, and in

the research - by 2.8 times. During lactation, the level of this element in both groups decreased. However, in the experiment, it remained high until its completion, that is, an improved premix recipe satisfied the physiological needs of cows. As a result, colostrum and milk were more enriched with this micronutrient, which has a positive effect on bio-synthesis processes in the body of cows and calves [4].

The concentrations of manganese in colostrum were the highest in the two groups compared with the start of the study, but in the experimental group it was 2.7 times more than in the control group. Trend of significant variability decreased over the course of 20 days of lactation, while the concentration of this element was gradually decreasing.

Changes in the dynamics of zinc had the same pattern as cobalt and manganese, but with a certain peculiarity. In the experimental group at the 3rd day its concentration was highest with subsequent gradual decrease of this index, but also for the 20th day of zinc in milk was 3.3 times more in comparison with the control group, as well as in the first trunk of colostrum.

Quantitative changes in the content of copper in the colostrum and molasses under the influence of premixes took place with approximately the same regularity - after reaching the maximum level in the first lung there was a uniform and gradual decrease. However, the concentration of copper in milk and milk in the experimental group was higher than in the control group.

Conclusions

The high content of colostrum and milk of proteins, fats and minerals is due to the physiological state of cows, and especially the biological value of rations due to the premixtures, which contributes to the more complete satisfaction of the growing calf and positively affects its trophic and immunobiological processes. Biochemical methods of research have established that from the first day and within the next 20 days after calving, a sharp increase in the concentration of proteins, fats and trace elements in milk and milk is initially due to the biologically active substances of premixes and the subsequent further reduction of their level, which, however, remains higher than the initial period of animal health. This effect is more pronounced in the experimental group, which fed premixes, prepared for improved recipes. In the body of lactating cows before and after calving, the processes of biosynthesis of organic compounds of milk and milk in alveoli and inter-vein breast tissue are intensified under the influence of premixes. Since colostrum and milk in the first days of life are the main types of feed for a calf, they increase its adaptive capacity and resiliency in the natal and postnatal periods.

Bibliography

1. *Акопов А.А.* Профилактика нарушений обмена веществ у коров с помощью микроэлементов/*А.А. Акопов, Л.В. Абрагян*//Ветеринария. — 1985. — № 4. — С. 54–56.
2. *Горячев И.И.* Премиксы для высокопродуктивных коров/*И.И. Горячев, Я.Ю. Крисян*//Зоотехническая наука Белоруссии. — 1987. — № 28. — С. 36–40.
3. *Дзените А.Я.* Минеральные резервы в организме коров во время беременности/*А.Я. Дзените*//Всасывание и обмен питательных веществ в организме животных. — Рига, 1975. — С. 173–177.
4. *Дьяченко Л.С.* Кобальт в рационах молочных коров/*Л.С. Дьяченко, В.Ф. Лысенко*//Республ. межвед. темат. науч. сб. — К., 1985. — № 66. — С. 49–51.
5. *Захаренко Н.А.* Профилактика нарушений белково-минерального обмена у коров/*Н.А. Захаренко, Н.М. Шабальник*//Ветеринарные проблемы пром. животновод. — Белая Церковь, 1985. — № 10. — С. 17–19.
6. *Крыков В.М.* Витаминно-минеральные добавки для коров/*В.М. Крыков, В.Н. Михайлова*//Справочник по кормам и кормовым добавкам. — К.: Урожай, 1984. — 218 с.
7. *Лабвистис Я.Я.* Эффект скармливания нового премикса «ПАД» для коров/*Я.Я. Лабвистис, Н.И. Максимова*//Труды латвийской с.-х. академии. — Рига, 1986. — С. 3–6.
8. *Никитин А.М.* Справочник по кормлению сельскохозяйственных животных степи Украины/*А.М. Никитин, Н.И. Разумей.* — Одесса: Маяк, 1982. — 169 с.