

THE INTENSITY OF PROTEIN EXCHANGE AND THE CONTENT OF GLUCOPROTEINS IN THE BLOOD OF COWS UNDER THE CONDITION OF FEEDING IODINE CITRATE

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A balanced and complete feeding of cows during the dry period is an important condition for their preservation and health, as well as the growth of dairy productivity in the period of the future lactation. The purpose of the work was to study the parameters of protein metabolism and the content of glycoproteins in the blood of cows after calving under the condition of feeding iodine citrate in various doses.

The research was conducted on the 15 full-age cows of Ukrainian black-and-white milk breed, analogues by age (3–5 lactation), body weight, lactation period (1st month after calving) in the winter-stool period under the condition of anchoring the cows. The cows of I (control) group received the basic diet (BD), which was normalized according to the physiological state, productivity and body weight. The animals of the II experimental group from 18 to 78 days of lactation received iodine citrate in the feed daily at a rate of 0.6 mg I/kg of dry matter of the diet and the animals of the III experimental group received BD and iodine citrate at the rate of 0.06 mg I/kg of dry matter of the diet. For biochemical studies, the selected samples of venous blood were used in the preparatory and experimental (60 days of feeding of iodine supplements) periods. The state of protein exchange was estimated by the content of urea, total protein, albumin, the activity of AIAT and AsAT sialic acids, and hexose-bound proteins in the blood serum.

It has been found that the level of total proteins increased by 13.5 % ($P < 0.05$) in the blood serum of animals of group III, which fed iodine citrate in the amount of 0.06 mg/kg of dry matter of the diet. The feeding of animals with iodine citrate contributed to 16.7 % increase in albumin content in these animals and 16.6 % decrease in the activity of AsAT ($P < 0.05$). Increasing the total protein and albumin in the blood of animals in the III experimental group may indicate a stimulating effect of iodine citrate in this concentration, on the intensity of protein synthesis in the liver of the cows. In the blood of cows of the II experimental group, which received 0.6 mg I/kg of dry matter of the diet, the content of albumin was not increased to be 15.1 % and the total protein to 2.43 % and the activity of AsAT was decreased by 16.6 % ($P < 0.05$). AIAT did not undergo significant differences in the cows of experimental groups. It is worth noting that the probable changes in the activity of AIAT due to the activity of iodine citrate in cows of experimental groups were not detected. Obviously, the feeding of iodine in the form of citrate increases the protein exchange rate and activates the processes of transamination in the liver. In the blood of cows of experimental groups, no probable differences were found between the main final protein metabolism product — urea and creatinine. Obviously, the use of these doses of iodine citrate did not affect the course of the protein exchange and the energy processes in the myocytes and it did not cause the functional and structural changes in the muscle and excretory systems of the organism.

Studies of the level of glycoproteins in the blood of control and experimental cows indicate the corrective effects of iodine citrate on the immunobiological reactivity of their organism. This is evidenced by the higher level of glycoproteins and individual monocytes of their carbohydrate components in the blood of animals in experimental groups compared with the control that remained within the physiological norm. However, there is a more pronounced effect of adding 0.6 mg I/kg of dry matter of iodine citrate to the animal diet, used in the II group and was accompanied by a probable increase in the concentration of ceruloplasmin by 10.2 % ($P < 0.01$), hexose bound to proteins by 15 % ($P < 0.01$), sialic acids — by 24 % ($P < 0.01$). Whereas in the blood of animals of the III group, the tendency to increase the concentration of ceruloplasmin and hexose bound to proteins and the probable increase in the content of sialic acids was maintained by 11.4 % ($P < 0.05$). Thus, the biological effect of iodine citrate is more pronounced in cows of group II, which received a higher concentration of mineral additive.

Keywords: COWS, IODINE, GLYCOPROTEINS, PROTEIN, TRANSAMINASES