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## On some problems of modern intensive animal husbandry

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**Abstract:** Metabolism violations are one of the most acute problems of industrial husbandry farming. Ketosis of cows remains an urgent problem. The material for the study was highly productive cows of the first and second lactations on 1-14 days after calving, weighing 480-630 kg. Animals suffering from metabolic subclinical ketosis were divided into two groups (71 heads in each group). Clinical studies were performed by testing the amount of  $\beta$ -hydroxybutyrate and analyzing data in Dairy Comp 305. The enterprise protocols were used to treat the animals. The effectiveness of treatment was evaluated every day; on the second day, 46.5% of cows recovered in the first group, 38.0% - in the second group, and 53.5% and 62% of cows in each group recovered on the third day. In animals with metabolic disorders, in particular, ketosis, the genetic lactation potential is not fully used which decreases profitability of the farm. Daily well-structured work aimed at preventing and treating postpartum diseases that decrease dry matter intake can reduce the risk of secondary ketosis. To reduce the risks of primary (metabolic) ketosis, it is necessary to follow the feeding regimes in all technological groups of animals and form them from animals with the same hierarchical status.

### 1. Introduction

The scientific and technological progress poses complex tasks for agricultural workers. The transfer of agriculture to an industrial basis is a natural process due to the ongoing economic and socio-demographic changes in Russia. New technologies for keeping animals are being developed, in-line shop production systems are being implemented, lines of animals adapted to the new technology are being introduced, the psychological mood of rural workers is changing, and the neuropsychic load is increasing [1].

Industrial technologies in animal husbandry are based on economic indicators; they do not always take into account physiological characteristics of animals and their metabolic processes. Developing these technologies, experts hoped that animals would accept their conditions. The absence of pastures, active forms of movement violated stereotypical reactions, reduced resistance to diseases and other disorders. There are new diseases called “concentration diseases” or “diseases of enclosed spaces,” as well as “technopathies” caused by interaction of animals with mechanisms. [2]

The effect of physical inactivity is manifested in various forms. This condition is associated with a sudden and prolonged restriction of motor activities. At the same time, an “urgent” nature of changes in the physiological status and compensatory mechanisms are observed. A complex restructuring is taking place. As a result, the function of the central nervous system suffers - the reflex regulation of a



vascular tone and metabolism are disrupted which leads to impaired digestion and other disorders. Daily physiological changes cannot be observed. They decrease the functional activity of organs and systems, violate regulatory mechanisms.

In animal husbandry, this problem occurred in industrial zones, where animals are limited in their physical activity which causes metabolic disorders, ketoses, barrenness and other pathologies [3].

Highly productive herds are becoming more widespread as a result of selective works, high-tech herd management and full-fledged animal feeding [4,5].

One of the main causes of difficulties in the development of animal husbandry is the violation of various types of metabolism: proteins, carbohydrates, lipids, vitamins, minerals - micro and macro elements in the body of productive animals as a result of an imbalance in their intake of food. [6,7].

Disorders in metabolism are one of the most acute problems in modern animal husbandry in many countries of the world, which cause structural changes in all organs and systems, deteriorate the ability to perform their physiological functions [8, 9].

## 2. Problem statement

Under the conditions of EkoNiva Agro LLC Bobrov, among all pathologies in the calf group, the largest percentage of animals is cows with metabolic disorders.

The problem of ketosis in livestock breeding complexes where modern and intensive methods of livestock breeding are used is urgent.

The research objective is to study the therapeutic efficacy of treatment protocols for subclinical ketosis in highly productive cows in the conditions of EkoNiva Agro LLC Bobrov.

The following tasks were set:

1. To determine the type of ketosis.
2. To determine the prevalence of metabolic and secondary ketosis.
3. To study the effectiveness of the treatment protocol for subclinical ketosis.

Dexafort - intramuscularly 10 ml once,

Letozal - intramuscularly 25 ml once,

40% glucose solution - intravenously 400 ml for 3 days,

Kalfoset - intravenously 300 ml once,

Propylene glycol - inside of 600 ml for 3 days.

4. To study the effectiveness of the treatment protocol for subclinical ketosis.

Cortexonretard -10 ml intramuscularly once a day to detect ketosis,

Katozal - intramuscularly 25 ml once,

40% glucose solution - intravenously 400 ml for 3 days,

Calcium borogluconate - intravenously 400 ml once,

Propylene glycol - inside of 600 ml for 3 days.

5. To conduct a comparative assessment of the effectiveness of treatment protocols used at the Bobrov livestock complex.

## 3. Materials and methods

The work was carried out from 06/01/2018 to 02/28/2019 on Holstein cows in the conditions of the EkoNiva Agro LLC Bobrov livestock facility designed for 2800 cattle places, Bobrov district, Voronezh region.

The material for the study was highly productive cows of the first and second lactations on 1-14 days after calving, weighing 480-630 kg. During the experiment, 2599 heads were studied. In 223 animals, subclinical ketosis was diagnosed.

As a result of the clinical study using the rapid test for the amount of  $\beta$ -hydroxybutyrate in the blood and analysis of data in Dairy Comp 305, we found that 81 cows had secondary ketosis, which was accompanied by metritis, mastitis, renal displacement, delayed afterbirth, bronchopneumonia. 142 animals suffered from metabolic ketosis caused by violations in the feeding and maintenance regimes.

Animals having subclinical metabolic ketosis were divided into two groups (71 heads in each group).

The diagnosis of ketosis was made comprehensively, on the basis of clinical signs: depression, slowness and caution when moving, reduced appetite, down ears, endophthalmos, dull coat, hypotension of the stomach and sluggish chewing gum, decreased productivity (less than 5 liters of milk), daily milk yield decreased 2-3 times. Fatness did not correspond to the body condition for Holstein cows. Some had profuse diarrhea.

The results of the express blood test: blood was taken from the caudal vein following the asepsis and antiseptics rules. The diagnosis of subclinical ketosis (the level of ketone bodies is 1.1-2.5 mmol / liter) was confirmed using a StatStripExpressKetoneMeter portable analyzer and StatStripKetone  $\beta$ -hydroxybutyrate test strips produced by NOVA Biomedical.

Anamnesis. Based on an analysis of the data in DairyComp 305.

The first group of animals was treated according to the protocol:

Dexafort - intramuscularly 10 ml once,

Letozal - intramuscularly 25 ml once,

40% glucose solution - intravenously 400 ml for 3 days,

Kalfoset - intravenously 300 ml once,

Propylene glycol - inside of 600 ml for 3 days.

The second group of animals was treated according to the protocol:

Cortexonretard -10 ml intramuscularly once a day to detect ketosis,

Katozal - intramuscularly 25 ml once,

40% glucose solution - intravenously 400 ml for 3 days,

Calcium borogluconate - intravenously 400 ml once,

Propylene glycol - inside of 600 ml for 3 days.

To assess the effectiveness of treatment protocols, daily monitoring was carried out paying attention to the mobility and eatability of the feed. When conducting a routine medical examination, blood was taken from the caudal vein and the level of  $\beta$ -hydroxybutyrate was monitored.

The recovery of animals was determined by the absence of clinical signs of ketosis and the level of  $\beta$ -hydroxybutyrate, less than 1.1 mmol / liter.

The results of effectiveness of the treatment protocols for sick cows diagnosed with subclinical metabolic ketosis are presented in the table 1.

**Table 1.** Therapeutic efficacy of treatment protocols

Table 1. Therapeutic efficacy of treatment protocols							
Group	Amount of cows	Days of treatment					
		1		2		3	
		Recovered					
		Amount	%	Amount	%	Amount	%
Group 1	71	-	-	33	46,5	38	53,5
Group 2	71	-	-	27	38,0	44	62,0

#### 4. Discussion

We can see that on the second day, 46.5% of the cows recovered in the first group, 38.0% - in the second group, and 53.5% and 62% of cows recovered on the third day of treatment on the first and second days, respectively.

#### 5. Conclusion

Thus, during the experiment, secondary ketosis was identified in 35.4% of animals, and metabolic ketosis - in 64.5%. In order to reduce the risks of primary (metabolic) ketosis, it is necessary to follow the feeding regimes in all technological groups of animals and to form groups with the same hierarchical status.

It is indisputable that movement has a beneficial effect. However, in practice, it is difficult to implement. The advanced industrial methods in animal husbandry do not take into account physiological indicators.

The primary task is radical improvement of the system for breeding animals at pedigree farms, specialized heifers, and industrial farms.

The modern cattle breeding requires appropriate zoohygienic and physiological conditions for breeding animals which will make it possible to improve the quality of the breeding stock and increase the milk yield. The statistics shows that reproduction, movement, and disease prevention contribute to high productivity.

Daily well-structured work at preventing and treating postpartum diseases will reduce the risk of secondary ketosis.

The comparative analysis of the results showed that the most effective treatment protocol is the first one which can be used for treating this pathology.

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