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## SOME ASPECTS OF THE IMPROVEMENT OF FARMS FROM BOVINE LEUKEMIA

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### Annotation.

*This article presents the experience of rehabilitation of two farms with the initial infection with the bovine leukemia virus 18,92% and 34,61%. The scheme of farm health improvement by the method of serological and hematological research, with the isolation of seropositive animals and the subsequent elimination of animals with hematological leukemia, is described. It also shows the prevalence and insidense of oncornavirus infection in an uncontrolled epizootic process.*

**Key words:** Leukemia; virus; cattle; serology; hematology; health improvement; RID; ELISA.

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**Introduction.** The fight against bovine leukemia is a complex veterinary-sanitary and organizational-economic process, which is complicated by the lack of specific means, prevention and treatment, insufficient study of the characteristics of infectious and epizootic processes and the length of time required for the improvement of the economy, unfavorable for cattle leukemia [1,2,3,4,5,6,7].

In No. PP - (Presidential Decree) - 4576 dated January 29, 2020. On additional measures of State support for the livestock industry, No. PP-5017 03.03.2021. On additional measures for further State support of livestock industries in recent years, highly productive breeding heifers, Holstein-Friesians and other red-and-white dairy breeds of cattle have been imported into the Republic. And this increases the risk of the spread of bovine leukemia in farms if import and quarantine rules for newly imported animals are not followed. [8,9,10,11,12].

Prior to the use of serological methods for controlling the infection of animals with a virus, the fight against leukemia was based on clinical, hematological and pathomorphological diagnostic methods, which included:

- clinical and hematological examinations of animals older than two years, twice a year, followed by removal of patients;
- isolated rearing of young animals;

- carrying out general veterinary and sanitary measures;

Prevention of bovine leukemia in prosperous farms was achieved by protecting such farms from the importation of animals and semen of sires obtained from farms that are unfavorable for this disease. [13,14,15,16,17].

### Materials and research methods.

Currently, the fight against bovine leukemia in the territory of the republic is carried out on the basis of the "Instructions on measures to combat bovine leukemia" approved by the State Committee for Veterinary Medicine and Livestock Development of the Republic of Uzbekistan (SCVM and LD RUz.) dated 16.06. 2018.

Epizootological studies were carried out on the basis of the "Methodological recommendation for epizootological research in bovine leukemia", approved by the State Committee of the Republic of Uzbekistan and the Republic of Uzbekistan. from 25.09. 2019.

Serological studies (RID - Immunodiffusion reactions, ELISA - Enzim lincel immunosorbent assau) were carried out in accordance with the "Methodological recommendation for the serological diagnosis of bovine leukemia" approved by the State Committee of the Republic of Uzbekistan. from 29.12.2020.

To conduct serological studies to detect virus-specific precipitating antibodies to the bovine leukemia virus, in animal blood sera,

immunodiffusion reactions in agar gel were used in the modifications of Kh.S. Salimov (2018). The reaction took place in 1% agar gel in 8.5% sodium chloride solution in a humid chamber in a thermostat at a temperature of 37°C. Agar was applied to photographic plates 9x12 cm in size, while the thickness of the agar gel layer was 3-4 mm. For punching holes in agar gel, standard punches were used, each with 7 punch tubes with an outer diameter of holes of 6 mm, with a distance between the lateral and central ones of 3 mm. After filling the wells with antigen and sera, the photographic plates were placed in a humid chamber. Accounting for the results of the reaction was carried out after 18-24 hours.

The antigen of the leukemia virus obtained from the continuous line of cell cultures FLK (Fetal Lamb Kidney) in the leukemia laboratory of the UzSRIVM (Uzbek Scientific Research Institute of Veterinary Medicine) and the antigen of the Kursk biofactory was used as an antigen.

In order to establish early morphological changes in the blood, in the dynamics of the infectious process, clinical and hematological studies of animals seropositive for BLV (bovine leukemia virus) were carried out.

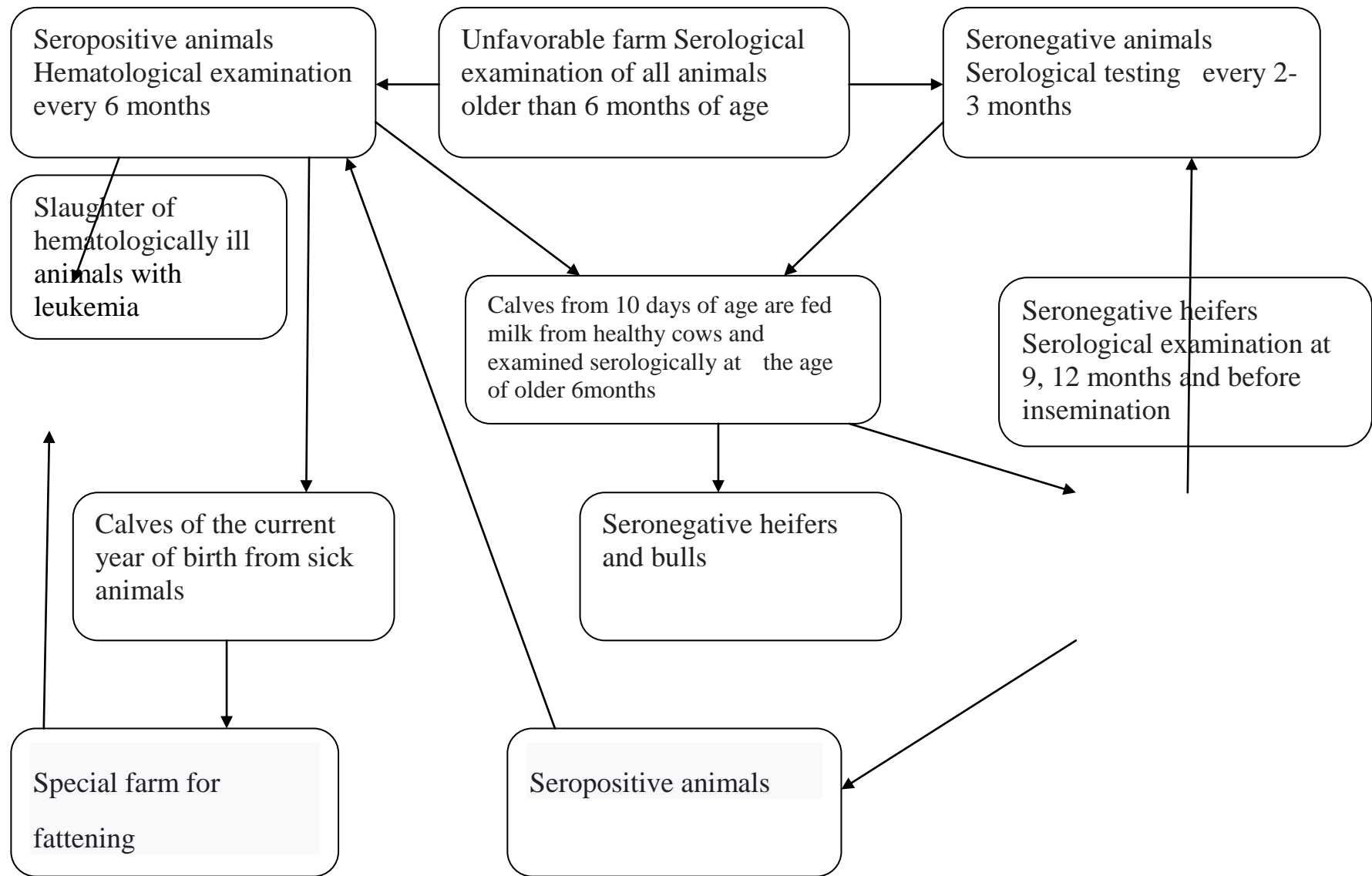
**Results and discussions.** To develop a scientifically based system of measures to combat bovine leukemia in 2 farms of the Navoi region, where red breeds of cattle are mainly zoned, repeated serological and hematological studies of cattle for leukemia were carried out.

When animals infected with the leukemia virus and hematologically ill with leukemia were detected, a complex of veterinary-sanitary, organizational and economic anti-leukemia health measures was carried out. When developing and implementing a system of anti-leukemic measures, we took into account the specific epizootic situation, the economic conditions of each farm. It should be noted that the effectiveness of recreational activities depended on the degree of spread of leukemia in the herds.

Thus, as a result of a complete clinical, hematological and serological study of animals of the Red Estonian breed in the farm "Adiz bobo" in the Navoi region, it was found that 4.52% of cows and 18.92% of animals had virus-specific precipitating antibodies to BLV in the blood serum. The moderate number of sick and infected animals on the farm is explained by the short period of trouble for the herd due to leukemia and the extremely limited movement of cows between stockyards. Such affection (of a medium degree) and the conscientious attitude of the farm workers to the problem contributed to the improvement of the economy in a short time.

According to the epizootic situation for leukemia, restrictive, health-improving, anti-leukemia measures were carried out in this farm, which included the following Pic. 1

Scheme for the rehabilitation of a herd of cattle disadvantaged by leukemia



All livestock of the farm was divided into two groups:

the first - healthy animals, serologically negative in RID;

the second - animals positive in RID (infected with leukemia virus).

Hematologically ill with leukemia animals were isolated with subsequent delivery for slaughter, the calves obtained from them were transferred to the fattening group. It was forbidden to regroup animals on the farm without the consent of the veterinarian serving the farm. Animals of the second group were kept strictly isolated from healthy livestock in order to exclude contact, with the provision of separate attendants. Milk from animals of this group was not fed to calves, but was handed over to the dairy and after pasteurization was used on a common basis. The infected group was subjected to clinical and hematological studies every 6 months. Sick animals, in order to avoid the appearance of tumor lesions in them, and cows that lost productivity and reproductive function, were handed over for slaughter. The rest of the cows and heifers were inseminated, kept as needed, receiving milk and offspring from them in isolation, and gradually replaced over 1-2 years. The calves obtained from the two groups were kept with their mother until the age of 10 days, and from the age of 10 days to 6 months they were kept isolated from the cows of their mothers in a separate room. During this period, they were fed milk from animals of the first group (serologically negative in RID).

Animals of the recovering groups are examined serologically every 6 months for the first 2 years, and for the third year - every 3 months. All animals responding positively to

BLVS were transferred to the second group. Young animals older than 6 months of age were also examined serologically in the RID. Upon receipt of negative results for BLVS, they were obtained in mass use, and upon receipt of positive results of their use, they were obtained in the second group.

For the entire period of health-improving measures, precautionary measures for the introduction of infection were observed. Newly identified infected animals were immediately removed from the herd. Calving of cows and heifers was carried out in the maternity ward with a dispensary, separately for healthy and infected groups of animals. Heifers and cows were inseminated with semen obtained from sires free from FLV infection. The veterinary and sanitary requirements for therapeutic and specific measures with animals (taking blood, administering drugs, vaccination, labeling, rectal examinations, etc.) were strictly observed. To prevent the attack of blood-sucking insects in the summer, weekly purchases were carried out with the appropriate acaricidal and insecticidal (0.1% solution of neocidol, 2% solution of creolin, 0.5% aqueous emulsion of trichlormetaphos-3) preparations.

As a result of the measures taken, after 6 months, during a repeated serological study, the number of animals infected with FLV decreased and amounted to 10.96%. Further serological studies made it possible to drastically reduce the number of newly detected infected animals: 9.79, 4.95, 1.78 and 0.44%, and in the last study, conducted 2.5 years after the initial one, oncornavirus infection was not detected in any of the animals (table 1).

(Table 1).

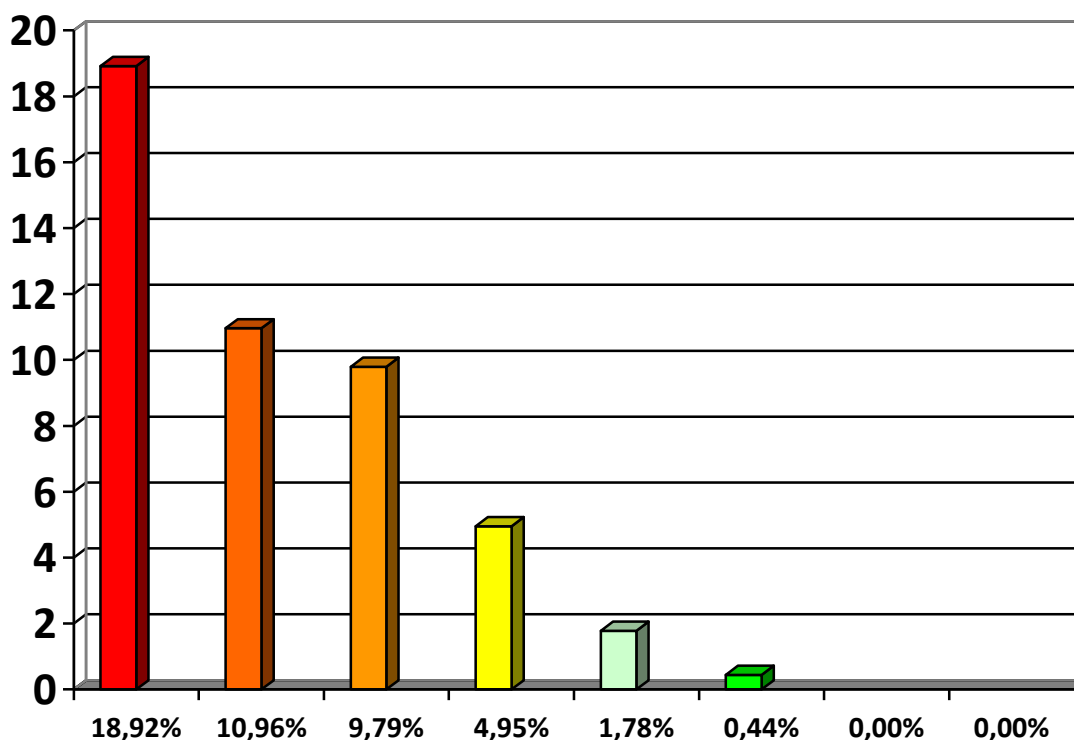
**Results of serological studies**

Names of farms	Research 1			Research 2			Research 3			Research 4		
	Researched animals	seropositive		Researched animals	seropositive		Researched animals	seropositive		Researched animals	seropositive	
		amount	%		amount	%		amount	%		amount	%
Farm "Adiz bobo"	317	60	18,92	310	34	10,96	429	42	9,79	444	22	4,95
farm "Hadicha"	208	72	34,61	120	25	20,83	61	7	11,47	63	3	4,76
Names of farms	Research 5			Research 6			Research 7			Research 8		
		Seropositive		Researched animals	Seropositive		Researched animals	seropositive		Researched animals	seropositive	
		amount	%		amount	%		amount	%		amount	%
farm "Adiz bobo"	505	9	1,78	456	2	0,44	397	0	0	0	0	0
farm "Hadicha"	68	1	1,47	68	0	0	0	0	0			

The dynamics of the decrease in infection with the leukemia virus in cattle of the red Estonian breed in the farm "Adiz bobo" is shown in diagram 1.

Diagram 1

The dynamics of the decrease in infection with the bovine leukemia virus in the farm "Adiz bobo"



During the recovery period, 28 cows with leukemia were identified during a three-time hematological examination of animals seropositive to BLV and they were sent for slaughter. 1.5 years after the division of the herd, at the fourth hematological examination, the isolation of animals with blood indicators characteristic of leukemia completely stopped.

Thus, 2.5 years after the division of the herd in the recoverable group, the isolation of infected animals was completely stopped and it became possible to eradicate the disease and oncornavirus infection.

As a result of a complete clinical, hematological and serological study, 34.61% of animals infected with BLV and 7.17% of hematologically ill animals with leukemia were identified in the Khadicha farm. Sick animals were immediately handed over for meat. All seropositive animals were kept in a separate isolator and hematological studies were

performed regularly (2 times a year). When hematologically ill animals were detected, they were handed over for slaughter. Every 3-4 months, a serological study of conditionally healthy cattle was carried out with the isolation of BLVS animals.

Repeated serological examinations made it possible to drastically reduce the number of newly detected infected animals: 20.83, 11.47, 4.76 and 1.47%, and during a subsequent two-fold examination conducted 3 years after the initial one, oncornavirus infection was not established.

The success of the recovery of farms was achieved through the constant implementation of a set of mandatory conditions: compliance with the requirements for veterinary and zootechnical processing of animals, the organization of proper primary registration (numbering) of animals and regular (every 3-4 months) serological testing of heifers

(starting from 6 months), as well as heifers and cows whose blood serum was seronegative.

In the farm "Arabon", unfavorable for bovine leukemia, with an uncontrolled epizootic process, the incidence of infection caused by BLV was studied. During the primary serological examination, 4.94% of animals infected with the bovine leukemia virus were found. Repeated studies revealed the following prevalence of leukemia infection: after 6 months - 5.78%, 12 months - 8.79%, 18 months - 12.07%, 24 months - 21.56% and after 30 months - 26.14% of the animals were infected with BLV. Incidence (the number of newly identified infected animals) was 0.84, 3.01, 3.28, 9.49 and 7.31%, respectively. Thus, in the leukemic infection controlled experiment, as compared to the uncontrolled one, the incidence rate was naturally lower.

Thus, the recovery of a farm that is unfavorable for leukemia (with moderate damage) by dividing animals into two separate groups was successful, in a short time, at minimal cost, without violating the technology of dairy cattle breeding.

When organizing and carrying out preventive measures, the following general veterinary and sanitary measures should be taken:

- the imported breeding stock must be free from antibodies to BLVS and be kept in a separate room for 6 months with serological control at least twice;
- comply with veterinary and sanitary requirements, conduct thorough mechanical cleaning and disinfection of stockyards and territories;
- strictly comply with the requirements for the implementation of therapeutic, preventive and other measures with animals (blood sampling, vaccination, treatment, numbering and labeling of animals, rectal examinations, etc.);
- carry out artificial insemination of cows and heifers with the sperm of bulls - producers free of antibodies to BLVS;
- to prevent the attack of blood-sucking insects, the entire livestock of the farm must be treated

weekly with appropriate acaricidal and insecticidal preparations.

The basis of measures to combat leukemia are: timely diagnosis, accurate knowledge of the epizootic situation, directed movement of breeding and use animals from farms that are free of infection to safe farms, from disadvantaged farms only to disadvantaged farms, isolated rearing of breeding young animals free from the leukemia virus, phased creation farms, districts and regions safe for leukemic infection.

Organizational measures include the production of a set of components for the serological diagnosis of leukemia on the basis of the Uzbek Scientific Research Institute of Veterinary Medicine, the training and retraining of veterinary specialists, the publication of methodological manuals and booklets, the provision of methodological assistance to veterinary laboratories in mastering the diagnosis of leukemia using the immunodiffusion reaction, enzyme immunoassay and the preparation of public opinions.

**Results.** An essential condition for increasing the effectiveness of anti-leukemic measures is the precise planning of their implementation in individual farms, as well as on a regional scale. In addition to fulfilling the requirements of the instruction on measures to combat leukemia, each health-improving anti-epizootic plan should provide for specific organizational and economic measures, taking into account the epizootic situation and economic opportunities of farms.

At present, the most serious attention should be paid to serological diagnosis and prevention of bovine leukemia in the republic, because the situation may become even more difficult and the recovery of farms, districts, regions and the republic as a whole from leukemia will take a long time.

Thus, the improvement of the herd from leukemia through the use of complex serological and hematological methods, with the division of animals into two separate groups

(with moderate damage), with the introduction of a complex of veterinary, sanitary, organizational, economic and recreational measures, followed by the removal of patients and gradual elimination of animals infected with FLV is the most acceptable and cost-effective method.

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