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Hematological Changes in Cows Infected with Mastitis Disease Among Cattle in Uzbekistan

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Annotation: Veterinary science and practice are faced with the urgent tasks of reducing the cost of products by developing and implementing effective and minimal methods of combating, diagnosing and treating livestock diseases belonging to private farmers and farms, as well as improving the productivity and reproductive characteristics of animals.

Keywords: Veterinary science, hematological, mastitis, cattle

Introduction

Relevance of the topic: Veterinary science and practice are faced with the urgent tasks of reducing the cost of products by developing and implementing effective and minimal methods of combating, diagnosing and treating livestock diseases belonging to private farmers and farms, as well as improving the productivity and reproductive characteristics of animals. is broken.

Also, in the Address of the President of the Republic of Uzbekistan Shavkat Miromonovich Mirziyoyev to the Oliy Majlis, reform of the agricultural and water management system, rational use of land and water resources are among the most important directions in the field of bringing our country closer to the ranks of developed countries in terms of the level of socio-economic development. special importance was paid to the current situation and sustainable solution of complex issues related to the introduction of food safety.

In particular, the provision of food to the population, the elimination of deficiencies in the system, and the provision of veterinary services are brought to a new level in terms of quality.

Decree of the President of the Republic of Uzbekistan No. PQ-3703 of May 8, 2018 "On the establishment of the Samarkand Institute of Veterinary Medicine" and No. PQ-4254 of March 28, 2019 "On the activities of the State Committee for the Development of Veterinary and Animal Husbandry of the Republic of Uzbekistan on the organization" and the decision of March 18, 2019 No. PQ-4243 "On measures to further develop and support the livestock industry", slaughter livestock on regulating the activities of enterprises and improving the system of supplying meat and meat products to the consumer market, including veterinary-sanitary rules regarding the production,

storage and sale of animal products and raw materials, and veterinary regarding specialized slaughterhouses - important measures are being taken to develop the rules and standards of sanitary expertise, to ensure epizootic stability in animal husbandry and the safety of food products.

In recent years, serious attention has been paid to bringing in breeding cattle from countries with developed animal husbandry and organizing breeding. According to the information of the Ministry of Agriculture and Water Management of the Republic of Uzbekistan, during 2006-2016, 69,175 high-yielding cattle were imported from Ukraine, Belarus, Poland, Austria, Germany, Holland and other **European countries**. Meeting the growing demand of the population of our republic for milk, meat, eggs and other food products depends on the rapid development of animal husbandry and the increase in production. The production of livestock products mainly corresponds to the share of farms and the private sector. Genes and blood of livestock products are produced in households.

According to the forecast indicators of increasing the production of livestock products in our country in 2016-2020, it was planned to increase the number of cattle to 148,000, sheep and goats to 23,187, and poultry to 92,000 by 2020, and these results were achieved.

Production of livestock products: meat (t/weight) - 2500, milk - 13000, fish - 150, honey - 23.0 thousand tons, eggs - 9600 million. delivered to the grain. Regular provision of quality livestock products to the population of the Republic is an urgent task of veterinary science and practice.

The development of animal husbandry, along with all areas of agriculture, providing the population with high-quality livestock products, and sufficient supply of industry with raw materials is an urgent demand of the present time. One of the main factors for the development of the industry is the creation of a solid feed base, improvement of livestock breeds, and improvement of livestock technology.

Literature analysis: The production of milk in the mammary glands is a complex secretory process. 500-600 liters of blood circulates through the mammary glands to produce 1 kg of milk. Milk is formed from the nutrients contained in the blood, so blood and milk are completely different in terms of composition. Cow's milk contains 90 times more sugar, 18-20 times more fat and a lot of calcium and phosphorus than blood plasma. This indicates that milk is produced as a result of the complete processing of the substances contained in the blood in the mammary glands. Mammary glands work very quickly. For example, despite the fact that the udder of a cow makes up 2-3% of its live weight, it produces 3-4 times more milk than the dry matter of the cow's body. 1.0 liters of milk in the mammary glands 145 g of organic substances in the blood are taken to make it, and 120 g of it is excreted in milk.

According to the experiments, it was found that the ration of dairy cows has enough of all nutritious substances, moderate feeding (the supply of substances required for nutrition in the ration) leads to an increase in the milk yield of cows.

As a result of metabolic disorders in the body of cows that are not fed according to the norm, the animal does not use food effectively, milk production decreases, the composition and quality of milk deteriorates, and the cow suffers from various diseases, such as mastitis and infertility. Taking this into account, it is necessary to feed dairy cows according to the norms. According to the latest data, more than 20 indicators are taken into account when determining the standard of nutrition for

dairy cows. These include dry matter in the ration, the amount of energy in the dry matter, protein, digestible protein, fat, sugar, starch, fiber, vitamins A (carotene), D3, E, and macro- and microelements.

The protein in milk is formed due to the amino acids that go to the udder with blood. To produce 1.0 l of milk containing 35 grams of protein, the udder glands receive 67 grams of nitrogenous compounds from the blood. When there is a lack of protein in the diet of dairy cows, the cow's milk and fat content decrease, the animal loses weight, and its general health deteriorates. Taking this into account, it is necessary to ensure sufficient protein in the diet of dairy cows.

The amount of starch from easily digestible carbohydrates is also taken into account in the diet of dairy cows, it should be around 115-135 g per 1 food unit, or the ratio of starch to sugar should be 1:1.5. Disturbance of these balances or feeding cows with feed contaminated with various pathogenic fungi or other microorganisms of poor quality can also be one of the main causes of mastitis.

Mastitis is an inflammation of the mammary gland that develops under the influence of mechanical, thermal, chemical and biological factors. A. P. Studensov states that the course and consequences of mastitis depend on the location of the pathological process and the pathogenic characteristics of its causative agent as much as on the state of the organism and the reactivity of the mammary tissue. Mastitis can also occur during lactation and weaning. [22]

After conducting clinical and laboratory examinations of the disease, samples of udder fluid are taken and examined to make a diagnosis.

In this case, the condition of the udder gland is evaluated based on clinical examinations, and udder fluid (secretion) is taken and laboratory tests are carried out, in which "Ketotest", "Mastotest", 2% mastidine solution, 5% dimastine solution and swab samples are used. During this period, statistical processing of samples was carried out using Statistica 5.0. was implemented on the basis of the program.

As a result of seasonal studies, during 1-2 months (8 times during one lactation) 300 highly productive dairy cows were examined for subclinical mastitis, udder inflammation was detected in 62.4% of animals: subclinical in 54.7%, 16.5% in definite clinical mastitis was detected. 38.8% of cows with one part of the udder affected, 21.5% with two parts affected, and 10.3% with more affected parts. Cows with a quarter of their udders were 4.3 percent. It was found that 15.9% of all registered sick cows were infected with mastitis two or more times, 15.4% with subclinical mastitis, and 6.9% with clearly manifested clinical mastitis. In the course of our research, it was found that the duration of mastitis in cows is seasonal. In the summer months, the incidence rate is lower and is 18.9%, and in the spring, the disease is more common, and this indicator is 30.8%. [14]

Objects and subjects of research: "TALAT" farm, Boston neighborhood, Parkent district, Tashkent region, "JAMAL OTA" farm, Yangiyol district, Tashkent region, "ERGASH OTA" LLC, Uroken Chirchik district, Tashkent region, and Uroken Ota, Tashkent region We studied the clinical changes observed during the illness in dairy cows at the "ANOR AGRO CHORVA" farm, Chirchik district. Mastitis disease in dairy cows causes great damage to the blood. We know that 500 liters of blood circulation is needed to produce 1 liter of milk. It can be seen that if bacteria enters the blood, it circulates throughout the body and causes the disease to progress rapidly. This table shows the

changes. It occurs as a result of strong hyperemia in the alveolar space and milk ducts and the passage of blood due to changes in the walls of blood vessels.

Changes in the blood of productive dairy cows in our experimental farm were detected when blood samples were taken and examined in the laboratory.

Blood analysis answers received from farms on the topic "Improving the diagnosis of cattle mastitis in Uzbekistan"

Follower sire f/x Cow 5973

Age-4 (table 1)

Parameter	Result	Ref.Range	Parameter	Result	Ref.Range
WBC	9.5 x 10^{9} /L	5.0-16.0	HCL	L 26.5%	28.0-46.0
Lymph	L 1.2 x 10^{9}/L	1.5-9.0	MCV	48.0 fL	38.0-53.0
Mon	0.9 x 10^{9}/L	0.3-1.6	MCH	17.1 pg	13.0-19.0
Gran	7.4 x 10^{9}/L	2.3-9.1	MCHC	358 g/L	300-370
Lymph%	L 13.1%	20.0-60.3	RDW	15.3%	14.0-19.0
Mon%	9.3%	4.0-12.1	PLT	291 x 10^{9}/L	120-820
Gran%	H 77.6%	30.0-65.0	MPV	5.6 fL	3.8-7.0
RBC	5.53 x 10^{12}/L	5.00-10.10	PDW	16.8	
HGB	95 g/L	90-139	PCT	0.162%	

Jamal sire f/x cow 4070

Age- 3 **(2 tables)**

Parameter	Result	Ref.Range	Parameter	Result	Ref.Range
WBC	9.7 x 10^{9} /L	5.0-16.0	**HCL**	L 26.5%	28.0-46.0
Lymph	L 1.0 x 10^{9}/L	1.5-9.0	**MCV**	48.7 fL	38.0-53.0
Mon	0.9 x 10^{9}/L	0.3-1.6	**MCH**	17.2 pg	13.0-19.0
Gran	7.8 x 10^{9}/L	2.3-9.1	**MCHC**	354 g/L	300-370
Lymph%	L 10.3%	20.0-60.3	**RDW**	14.7%	14.0-19.0
Mon%	9.8%	4.0-12.1	**PLT**	280 x 10^{9}/L	120-820
Gran%	H 79.9%	30.0-65.0	**MPV**	5.5 fL	3.8-7.0
RBC	5.45 x 10^{12}/L	5.00-10.10	**PDW**	16.8	
HGB	94 g/L	90-139	**PCT**	0.154%	

Talent f/x cow 2040

Age: 4 **(3 tables)**

Parameter	Result	Ref.Range	Parameter	Result	Ref.Range
WBC	9.5 x 10^{9} /L	5.0-16.0	**HCL**	L 26.9%	28.0-46.0
Lymph	L 1.3 x 10^{9}/L	1.5-9.0	**MCV**	48.5 fL	38.0-53.0
Mon	1.0 x 10^{9}/L	0.3-1.6	**MCH**	16.9 pg	13.0-19.0

Gran	7.2 x 10^9/L	2.3-9.1	**MCHC**	349 g/L	300-370
Lymph%	L 13.4%	20.0-60.3	**RDW**	14.7%	14.0-19.0
Mon%	10.8%	4.0-12.1	**PLT**	291 x 10^9/L	120-820
Gran%	H 75.8%	30.0-65.0	**MPV**	5.6 fL	3.8-7.0
RBC	5.55 x 10^{12}/L	5.00-10.10	**PDW**	17.1	
HGB	94 g/L	90-139	**PCT**	0.162%	

Pomegranate Agro f/x
Age: 3 **(Table 4)**

Parameter	Result	Ref.Range	Parameter	Result	Ref.Range
WBC	9.3 x $10^{9\ /L}$	5.0-16.0	**HCL**	L 26.4%	28.0-46.0
Lymph	L 1.3 x 10^9/L	1.5-9.0	**MCV**	48.4 fL	38.0-53.0
Mon	0.9 x 10^9/L	0.3-1.6	**MCH**	17.0 pg	13.0-19.0
Gran	7.1 x 10^9/L	2.3-9.1	**MCHC**	352 g/L	300-370
Lymph%	L 13.7%	20.0-60.3	**RDW**	15.3%	14.0-19.0
Mon%	9.6 %	4.0-12.1	**PLT**	275 x 10^9/L	120-820
Gran%	H 76.7 %	30.0-65.0	**MPV**	5.4 fL	3.8-7.0
RBC	5.46 x 10^{12}/L	5.00-10.10	**PDW**	16.6	
HGB	93 g/L	90-139	**PCT**	0.148 %	

He is sick with acute, catarrhal-purulent mastitis hematological indicators of cows.
Table 5

Indicators	Unit of measure	Cows with catarrhal-purulent mastitis	
		Control group	Experimental group
Hemoglobin	g/l	108±0,27	113±0,29
Erythrocytes	10^{12}/l	6,72±0,36	8,26±1,34
Leukocytes	10^9/l	6,76±0,12	10,56±0,14
Eosinophils	%	4,8±0,5	2,3±0,6
Lymphocytes	%	63,0±2,5	40,6±0,26
Monocytes	%	2,5±0,27	2,3±0,3
Neutrophils with rod nuclei	%	2,0±1,3	8,4±2,3

Neutrophils with segmented nuclei	%	27,1±1,3	44,8±1,4
Young neutrophils	%	0	1,1±0,5
Total protein	g/l	60,8±0,8	76,5±0,09

Morphological and biochemical indicators of the blood of cows in the experimental and control groups are the same before the start of the experiments. In cows in the control group, these indicators worsened until the end of the experiments

Table 3 shows the hematological parameters of cows with catarrhal-purulent mastitis in the control and experimental groups. It is known that by the end of the treatment, compared to the cows treated in the control group, the hemoglobin in the cows treated with the new variant in the experimental group was on average 5 g/l, erythrocytes it is determined that the number increases by 1.54 million/µl, leukocytes decrease by 3.20 thousand/µl, and leukoformula indicators improve to the level of physiological norms. Cows in the control group were characterized by a decrease in hemoglobin, erythrocyte count, total protein content, an increase in the percentage of leukoformula lymphocytes, eosinophils, and a decrease in the percentage of rod-shaped, segmented neutrophils, and young neutrophils.

1. **Conclusion:** The main reasons for cows to get sick with mastitis are the lack of improved rations, silage-concentrate rations and an excess of protein foods, as well as a lack of foods rich in easily digestible carbohydrates and coarse foods, and the decrease of the body's resistance. 10 days before labor and 15 days after calving, giving juicy food, keeping in unsanitary conditions, violation of sanitary-hygienic rules and milking regime during milking, the incidence of catarrhal mastitis of cows is 17%, hidden (subclinical) mastitis of cows and can be 33%.

2. Clinical signs of mastitis in cows, with clinical signs such as general weakness, indifference, change in appetite, hypotony of the pre-gastric sections, redness, pain, enlargement, hardening of the consistency of the injured udder skin, discharge of catarrhal exudate from the udder, it was characterized by a decrease in the number of hemoglobin, erythrocytes, total protein and an increase in the number of leukocytes in the blood.

3. Testing with 5% dimastine for early detection of subclinical mastitis in cows has high diagnostic efficiency and can be widely implemented in practice because it is easy and convenient to perform.

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