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Zainettinova D.B.¹, Julianov M.N.², Mukhamadiyeva N.N.¹
Etiology of mastitis in cows

¹ *Shakarim State University of Semey
(Russia, Semey)*

² *Kazakh National Agrarian University
(Russia, Almaty)*

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Abstract

The article examines the research on the etiology of mastitis in cows. Mastitis is a widespread disease of dairy cows. Diagnostic tests were performed to study the extent of mastitis spread in lactating cows. The main reason for the destruction of dairy cows with mastitis is not the benign feeding affected by mold fungi. Tests of feeds were selected to detect the level of contamination by microorganisms.

Key words: milk, mastitis, microorganisms, etiology.

The quality of the produced milk is affected by the sanitary condition of farms, the presence of cows, sick with mastitis and endometritis, the state of the technology of primary processing and storage of milk [1,2,3,4].

Due to inflammation of the udder, the productivity, sanitary quality of milk decreases, premature culling of cows due to hypothalaxia and atrophy of the udder occurs, the disease incidence of newborn calves increases (V.A. Parikov, 1990; N.G. Gasanov, 1990; L.D. Demidova, 2002; L.G. Roman, 2010; A.M. Semivolos, 2013; A.Ya. Batrakov, 2014; N.T. Klimov, 2014; Avdeenko, 2009, 2015).

The resistance of cows to mastitis is of great importance for obtaining high-quality milk [5,6].

In the emergence and spread of diseases of the mammary gland in cows, factors that reduce the resistance of the mammary gland and the organism as a whole play an important role (N.A. Sapozhnikova, 1992; V.I. Slobodyanik, 1994-2000; I.A. Rodin, 2002) on the background of which the pathogenic and conditionally pathogenic microflora manifests its action (V.M. Kartashova, A.I. Ivashura, 1988; V.M. Ivchenko, 1991; G.N. Kuzmin, 1995; V.M. Bagmanov, 2005; S. Janossi, Z. Baltay, 2004; D.P. Berry, 2005; V.S. Avdeenko, 2009; V.N. Filpot, Sh.S. Nickerson, 2012).

Much depends on keeping of animals in primary farms, unsatisfactory condition of which leads to contamination by pathogenic microorganisms in the process of milking.

The most significant climatic factors that affect the composition and properties of milk are the temperature and humidity of the air. Violations of the microclimate parameters reduce milk yield and the mass fraction of fat in milk [7].

To a large extent, the quality of milk - raw materials is formed under the influence of a feeding factor. Forages have both a direct effect on milk yield, the composition and properties of milk, and indirect by affecting on the microbiological processes in the rumen and the metabolism in the body of the lactating animal. Feeding of poor quality silage and haylage can lead to contamination of milk with mycotoxins. Concentrated type of feeding does not always promote rising of milk efficiency, it can negatively affect the health of cows, deteriorate the composition of milk and its technological properties. Feeding of flax cake, sour beetroot, beer shot, bards or grazing in swampy pastures also change the quality of milk in terms of fat, protein and biologically active substances. In such milk, ketone bodies and other substances unusual for benign milk can be found. Milking of the first streams of milk is of great importance. At the same time, microorganisms are removed from the teat cup, it is possible to detect clinical mastitis, and stimulation of milk yield occurs. For regular monitoring of subclinical mastitis, it is recommended to use at least once a week tests to determine the amount of somatic cells in milk by the express method.

It has been established that fodder defects in milk can contain up to 22 different chemical compounds. For example, with ethanol content, milk becomes sweet, silo. With the content of oily, capric, propionic, caprylic, caproic acids, milk becomes rancid with silage aroma, glycosides give a bitter taste to milk [8].

Mastitis can cause more than 140 species of various microorganisms. The most common of them can be combined into groups: contagious (infectious), conditionally pathogenic microbes of the animal's organism, microorganisms of the external environment [9].

Besides, the data of many scientists show that not only staphylococci, streptococci and intestinal bacterium cause mastitis, but also coronobacteria, salmonella, mycobacteria, mycoplasmas, viruses, fungi [10,11,12,13,14].

The research methods

We conducted relevant studies on the etiology of mastitis in cows.

The research was carried out in one of the farms "Kalikanuly" in the Beskaragai district in the village of Steklyanka and in the laboratory of Shakarim State University of Semey. Objects of research were cows of black and motley breed. To study the extent of the spread of mastitis in lactating cows, 30 animals were diagnosed.

The main problem for the farm "Kalikanuly" is mastitis of dairy cows of black and motley breed. The main reason for the damage of dairy cows with mastitis is feeding by non benign fodders infested with fungi.

The cows were subjected to clinical examination, a visual evaluation of the secretion was performed, and the cistern milk was tested with a 5% dimastin solution.

During the clinical examination, attention was drawn to the nerves of the udder (iliohypogastric, ilioinguinal, external seminal, perineal) and to the udder vessels (external pudic artery, anterior and posterior artery of the udder base, subcutaneous artery and vein) and lymph nodes, (supramammary, lymph nodes of the cistern).

When inspecting animals of milking cattle, cows of black and motley breed, it was noted that animals recover with semi-liquid feces, during feeding they take more food than chew. Selective clinical examination of milk cows allowed to reveal signs of a disturbance of the mineral metabolism: almost all cows have thin tails, which indicates a damage of the phosphorus-calcium equilibrium.

When collecting anamnesis, it was established that at a weight of 650-700 kg, the milking cows have milk yields of 14-15 kg. The analysis of the biochemical blood test data confirmed the symptoms of the disturbance of the mineral metabolism. There was also a disturbance in the technology of feeding animals. Protein feeds prevail in diets, low content of

juicy carbohydrate feeds. To identify the causes of stationary mastitis, tests of milk were taken from cows and small amounts of antibiotics that are used in the farm were selected.

1. Lucerne (6 days)

2. Barley (6 days)

3. Seed meal (3 days - no growth of microflora)

4. Moldy grain (6 days)

5. Crusher No 2 (3 days)

Results. When conducting diagnostic tests, mastitis was detected in 19 out of 30 examined animals, which amounted to 63.3%. At the same time, subclinical mastitis was diagnosed in 10 cows, and clinically expressed in 9 cows, of which three were purulent-catarrhal and in six cows were purulent mastitis.

Subclinical form of mastitis was detected by PEDM and 5% dimastin solution. Tests of milk were taken during milking.

To identify the causes of mold damage of feeds, the hangar was inspected, where feed is stored and feeds are prepared for feeding. Tests of feeds were taken, which are used to prepare fodder mixtures, and ready-made feed mixtures were also selected for detecting the level of contamination with mold fungi, yeasts and microorganisms.

The analysis of fodder for mycogenic sensitization showed the following: almost in all tests, the presence of microscopic fungi was detected. Only the seed meal was not infected.

The photo-documented proofs of the growth of microscopic fungi from feed tests are given below. Preliminary tests were maintained in 70% alcohol, according to the instructions.

In the study *Alternaria alternate*, *Mucor circinelloides* were identified in lucerne. On the 6th day *Alternaria alternate* colony were dark olive-colored, woolly, with a diameter of 50 and 20 mm, the growth rate was moderate. The colony of *Mucor circinelloides* was pale gray, fluffy, 50 mm in diameter.

In barley *Penicillium chrysogenum* and *Mucor ramosissimus* have been revealed. The diameter of colony of *Penicillium chrysogenum* is 5 mm, low and velvety with the grayish-turquoise center and a white peripheral part. The colonies of *Mucor ramosissimus* on a surface is gray, fluffy, on the reverse side is yellow-gray, growth is rapid.

In moldy grains *Penicillium* spp., *Mucor ramosissimus* have been found. The colonies of *Penicillium* spp were of various sizes from 5 to 20 mm in the diameter. The exudate was pale yellow in color.

The colonies of *Mucor ramosissimus* were 25 mm in the diameter, the growth was equal, the center has more dense growth of a mycelium than on the periphery.

Mucor circinelloides was detected in the crushed rind. The colonies on the surface were gray, fluffy. Growth was rapid, covered the entire Petri dish for three days.

All detected micromycetes are mycotoxic fungi, synthesize mycotoxins, which promote chronic intoxication and a metabolic disorder.

The presence of black mold of *Alternaria Alternata* is of particular concern, as well as a large number of bacilli (*Bacillus subtilis* or bacillus (Latin *Bacillus subtilis*) that have been detected in all all tests of a forage.

It is recommended to use probiotics to restore natural microflora and increase the resistance of animals to chronic intoxication under the influence of mycotoxins.

To solve the problems with the treatment of subclinical mastitis, milk tests were taken and an analysis of milk microflora for susceptibility to antibiotics was made.

At a bacteriological study of 15 tests of milk from animals sick with mastitis, a microflora was detected. As a result, it was found that the main microflora of milk of cows suffering from subclinical mastitis are bacteria: *Streptococcus agalactiae*, *Staphylococcus aureus*, *E. coli*, *Micrococcus lysodeikticus*.

Conclusion. Thus, the study conducted on mycotoxin fodder is the basis for increasing the degree of dissemination of the mammary gland which affects the resistance of the body.

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Kablanov T.E., Volodeev S.V., Mukhamadieva N.N.
Treatment and prophylaxis of postnatal cows diseases

Shakarim State University of Semey
(Russia, Semey)

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Abstract

The article examines the research on the etiology of postnatal disease in cows. Postnatal illness in cows is a widespread disease of dairy cows. To study the extent of the spread of postnatal disease in cows, clinical and biophysical diagnostic studies were conducted. The main reason is not benign feeding and keeping. Biophysical studies were used to identify the disease.

Keywords: endometritis, retention of placenta, cysts etiology, treatment

Raw materials of animal origin are the main and traditional source of full-fledged protein in human nutrition. The deficiency of protein nutrition is connected with a sharp decline in the number of livestock of the cattle, the productivity of livestock production and the purchasing power of the population. In the complex of urgent measures ensuring a sharp increase in the production of meat, milk and other livestock products, along with full-value feeding and proper keeping of animals, extensive reproduction of the herd is of great importance. The fertility and productivity of animals are a concrete criterion of the profitability of livestock farming, quantitative and qualitative growth. The correct organization of work on reproduction of a livestock based on data of science and the best practices will provide successful implementation of the development plan for livestock production. The aim of this work was the timely diagnostics and improvement of the effectiveness of therapeutic measures in the pathology of genital organs in cows.

To achieve this goal, the following main objectives were set: Early diagnostics of pathologies of the genital organs of cows by visual, rectal and biophysical methods. To study the spread and make an analysis of genital diseases in cows. To find out the most effective treatment regimens for diseases of the genital organs in cows.

The results of the research

Table 1 shows that the most common pathologies are such as endometritis, ovarian hypofunction - the follicular cyst, retention of placenta.