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ISSN: 0974-8369

Biology and Medicine

International, Open Access

Available online at: www.biolmedonline.com

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Diagnosis of the Hardened Inflammation of the Mammary Gland in Cattle and Methods of Treatment

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Abstract

There are many products which are taken from cattle. Products taken from its milk, meat, hide have huge benefit in the life of mankind. From them milk and dairy products have a great consumer demand among people. Despite the fact that the disease control at the moment gives good results, there are some diseases that are harmful to farm, including inflammation of the mammary gland has a major role. The disease is widespread in Akmola region. Productivity of milk decreases and cows are exposed to an early expense.

Keywords

Inflammation of the mammary gland; Cattle; Diagnostic test; Methods of treatment

Introduction

For the development of agriculture in Kazakhstan, launched a new strategic project in connection with the fundamental work carried out [1].

In the annual message by the President to the people of Kazakhstan, there are many special directions concerning this issue [2].

It is clear that, at any stage of the development process cattle breeding of cattle, its continuous production should be directly related to the work of sanitary clean, proper use of products [3-5].

Improvement of animal genetic point of view, paying great attention to the disease, milk production, as a particularly important product, do not yield the possibility of disease of cattle, including inflammation disease of the breast, which can be a brake to achieve this goal. Also, would like to say that the problem of creating a herd of cows suitable for machine milking resistant inflammation of the mammary glands is one of the major challenges [6-10].

Among the many diseases that reduce production and sanitary quality of milk has a special role illness inflammation of the mammary glands [11]. Within one season with inflammation of the mammary glands may become ill from 15-30% to 50-70% of the animals. Due to the fact that the current properties of the inflammatory process of cows infected inflammation of the mammary glands and preventive maintenance is not carried out, 15-20% and even more than the annual rate of dairy products is not taken. In milk (secretion), the injured mammary gland, the quantity of somatic cells (the majority of white blood cells), the volume of proteins and chlorides increases, alkalinity, milk density, level bacterial contamination increases, the volume of milk fat, lactose, the dry fat-free substances decreases, and the bactericidal activity is reduced. Nutritional value of such milk is scattered, it loses its technical properties for the production of fermented milk products and cheese. The use of such milk increases diseases among newborn calves; mortality and development of allergic reactions and can quite lead to food toxicities among people. In order to take high-quality, appropriated to health standards milk in the agricultural enterprises of the country, supported by the requirements contemplated in State standards and sanitary rules and norms. It is also necessary to strengthen grocery base, to equip dairy farms with

modern milky devices, freezing installations, to carry out work on selection and improvement of the cows suitable for machine milking and opposition of an illness of an inflammation of mammary glands. Besides, it is necessary to diagnose and prevent in time and effectively to treat diseases of mammary glands, to restore physiological functions of the damaged parts of an udder, and to keep high production of milk of cows [12].

Also should be mentioned that, during any inflammation, there is a sharp increase in the active biogenic amines, particularly histamine level increases. Increase of level of a histamine in blood of sick animals activates T-suppressor activity of lymphocytes, and this lowers immune reactivity of an organism of an animal. Ingress of substances with other information signs in the internal environment of the body, encourage risk changing its structure and chemical composition. Preservation of quantitative and qualitative internal stabilities of the body is the result of self-regulation of all body systems. Immunity refers to the number of units means the identification of homeostasis. For the formation of immunity, the whole entire body is involved and its defensive reactions are closely linked [13,14].

Study of these immunological changes and the effect of preventing inflammation of the udder on the general immunological condition of the body are of great interest.

From this point of view, we in turn consider new ways of diagnosing inflammation of the udder of cows, analyzing and finding new ways to prevent the disease, conducting research on specific proposals to the farm and publish their results in this article.

Purposes and research problems

The purpose of work is to determine the etiology, diagnostics, and methods of treatment of the hardened inflammation of an udder

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Received: March 1, 2015; Accepted: April 1, 2015; Published: May 16, 2015

Citation: Bakishева ZS, Bakishev TG, Tleulesov RB, Ahmetov AN, Kemechov ZO (2015) Diagnosis of the Hardened Inflammation of the Mammary Gland in Cattle and Methods of Treatment Biol Med (Aligarh) 7(2): BM-093-15, 3 pages.

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and determination of their efficiency by comparing. According to the purpose, the following tasks are set:

1. In economic conditions by means of various diagnostic tests to check cows for an udder inflammation.
2. Identify the biochemical and immunological status of blood of the cows infected with an udder inflammation.
3. In production conditions by means of other methods in a comparative aspect to reveal efficiency of a medical preparation at the infected groups of cows and also to make the offer on an evidence-based method of treatment of an inflammation of an udder.
4. Prepare technical, normative documents to implement diagnostic test and treatment preparations into production.

Materials and Methods

The practical part of research work was carried out on the farm “Izhveskiy”, Arshalinskiy area, and biochemical research works were carried out in the laboratories of the Department of Veterinary medicine of S. Seyfullin Kazakh Agro Technical University.

The cows of black-and-white breed, cows that got sick with an udder inflammation, milk samples, blood, diagnostic test, and other materials.

Clinical methods examinations of cows on existence of an inflammation of an udder applied at the planned experiments were conducted, and biochemical, immunological, diagnostic researches of blood were also conducted.

As a result of research work processing of digital data using statistical, biometric methods we carried out on the computer.

Research works in the conditions of the “Izhzheskiy” PC using each diagnostic test, check of cows on an inflammation. We will dwell upon the carried-out work. Tests were carried out with the help of the following methods:

- XMT (Xinjiang mastitis test) MCP – 1-2 ml of milk we pour on milk control plate 2 ml of test.
- SMT (somatic mastitis test) MCP – 1-2 ml of milk, 2 ml of test.
- (Check pH of milk) – on a table over white paper we establish glass for dab. We drip 1 drop of milk and a drop of test and we watch result.
- In each deepening of a plate where there are tests of milk of four nipples pour on 1 ml 5% solution of a dimastin. Milk mix with a reactant within 10-15 s is stirred a glass stick. The result of reaction is determined by change of color and density of mix.

- Diagamast add diagnosticum to the milk taken from 1 ml of udder.
- Reaction of a deposit takes 10 ml of milk place it for 16-18 h into the refrigerator or into any other cool place that milk wouldn't turn sour.

Results and Discussion

The results of this work are reflected in Table 1.

So, if we make an analysis on Table 1, the detection of inflammation in cows XMT is the most sensitive. With this test it was revealed 35 infected cows, which is 70%. And with SMT 14 heads (28), BTB 12 heads (24), 5% solution of a dimastin 11 heads (22), diagamast 7 heads (14), with the help of settling sample 25 heads (50) were revealed.

After that identified cows were divided into three groups and then they were treated. Methods of treatment:

- 1 group – Spektramast comprehensive massage with wrung-out oil on the hole in the nipple (created together by America and China)
- 2 group – the powder made of a dandelion herbs
- 3 group – Mastisept wrung-out oil, eroksimast, penstrept-400

No.	Diagnostic tests	Number of tests	Results of reaction		Identified diseased cows (%)
			Positive	Negative	
1	XMT (Xinjiang mastitis test)	50	35	15	70
2	SMT (somatic mastitis test)	50	14	36	28
3	BTB (Check pH of milk)	50	12	38	24
4	5% solution of a dimastin	50	11	39	22
5	Diagamast	50	7	43	14
6	Settling sample	50	25	15	50

Table 1: Checking cows on inflammation by means of diagnostic tests

Indicators	Healthy cows (M ± m)	Sick cows (M ± m)
Albumine (%)	41.3 ± 1.4	39.6 ± 1.1
α-Globulins (%)	14.1 ± 0.74	10.4 ± 1.2
β-Globulins (%)	12.2 ± 0.6	10.2 ± 0.15
γ-Globulins (%)	32.4 ± 0.74	39.8 ± 2.8
SMP (mg/ml)	0.33000 ± 0.02	0.79 ± 0.04
Glucose (mmol/l)	3.28 ± 0.21	3.22 ± 0.12
SMP (mmol/l)	0.15 ± 0.01	0.19 ± 0.01
Lactate (mmol/l)	1.23 ± 0.04	1.72 ± 0.08
Lactate/SMP	8.1 ± 0.12	9.03 ± 0.22

Table 2: Indicators of blood of the cows who got sick with an udder inflammation before and after treatment

Groups	Treatment types	Way of input	Measurement	Head of cattle	Recovery time (day)
1 st	Spektomast	Inserted into the hole in nipple	1 enters	50	6
2 nd	Dandelion powder	Adding to the stern	300 g	50	9
3 rd	Mastisept wrung-out oil, eroksimast, penstrept-400	Inserting to the muscle	10 ml	50	12

Table 3: Treatment project

We used the following order of the drugs:

- Spektramast – inserted into the hole in nipple. Is given during the acid hydrochloride milk of cows. For an inflammation of the negative staphylococcus freezing enzymes, grape bacteria, the streptococcus stopping milk, and intestinal bacteria are generally used.
- Dandelion – collection of medical herbs, such plants as a dandelion, honeysuckle are its parts.
- We used such drugs as mastisept wrung-out oil, eroksimast, penstrept-400 according to the instructions.

In the data of Table 2 data on immunobiological indicators in cow blood before and after treatment are specified.

As shown in the table, we can see that, if the level of albumin on 1.7 indicators, α -globulins on 3.7 and β -globulins on 2 rises, γ -globulins decrease to an indicator 7.4. Also we should say that decrease can be seen in SMP indicators (0.49) and sodium lactate/ SMP may have little changes about (0.93).

Now if we stop on the project of treatment as we stated earlier, three groups were created: ($n = 50$) to the first group we entered drug spektramast into nipple; ($n = 50$) to the second group we added 300 g of powder of dandelion to the stern; to the third group we entered mastisept wrung-out oil, eroksimast, pensirept-400 by 10 ml into the muscle (Table 3).

From the table, we see in group 1 recovery time is 6 days, in group 2 is 9 days, and in group 3 is 12 days.

Conclusions

1. The inflammation of an udder of cows especially a kind of the hardened inflammation is widespread, they make 30-35% of all obstetric and gynecological diseases.
2. For diagnostics of an inflammation of an udder of cows, the XMT, SMT, and BTB tests are used. When comparing tests it is revealed that by means of the XMT test it is possible to reach good results.
3. The use of spektramast wrung-out oil at treatment of an inflammation of an udder of cows during the period after the calves give the chance to reduce treatment term till 5 days.

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