

антитоксическое действие, повышает окислительно-восстановительные процессы, регулирует углеводный, азотистый и фосфорный обмены, поддерживая тем самым организм на уровне благоприятного течения физиологических процессов. Полученные результаты собственных исследования рекомендуем применять при лечении сложных воспалённых гнойных ран у собак, как один из методов патогенетической терапии.

UDC 619: 618.19-084

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BACTERICIDAL ACTIVITY OF MEANS, INTENDED FOR SANITARY TREATMENT OF COWS MORNING AFTER MILKING

Abstract

The high quality of milk sold is one of the main factors determining the financial stability and well-being of dairy farms. The quantity and quality of milk, the content of bacteria and somatic cells in it are largely determined by the organization of the milking process, the choice and sequence of its constituent procedures. Milking of cows should include not only the proper connection of the milking machine, but also the massage of the udder, as well as its sanitization before and after milking. The hygiene of milking cows is a fundamental element in the process of obtaining high quality milk - the highest and the euro variety. Special attention of scientists and practitioners in recent years has focused on the use and implementation of highly effective means for sanitizing the udder after milking. In countries with developed dairy farming for these purposes, drugs based on iodine (iodine-povidone, etc.), in the form of iodine polymers, are increasingly used. There are also products based on lactic acid and chlorhexidine. The application of the proposed tool allows you to improve the sanitary condition of the udder and prevent contamination of the udder of cows after milking, which will improve the sanitary quality of milk produced, as well as prevent mastitis in cows.

Keywords: *mastitis, udder sanitization, microbial dissemination of the skin of the udder nipples, milk quality, somatic cells.*

Introduction. One of the main problems in dairy farming is mastitis in cows. They cause great economic damage, especially hidden forms. According to many authors [1,2], the economic damage caused by the disease comes from reducing milk production by 15–20 % of annual milk yield and milk quality, premature culling, reducing the productive use of cows by 2.5 years, treatment costs and other factors. Calves from cows with mastitis suffer from dyspepsia and other digestive disorders 2 times, and die 4-5 times more often than calves from healthy mothers. In almost half of the cows who have recovered from subclinical mastitis, milk productivity is rarely fully restored, the affected shares remain less productive until the end of life [3, 4] . The latent form of mastitis is dangerous

because it is invisible and can lead to various inflammatory processes of the mammary gland, which subsequently leads to a decrease in milk productivity. The main reasons contributing to the emergence of subclinical mastitis include the method and conditions of cows, the uneven development of quarters of the udder, violation of the vacuum mode during machine milking, the pulse frequency, and most importantly the quality of the performance of the pre-dormant and subsequent operations [5, 6].

In the system of prophylaxis of subclinical mastitis, compliance with the requirements of sanitation when washing the udder, disinfection of the udder nipples before and after milking takes a certain place. At the same time, a two-time treatment in the morning and evening (with two-time milking) reduces the diseases of subclinical mastitis by 5.3 % as compared with a one-time treatment even under adverse weather conditions [7].

Many authors have found that disinfection of the teats of the udder after milking helps to reduce the incidence of the mammary gland subclinical mastitis about two times compared with untreated animals. In addition, the purity of the nipples greatly affects the number of somatic cells in milk. Pathogenic elements of the environment in many cases are the main sources of mastitis [7, 8].

It is known that most bacteria get into the milk from contaminated nipples of a cow. It is impossible to completely remove these contaminants and grease with water, even with thorough washing. Therefore, before milking it is necessary to clean and disinfect the nipples.

After machine milking, the teat canal of the udder remains open for 30 minutes (sometimes up to 2 hours). During this period, air is sucked into the inlet of the nipple, with which the bacteria enters. This is a big risk of mastitis. Therefore, for daily mastitis prophylaxis, nipple disinfection is proposed immediately after milking.

In this regard, the goal of our work was to develop a new tool that prevents mastitis in cows by treating the teats of the udder, which can form a protective film on the skin of the udder and thus not allow microorganisms to penetrate the teat canal of the udder and have a wound-healing repellent effect.

Research results. The study of the antimicrobial activity of drugs was conducted in conjunction with the staff of the scientific clinical diagnostic laboratory of the Kazakh National Medical University named after S.Asfendiyarov.

The antimicrobial activity of the tested components of new bactericidal compositions was first determined by the method of diffusion into agar and, more precisely, by the method of serial dilutions in a dense nutrient medium.

To study the antimicrobial activity of the preparations, 1 ml of 2 billion suspensions (in physiological sodium chloride solution) of the microorganism culture were added to sterile Petri dishes with a dense nutrient medium. 20-30 minutes after the diffusion of the microorganisms into the agar, wells 8 mm in diameter were made at a distance of 4 cm from each other on the surface of the seeded medium. In the wells were placed 0.1 ml of the test substance for sanitization. After exposure to a thermostat at 37⁰C for 18-24 hours, the results on the size of the zone of no growth of microorganisms around the disks were taken into account. The results were defined as “resistant” (the microorganism is resistant to the action of the drug) when the zone of no growth did not exceed 10 mm, «little-sensitive» - 11-14 mm, «sensitive» - 15-24 mm and «highly sensitive» - more 25 mm [1].

Bactericidal activity of the test drug was determined by the method of diffusion into agar using wells. The research results are reflected in table 1. Analysis of the data (table 1) shows that the diameter of growth inhibition zones when using a new drug, was 35 mm for *E. coli* and *Staphylococcus aureus*. When using «Lyucsedip» the same figures were 33 mm and 31 mm, respectively.

Table 1 - Bactericidal activity of the studied agents by the method of diffusion into agar

Means for sanitizing udder	Diameter of growth inhibition zones (together with holes), mm (M ± m)	
	E.coli	St aureus
New tool	35 ± 0.1	35 ± 0.3
Lyucsedip	33 ± 0.3	31 ± 0.3
Control (saline)	-	-

Note: «-» no growth inhibition zone

The results obtained by the method of diffusion on agar show that the drug being developed is bactericidal in activity that is superior to the drug Lyucsedip.

The main stage of our research work is to determine the effectiveness of antiseptics in the sanitary treatment of the udder production conditions. The resulting materials are presented in table 2.

Table 2 - The results of a comparative analysis of the microbial dissemination of the skin of the teats of the udder during the treatment of the test substance and the drug «Lyucsedip»

Group of animals	Tested drugs		Staphylococcus aureus, CFU*10 ⁶	Esherichiacoli, CFU*10 ⁶
Experienced	New tool	before processing	5.9 ± 0.36	6.6 ± 0.41
		after processing	1.9 ± 0.06	1.8 ± 0.40
Control	Lyucsedip	before processing	7.3 ± 0.42	8.2 ± 0.56
		after processing	3.6 ± 0.08	2.9 ± 0.14

It should be noted that in the experimental group the number of conditionally pathogenic microflora is significantly reduced compared with the control. In particular, the number of minutes used actor family Staphylococcus teat when processing a new medium was reduced by 73.1 - 79.3% respectively, and the processing nipple drugs «Lyucsedip». Reducing the number of bacteria of said group was respectively 51, 9% and 76, 5 %

Conclusion. Analysis of the obtained data showed that the entire drug we developed has high antimicrobial activity. Having received positive results on the antimicrobial action of the drug, we decided to continue working with this drug.

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ТҮЙІН

Өндірілетін сүт сапасының жоғары болуы – сүтті бағыттағы шаруашылықтардың финанстық тұрақтылығы мен қолайлылығын анықтайтын негізгі фактор болып табылады. Сүттің саны мен сапасының, сонымен қатар құрамында соматикалық торшалар мен бактерияның болуы сауу процесімен және оның біртектілігімен тығыз байланысты. Сиырларды сауу процесіне тек қана сауу қондырғыларын дұрыс жалғау ғана емес, сонымен қоса желін массажын және де сауудан кейінгі және дейінгі санитариялық өңдеуден тұру қажет. Сиырларды сауу гигиенасы – жоғары сапалы сүт алудағы негізгі жұмыстардың бірі болып табылады. Көптеген ғалымдар мен іскерлердің назары соңғы уақыттарда сауудан кейін сиырдың желінін санитариялық өңдейтін белсенділігі жоғары құралдарды қолдану мен енгізуге ауған. Сүтті бағыттағы мал шаруашылығы дамыған елдерде бұл мақсатта йод негізіндегі препараттарды (йод-повидон, йод-полимер) қолданады. Сонымен қатар сүт қышқылы және хлоргексидин негізіндегі препараттар қолданылады. Ұсынылып отырған сауудан кейінгі препарат желіннің санитариялық жағдайын жақсартуға ықпал жасайды және сиыр желінінің ластануын алдын алады, ал ол өз кезегінде өндіріліп отырған сүттің санитариялық сапасын жақсартуға көмектеседі және де сауын сиырлардың желінсауын болдырмайды.

РЕЗЮМЕ

Высокое качество реализуемого молока – один из основных факторов, определяющих финансовую стабильность и благополучие молочных хозяйств. Количество и качество молока, содержание в нем бактерий и соматических клеток во многом определяются организацией процесса доения, выбором и последовательностью составляющих его процедур. Доение коров должно включать в себя не только правильное подсоединение доильного аппарата, но и массаж вымени, а также его санитарную обработку до и после доения. Гигиена доения коров – основополагающее звено в процессе получения молока высокого качества – высшего и евро сорта. Особое внимание ученых и практиков в последние годы сосредоточено на использовании и внедрении высокоэффективных средств для санитарной обработки вымени после доения. В странах с развитым молочным животноводством для этих целей все чаще используют препараты на основе йода (йод-повидон и т.д.), в виде йод-полимеров. Есть также средства на основе молочной кислоты и хлоргексидина. Применение предлагаемого средства позволяет улучшить санитарное состояние вымени и предотвратить загрязнения вымени коров после доения, что улучшит санитарное качество производимого молока, а также профилактирует мастит у коров.