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ІРІ ҚАРА ЖЕЛІНСАУЫНЫҢ СЕРОПРОФИЛАКТИКАСЫ

Аңдатпа

Ірі қара мал желінсауына қарсы тиімділігі жоғары емдік қан сарысуын қолдану туралы мәліметтер келтірілген.

Кілт сөздер: желінсау, этиология, қоздырғыштар, желінсау профилактикасы және емі, гипериммунды қан сарысуы.

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BIOLOGICAL PROPERTIES OF STAPHYLOCOCCI ISOLATED FROM COWS WITH MASTITIS

Annotation

The most important and the main objective of increasing livestock production is the growth of livestock and increase its productivity. As is known, in the modern system of animal husbandry is the main value of dairy cattle, the economic potential of which is associated mainly with the preservation of the health of the breast. Mastitis disease is a major cause of premature culling a large number of cows in dairy complexes and also causes a decrease in milk productivity, milk quality care, the shortfall in young animals, increases the cost of care, feeding and treatment of sick animals.

Keywords: probiotics, persistence, Escherichia, Enterobacteria, Enterococci, lactobacilli.

Introduction

Research on the diagnosis, treatment and prevention of mastitis of cows is essential relevance. Economic losses, mainly due to a decrease in milk production and the inability to maximize the genetic potential for milk production of the animal. It was found that the defeat only one quarter of the udder causes the loss of up to 12-15% of milk per lactation. After an illness mastitis in the next lactation milk productivity is not restored in almost half of the cows, and some fall due to non-reversible structural and functional changes in breast tissue [1, 2, 3]. For this reason, sometimes up to 30% cows are culled.

Causes of mastitis in cows can be a variety of factors: infection, intoxication, trauma of udder, especially when the wrong machine milking, chemical irritation, thermal effects (cooling), and others. Of all these reasons are important is mastitis. Particular etiological importance is attached to Staphylococcus, Streptococcus, E. coli, whereas other microorganisms play a minor role, but the inflammation of the udder caused by them, can occur quite adversely and have implications for milk hygiene [4, 5].

The purpose and objectives of the research - to study the biological properties of Staphylococci isolated from mastitis cows.

Material and methods

The studies were conducted in the farms of Almaty region and antibacterial biotechnology laboratory of KazNAU. 2,324 milk samples from 581 cows were investigated. Subject of bacteriological examination were 1000 milk samples from 250 cows, including the proportion of

clinically disease of mastitis - 150, subclinical mastitis – 298, healthy - 552. Each sample was cultivated on MPA on a Petri dish, as well as saline, blood agar and Endo agar.

Results of the study

Total allocated 1061 cultures of microorganisms. Identification of selected bacterial cultures was performed according to the classifier of Bergey (1984). Results of researches have shown that the main causative agents of mastitis in cows are Staphylococci - 671 (63.5%) and Streptococcus - 237 (22.5%), Escherichia coli - 108 (10.32%), Salmonella - 32 (2.64) and Diplococci - 13 (1.04%).

Due to the fact that the dominant pathogen in cows with mastitis was Staphylococci, we have attempted to characterize Staphylococci isolated from cow mastitis.

All 671 strains of Staphylococci had typical morphological and tinctorial properties. Cultures grew well on the MPA in the form of small, round, smooth colonies with characteristic pigmentation: golden, white, lemon-yellow. From 671 strains of Staphylococci 281 strains attributed to Staphylococcus aureus, 232 - Staphylococcus albus, 158 - Staphylococcus citreus.

For differentiation of pathogenic and non-pathogenic Staphylococci used the following tests: plasma-coagulation reaction, the reaction of hemolysis, the definition of toxin formation, dermonecrotic test, pigmentation, fermentation of mannitol, phage typing.

Of 671 tested Staphylococci strains isolated from cow's milk, plasma coagulated strains 296 or 44%, 80 of them for 1 hour or 26.9%, 47 strains for 1-2 hour or 15.8%, 3 hours – 8 strains or 2.7%, 6 hour – 114 strains or 38.4% and in 18 hours - 48 strains or 16.2%. The highest number (42.7%) strains coagulated plasma for 1 2 hours. Of the 44 Staphylococcal strains coagulated plasma (14.7%) were isolated from healthy cow's milk, 172 strains (57.8%) from cows with subclinical mastitis and 81 strains (27.5%) from cows with clinical mastitis.

This the total number of coagulated plasma Staphylococci strains isolated from healthy cows 14.7% and by 85.3% of patients with mastitis.

According to research results from 671 strains of Staphylococci 361 produced Hemotoxin (53.7%). 361 from hemolytic strains 103 (28.8%) produced alpha-Hemotoxin, 11 (3.1%) – beta-Hemotoxin, 9 (2.5%) – delta-Hemotoxin, 114 (31.6%) - mixed types of Hemotoxin (alpha-beta), 93 (25.7%) - alpha-beta-delta- 22 (5.8%), alpha-delta- 9 (2.5%), beta-delta.

Given that the main criteria for pathogenicity of Staphylococci are plasma-coagulation and hemolytic activity, further investigations were carried out only with the 296 strains with plasma-coagulation activity.

127 strains of Staphylococci were investigated, coagulating plasma within 1-2 hours, 41 strains produced alpha Hemotoxin had a hemolytic titer of 1: 640 and above, and 69 strains from a mixed type toxin (alpha-beta) was somewhat lower titer (1: 640).

Dermonecrotizing properties were studied in 94 strains, of which a positive reaction (necrosis) gave 58 (61.1%), doubtful (infiltration and redness) - 25 (26.5%) and negative - 12 (12.5%) cultures. Activity of Staphylococci in respect of the fermentation of carbohydrates was also used to characterize the pathogenicity of strains. Biochemical properties were determined of 296 strains of coagulase positive Staphylococci. 19 of 296 strains are not decomposed mannitol.

Phage typing of pathogenic Staphylococci was conducted using a standard of Staphylococci phages obtained from the Institute of Epidemiology and Microbiology by the name of N. Gamalei (Russia).

The main set consisted of 22 standard phages. These phages were divided into 4 groups (I group - phages 29, 53, 52A, 79, 80; II group - phage 3A, 3B, 3C, 55, 71; III group - phages 6, 7, 42E, 47, 53, 54 75, 77, 83A; IV group - phage 42D. Outside of groups - phages 81, 187). Of the studied 296 cultures as strains of Staphylococci were typed 196 (66.3%) and 100 cultures are not typed (33.7%). From 197 typeable strains 128 (65.0) were lysed by phages in a dose ITP (dilution test) and 69 (35%) – in TR dose. In many cases, strains lysed by not one, but several phages that gives for each strain characteristic phagomosaic.

According to results 142 cultures of 196 strains were *Staphylococcus aureus*. Characteristically, 67 of these 142 strains (47.1%) were typed by phage 42D.

In analyzing the results of phage typing of *Staphylococcal* strains, depending on the source from which they were isolated, we obtained the following data. 63 from 196 strains (32.5%) were isolated from cows with clinical mastitis, 110 (55.8%) - with latent mastitis and 23 (11.7%) - from healthy cows.

Thus, of the 671 strains of *Staphylococci* 296 (44.1%) were pathogenic and, in most cases (252 strains) were isolated from share of the udder with clinical and subclinical mastitis.

Conclusions

In the investigated farm a main role in the etiology of mastitis play 671 *Staphylococcus* strains (63.5%) and *Streptococcus* - 237 strains (22.5%), *E. coli* - 108 (10.32%), *Salmonella* - (2.64) and *Diplococci* - 13 (1.04%).

296 of 671 strains of *Staphylococci* cultures were differentiated as pathogenic. Among pathogenic 91.9% produced alpha Hemotoxin in pure form or in combination with beta and delta Hemotoxin and 65.3% belonged to *Staphylococcus aureus*.

Phage typing of 296 *Staphylococcal* strains isolated from milk of cows with clinical and subclinical forms of mastitis showed that the largest number of *Staphylococci* lysed by phages of III and IV groups. Typing of *Staphylococci* using phage can detect strains forming toxin that cause mastitis in cows and food poisoning in humans.

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БИОЛОГИЧЕСКИЕ СВОЙСТВА СТАФИЛОКОККОВ, ВЫДЕЛЕННЫХ ОТ МАСТИТНЫХ КОРОВ

Аннотация

Важнейшей и основной задачей увеличения производства продукции животноводства является рост поголовья животных и увеличение его продуктивности.

Как известно, в современной системе животноводства основное значение представляет молочное скотоводство, экономический потенциал которого связан, в основном, с сохранением здоровья молочной железы. Заболевание коров маститом является одной из основных причин преждевременной выбраковки большого числа коров в молочных комплексах, а так же вызывает снижение удоя, санитарных качеств молока, недополучение молодняка, увеличивает затраты на уход, кормление и лечение больных

Ключевые слова: пробиотики, персистирования, эшерихии, энтеробактерии, энтерококки, лактобактерии.

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ЖЕЛІНСАУМЕН АУЫРАТЫН СИЫРЛАРДАН БӨЛІП АЛЫНҒАН СТАФИЛОКОКТАРДЫҢ БИОЛОГИЯЛЫҚ ҚАСИЕТТЕРІ

Аңдатпа

Мал шаруашылығы өнімін өндіруді ұлғайтудың басты және негізгі міндеті - жануарлар басын көбейту мен оның өнімділігін жоғарылату болып табылады.

Мал шаруашылығының заманауи жүйесінде негізгі маңызға экономикалық потенциалмен байланыста бастысы сүт бездерін сау сақтап қалудағы сүтті мал шаруашылығы ие. Желінсаумен ауырған сиыр сүт кешендерінде сиырлар санының артып ерте жарамсыз болуына, сондай-ақ сауым сүтінің азаюына, сүттің санитарлық сапасының төмендеуіне, төлдерді кем алуға, күтімде шығындардың, ауру малдарды емдеу мен азықтандырудың артуына алып келетін негізгі себептердің бірі болып табылады.

Кілт сөздер: пробиотиктер, шартты зардапты микробтар, эшерихиялар, энтеробактериялар, энтерококкилер, лактобактерилер.

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ВЛИЯНИЕ ЗАПУСКОВ И ПАДЕНИЯ РН «ПРОТОН-М» НА КАЧЕСТВО МОЛОКА КОРОВ В НЕКОТОРЫХ ХОЗЯЙСТВАХ УЛЫТАУСКОГО РАЙОНА

Аннотация

В статье приведены результаты количественного и качественного удоя молока отобранных из прилегающих районов падения ракета-носителя «Протон-М». Анализ полученных данных показывает, что в данных пробах имеются отклонения по количественному удою молока крупного рогатого скота, по органолептическим показателям, по степени чистоты, классности и бактериальной обсемененности.

Ключевые слова: количественный удой, качественный удой, ракета-носитель «Протон-М».

Введение

В договоре аренды комплекса «Байконур» Российской Федерации под поля падения ракета - носителей на территории Республики Казахстан используется 22 зоны падения с 46 районами падения отделяющихся частей ракет-носителей.

Районы падения (РП) первых ступеней РН «Протон-М» находятся на территории Улытауского района Карагандинской области [1]. Ежегодно проводится до восьми запусков ракет-носителей «Протон-М».

Гептил - ракетное топливо, в состав которого входит высокотоксичное соединение 1,1-диметилгидразин (1,1-ДМГ). Проблема загрязнения окружающей среды ракетным топливом и его компонентами приобретает особую остроту и для Казахстана [2].

Результаты российских и казахстанских комплексных экспедиционных работ, проводимых в местах падения остаточных частей космических ракет, свидетельствуют о наличии 1,1-ДМГ и продуктов его окисления в почве, воде и растениях в концентрациях, предельно допустимые