

стафилокктың түрлік ерекшелігіне қарамастан протеолитикалық белсенділік танытты. Барлық зерттелген дақылдарда *Staphylococcus aureus*-тен басқа лецитинатикалық белсенділік табылды. Ең жоғары гемолитикалық белсенділік ірі қара малдан мұрын қуысынан бөлінген *Staphylococcus aureus* штаммы көрсетті. Гемолитикалық белсенділігі жоқ дақылдардың үлесі орта есеппен 19,6% құрады. Сондай-ақ, бұл сипат *Staphylococcus epidermidis* дақылдарының 8,3% - ына тән болды. Құс ұшасының 58%-дан бөлінген *Staphylococcus aureus* штамдарының көп бөлігі ДНҚ-азға қатысты белсенділік танытты. Ірі қара малдан мұрын қуысынан бөлінген стафилококктар ДНҚ-аз оң белсенділіктің (16%) ең аз пайызын көрсетті

РЕЗЮМЕ

В статье рассматриваются результаты микробиологических исследований по бактериологическим и биохимическим свойствам 58 штаммов стафилокков; из них 34 штамма принадлежат к виду *Staphylococcus aureus*, 15 штаммов определены, как *Staphylococcus epidermidis* и 9 как *Staphylococcus saprophyticus*. В результате проведенного исследования наиболее активными были выделенные культуры *Staphylococcus aureus*, которые по своим биохимическим свойствам ферментируют маннит, фруктозу, глюкозу, маннозу, лактозу, мальтозу, сахарозу, трегалозу, галактозу, аргинин, уреазу. Вариабельность по отношению к лактозе показали штаммы *Staphylococcus epidermidis* и *Staphylococcus saprophyticus*. *Staphylococcus epidermidis*, в аэробных условиях, не разлагает маннит и не ферментирует трегалозу. Также по отношению к манниту *Staphylococcus saprophyticus* продемонстрировал вариабельность. По биохимическим свойствам *Staphylococcus aureus*-коагулирует плазму кроликов и окисляет маннит, проявляет устойчивость к новобиоцину и полимиксину. 88,3 % выделенных штаммов проявили протеолитическую активность вне зависимости от видовой принадлежности стафилокка. Во всех исследованных культурах, помимо *Staphylococcus aureus*, была обнаружена лецитинатическая активность. Наиболее высокую гемолитическую активность показал штамм *Staphylococcus aureus* выделенный из полости носа от крупного рогатого скота. Доля культур с отсутствием гемолитической активности составила в среднем 19,6%. Также данное свойство была характерно для 8,3% культур *Staphylococcus epidermidis*. Большая часть штаммов *Staphylococcus aureus*, которые были выделены от 58% тушек птиц, проявили активность в отношении ДНҚ-аз. Стафилококки, выделенные из носовых истечений от крупного рогатого скота показали наименьший процент ДНҚ-аз положительной активности (16 %).

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THE RESULTS OF A STUDY ON THE PRODUCTION TEST OF THE POLYPHAGE PREPARATION IN THE MEAT PROCESSING PLANT OF «KARASU» LLP

Abstract

This article presents the results of a study on the production test of the Polyphage preparation in the slaughterhouse of Karasu LLP. The control was contaminated test objects, which were treated with sterile physical solution under similar conditions with experienced. The surface of test objects was seeded with 1 billion suspension of bacterial culture of *E. coli* 1257 at the rate of 1 cm³ per 10 cm². Then the test objects were treated with 10% Polyphage disinfectant from a hand sprayer at the rate of 0.2-0.3 liters per 1 m². A 10% solution of the Polyphage disinfectant with a consumption rate of

0.2 l / m² and exposure for 1 hour provides a complete 100% disinfection of all test surfaces from bacteria. Studies of the effectiveness of a 10% solution of the Polyphage disinfectant showed that it has bactericidal properties, i.e. 100% complete destruction of microorganisms on the premises; test objects contaminated with a sanitary test microorganism of the 1st resistance group *E.Coli* pcs. 1257.

Keywords: *Polyphage, disinfection, testing, E. coli strain, infection, exposure.*

Introduction. Providing the population with food products of high sanitary quality, and industry with raw materials of animal origin is the most important national economic task. Successful completion of this task depends on increasing the number of animals and increasing its productivity. However, the constraining factors in the development of livestock and poultry farming are infectious diseases, among which bacterial infections, in particular brucellosis, pseudotuberculosis, salmonellosis, colibacteriosis, and diarrhea diseases of young animals caused by conditionally pathogenic microflora, belong to the first group in terms of resistance [1].

In our country, it is customary to recover from bacterial infections of farm animals and birds by systematic research, with the subsequent delivery of carcasses and products obtained to processing plants from those that respond positively, used in combination with other measures, as well as replacing the dysfunctional population with healthy animals. Moreover, sanitation must be subjected to slaughterhouses, meat and milk processing enterprises, transport, etc., which are not carried out regularly and effectively.

Nevertheless, many such processing plants, with the readings being prosperous, are themselves objects of potential carriers of bacterial infections.

One of the causes that reduce the efficacy of antimicrobials is and what application due to inadequate, formed poly antibiotic resistant microorganism strains acquiring all new pathogenic properties that lead to their extremely widespread [2].

This circumstance necessitates the development of non-standard disinfectological technologies and the creation of fundamentally new types of biocides. One of the most promising approaches for finding effective agents is the use of natural bacterial antagonists, which are lytic bacteriophages and the development of disinfectants based on them. It should be noted that phages are compatible with other medicines and their use is possible in combination with other antimicrobial drugs, for example surfactants.

In the microbiology laboratory of the Scientific Research Institute of Biological Safety Problems, the authors developed the disinfectant «Polyphage», filed an application for invention No. 2017 / 0589.1 with the National Institute of Intellectual Property of the Republic of Kazakhstan, and compiled standard technical documentation.

The preliminary laboratory tests showed the effectiveness of the Polyphage preparation for suppressing the growth of a large number of microbes, which indicates the possibility of its practical use in animal husbandry, poultry farming and the food industry [3].

According to the project for commercialization of RSSTA No. 230-16-GK, an application was submitted to test the Polyphage preparation No. 09-05 / 1662 of September 14, 2018 and with a cover letter, NTD and samples of the Polyphage preparation were delivered to the Committee of Veterinary Control and Supervision of the Ministry of Agriculture of the Republic of Kazakhstan.

On the basis of the Order of the Committee of Veterinary Control and Supervision of the Ministry of Agriculture of the Republic of Kazakhstan No. 151 dated 01. 11. 2018, permission was obtained to conduct testing tests of the disinfection regimen with the Polyfag drug in the slaughterhouse of «Karasu» LLP.

Materials and research methods. Approbation test modes disinfecting preparation «polyphage» carried out according to the «Guidelines on the procedure for testing new disinfectants for veterinary practice» [4]. The experiments on the development of wet disinfection regimes were carried out on test objects made of concrete, metal, metal tiles, rubber, glass, plastic, wood, brick, contaminated with a one billionth suspension of an 18 hour culture of *E. coli*.

When testing a wet method to test solutions contaminated microorganisms test - objects singly applied by atomizing surfaces using a hand sprayer at a rate of 0.2-0.3 l / m².

The control was contaminated test - objects that were treated with sterile physical solution under similar conditions with experienced. After a predetermined exposure, the materials were washed

off with the help of sterile swabs, which were then placed in test tubes with sterile tap water. After 10 minutes, the contents were transferred to centrifuge tubes and centrifuged three times for 20 minutes at 3000 rpm. Sowing was carried out on nutrient media: agar - e NDO, meat-peptone agar

Results and discussion. The work was carried out in the premises of the slaughterhouse. Tests of the disinfection regimen of the «Polifag» preparation were carried out on test objects made of various materials: (concrete, metal, metlakh tile, rubber, glass, plastic, wood, brick).

The surface of test objects were seeded with 1 billion suspension of bacteria culture *E coli* 1257 based on 1 cm³ per 10 cm². Then the test objects were treated with 10% Polyphage disinfectant from a hand sprayer at the rate of 0.2-0.3 L per 1 m². The exposure time was 60 minutes.

After 60 min, washings were made from the test objects, which were placed in centrifuge tubes and washed three times with sterile saline solution, centrifuged at 3,000 rpm. From the sediment, 5 tubes from each sample were seeded on MPA and MPB medium and thermostated at 37 °C for 5 days. The research results are presented in table 1.

Table 1 - Disinfection in the premises of a slaughterhouse with a 10% solution of the Polyphage preparation at an exposure of 1 hour and a consumption of disinfectants of 200-300 ml / m².

Disinfectant and Control	Flow rate ml / m ²	Exposure (hour)	Type of material	The presence of bacteria growth <i>E. coli</i> 1257 on MPA
Des . Polyphage (<i>E. Coli</i> 1257)	150 ml / m ²	1	concrete	-
	150 ml / m ²	1	metal	-
	150 ml / m ²	1	metlakh tile	-
	150 ml / m ²	1	rubber	-
	150 ml / m ²	1	glass	-
	150 ml / m ²	1	plastic	-
	250 ml / m ²	1	tree	-
	250 ml / m ²	1	brick	-
Control (physical solution)	150 ml / m ²	1	concrete	+
	150 ml / m ²	1	metal	+
	150 ml / m ²	1	metlakh tile	+
	150 ml / m ²	1	rubber	+
	150 ml / m ²	1	glass	+
	150 ml / m ²	1	plastic	+
	250 ml / m ²	1	tree	+
	250 ml / m ²	1	brick	+
Note: "-" the lack of growth of the tested bacteria on nutrient media; "+" The presence of bacterial growth in nutrient media.				

From the data of table 1 it can be seen that a 10% solution of the Polyphage disinfectant at a flow rate of 0.3 l / m² and exposure for 1 hour provide a complete 100% disinfection of all test surfaces from bacteria. In all test tubes of the MPA medium, growth of bacterial cultures during the observation period of 5 days was not detected, while at the same time in the control on a nutrient medium they grew by 2 days.

Conclusion

The disinfectant preparation «Polyfag» has passed the approbation tests and its disinfecting effectiveness has been proved.

The conducted results of the study of disinfection regimen and recommend the use of the drug «Polyphage» for the disinfection of meat and milk processing enterprises and other objects of veterinary surveillance contaminated with brucellosis, pseudotuberculosis, salmonellosis, colibacteriosis and diarrheal diseases of young animals belonging to the 1st resistance group.

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ТҮЙІН

Бұл мақалада «Қарасу» ЖШС қасапханасында полифаг препаратын өндірістік сынақтан өткізу нәтижелері келтірілген. Бақылауға нысандардың беткейінен 1 см^3 қа 10 см^2 есебінен бақылау және тәжірибелік деп бөлінген *E. coli* 1257 штамымен ластанған жұғынды алынды. Тәжірибелік тест-нысандар стерилді таза физиологиялық ерітіндімен өңделіп, ал бақылау тобы сыналып отырған 10% «Полифаг» дезинфекциялық затымен 1 м^2 –қа 0,2-0,3 л есебімен 1 сағаттық экспозицияда өңделіп, нәтижесінде сыналған нысандар бактериялардан 100% залалсыздандырылды. *E. coli* 1257 штамы санитариялық көрсеткіштері бойынша төзімділігі 1 топқа жатады. Жоғарыда жүргізілген тәжірибелік жұмыстардың нәтижесі бойынша, 10% «Полифаг» ерітіндісі төзімділігі 1 топқа жататын бактерияларды толығымен зарарсыздандыратындығына көз жеткізілді.

РЕЗЮМЕ

В данной статье приведены результаты исследования производственного испытания препарата «Полифаг» в убойном цехе ТОО «Карасу». В качестве контроля служили контаминированные 1 млрд. взвесью культуры бактерий *E. coli* шт.1257 из расчета 1 см^3 на 10 см^2 тест-объекты, которые были разделены на контрольную и опытную. Опытные тест-объекты обрабатывали стерильным физ.раствором, а контрольные были обработаны испытуемым 10% дезинфицирующим средством «Полифаг» из ручного распылителя из расчета 0,2-0,3 л на 1 м^2 . 10% раствора дезинфицирующего средства «Полифаг» при норме расхода 0,2 л/м² и экспозиции 1 час, обеспечивает полное 100% обеззараживание всех испытуемых поверхностей от бактерий. Проведенные исследования 10% раствором дезинфицирующего средства «Полифаг» показали, что он обладает бактерицидными свойствами, т.е. полного 100% уничтожения микроорганизмов на тест объектах, контаминированных 1 млрд. взвесью культуры бактерий *E. coli* шт.1257. *E.Coli* шт. 1257 по санитарным-показателям относится к 1 группе устойчивости. На основании проведенного эксперимента доказано, что 10% раствор «Полифаг» полностью обеззараживает бактерии, относящиеся к 1 группе устойчивости.

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ANALYSIS OF PROPERTIES OF SHEEP WOOL AND RESEARCH OF THE POSSIBILITY OF THEIR USE IN OTHER SPHERES TAKING INTO ACCOUNT VETERINARY AND SANITARY REQUIREMENTS

Abstract

The article presents the results of the analysis of the current state of sheep wool processing and it is established that about 70% of coarse wool, or 34% of the total wool production in Kazakhstan remains unrealized and can be considered as losses. A comprehensive analysis of the physical and