

# **Quality control and economic evaluation of the use of Brokarsept in the incubation of eggs in industrial poultry farming**

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## Abstract:

In poultry breeding and breeding enterprises, studies of the quality of disinfection were carried out using the antiseptic Brokarsept, which is a complex organic compound containing two complexes of active substances (AS), one of which has a bactericidal and keratolytic effect, and the second has a fungicidal, virucidal and bactericidal effect. Brokarsept contains, as the main AS, a new chemical compound with a long-chain CH radical, which has no analogues in the Russian Federation. An effective bactericidal, virucidal and fungicidal effect of the drug was revealed. Studied the concentrations when using it. The economic efficiency of using the Brokarsept drug for the rehabilitation of production facilities and technological equipment has been established.

Keywords: management, control, quality, antiseptic, brokarsept, sanitation, bactericidal action, incubator, equipment, hatching eggs, poultry.

## **Introduction**

Maintaining veterinary and sanitary welfare in poultry farms is the main factor in increasing poultry productivity. Currently, various types and methods of processing premises, poultry and hatching eggs are used in the production of poultry products. The correct choice of disinfection

technology in the process of in vivo formation of productivity reduces production costs and allows you to get high-quality and safe products.

The effective implementation of disinfection measures is largely determined by the state of veterinary science and practice of using disinfectants. In this regard, veterinary science is faced with the task of finding new highly effective disinfectants.

Brokarsept 10% concentration is a whitish-yellowish liquid with a viscous consistency. Forms polymer foam on shaking. Working solutions were prepared from a 10% substance by diluting it with tap water. From one liter of the substance, 1000 liters of 0.01% concentration can be prepared. Antiseptic according to GOST 12.1.007-76g. does not have an irritating and allergic effect, is non-toxic, does not have a pungent odor, does not corrode metal equipment, does not destroy rubber, plastics, fabrics. Brokarsept on the treated surface forms a polymer film that serves as a barrier for microflora and provides a prolonged bactericidal effect for a month. The guaranteed shelf life of the antiseptic is 3 years.

### **Material, methods and research results**

Studies on the use of antiseptic Brokarsept were carried out in incubators of poultry enterprises of the Stavropol Territory, Rostov and Lipetsk regions. Before processing the incubation eggs, the inner walls of incubators, trays, and carts were wet-treated by a single spraying of an aqueous solution of Brokarsept at 0.2; 0.1; and 0.05% concentration. Working solutions of the antiseptic were prepared using tap water at a temperature of 20°C.

For wet processing of objects of veterinary supervision of the hatchery, including hatching eggs, imported devices for receiving aerosol of American production were used, as well as a spray gun connected to a compressor or household sprayers of the "Automax" type.

For the reorganization of the hatchery, four batches of one thousand Loman Brown eggs were selected, which, after sorting, were placed in trays and placed in trolleys. The first batch of incubation eggs of egg chickens were wet treated with a 0.05% aqueous solution of Brokarsept. The second batch was treated with a 0.5% solution, the third with a 0.1% solution. A control batch of hatching chicken eggs was disinfected six times with formaldehyde vapor: the first time 2 hours after receiving; 2nd after sorting eggs in the warehouse; 3rd after sorting in the hatchery; 4th 6 hours after the start of incubation; 5th before transferring embryos to hatch; 6th in hatchers. The incubator and equipment, where eggs of the control lot are to be incubated, were also treated with formaldehyde vapor. Two to three hours after wet treatment and aeration at room temperature, the carts with the incubation egg were placed in incubators pretreated with 0.2% Brokarsept solution.

It should be noted that after wet processing of trays, inner walls of incubators, carts, hatching eggs, their surface is covered with a thin polymeric protective film, which serves as an additional barrier for pathogens of bacterial infection. Washes from the surface of the shell of hatching eggs of egg chickens and the walls of incubators to control the quality of disinfection of objects of veterinary inspection were taken before treatment, and then 7 and 18 days after processing and incubation of eggs at the rate of 20 samples for the detection of Escherichia coli, Salmonella and Staphylococcus aureus.

The results of hatching chickens and the quality of sanitation of hatching eggs of Loman Brown chickens and technological equipment of the hatchery are presented in Table 1. From the results of the studies given in Table 1 it can be seen that after a single sanitation of hatching eggs and objects of technological supervision of the hatchery 0.05%; 0.1% and 0.2% aqueous solution of the Brokarsept drug, the surface of the eggshell and processing equipment was disinfected from the causative agents of Escherichiosis, Salmonellosis and Staphylococcosis, while in the control batch of eggs with six times disinfection of eggs with formaldehyde vapors of the causative agents of Escherichiosis and Salmonellosis, salmonellosis staphylococcosis was isolated throughout the incubation.

Table 1. Results of hatching Loman Brown chicks and quality of hatchery equipment remediation after treatment with Brokarsept antiseptic.

Study period	Brokarsept, % (n=1000)			Formaldehyde vapor (control)n=1000
	0.05	0.1	0.2	
	Colibacillus			
Before processing eggs and objects	in 2 samples	in 2 samples	in 2 samples	in 3 samples
	Salmonella			in 2 samples
	in 3 samples	in 2 samples	in 1 sample	
	Staphylococcus aureus			
	—	—	in the 1st sample	in the 1st sample
After processing after 7 days	No causative agents of bacterial infection have been identified			Colibacillus in 2 samples salmonella in the 1st sample staphylococcus in the 1st sample

After processing after 18 days	No causative agents of bacterial infection have been identified			E. coli in 4 samples salmonella in 3 samples staphylococcus aureus in 2 samples
Chick hatching,%	85.8 <sup>x</sup>	85.9 <sup>x</sup>	85.5 <sup>x</sup>	82.5
Broiler safety up to 20 days,%	99.2 <sup>x</sup>	99.3 <sup>x</sup>	99.1 <sup>x</sup>	97.6

Note: x-results are statistically significant compared to control p <0.001.

During the incubation period of the control batch of eggs, there was an increase in the number of samples, by the end of the incubation period in which the causative agents of bacterial infection were isolated. Treatment of pilot batches of eggs and veterinary inspection facilities of the hatchery with Brokarsept 0.05; 0.1% and 0.2 concentration showed that all concentrations of Brokarsept had a pronounced bactericidal effect during the entire incubation period, which indicates a prolonged action of the drug, which was not noted in the control with six times the use of formaldehyde vapors.

The hatching of young poultry in experimental batches of eggs was 3.0-3.4% higher than in the control due to the absence of microbial contamination during incubation of eggs and against this background, a decrease in the mortality of embryos in the following days of incubation of eggs. The safety of Loman Brown chickens up to 20 days of age in the experiment was also higher by 1.4-2.1%, which serves as a barrier for microflora and has a bactericidal effect up to one month.

### **Conclusion**

As a result of the experiment carried out in production conditions, it was established that the Brokarsept drug in various concentrations (0.05-0.2%) has a pronounced bactericidal effect against gram-positive and gram-negative microorganisms and a prolonged bactericidal effect during the entire period of incubation of eggs due to the formation on the surface eggs and the processed surface of a thin polymer film, which makes it possible to recommend Brokarsept for introduction into industrial poultry farming.

The economic effect of the introduction of Brokarsept in the industrial poultry industry will amount to more than 250 thousand rubles per 1 million incubated eggs, and will also create a comfortable environment in the hatchery for operators to work during the reorganization of facilities and technological equipment of the hatchery.

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