

**INDICATORS OF PHAGOCYtic ACTIVITY OF NEUTROPHILS OF
BLOOD AND CERVICAL MUCUS OF COWS
WITH PURULENT-CATARRHAL ENDOMETRITIS**

Glotov E.E., postgraduate

SB NULES of Ukraine “Crimean Agrotechnological University”

The results of research on the dynamics of the phagocytic activity of neutrophils in peripheral blood and cervical mucus cows with purulent-catarrhal endometritis are referred to in this article. The functional activity of blood neutrophils and cervical mucus of cows after treatment with probiotic "Vetomgin" and the traditional treatment of postpartum endometrial pathology is show in a comparative perspective. Were used Bac. subtilis u Bac. amyloliquefaciens as strains of Probiotic cultures.

Keywords: endometritis, cows, phagocytic activity, probiotics

In modern conditions of farming human intervention in the environment was wearing a particularly intense, and usually negative. This leads to serious changes in the natural biocenosis at all levels, including microbiocenoses of animals, which leads to the depletion of adaptive and compensatory mechanisms of the living organism, the emergence of immunodeficiency states, the wide dissemination of multidrug resistance of infectious agents, macroorganism inability to maintain homeostasis in a natural way [1].

Therefore, at present, one of the most important tasks of cattle breeding is to ensure population of the country with safe and high quality food, and thus maintaining the health of production animals with the use of environmental, alternative methods of physiological correction becomes of great importance [2].

Taking into account the urgency of the problem there is the search for new drugs, circuits, and methods of treating bacterial infections of production animals, including endometritis in cows.

The purpose of work is the study of the phagocytic activity of neutrophils in peripheral blood and cervical mucus in cows with acute purulent-catarrhal endometritis in a comparative treatment of antibacterial and probiotic preparations.

Materials and methods. Investigations were carried out in summer 2013 on the basis of the veterinary clinic SSPC of SB NULES of Ukraine “CATU”.

We used the modified technique of V.M. Berman et al. to study the phagocytic activity of neutrophils in peripheral blood and cervical mucus in cows with acute purulent-catarrhal endometritis, ukrainian red dairy breed [3, 5].

In a centrifuge tube containing 0.1% sodium citrate solution 0.3 ml of blood was added. In the test tube 0.1 ml of a suspension Staph. aureus at a concentration of 1.5×10^9 microbial cells / ml was added. It was incubated at 37⁰C for 30 minutes, constantly shaking. For 30 minutes the slides were loaded and the slurry

droplets smears were prepared, which were dried and fixed with ethanol for 10 minutes and then stained according to Romanovsky-Gimza.

Then the suspension was put into a thermostat for 90 minutes in the same mode. After incubation, the smears were prepared by analogy.

When microscopy active neutrophils were counted in the cytoplasm microbial body and inactive on 100 cells were revealed. We counted the number of active neutrophil viable and non-viable microorganisms.

Phagocytic activity of neutrophils was determined by calculating the number of phagocytic (FN) and phagocytic index (PI) for 30 and 120 min of incubation. Phagocytic number was calculated as the average number of microbes' trapped one active neutrophil. Phagocytic index was defined as the percentage of phagocytized cells counted of the number of neutrophils.

Phagocytic activity of neutrophils in the cervical mucus of cows was determined by the G.G. Kozlov et al. [4]. Smears from the cervical mucus were made immediately after its getting. Smears were dried and fixed with methanol for 15-20 minutes and then stained according to Romanovsky-Gimza for 20 minutes. We counted 100 neutrophils and the number of captured bacteria in the smear.

Phagocytic index was calculated by dividing the number of trapped bacteria on the number of neutrophils counted.

The diagnosis of endometriosis and determination of the nature of the disease were based on clinical signs.

Results and discussion. Test animals were divided into two groups - experimental and control by 7 cows. In the control group, the scheme economy was used: intrauterine ichthyol candles in 3 pieces with an interval of 24 hours for 5 days, intramuscularly comprehensive multivitamin preparation "Introvit" to 20 ml per head one-time, 50 UA oxytocin intramuscularly. In the experimental group was used a similar scheme as to that of the control group, replacing ichthyol candles on probiotic preparation "Vetomgin" (Russia), which was introduced in utero as a suppository in the amount of 3 candles in the course of day 5 days.

Cervical mucus and blood were obtained on the day of the treatment of animals, and then on the 10th and 20th day.

Dynamics of the phagocytic index in the peripheral blood of cows control and experimental groups are presented in table 1.

Table 1

Indicators of phagocytic index of blood neutrophils of animals

timeline research day	group of animals	
	control	experimental
before treatment	65,82±1,51	66,12±1,08
10th	64,78±1,48	67,39±1,45*
20th	66,32±1,12	68,58±1,35*

Remark. * $p \leq 0,05$

The animals of the control group showed a decrease in the phagocytic index in the first week after treatment of the disease, whereas in animals of experimental

group reliably increased same indicator on the 10th and 20th day after the start of treatment.

Dynamics of phagocytic number of blood neutrophils of studied cows is shown in table 2.

Table 2

Indicators of phagocytic number of blood neutrophil of animals

timeline research day	group of animals	
	control	experimental
before treatment	1,48±0,08	1,46±0,18
10th	1,51±0,18	1,54±0,25
20th	1,56±0,12	1,67±0,10

The data in table 2 indicate that the phagocytic number blood neutrophils insignificantly different in both groups.

The dynamics of phagocytic index of neutrophil in the cervical mucus cows shown in table 3.

Table 3

Indicators of phagocytic index of neutrophil in the cervical mucus of animals

timeline research day	group of animals	
	control	experimental
before treatment	53,4±1,32	54,2±1,1
10th	52,1±1,18	57,68±1,47*
20th	56,4±1,22	59,78±1,26*

Remark. * $p \leq 0,05$

Dynamics of the phagocytic number of neutrophils in the cervical mucus in the test cows is shown in table 4.

Table 4

Indicators of phagocytic number of neutrophil in the cervical mucus of animals

timeline research day	group of animals	
	control	experimental
before treatment	1,36±0,04	1,41±0,15
10th	1,45±0,21	1,51±0,08
20th	1,51±0,17	1,58±0,24

Comparative dynamics of the phagocytic activity of neutrophils in the blood and cervical mucus are shown in Fig. 1.

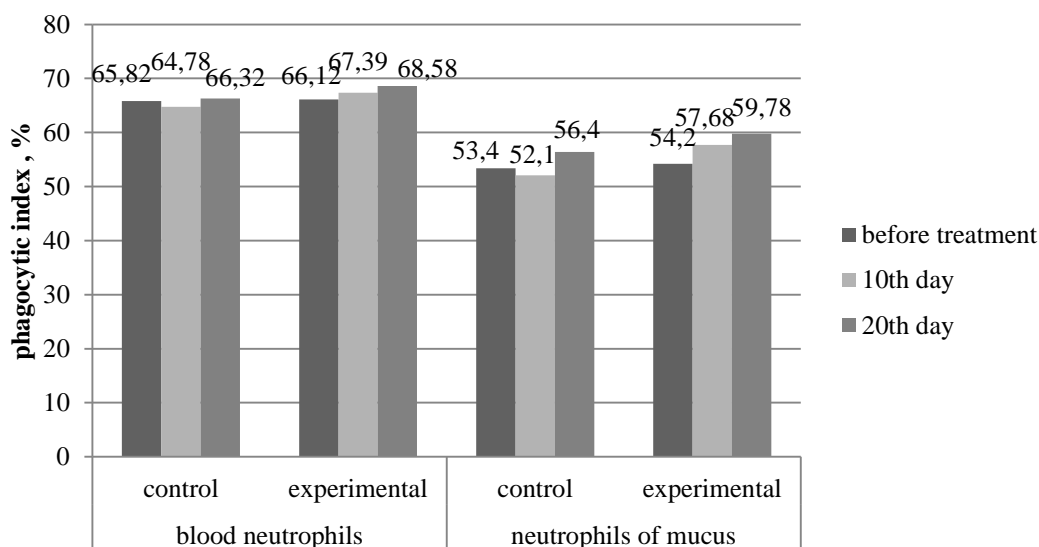


Fig. 1. Comparative dynamics of phagocytic index of neutrophil of blood and cervical mucus in cows of both groups

Conclusions. The use of probiotic "Vetomgin" stimulates the phagocytic activity of neutrophils in peripheral blood and cervical mucus. Thus, indicators of the phagocytic index of neutrophils in peripheral blood and cervical mucus on the 10th and 20th day of research results showed reliably higher ($p \leq 0,05$) in animals of experimental group, than in the control group.

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Глотов Е.Э. Показатели фагоцитарной активности нейтрофилов крови и цервикальной слизи коров, больных гнойно-катаральным эндометритом

В статье приведены результаты исследований по динамике фагоцитарной активности нейтрофилов периферической крови и цервикальной слизи коров, больных гнойно-катаральным эндометритом. В сравнительном аспекте показана динамика изменений функциональной активности нейтрофилов крови и цервикальной слизи коров после лечения с применением пробиотического препарата «Ветомгин» и традиционного лечения послеродовой патологии эндометрия. В качестве пробиотических культур использованы штаммы *Bac. subtilis* и *Bac. amyloliquefaciens*.

Ключевые слова: эндометрит, коровы, фагоцитарная активность, пробиотики.

Глотов Є.Є. Показники фагоцитарної активності нейтрофілів крові і цервікального слизу корів, хворих гнійно-катаральним ендометритом

У статті наведено результати досліджень по динаміці фагоцитарної активності нейтрофілів периферичної крові і цервікального слизу корів, хворих на гнійно-катаральний ендометрит. У порівняльному аспекті показана динаміка змін функціональної активності нейтрофілів крові і цервікального слизу корів після лікування із застосуванням пробіотичного препарату «Ветомгін» і традиційного лікування післяродової патології ендометрію. В якості пробіотичних культур використані штами *Bac. subtilis* і *Bac. amyloliquefaciens*.

Ключові слова: ендометрит, корови, фагоцитарна активність, пробіотики.