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Response of populations of pathogenic bacteriums Erysipelothrix rhusiopathiae to dermal excretions of pike

Aim To determine the reaction of populations of pathogenic bacteria of E. rhusiopathiae is the effect of skin excretions of pike common. Methods. The tests of the mucus from the skin of the fishes were taken by means of a filtering paper, extracted, sterilized and tested with E. rhusiopathiae populations. Results Table of contents of E. rhusiopathiae in experience was more than control in standards with breeding of skin excretions of pikes of 1:10 in 3.26; 1: 100 - 2.54; 1: 1000 - 1.20 times. Conclusions. Populations of the pathogenic bacteria of the E. rhusiopathiae test of stimulating effects from the side of the pike are typical of the selection of her by skin glands in the environment of the existence of biologically active substances.

Key words: Erysipelothrix of rhusiopathiae, pike common, secretion of skin skin, stimulatory effect.

An intensive production of agricultural goods in stock-raising complexes and farms is often the reason for the worsening of the ecological state of adherent territories. The special danger is presented by bacterial contamination of soils and reservoirs by a pathogenic and conditionally pathogenic microflora. Taking into account it is actually enough to control and optimize the state of geobiocenosis in the zone of location of stock-raising complexes. For the successful implementation of these tasks, the necessary are given about the features of the ecological interaction of causative agents of infectious diseases and components of water and ground ecosystems.

Rhusiopathiae is a widespread enough bacterium in Erysipelothrix in the wild and proof against the influence of unfavorable factors of the environment, in addition, these microorganisms are pathogenic for agricultural animals, and also for people [1]. Bashiha is a disease to bring E over. rhusiopathiae, inflicts most losses to the pig breeding. Patients and clinically healthy pigs-bacillicarriers distinguish a causative agent with feces, urine [8, 11, 12]. Soils and reservoirs become the source of distribution of E. rhusiopathiae. Getting in natural groups, these bacteria begin to co-operate with the components of biocenosis, to move trophic chains, spread for territories, by submitting the threat of infection of people and animals.

Reservoirs have a significant value for economic activity and rest of people. In scientific literature there is very little information about the character and effects of the interaction of E. rhusiopathiae and various types of aquatic lives. We put a task to learn the features of ecological connections of pathogenic bacteria of E. rhusiopathiae with the components of biocenosis in the conditions of fresh reservoirs - by water-plants [4], by higher plants [5, 7], by animals [3]. A fish-farming is one of the major directions of economic use of reservoirs, which is why special interest is the study of the mutual influence of E. rhusiopathiae and economically valuable types of fish. It is known that fishes can be the source of infection of people by these bacteria [9, 10].

One of the widespread types of freshwater, lacustrine and pond fishes in Ukraine is a typical lake (Esox of lucius). Pikes stick to the off-shore zone in areas with moderate flow, submarine and surface vegetation. Feed on shallow fish, frogs [6]. Pikes are conducted in fish industries, in addition, it is a popular object of sporting and amateur fishing.

For research of intercommunications with the bacteria of E. rhusiopathiae pike the ordinary is select taking into account prevalence in the different types of reservoirs of Ukraine, and also because this type of fishes occupies the top of most trophic chains of reservoirs.

Aim of researches - to set the reaction of populations of pathogenic bacteria of E. rhusiopathiae on influence of skin excretions of pike ordinary.

Materials and methods of researches. The necessary for researches living copies of fishes bought in the specialized shops. During the choice of fishes paid attention to integrity of the cutaneous covering and satisfactory original appearance. On a laboratory table a pike was fixed on a side. A filtration paper was moistened by water and covered the upside of fish to them. Through 1 хв by clean pincers a paper was taken off and placed in glass test tubes for the receipt of water solutions of skin excretions. The volume of water, necessary for extracting, was determined going out correlation of 0,1 см3 of water on 1 см2 of area of filtration paper with skin excretions of fishes. Through 1 год water from test tubes was sterilized (skipped through bacterial filters with the diameter of пор <0,2 мкм).

In researches used the cultures of bacteria of E. rhusiopathiae (stamm of SR-2), that grown during 48 год for temperatures (+36,7±0,3°C) on cordially-cerebral clear soup (AES Chemunex, France).

Using the method of the serial breeding, prepared pre-production models that after bringing of test cultures of bacteria contained skin excretions of fishes in such breeding : 1:10; 1:100; 1:1000; 1:10 000. Control were sterile water and cultures of bacteria in analogical correlations. Initial closeness of bacteria in standards - identical, as інокуляти cultures of E. rhusiopathiae took away from one capacity and they were identical on volume.

The Closeness of populations of E. did rhusiopathia determine through 48 hours of sowing of the tests in the sequential breeding of 1×10 -3 and 1× 10-4 for 0.1 cm3 on the surface of the cordially-cerebral agar. The test was cultivated for 72 hours for temperatures (+ 36.7 ± 0.3)°C with a further calculation of colonies that grew and the average amount of colony forming units (COO) of the bacteria was 1 cm3.

The closeness of populations of E. rhusiopathiae appeared to be more than 3.26 times in control in the pre-production models (index of breeding of 1:10). The increase in the level of breeding of the secrets of the skin glands of the experimental type of fish in the pre-production models to the values of 1: 100 and 1: 1000 affected the decrease in the difference in the content of E. rhusiopathia in the experience of comparatively with control to 2, 54 and 1.20 times respectively. Existence of the stimulatory effect on the population of bacteria from the side of the pike normal confirms the statistically reliable difference between the medium content of the bacteria in the pre-production and control models. However, at the level of breeding of 1:10 000 skin excretions of experimental type of fish, the stimulatory effect of influence on the population of E. rhusiopathiae disappears. To it absence testifies statistically reliable difference between maintenance of bacteria in pre-production and control models. It is set by means of cross-correlation analysis, that the decrease of content of bacteria in pre-production models is related to the decrease of fish skin skin glands secretions (r = 0.83) [2]. The results of researches show that foods from the excretions of the skin glands of the pike are a very beneficial environment for the presence of pathogenic bacteria of E. rhusiopathiae. Probably, that in the wild at the bacterial contamination of the reservoirs they can accumulate on the covers of freshwater fishes. Distinguishing in the environment of the existence of bacterial mucus, a pike usually changes the terms of their existence, as a result of what between these types the topical type of biocenotic connections is formed .. The obtained data need to be taken into account for determination of directions of circulation of E. rhusiopathiae in the objects of environment and prophylaxis of diseases of people and animals on бешиху. In particular during the mass hunting and treatment of freshwater fishes workers must use rubber gloves, and to process the places of damages anti-infectives.

Conclusions

It is set researches that populations of pathogenic bacteria of E. rhusiopathiae test stimulatory effects from the side of the pike are usually from the selection of her by skin glands in the environment of the existence of biologically active substances.

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