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MORPHOLOGICAL INDICATORS OF FISH BLOOD

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Abstract
In fish kept in the same environment with a bioecological environment, i.e. weather disturbances, a lot of stagnant water, these indicators were, respectively, metamyelocytic-neutrophil 0.48; segmented neutrophils 1.4; eosinophil 0.0; pseudoeosinophil 2.2; basophil 0.0; pseudobasophil 1.4; monocyte 8.3; lymphocytes 83.5 g/%. In our experiments, an increase in the number of metamyelocytic neutrophils, segmented neutrophils, pseudoeosinophils and lymphocytes was observed, basophils decreased from 2.3 g/% to 0.0, and monocytes decreased from 11.3 g/% to 8.3 G/%.

Keywords: Erythrocyte, 1012/l, Hemocrit, Hemoglobin content in erythrocytes, pg, Average erythrocyte size, µm, Leukocyte x1012/l, Extensive technology, Intensive technology, Artificial pool, Hemoglobin in pool conditions, Limited water pool.

Introduction

Relevance of the topic. Along with other branches of animal husbandry, fisheries are being further developed and our people's demands for fish and fish products are increasing. This, in turn, is being widely implemented in the field of intensive development of fisheries based on new innovative technologies and the development of innovative methods of fish farming based on intensive technologies. As an example, a number of resolutions and orders of our Honorable President are being put into practice. In particular, in accordance with the Resolution of the President of the Republic of Uzbekistan No. PQ-4816 dated August 29, 2020 “On measures to support

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the fisheries sector and increase its efficiency", in order to support the fisheries sector in the Republic, increase the efficiency of fisheries and fishing farms, ensure rational and effective use of land and water resources in this sector, and ensure the widespread introduction of intensive technologies:

Starting from 2020, the tax for the use of water resources for fisheries that breed fish in artificial reservoirs will be calculated based on the difference between the volume of water taken from water bodies and returned, at the rates established for irrigation of agricultural land.

The Ministry of Water Resources, together with the Ministry of Agriculture and the "Uzbekbaliqsanoat" association:

In 2021-2022, in conditions of water shortage, a process of gradual introduction of new resource-saving intensive technologies and widespread use of secondary water sources in artificial reservoirs by fisheries that draw water from rivers and canals was implemented.

The level of knowledge of the problem. For the study, blood was taken from the caudal artery of white Amur carp fish from the fishery using a syringe. In carp, instead of injection, blood is taken from the junction of the lateral line by drawing a line perpendicular to the anal opening. Blood should be taken from a hungry fish. Freshly caught fish should be kept in oxygenated water for 5-10 minutes before blood is taken. The fish should be taken out of the water and wrapped in gauze. Only the base of the tail should remain outside. The puncture site is cleaned of body fluid with a cotton swab with a 70% alcohol solution. A sterilized needle and syringe are used to draw blood. Instruments are treated with sodium citrate and heparin solutions. A forceful puncture is made along the spine at a 450 angle above the anal opening. The blood sampling site cannot be squeezed. This is to prevent the released fluid from entering. It is not recommended to draw blood again from the blood sampling site.

Results and their Analysis

For the survival of crayfish, the proper supply of blood to the body and organs is of great importance for their vital activity. Arterial blood supplies organs and tissues in the body with oxygen and a number of nutrients, oxygen. Carbon dioxide and metabolic products from the body are transported through venous blood vessels to the external environment and excretory organs. Changes in blood components in organs

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and tissues lead to metabolic disorders and, as a result, to changes in their physiological lifestyle.

The blood of fish is a reactive tissue, which quickly responds to any influences, is sensitive to factors that come to the body from the outside: disturbances in the aquatic environment, pathogens, the presence of toxic substances in water, oxygen deficiency. Blood is classified according to its functional properties.

Currently, there is a lack of domestic and foreign data on the morphology of blood cells in fish and a similarity in their names. Based on these data, it can be concluded that the morphological composition of the blood of fish affected by water hydrochemistry requires additional study.

In our studies, when healthy fish and fish affected by water hydrochemistry were compared, their morphophysiological and hematological indicators were sharply different. When comparing the leukogram of the blood of karr fish with bioecological differences, inadequate storage conditions and water hydrochemistry, in healthy fish, respectively, metamyelocyte neutrophil 0.4; segmented nucleated neutrophil 0.3; eosinophil 0.1; pseudoeosinophil 1.1; basophil 2.3; pseudobasophil 0.1; monocyte 11.3; lymphocyte was 83.5 g/%. In the karr fish reared in the bioecological environment, i.e., in the environment with a lot of stagnant water, these indicators were, respectively, metamyelocyte neutrophil 0.48; segmented neutrophil 1.4; eosinophil 0.0; pseudoeosinophil 2.2; basophil 0.0; pseudobasophil 1.4; monocyte 8.3; lymphocyte 83.5 g/%. In our experiments, an increase in the number of metamyelocyte neutrophils, segmented neutrophils, pseudoeosinophils, and lymphocytes was observed, while basophils decreased from 2.3 g/% to 0.0, and monocytes decreased from 11.3 g/% to 8.3 g/%.

Table 1 Morphological parameters of blood of one-year-old karr fish affected by a water-affected factor

Indicators		Healthy	Sick		
			Influencing factor (in water)		
			biocecology	Storage conditions	hydrochemistry
Hemoglobin content, (g/l)	average	91±3,30	62±2,22	46,3±2,13	39,2±1,59
	maximum	103±4,12	63±2,9	54,1±2,90	41,3±2,66
	minimum	85±3,10	56±2,7	44,2±2,87	33,8±1,30
Red blood cell count, (x 10 /l)	average	1,75±1,1	1,17±0,014	0,76±0,02	0,51±0,04
	maximum	2,28±1,6	1,27±0,029	0,86±0,04	0,89±0,08
	minimum	1,43±1,9	0,95±0,014	0,51±0,02	0,33±0,04
Leukocyte count, (x109/l)	average	23,7±1,72	43,1±2,40	57,1±3,9	98,2±9,40
	maximum	31,9±2,18	56,9±3,5	75,1±4,81	175,3±14,1
	minimum	18,4±2,3	32,6±2,30	45,3±2,48	63,3±6,1

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Conclusions

During the experiment, it was observed that the morphophysiological characteristics of the fish organism, the hydrochemistry of the water and the blood hemoglobin content (g/l), the number of erythrocytes (x 10 /l) and the number of leukocytes (x109/l) of the fish kept in the same conditions as the fish were kept in the same conditions as the fish.

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