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CAUSES AND SYMPTOMS OF PROTEIN METABOLISM DISORDERS IN FISH

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Annotation
This article describes the causes that cause disorders of protein metabolism that occur among fish grown in conditions of artificial fishing pools. Clinical signs such as fish clinical examination results, hematalogical examinations, body weight, integrity of the jabra caps, appetite, body length, glitter of the tangles were studied.. It is characterized by disorders of protein metabolism in fish, decreased appetite in fish, disruption of vitamin and mineral Metabolism, cachexia, lagging behind growth and development, decreased tangle luster, low mobility and high mortality.

Keywords: fish, protein, methionine, tryptophan, calcium, magnesium, polyculture, hydrochemical regime, differential diagnosis, deformation, hypogemoglobinemia, hypoproteinemia, hypocalciemia and hypophosphoremia.

Relevance of the topic

The state committee for the development of Veterinary and animal husbandry, the Ministry of Economic Development and poverty reduction and the Uzbekbaliksanoat Association are taking measures to implement projects for the production of fish in apartments of 10 residents in districts specializing in fisheries. Together with the Association “Uzbekbaliqsanoat”, the state committee for the development of Veterinary and livestock, in the short term, on the basis of foreign

experience and innovative resource-saving technologies, a manual for the intensive cultivation of fish (type of fish, quality, cultivation scheme, resource-saving technologies) is being developed in the apartments of the population.

In 2018-2023, the Republic approved a program of measures for the rapid innovation development of the fishing industry. In this regard, scientists from the Research Institute of Fisheries have developed reliable developments for the next three years, which are based on comprehensive practical research on the cultivation of African Sturgeon, carp and other fish using advanced technologies. For example, now in our Markets Live African catfish and other types of fish are on sale at affordable prices. And it is undeniable that the elimiz table serves to be full of Fish and fish products. The development of methods for diagnosing and preventing violations of protein metabolism in fish grown on fish farms in the conditions of artificial water bodies of our republic is an urgent circulation today.

Analysis of literature on the topic. Diseases of protein metabolism in fish occur mainly when they are fed with a diet that cannot meet their needs for nutrient nutrients, or when they are overpowered from a meager. The disease is observed in fish of different ages, young fish become more sensitive[1].

Fat metabolism disorders also have a great influence on protein metabolism in the body of fish. When breaking through sick fish, it is possible to see a large accumulation of fat in the inner limbs, the unusual appearance of the liver attracts attention. Its size is increased, the liver becomes yellowish-sand in color. At some point, the brown speckled sand alternates with white and red spots with colored spots[2].

Proteins can be reduced or increased in the body of fish. Lack of amino acids such as methionine, tryptophan in Carp, River and African catfish usually leads to loss of appetite, eye cataracts, staying from growth. In the 3rd week of decreasing lysine and valine amino acids, high levels of mortality are observed among fish [3].

When proteins are not enough, they lead to the manifestation of dystrophic processes in the liver, heart, kidneys and other vital organs of fish.[4]

When histological examination of the internal organs of sick fish is carried out, necrosis and melting in the parenchymal cell of the liver, the accumulation of serroid

granule in the spleen, the kidney is also similar, serroid dystrophy of the renal canal is observed[5].

When the liver is histologically examined, it is possible to see that hepatocytes cover fat. The normal structure of liver cells is disrupted [6].

In the deficiency of proteins, there is an increase in leukocytes and young erythrocytes in the blood, a lack of growth of the jabra pennant, disorders of the alashinization of calcium, magnesium and iron substances in the body. In this process, the body weight of the fish and the process of substance exchange in the body are restored very slowly [7].

When the fish organism lacks proteins, its natural endurance decreases, the spine is deformed, it becomes difficult for wounds to heal [8].

When protein metabolism is disturbed - which also has a major impact on carbohydrate metabolism in the fish's body, causing energy deficiency, in addition to negative consequences such as appetite transmission in fish, liver pathologies, decreased immunity, becoming susceptible to infectious and invasive casalicles, and fish lagging behind growth and Development [9].

In the acute course of the disease, there is a change in the body color of forel fish, in a short time, infected fish turn dark or completely black, sometimes water accumulates in the abdomen, covering the eyes with a white veil. Fish do not receive feed, movement coordination is impaired, accumulates on shores with little water and dies in bulk. Older fish will be much more resistant to disease than younger ones [10,12].

For the Prevention of diseases of impaired metabolism in fish, it is initially carried out by enriching the composition of the fishery pond water, forming a natural feed base in the water, fishing the basin with the observance of polyculture Meyers and establishing feeding with fully balanced feed [11].

Object and methods of research. Clinical and laboratory tests were carried out in order to study the etiology of protein metabolism disorders among fish grown in the conditions of “MIRBOZOR Dolphins” in Narpay District of Samarkand region and “New Road Amurs” fish farms in Yangiyul District of Tashkent region. Observations were carried out on carp fish aged 1 year. The storage and feeding conditions of farm fish were studied.

The feed composition of the fish in each farm where the experiment was carried out was checked and analyzed. The biochemical composition of feeds was checked on the basis of the **GOST 13496.4-2019** Standard. For this process to take place, methods of titration and photometry were used.

During the observations, the area of the fisheries, the depth of the basin, the degree of fishery of the basin, the degree of contamination of the basin with algae, the physical and chemical indicators of the basin water (temperature, pH, amount of O_2), the degree of fertilization of the fishing pond were checked.

The appetite of the fish in the experiment, body weight, body length, glitter of coins, integrity of the jabra caps, reaction to external influences were determined.

In blood samples from fish caught as samples, the amount of hemoglobin (in Sali hemometer), the total protein in the blood serum (refractometric method), the total calcium (complexometric method with the help of murexide), the amounts of inorganic phosphorus (Ammon-Ginsburg method, I.A.Ivanovsky modification) detected.

Analysis and results: During the research period, the level of reclamation activities in fish farms was checked. In this case, mainly the area of the fishing pond is 1.3 meters in the section where water enters when the depth is checked as a basin mvjud with an area of 1 2.3 hectares and 1 3.4 hectares in the “MIRBOZOR Dolphins” farm, the depth is 1.5 meters in the section where water is discharged, the presence of a

If it was found that the fertilization process of the fishing pond is not in demand and 30% of the basin is contaminated with algae, then in observations in the Tashkent region we got the results below.

In the” new road Amurs " farm, a basin with an area of 5 hectares was mvjud, and the depth of the basin was 0.70 meters at the entrance to the water, while the depth of the water outlet section was 1.7 meters, the presence of a partial sludge process at the bottom of the basin, which was determined as a result of The literature also lists the factors affecting fishing ponds [13].

The incorrect Organization of the fertilizing current of the fishing pond and the presence of algae in 45% of the basin were observed during inspections.

(a) **(b)**

Figure 1: a) "MIRBOZOR Dolphins" **b)**"New Road Amurs" pollution of the basin water of fish farms.

When we measured the body weight of 50 heads of fish taken as a sample as a result of examinations carried out in the "MIRBOZOR Dolphins" farm, it was found that the body weight of 7 fish among fish is more than 1.5 kg, the body weight of 12 fish is 0.9-1.5 kg, in 11 fish-0.5-0.9 kg and What is noteworthy is that fish have different body weight, although they are fed under the same conditions at the same age. The feeding process and feedings of their farm fish were introduced, in which 1 feeding was carried out in one day by the first months of the autumn season, when their fish were fed 2 times a day during the summer months.

When we conducted clinical experiments on fish grown on the farm, it was found that the fish have a body length of up to 20-35 sm, the coins have a medium degree of luster, the integrity of the jabra cap, a low reaction to respond to external influences, and the fish is in an almost indecent state in one place, being.

When we conducted clinical tests of fish grown in the conditions of "New Road Amurs" fisheries, we found that the body weight, from 0.5 kg to 1.03 kg, when we selected and examined 50 heads of fish on the basis of the optional selection factor, is at the required level of the luminosity of the coins, the integrity of the jabra

As a feed for fish in farms, wheat bran, wheat grain and barley grain were given as a result of inspections, namayon became. As a result of the examinations, clinical signs of decreased appetite of fish, lagging behind growth and development, dystrophy of their internal organs, cochyx, the presence of foci of necrosis in the

liver were identified, such as thickening of the catalyzed wall of the volume of oshgazon. Clinical signs with it was found that the violation of the nutritional Meures of fish was caused by the fact that the underutilization of basin water was caused by the derailment of the process of protein metabolism in the body of fish as a result of the lack of demand from the quality of nutrients.

Figure 3: the process of measuring the body weight of fish in fish farms.

It is possible that we will see a reduction in the amount of protein substance that fish should receive daily as a result of a low amount of nutrition, in which fish are given 1% of their body weight without following the fish feeding procedure on the farm. Meyor groundbreaking one-day feed should make up 2.5% of the fish's body weight. It was concluded that the lack of proper fertilization of the basin water is not at the level of demand of the natural feed base in sabali ponds.

Due to the fact that the feed used in the farm was not enriched with additional vitamins and minerals, the intake of feed by fish was sharply reduced, as a result of which there was a decrease in body weight in fish (coxexia).

The lack of vitamins in the feed also has a negative effect on the sensitization of proteins.

As a result of the fact that the depth of the basins is not suitable for meager indications, the garbage and feed waste from the fish will sink to the bottom of the basin, accelerate the formation of mud, quickly pollute the water present in the basin and grow algae, the water (pH) pointer will pass into the acidic environment, and the reduction As a result of the deficiencies identified above in fish grown in the

conditions of the farms in which the studies were carried out, the process of receiving feed among fish was disrupted, and as a result, the coefficient of drop in protein substances from the external environment into the fish body decreased. This leads to a violation of the exchange of proteins in the body.

Samples taken from the feed used in the farm and the blood of the fish were taken and laboratory tests were carried out in the tekshuruvs carried out in the fish farms.

Table 1.

O\N	Nutritional value	Ingredients (per 100 grams)
1	proteins	13 gr
2	fats	2.5 g
3	carbohydrates	57.5 g

The table shows the amount of protein, fat, ulevodes in 100 grams of wheat, and the presence of 13 grams of oxisl, 2.5 grams of fat and 57.5 grams of carbohydrates in 100 grams of wheat was found in labaratoria checks. It can be seen that wheat grain, which is used as a feed in the fisheries sector, is able to satisfy the fish organism's demand for carbohydrates but cannot meet its daily requirement for protein.

Table 2. Biochemical indicators of fish blood

Pointer	"MIRBAZAR DOLPHINS"	"New Road Amurs"	Standard (SI unit)	
Hemoglabine (HB)	72,23±3,99	73,13±4,01	75,25±4,38	g\l
Common protein	35,5±2,1	36,15±2,23	40,23 ± 2,6	g\l
Common calcium	2,01±0,13	1,91±0,10	2,05±0,15	mmol\l
Inorganic phosphorus	1,01±0,06	0,78±0,05	1,04±0,08	mmol\l

When checking the biochemical indicators of a blood sample from fish grown under the conditions of "MIRBOZOR Dolphins", the amount of hemoglabin was 72.23±3.99 g\l, the total protein was 35.5±2.1 g\l, the total calcium was 2.01±0.13 mmol\l and inorganic phosphorus was 1.01±0.06 mmol\l. When checking the biochemical indicators of blood samples of fish fed on the" new road Amurs " farm, the amount of hemoglabin was 73.13±4.01 g\l, the total protein was 36.15±2.23 g\l, the total calcium was 1.91±0.10 mmol\l and inorganic phosphorus was 0.78±0.05 mmol\l. Hematological indicators of fish were characterized by hypogemoglobinemia, hypoproteinemia, hypocalciemia and hypophosphoremia.

The result of clinical and labarator examinations carried out shows that among the fish grown in fish farms, it was found that there is a disease of protein metabolism disorders.

Conclusion:

1. The main etiological factors are such as the lack of evolution of feed at the origin of protein metabolism disorders in fish, the establishment of proper feeding, the complete failure of the fish organism to meet its daily requirement for protein, poor fertilization rate of basin water, contamination of the basin with algae, the absence of a natural feed base in the basin.
2. The result of impaired protein metabolism in the fish organism is characterized by deterioration of the appetite among fish, cochexia, hypogemoglobinemia, hypoproteinemia, hypocalcemia, hypophosphoremia, decrease in the luminosity of the coins, decreased response to external influences, lagging behind growth and development, leaving the organism susceptible to infectious and parasitic diseases, and a high level of mortality.

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