

**МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ОДЕСЬКА НАЦІОНАЛЬНА АКАДЕМІЯ
ХАРЧОВИХ ТЕХНОЛОГІЙ**



ЗБІРНИК МАТЕРІАЛІВ

**XIII Всеукраїнської науково-практичної
конференції молодих учених та студентів
з міжнародною участю**



**«Проблеми формування
здорового способу життя у молоді»**

1 жовтня - 3 жовтня 2020 року

м. Одеса

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РОЗДІЛ 3
ТЕХНОЛОГІЧНІ АСПЕКТИ
ВИРОБНИЦТВА ХАРЧОВИХ ПРОДУКТІВ
ЛІКУВАЛЬНО-ОЗДОРОВЧОГО НАПРЯМКУ

major part of shrimp production cost. Ingredients which can be used for feed preparation were shown. Features of feed processes were discussed.

Scientific adviser Liudmyla Fihurska, Associate Professor,
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PRODUCTION OF COMPOUND FEED PROVIDES QUALITY FISH

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Aquaculture is the reproduction, breeding and commercial cultivation of aquatic organisms, in recent decades it has become a large-scale high-tech industry and began to play a leading role in the development of the fishery complex of most states. The leading position in this is occupied by such high-growth countries as Japan, the USA, Canada, Iceland, Denmark, Norway, and more recently, China.

Compound feed recipes for fish are usually made by combining the individual components according to their chemical composition. Since the chemical composition and nutritional value of individual types of feed are different, there is a need to combine feed with each other in certain proportions. In practice, this happens in the preparation of diets. The chemical composition of animal feed gives a general idea of its potential biological value. The actual value of compound feeds is determined after adjusting for the inevitable losses that occur during the digestion and assimilation of nutrients of compound feeds in the body of fish.

Composition of recipes for feeds include up to 18 components with their content from 0.02% (counting preparations, antioxidants) to 55% (fish meal) (Table 1). Use components of the animals, plant, microbiological and mineral origin.

Components of animal origin are characterized by a high content of protein and fat: fishmeal, blood, low-value fish, fish processing waste. The main source of nutrients for fish is fishmeal. Fishmeal protein has a complete set of essential amino acids; it contains a lot of lysine, methionine and tryptophan. Fishmeal, which is used in mixed feed for trout, must contain at least 55% crude protein.

Animal fats and vegetable oils are not just a source of energy, essential fatty acids, but also vitamins A, D, E and K. Recommendations on the required fat content in compound feeds for fish have repeatedly changed during past twenty years.

The source of starch in aquacultures is corn, rice, cassava, barley, potatoes, and wheat. Starch is the main carbohydrate in aquaculture. Starch can be a source of energy in compound feeds for fish, but its main role is to bind the particles of the finished product. For sinking aquacultures, the minimum level of starch is 10%, for floating - 20%. Long-term studies of leading scientists of the world made it possible to recommend the necessary level of mineral substances in compound feed for different fish species.

Table 1 Components of compound feed for trout of different manufacturers

№	The name of the compound feed manufacturer	Components
1	Soviet Research Institute of Fisheries	fish meal, krill meal, meat and bone meals, blood meal, algal and grass meal, soy and sunflower meals and cake, dry milk, yeast feed, wheat flour, vegetable oil, feed phosphatides, molasses, premix, fish oil;
2	Assortment Agro	fish meal, blood meal, fish oil, premix, wheat flour, vitazar, soybean meal, yeast;
3	114-1 Укр., Ф-1, Ф-2	fish meal, meat and bone meal, yeast, meal (soybean and soybean), wheat bran, phosphatides, premix 111-3 Rus;
4	Skretting	LT fish flour, squid flour, gluten (wheat and corn), corn, fish oil, soy flour, soy concentrate, hemoglobin, linseed oil, rapeseed oil, premix, amino acids;
5	AQVAREX	fish meal LT, blood meal, wheat, soybean meal, pea protein, wheat germ, choline chloride, fish oil, premix;
6	Aller Aqua	LT fish meal, Digestor fish meal, krill meal, offal, soy meal, wheat, vegetable oils, fish oil, gluten, vitamins, mineral supplements, immune stimulants, astaxanthin, oilcake, meal.

An important component of fish feed (trout etc) are carotenoid additives. In nature, fish receive from natural food a large number of specific carotenoids of aquatic organisms - astaxanthin. Astaxanthin is rich in aquatic invertebrates, especially crustaceans that consume fish. It is

astaxanthin that adds a bright pink color to the muscles and caviar of salmon - trout, salmon, chum, pink salmon, sockeye salmon, etc.

Antibacterial and anthelmintic preparations, antioxidants, acidifiers are also introduced into the composition of compound feed recipes for trout. The use of acidifiers (1.0-1.5%) increases the survival of trout larvae and shows the best growth indicators; the effect is similar to the effect of antibiotic growth stimulators. Therefore, the needs of fish in nutrients and biologically active substances are considered.

PRODUCTION OF DRY-CURED SAUSAGES WITHOUT CASING

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The traditional technology for the production of dry-cured sausages provides for the formation of a product using a sausage casing. The casings can be natural, made from the intestines of slaughter animals, artificial, made from collagen skins. The use of synthetic casings is not widely used for this type of sausages for a number of reasons, including the fact that they are not edible, have poor vapor permeability, as a result of which the drying process is extremely difficult. Sometimes paper or fabric casings are used. The casings used are expensive, which leads to an increase in the cost of the product.

To reduce the cost of sausages, we have developed a technology for the production of sausages without casing. Sausage-meat was prepared according to the generally accepted scheme - the meat was chopped in pieces of 300-400 g, mixed with salt and sodium nitrite, kept in salting for 7-8 days at a temperature of 0 ...+4° C. After that, the meat was minced in a meat grinder with a grid hole diameter of 3 mm and mixed with other components according to the recipe. The minced meat obtained was rolled out in a 5 mm layer on a sheet of metal covered with a layer of tetrafluoroethylene (Teflon), cut into strips 30 mm wide and 200 mm long.

The cut strips were carefully transferred onto a metal mesh with apertures of 3 to 5 mm and placed in a drying chamber. Sausages were dried for 5...7 days at a temperature of +10...+12° C with an air speed of 0.3 to 0.5 m/s. The dried products were separated from the mesh, inspected and packed. Since sausages are uncoated, group packaging is required.

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