В нашем исследовании был отмечен изолят *E. coli,* выделенный из сливочного масла, у которого была установлена устойчивость к стрептомицину и хлорамфениколу а также изолят, выделенный из охлажденной свинины, у которого установлена устойчивость к 6 антибактериальным препаратам.

Заключение. Проведенным исследованиями установлено, что процент выявлений БГКП при исследовании образцов пищевой продукции составил 1,7%. Среди бактерий группы кишечной палочки чаще всего выявляли *E.coli*, но также обнаруживали бактерии рода *Kluyvera*, *Citrobacter, Klebsiella, Enterobacter*. При определении чувствительности к антибиотикам были выявлены изоляты *E. coli* резистеностные к хлорамфениколу, тетрациклину, стрептомицину, ко-тримаксазолу и канамицину.

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COMPONSITION AND SPECIFIC CHARACTERISTICS OF CHLORELLA ALGAE

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The article provides literary data that green algae - common chlorella (Chlorella vulgaris) has specific components. The content of chlorella is 40-50% proteins, 35% carbohydrates, 5% lipids, and up to 10% vitamins and macro-microelements, that shows its natural activity as a feed additive with high nutritional value. ***Keywords:*** *chlorella, algae, cell, chlorophyll, photosynthesis, protein, carbohydrate, vitamin, macro-microelements.*

СОСТАВ И СПЕЦИФИЧЕСКИЕ СВОЙСТВА ВОДОРОСЛЕЙ ХЛОРЕЛЛЫ

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В статье приведены литературные данные о том, что зеленая водоросль - обыкновенная хлорелла (Chlorella vulgaris) обладает уникальными компонентами. Содержание хлореллы составляет 40-50 % белков, 35 % углеводов, 5 % липидов, до 10 % витаминов и макро-микроэлементов, что показывает её естественную активость как кормовая добавка с высокой пищевой ценностью. ***Ключевые слова:*** *хлорелла, водоросль, клетка, хлорофилл, фотосинтез, белок, углевод, витамин, макро-микроэлементы.*

Chlorella was discovered and classified by the Danish scientist M.U. Beijernik in 1890. The name chlorella comes from the Greek "chloros" - yellow-green, and the Latin ending "ella" - small. Chlorella is considered the longest-liver of our planet, its existence is measured by more than two billion years. Because of its unique cell structure, chlorella has managed to survive most of the flora and fauna of our planet.

Chlorella is a single-celled green algae and belongs to the Chlorophyta division. It has its spherical shape, from 2 to 10 μm. The spherical cell of chlorella has one nucleus and a cup-shaped chromatophore. [3].

Each such cell contains homogeneous protoplasm, a very small nucleus that stains well with hematoxylin, and a ribbon-like or rounded chromatophore with one or rarely with two pyrenoids. Getz-Entz (Geza-Entz) described special contractile vacuoles in chlorella cells, similar to chlamydomonas, but these informations were refuted by later researchers.

Bejerink studied the nutrition of chlorella and determined that in order to obtain the necessary nitrogen, they need not only peptone, but also some kind of carbohydrate (for example, sugar). After that, he added them as pentone-carbohydrate organisms to the physiological group that he established.

The cell walls of chlorococcal algae have the following chemical composition: 24-74% neutral sugars, 1-24% uranilic acids, 2-16% proteins, 0-15% glucosamines. Neutral sugars are represented by two types: rhamnose (galactose and mannose) and glucose. In the shell of this group of algae observed lipid inclusions which are hydrocarbons and these inclusions localized in the outer layer. [1].

The outer shell - a polymeric carotenoid - adsorbs and removes toxins, i.e. it neutralizes the action of toxic substances. In addition, chlorella has a high concentration of nucleic acids. Chloroplasts of chlorella contain chlorophyll-a and chlorophyll-b. For the process of photosynthesis, chlorella requires only water, carbon dioxide, light, and a small amount of minerals for reproduction.

This algae is involved in photosynthesis, a process responsible for cleaning the atmosphere of toxic carbon dioxin and producing large amounts of oxygen. Since chlorella consist of almost 60% protein and able to reproduce it 50 times faster than other protein cereal plants, this algae can serve as valuable protein source.

According to Rakhimov and Yakubov's information (1971), 100 g of total chlorella nitrogen contains (in g of nitrogen): 6.4 - aspartic amino acid; 6.2 - glycine; 7.7 - alanine 7.8 - glutamine amino acid; 3.3 - serine; 2.8- tyrosine; 5.8 - proline; 0.2 - cystine; 5.5 - valine; 15.8 - arginine; 3,3 - histidine; 3.5 - isoleucine; 6.1 - leucine; 10.2 - lysine; 1,4 - methionine; 2.8 - phenylalanine; 2,9 - threonine; 2.1 – tryptophan.

In terms of vitamin richness, chlorella surpasses all vegetable feed and agricultural crops. In 1 g of dry matter mass chlorella contains (in micrograms): carotene - 600; vitamin A - 100; B1 - 18; B2 - 28; B6 - 9; B12 - 0.1; C - 1300; provitamin D - 1000; K - 6; RR - 180; E - up to 350; pantothenic acid - 17; folic acid - up to 485; biotin - 0.1; leucovorin - 22. Also Chlorella contains various macro- and microelements like iron, copper, manganese, zinc, molybdenum, boron, cobalt, silicon and etc. which are necessary for the normal development and functioning of the human body and animals. The nutritional value of chlorella is 2 times higher than soy protein (Clycine max). 1 kg of chlorella's nutritional value is equal to 4-5 kg of soy. By adding 5-7 kg of chlorella to 1 ton of grain, its value increases by 1.5 times.

Many substances contained in chlorella accumulate in its culture media, in other words, in the water where it grows. So, according to the Bulgarian scientist Stanchev P.I., the cell mass contains up to 350, and culture medium up to 310 different substances. These are various carbohydrates, proteins, organic and fatty acids, hydrocarbons, alcohols and esters, carbonyl compounds, vitamins, sterols and other substances with high biological activity that can be successfully used in medicine and agriculture [9].

Chlorella contains a natural antibiotic - chlorellin, which actively destroying pathogenic microflora at concentrations of 1:500,000 and 1:1,000,000, and effective against streptococci, staphylococci, Escherichia coli and, to a lesser extent, the causative agent of tuberculosis. Chlorella synthesizes a conditional, non-exchangeable arachidonic acid which is necessary for the normal development of the reproductive activity of the body and also a natural polysaccharide substance - chlon "A" - antiviral interferon biosynthesis in humans and animals. [5]

According to Asanov R.A. (1971), Bogdanova N.I. (2006), in the process of photosynthesis, chlorella is able to use till 12% of light energy and the dry matter of its cells is very nutritious, it contains till 50% of complete proteins, fatty oils and vitamins B, C, K.

Chlorella is characterized by very high rates of reproduction. Therefore, it has become an object of mass cultivation for use in various directions. Chlorella reproduces only by autospores, usually formed by 4-8 in one cell and released after the rupture of cells wall [8].

Recent days, about 40,000 representatives of green algae have been registered. Japan is currently the world leader in the consumption of green algae chlorella and its use in the treatment of diseases. Because this plant has immune-boosting and anti-cancer properties. In 2009, the annual dry matter production of

chlorella in Japan, Germany and Taiwan was 2,000 tons. Chlorella is resistant to various conditions, for example in suitable conditions, it increases the amount of lipids and starch in the composition and under difficult storage conditions their growth decreases [5].

Chlorella vulgaris is constantly found in the mud of puddles, ponds and in other places. Chlorella vulgaris and its related form - Chlorella infusionum can be cultivated in the laboratory and at home condition and doesn't required special conditions for keeping new strains of chlorella cultures. It can be kept in glassware at room temperature and light till to 10 years. After two or three weeks, the suspension becomes transparent due to the sedimentation of cells and most likely it goes to state of anabiosis [6].

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