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GREENIZATION MULTINUTRIENT FUNCTIONAL-PEPTIDE COMPLEX IN CLINICAL PRACTICE

(methodological recommendations)

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CONTENT

LIST OF ABBREVIATIONS

EAA - essential amino acids

PUFA - polyunsaturated fatty acids

SA - saturated acids

MUA - monounsaturated acids

CVHC - chronic viral hepatitis C

NASH - non-alcoholic steatohepatitis

LPO - lipid peroxidation

AOD - antioxidant defence

MS - metabolic syndrome

INTRODUCTION

Since the second half of the last century, there have been significant negative changes in the diet of the population of most countries due to global contamination of food with man-made impurities, increase of consumption of refined products, reduced content of essential micronutrients in food. Food products have components, such as trans fatty acids, sugar substitutes, odorants, flavouring agents, colorants, and consistency improvement agents that people did not know before that, and the body's enzyme systems are not adapted to these substances. By prolonging the shelf life, improvement of the taste, smell, color of products, xenobiotics cause the destruction of protein and vitamins. Consuming a particular food, modern people cannot be sure that their body will receive all the necessary substances in those combinations created by the nature.

In recent years, when consuming food products, people are increasingly thinking not about their benefits, but about how safe they are for health. When you eat sweets that do not contain sugar, the body does not receive glucose; fats that contain trans fatty acids - the body does not receive the necessary lipids; destroyed by preservative proteins - the body does not get the right amount and quality of amino acids. The diet of modern people is characterized by an imbalance between eating large amounts of food products that contain "pure" calories of fillers, malt, palm oil and other fats, and by deficiency of vitamins, essential minerals, natural fats, antioxidants, essential amino acids (EAA) in semi-artificial food products. Prolonged deficiency of the required components causes changes in metabolism, depletion of internal reserves of protein, calcium, etc., triggers saving mechanisms by reducing the intensity of metabolism, which causes obesity, muscle weakness, osteoporosis, immunodeficiency, apoptosis (self-destruction) of weakened cells, cancer and other diseases.

Since the 50s of the twentieth century, the world is intensively studying the effect of certain nutrients on biochemical, physiological processes in the body, as well as the possibility of their use for prophylactic and therapeutic purposes. The effect on the body of most micro- and ultramicroelements - selenium, zinc,

chromium, vanadium, molybdenum, ubiquinone, lycopene, zeaxanthin, lutein, certain fatty acids, quercetin, proanthocyanidins, resveratrol, herbal sterols, chondroprotectors, etc. Almost 700 food components have been described and studied. A significant number of them are used in medicine. At the same time with the food industry, the market of biologically active supplements and functional food products has been developing, designed to supplement the diet of modern people with deficient components in ordinary food. The use of functional food products, dietary supplements and special products for dietary consumption is particularly common in Japan. The experience of using special products in Japan is more than 50 years and shows that up to 90% of the population consumes them daily, in the US over 20 years - almost 80% of the population, in France and Germany - 60%, in Russia - almost 3%.

Most functional food products, dietary supplements and special products for dietary consumption are concentrates of natural or identical to natural biologically active substances, which are used to enrich the diet with individual substances or their complexes. Most of them contain a limited number of components, mainly a combination of vitamins, minerals, individual amino acids, fatty acids, phospholipids, herbal antioxidants.

Multinutrient functional-peptide complex, which consists of two separate complexes "Greenization Mix" and "Greenization Pro" differs favorably from most existing special products (because it includes natural extracts and extracts of animal and herbal origin, containing all the necessary substances in their natural compounds and ratios).

When using Greenization products, the body simultaneously receives a balanced complex of all nutrients in easily digestible compounds due to a special technology of preparation and processing.

Methodological recommendations are intended for doctors: therapists, gastroenterologists, infectious disease specialists, cardiologists, oncologists, family doctors, as well as for interns, attendees of the faculty of retraining and advanced training.

MECHANISM OF ACTION OF GREENIZATION MULTINUTRIENT FUNCTIONAL-PEPTIDE COMPLEX

Greenization multinutrient complex is created on the basis of the concept of a balanced diet, the theory of functional systems, ideas about the assimilation of biologically active components of food in the most digestible form.

Existing food cooking methods mainly involve the use of high temperatures, accompanied by irreversible denaturation of proteins, destruction or polymerization of lipid components, destruction of a significant amount of vitamins and other undesirable changes. When nutrients enter the human body after traditional methods of processing, their digestibility decreases both in the digestive system and at the level of intracellular metabolism.

When the manufacturer uses low-temperature non-enzymatic processing of raw materials, partial hydrolysis of nucleoprotein, lipoprotein complexes and proteins occurs, which allows to obtain these compounds in the globular state, provided almost complete preservation of their functional properties, although with the loss of tissue specificity. Due to this technology, all nutrients enter the human body in bioavailable forms.

Along with the use of original product processing technology, Greenization includes biologically active complexes of proteins and lipids, vital macro- and microelements: calcium, sodium, potassium, magnesium, selenium, cobalt, molybdenum, iron, copper, zinc, iodine, the sources of which are various types of natural raw materials, including sea cucumber (cucumber), lentils, spirulina, quail egg albumens, etc.

Nutritional value is an integral parameter that reflects all the useful properties of products, including the degree of meeting the physiological needs of people in basic nutrients and energy. The biological value of a protein depends on EAA presence and its balance in protein composition. The amino acid composition of Greenization has been studied at the Institute of Biochemistry of the Academy of Medical Sciences of Ukraine. The data of these studies are shown in Table 1.

The biological value of protein is determined by EAA content, its balance. The results of the analysis showed that the total amount of EAA in the multinutrient complex is higher than in the ideal protein (according to the FAO/WHO scale). Nonessential amino acids that act as precursors during the synthesis of proteins and other biologically active compounds make up 57-60% of the protein. This amino acid composition provides a high biological value of the product, allows you to quickly compensate for the deficiency of amino acids.

Table 1

Amino acid composition of the protein of Greenization complex, mg%

Amino acids	Greenization Mix	Greenization Pro
Essential	**40,99**	**43,59**
Valine	5,31	4,73
Isoleucine	4,79	4,47
Leucine	8,25	8,63
Lysine	5,84	8,61
Methionine	1,15	1,83
Threonine	5,08	5,77
Cystine	1,89	1,39
Tyrosine	3,97	3,65
Phenylalanine	4,71	4,51
Nonessential	**59,01**	**56,43**
Alanine	5,44	5,93
Arginine	5,28	5,93
Aspartic acid	21,70	9,97
Histidine	1,93	3,61
Glutamic acid	12,57	17,83
Proline	2,06	3,15
Serine	5,95	5,15
Glycine	4,06	4,86

Protein is the main structural element of each cell and performs important functions, in particular:

- **Synthetic** - synthesis of tissue proteins, enzymes, hemoglobin, etc.
- **Cell growth, repair and proliferation**
- **Catalytic** - enzymes, including intracellular
- **Regulatory** - hormones
- **Structural** - collagen of blood vessels, skin, bones, teeth, etc.
- **Contractile** - myosin of muscles, uterus, myocardium
- **Transport** - hemoglobin, myoglobin, albumin and other transport proteins
- **Buffer** - ensuring a constant reaction of the plasma environment of the cerebrospinal fluid and intestinal secretions
- **Protective** - immunity
- **Information** - receptor.

High biological value of Greenization is ensured by the presence of all necessary fatty acids, especially omega-3 and omega-6 polyunsaturated fatty acids (PUFA) (Table 2).

Table 2

Composition of fatty acids of lipids in MNFC complex,

% of the amount of fatty acids

Acid code	Greenization Mix	Greenization Pro	Adequate level of consumption
Saturated	23,30	39,52	25
Lauric 12:0	0,242	0,122	
Myristic 14:0	0,831	1,253	
Pentadecanoic 15:0	0,079	0,041	
Palmitic 16:0	15,56	21,62	
Heptadecanoic 17:0	0,787	0,631	
Stearic 18:0	5,809	15,86	
Monounsaturated	28,93	33,97	30
Myristoleic 14:1	0,089	0,155	
Pentadecenic 15:1	0,165	0,075	
Palmitoleic 16:1	8,167	7,279	
Oleic 18:1	20,512	26,470	
Polyunsaturated	43,72	24,13	11
Heptadecadienoic 17:2	0,254	0.032	
Linoleic 18:2	23,530	18,815	
Linolenic 18:3	13,710	2,113	
Arachic 18:4	0,680	0,197	
Eicosapentaenoic 20:3	1,758	0,086	
Arachidonic 20:4	0,680	2,259	
Docosatetraenoic 22:4	0,151	0,205	
Docosapentaenoic 22:5	0,155	0.128	
Docosahexaenoic 22:6	2,809	0,301	
Omega-3 family	18,26	2,50	1
Omega-6 family	37,24	20,92	10

Biological value of PUFA of different categories is due to the fact that they perform important functions as structural blocks of membranes and modulators of various biochemical processes, and are precursors of the synthesis of regulatory mediators: eicosanoids, prostaglandins, prostacyclins, thromboxanes and leukotrienes. The ratio of fatty acid categories is important: saturated (SA), monounsaturated (MUA) and PUFA. Greenization Mix has the ratio of 23:28:43, Greenization Pro - 39:33:24, rational nutrition - 25:30:11. The question of the optimal ratio of certain categories of fatty acids in food lipids is debatable. PUFA content is the most important in terms of biological efficiency of lipids.

The total amount of PUFA in Greenization significantly (2-4 times) exceeds their adequate level recommended for consumption, which indicates the high biological efficiency of Greenization lipids. Fats also have a plastic function because they are part of cell membranes and other cell structures. The central and peripheral nervous system is rich in lipids. PUFAs are part of cell membranes, their most important biological function is the synthesis of tissue hormones - prostaglandins. Their properties and the cell response to various factors depend on PUFA ratio in cell membranes. In the human body, prostaglandins are formed not only in tissues but also in platelets (thromboxanes) and leukocytes (leukotrienes). The biological action of prostaglandins is extremely diverse and depends on the type of PUFA from which they are synthesized.

The source of prostaglandins is omega-6 and omega-3 fatty acids. Both of these categories of fatty acids are essential components of cell membranes, but their pathways of metabolism and action are significantly different. Fatty acids such as linoleic and arachidonic acid are sources of both prostacyclin and thromboxane. Only fatty acids of the omega-3 family with 20 and more carbon atoms shift the balance towards the synthesis of prostacyclin. For example, thromboxane A2 is synthesized from arachidonic acid, which causes platelet aggregation and narrows the lumen of blood vessels, and thromboxane A3 is synthesized from eicosapentaenoic acid, which has no such effect. Leukotriene B4 is a derivative of arachidonic acid, it belongs to

the mediators of inflammation, leukotriene B5, synthesized from eicosapentaenoic acid and it has anti-inflammatory action.

The main mechanisms of action of omega-3 fatty acids

- Regulation of eicosanoid synthesis
- Modification of the fatty acid composition of phospholipids of cell membranes
- Effect on inositol lipid cycle and cell signaling system
- Influence of Ca^{2+} + channels
- Effects on enzymes and cell receptors.

Omega-3 fatty acids exhibit anti-inflammatory properties in case of inflammatory processes of various etiologies due to their antagonistic properties to arachidonic acid and its metabolites. Omega-3 fatty acids reduce the synthesis of proinflammatory leukotriene B4, change the activity of protein kinase C, affect the response of T- and B-lymphocytes, lymphokine secretion, cell proliferation. The recommended dose of omega-3 fatty acids for healthy people is at least 1,1–1,4 g a day, of them 1,1 g - linolenic and 0,3-0,4 eicosapentaenoic and docosahexaenoic acids. Evidence suggests that Greenization contains omega-3 fatty acids in therapeutic doses.

Hypothetical formula of ideal dietary fat has been developed, in which, in addition to the content of fatty acids, atherogenic properties, degree of defence against lipid peroxidation and concentration of biologically active substances are taken into account. The composition of fatty acids in Greenization is characterized by a high content of PUFAs, including omega-3, which ensures a high antiatherogenic potential of the product. PUFAs in Greenization are well protected from free radical oxidation by vitamins, antioxidant minerals and a large number of herbal antioxidants. This composition of Greenization provides increase of biological activity of fatty acids and a more evident regulatory effect.

Vitamins are essential factors in nutrition, the mandatory presence of which in food is necessary to maintain normal life, as well as ensure the growth and recovery of the body. The importance of their presence in food is also due to the fact that these

substances are precursors of various coenzymes that regulate and participate in metabolic processes.

Table 3

Composition of vitamins in Greenization complex, mg/100 g

Vitamins	**Greenization Mix**	**Greenization Pro**
Vitamin B_1 (thiamine)	3,30±0.18	5,95 ± 0,18
Vitamin B_2 (riboflavin)	1,30 ± 0,1	0,68 ± 0,04
Vitamin B_5 (pantothenic acid)	6,25 ± 0,40	4,00 ± 0,20
Vitamin B_6 (pyridoxine)	trace amount	0,13 ± 0,01
Vitamin B_9 (folic acid)	0,36 ± 0,01	0,19 ± 0,02
Vitamin B_{12} (cyanocobalamin)	0,07 ± 0,01	0,06 ± 0,005
Vitamin C (ascorbic acid)	24,60 ± 0,6	12,80 ± 0,50
Vitamin E (tocopherol)	24,00 ± 0,005	17,50 ± 0,02
Vitamin A (retinol)	1,76 ± 0,03	0,17 ± 0,02
Carotenoids	45,96 ± 0,09	0,50 ± 0,10
Ubiquinone Q_{10}	1,45± 0,4	7,37 ± 0,86
Ubiquinone Q_9	0,91± 0,16	1,24 ± 0,23
Vitamin PP	14,40± 0,05	11,2±0,30

The presence of vitamins B_2, C, PP, carotenoids in Greenization Mix, and in a fairly high concentration - vitamins E and A, provides manifestation of mainly antioxidant and anti-radical biological action. Greenization Pro contains a fairly high concentration of vitamins B_1, B_2, B_9, PP, E, Q_{10} and carotenoids. Given the current knowledge about the mechanisms of action and biological role of these vitamins, we can explain the neurotropic effect, non-specific increase in immunity, activation of bioenergetic metabolism, redox processes, increase in the stabilization of biomembranes.

Greenization contains all the necessary macro-, micro- and ultramicroelements, which are mandatory components of animal and herbal raw materials from which Greenization is produced. In order to increase the functional activity of Greenization, some essential macro- and microelements have been included, in particular calcium, magnesium, zinc, manganese, silicon, vanadium, which are contained in the product in chelated form.

Deficiency of calcium, manganese, silicon is the cause of osteoporosis. In modern refined products, the amount of these minerals is low. The population, including children, do not consume enough dairy products, some people, due to the spread of intestinal diseases, do not tolerate them. Excessive consumption of sweets, sweet drinks, coffee causes an increase in the loss of minerals with the urine excretion, while with a high carbohydrate diet the body's needs for essential minerals are increased.

Manganese performs an important antioxidant function. It is part of manganese-dependent superoxide dismutase, which is the only antioxidant localized directly in the mitochondria, where intense oxidation and ATP synthesis take place. Manganese-dependent superoxide dismutase protects mitochondria from oxidative stress.

Magnesium participates in the functioning of almost 300 enzymes that carry out: oxidation of fatty acids, glucose metabolism, ATP synthesis, it activates amino acids and, thus, participates in the building of protein (growth factor). Magnesium reduces muscle weakness due to the ability to activate cholinesterase, reduces the

likelihood of seizures, it is a cofactor of B vitamins. Magnesium in the brain is involved in the formation of catalytic centers, stabilization of regulatory sites, synthesis of neurospecific proteins, degradation of neurotransmitters - norepinephrine, acetylcholine, synthesis of all neuropeptides in the brain. In the event of magnesium deficiency, attention and memory are reduced. Magnesium protects the nervous system from the negative effects of free radicals, toxic substances and drugs. It reduces neurotoxicity and accumulation of beryllium, nickel, lead, aluminum in the nervous tissue. Magnesium is a natural insulator on the path of the impulse, it controls the operation of the voltage-dependent ion channel for calcium, sodium, potassium, prevents cardiac arrhythmias, optimizes osmolar processes in nervous and other tissues, preventing edema. Magnesium reduces the risk of sudden death.

Zinc is called the main mineral of the immune system. Zinc deficiency causes involution of the thymus, decrease in the number of thymocytes and suppression of their function, decrease in the level of thymalin in the blood serum (zinc is required for its activation); reduce in the number of peripheral T-lymphocytes, impaired proliferation of T-lymphocytes under the influence of phytohemagglutinin, reduce in their cytotoxic activity, the function of helper T-lymphocytes, activity of EC cells; functions of macrophages (phagocytosis and midcell killing), neutrophilic granulocytes (phagocytosis, chemotaxis), antibody production. Zinc is part of the enzyme - alcohol dehydrogenase and insulin, it is involved in the metabolism of neurotransmitters and the activity of certain receptors in the central nervous system, it promotes normal fetal development, it has a beneficial effect on the skin. Zinc deficiency increases the risk of male infertility and apoptosis of weakened cells.

Selenium - an important component of enzymes of the glutathione system of antioxidant defence, it is part of 200 enzymes involved in various biochemical reactions, it exhibits immunotropic, antiatherogenic and anticancer properties, improves the functional state of muscles, especially the myocardium, participates in the synthesis of thyroid hormones. Selenium deficiency in the soil is the cause of congestive heart failure in endemic areas.

Iodine participates in the synthesis of thyroid hormones. In the event of its deficiency an endemic goiter with hypothyroidism, arterial hypertension may occur. Iodine deficiency in pregnant women can cause stunted growth, impaired intelligence and blindness with deafness in newborns, it may cause spastic paralysis, in adults - it causes autoimmune thyroiditis and infertility.

Vanadium - the most studied effect is the effect on glucose metabolism. It improves the transport of glucose into cells, its action does not depend on the presence of insulin, which is important in patients with non-insulin dependent diabetes mellitus. An important effect of vanadium is its ability to block the activity of the leading enzyme of cholesterol synthesis - hydroxymethyl-glutaryl-CoA reductase, i.e., vanadium, like statins, it inhibits cholesterol synthesis and lowers its level in the blood. Unlike statins, it does not cause adverse reactions. Vanadium also helps to lower blood pressure.

Bioflavonoids, phytosterols and phytostanols, which are part of Greenization, have a positive effect on the body. Biologically active substances of plants show anti-inflammatory, antispasmodic, antimicrobial, antioxidant, immunomodulatory and other properties. Biologically active substances of phyto-mediators in Greenization reinforce each other and provide a lasting positive effect with long-term use. The main mechanism of action of phenolic compounds of plants, which is associated with biological effects, is their ability to take part in reversible redox reactions in the body. The antioxidant effect of phenolic compounds includes the mechanisms as follows:

- Antiradical (interception of free radicals)
- Antilipoperoxide (interception of lipid peroxidation radicals)
- Antioxygen (AFK seeds)
- Deactivation of peroxynitrite
- Inhibition of xanthine oxidase and other radical-producing enzymes
- Chelation of metals.

In plants, bioflavonoids are always contained along with ascorbic acid, in the body they contribute to the accumulation of ascorbic acid in leukocytes, adrenal glands and other organs, they contribute to more economical consumption in the event of ascorbic acid deficiency in the diet. Once in the body, phenolic compounds of plants activate the detoxification processes in the liver. Flavonoids are stronger than tocopherols and carotenoids in terms of antioxidant effect.

Phytosterols and phytostanols of plants are called analogues of animal cholesterol. They are not digested in the intestine, however, they are antagonistic to food cholesterol and endogenous cholesterol, which is excreted with bile, reducing its absorption and displacing it from intestinal cells. Due to these properties, phytosterols and phytostanols have a hypocholesterolemic effect.

The original technology of processing environmentally friendly raw materials of marine and terrestrial origin provides the vast majority of all nutrients in bioavailable colloidal, water-soluble and microencapsulated forms. Due to the high digestibility of all nutrients in comparison with that of food products obtained by traditional technologies, conditions are created for the correction of metabolic disorders, immunoprotective and antioxidant action, which is confirmed by the results of study of Greenization multinutrient functional-peptide complex in leading research institutes, in particular:

- Bogomolets National Medical University of the Ministry of Health of Ukraine
  - at the Department for infectious diseases
  - at the Department for clinical pharmacology
- P.L. Shupik National Medical Academy of Postgraduate Education of the Ministry of Health of Ukraine
  - at the central research laboratory
  - at the Department for gastroenterology, nutrition and endoscopy
  - at the Department for oncology

- Shalimov National Institute of Surgery and Transplantology of the Academy of Medical Sciences of Ukraine
- Academician A.P. Romodanov Institute of Neurosurgery of the Academy of Medical Sciences of Ukraine
- F.G. Yanovskyi National Institute of Tuberculosis and Pulmonology of the Academy of Medical Sciences of Ukraine
- Kyiv Municipal Children's Gastroenterological Center
- M. Gorky Donetsk State Medical University
- I.I. Mechnikov Ukrainian Research Anti-Plague Institute
- Clinical Department of the Institute of the Nation's Health
- Taras Shevchenko National University of Kyiv
- O.V. Palladin Institute of Biochemistry of the National Academy of Sciences of Ukraine
- Institute of Technical Thermophysics of the National Academy of Sciences of Ukraine

USE OF GREENIZATION MULTINUTRIENT FUNCTIONAL-PEPTIDE COMPLEX IN THERAPEUTIC NUTRITION OF PATIENTS WITH HEPATITIS

Diet therapy is a permanent and safe method of treating liver diseases. By selecting the chemical composition of the diet depending on the patient's needs, particulars of the disease and prescribing products that have high biological and therapeutic effects, you can stabilize the process, prevent disease progression in many patients with hepatic steatosis, steatohepatitis, toxic, viral hepatitis, in the early stages of liver cirrhosis. Because Greenization multinutrient functional-peptide complex contains a variety of biologically active substances that can positively affect the liver and the body as a whole, it should be recommended to patients with pathology of the hepatobiliary system at different stages of the disease.

Greenization multinutrient functional-peptide complex in nutrition and in complex therapy of patients with viral hepatitis.

In chronic viral hepatitis Greenization is used in cases of combined course of chronic viral liver hepatitis and steatosis, steatohepatitis, as well as in standard antiviral therapy of chronic hepatitis C with recombinant interferon in combination with ribavirin.

The use of Greenization in viral hepatitis allows to create favorable conditions for the immune system, the condition of which determines the course of the disease and its consequences. During the interaction of virus and macroorganism in the human body there are various immune reactions aimed, on the one hand, to eliminate the pathogen, on the other hand, they themselves cause inflammatory processes in the body, suppressing apoptosis reactions, leading to chronic forms of the disease. According to clinical studies, the use of Greenization MNFC in chronic viral hepatitis activates apoptosis reactions due to increase of CD95 receptors. This process is accompanied by an improvement in the functional state of the liver, which is clinically manifested by improved well-being, normalization or reduction of the

activity of liver enzymes, etc. Deficiency of ***even one essential nutrient may cause a decrease in the body's immune defenses***.

Sufficient amino acids are important for the repair of immune system cells, interferon synthesis and other immune defense factors. Decreased consumption of complete protein is one of the causes of secondary immunodeficiency. The important role of ascorbic acid for the immune system is evidenced by the fact that its concentration ***in neutrophilic granulocytes is 150 times higher*** than in blood plasma. An important role of ***retinol and carotenoids*** for the immune system, which support cell differentiation, increase DNA synthesis, inhibit proliferation, which increases the body's resistance to infection. Carotenoids are protectors of division of immunocompetent cells, they normalize the synthesis of immunoglobulins, including secretory immunoglobulin A, they are immunoprotectors of some factors of specific and nonspecific defence, activators of lysosomes in phagocytes. For the normal functioning of immunocompetent organs, it is important to provide the body with ***folic acid***. Reduced folate intake causes a decrease in the level of DNA methylation in lymphocytes. Additional use of folic acid helps to restore damaged DNA structures. The evident ability to immunomotropic action is found in ***selenium and zinc***. ***Selenium deficiency*** in the body increases the risk of viral infections, including new modifications of viruses. ***Zinc deficiency*** causes involution of the thymus, decrease in the number of thymocytes and suppression of their function, decrease in the level of thymulin in the blood serum. Zinc is an immunomodulator that prevents the formation of autoimmune reactions, which is important for patients with viral hepatitis who are receiving antiviral therapy. Administration of interferon increases the risk of autoimmune reactions and Overlap syndrome (combination of viral hepatitis with autoimmune one). Nutrients that use immune cells take them from the blood, their level is maintained by cells coming from outside.

Since chronic viral hepatitis is the disease that is accompanied by s long-term persistence of the virus, to maintain an adequate state of the immune system requires a constant supply of nutrients, almost throughout the whole life. No synthesized immunostimulant is able to "feed" immune cells and provide material for the

formation of immune factors. Greenization contains the whole complex of EAA, fatty acids, vitamins and minerals to restore the cells of the immune system and a complex of antioxidants to protect it from free radicals. In addition, Greenization also contains transfer factors that have a decisive influence on the adequacy of the immune system. Transfer factors are contained in significant amounts in eggs, however, during heat treatment they are destroyed.

Studies have shown that Greenization prevents some complications of antiviral therapy, reduces the manifestations of extracellular lesions in viral hepatitis. Thrombocytopenia is one of the extracellular manifestations of chronic viral hepatitis C (CVHC), which limits or requires discontinuation of antiviral therapy. The causes of thrombocytopenia in CVHC are not clear. It was found that hepatitis C virus RNA is often found in the platelets of patients with CVHC, antibodies to platelets are found in 66% of patients with CVHC. In the human body, platelets perform important functions: they participate in the processes of homeostasis, blood clotting, regulation of local inflammatory reactions and immunity, the release of vasoconstrictors. The main regulator of thrombocytopoiesis is thrombopoietin - a polypeptide that is synthesized in the largest amount by the liver. The causes of thrombocytopenia in patients with CVHC are as follows: hypersplenism, decreased thrombopoietin synthesis, immune-mediated platelet clearance, the effect of the virus on platelet progenitor cells - megakaryocytes due to replication in these cells.

Drug thrombocytopenia may occur with the use of various medicinal products, in particular interferon. The main mechanism of pathogenesis of drug-induced thrombocytopenia is associated with the destruction of platelets by complement, which is activated during the reaction of the medicinal product with related antibodies. After withdrawal of medicinal product, the content of platelets in the blood normalizes. The formation of antibodies to platelets in patients with CVHC is possible due to the breach of the membrane glycoproteins. *It was established that the use of Greenization reduced the expectancy of thrombocytopenia in patients with CVHC, its severity, frequency during antiviral therapy.*

Algorithm for the use of Green Mix and Green Pro in patients with CVHC during antiviral therapy

Option 1. Patients with no changes in the number of platelets during antiviral therapy are recommended prophylactic doses of Greenization. With a moderate decrease in the number of platelets, the dose of Greenization is increase of.

Option 2. Patients with a slight decrease in the number of platelets in the blood (at least $100x10^9$ in 1l) during antiviral therapy are recommended average doses of Greenization. In the absence of a tendency to reduce the number of platelets, the dose is reduced to prophylactic.

Option 3. Patients with a significant decrease in the number of platelets in the blood (70 - $90x10^9$ in 1l) prior antiviral therapy for 14 days are recommended to use high doses of Greenization, to increase the platelet count to $100x10^9$ in 1 l and more. For the entire period of antiviral therapy it is recommended to prescribe a medium dose of Greenization. If the platelet count stabilizes, it is possible to switch to prophylactic doses.

Option 4. Patients whose platelet count has decreased to $80x10^9$ in 1l or less, without canceling antiviral therapy, are prescribed Greenization in high doses, with an increase in platelet count - the continuation of treatment with the use of Greenization in high doses. With a stable allowable number of platelets (in the range of 100–$150x10^9$ in 1l), the dose of Greenization is reduced to medium, with a tendency to decrease the number of platelets - the dose is increase of.

The positive effect of Greenization on the platelet count is due to the immunomodulatory, cytoprotective, antioxidant and apoptosis modulatory effects of the biologically active components of the multinutrient complex.

Use of Greenization multinutrient functional-peptide complex as a therapeutic nutrition in patients with steatohepatitis

There are two main forms of steatohepatitis: alcoholic and non-alcoholic. According to morphological studies, steatohepatitis is an excessive accumulation of triglycerides in the liver, which is accompanied by activation of free radical oxidation, damage to cell membranes and other organelles of hepatocytes, inflammation, stimulation of fibrosis up to liver cirrhosis. In recent years, there has been an increase in the incidence of nonalcoholic steatohepatitis (NASH).

The causes of NASH are considered obesity, diabetes, dyslipidemia, rapid weight loss, lack of protein in the diet, congenital defects of β-oxidation of fatty acids, α-antitrypsin deficiency, etc. NASH can be both an independent disease and a manifestation of various diseases. As a rule, the course of the disease is hidden, there is an increase in the activity of hepatic transaminases, hepatomegaly. In many patients, liver dysfunction is detected by accident during examination for other diseases. The course of the disease is usually long-term, with minimal or moderate activity of inflammation in the liver, however, without treatment, the transition to liver cirrhosis is observed.

A mandatory component of the treatment of patients with steatohepatitis is the normalization of fatty acid oxidation in mitochondria, improved transport of triglycerides from the liver, reduction of fatty liver infiltration and lipid peroxidation (LPO). Excessive amount of fat in the liver is a factor in the intensification of LPO and depletion of the antioxidant defense system (AOD). In recent years, hyperlipoperoxidation due to an imbalance between free radical oxidation and the activity of protective anti-radical systems is considered a universal mechanism of damage in many pathological processes. Free radicals cause the destruction of lipid, protein components of membranes, receptors, they cause disruption of the structural and spatial organization of nucleic acids. Greenization multinutrient functional-peptide complex contains a whole set of biologically active nutrients that affect all parts of the pathogenesis of steatohepatitis (Table 4).

Table 4

The main nutrients of Greenization and their effect in steatohepatitis

Nutrients	Action
Amino acids	Synthesis of transport proteins, removal of triglycerides from the liver, enhanced recovery
Choline, lecithin, antioxidants: tocopherol, ascorbic acid, selenium	Restoration of cell membranes, LPO suppression, AOD system activation
L-carnitine, coenzyme Q10	Improvement of transport and β - oxidation of fatty acids
Lecithin, choline, inositol, methionine, cyanocobalamin, folic acid	Lipotropic action
Arginine, magnesium, niacin	Improvement of microcirculation, stimulation of energy processes
Omega-3 fatty acids	Reduction of severity of inflammatory reaction
Bioflavonoids	LPO suppression, AOD system activation

Algorithm for the use of Green Mix and Green Pro in patients with steatohepatitis

Option 1. In the event of steatohepatitis with minimal activity, it is recommended to use Greenization in medium doses for 8 weeks, followed by reduction of the dose to the minimum and using it for another 6-8 weeks.

Option 2. In the event of steatohepatitis, combined with metabolic syndrome*, diabetes mellitus, atherogenic dyslipidemia, it is recommended to use Greenization in medium doses for 12 weeks, followed by reduction of the dose to a minimum and use for another 1-2 months.

Option 3. In the event of steatohepatitis with underlying alcoholism, it is recommended to use Greenization in medium doses for 8-10 weeks, followed by reduction of the dose to a minimum and using it for another 8-10 weeks. If the patient

does not want to give up alcohol, it is recommended to constantly use Greenization in small doses.

*With a significant increase in body mass index and if body weight exceeds 80 kg, it is recommended to use Greenization in high doses.

Due to the high degree of safety, the use of Greenization multinutrient functional-peptide complex can be recommended in the complex therapy of patients with acute and chronic hepatitis and liver cirrhosis of various etiologies to provide nutritional support, improve energy processes, activate antioxidant defense system, regeneration processes of liver and other organs and systems.

USE OF GREENIZATION MULTINUTRIENT FUNCTIONAL-PEPTIDE COMPLEX IN DIETS OF DIETARY NUTRITION OF PATIENTS WITH METABOLIC SYNDROME

In recent years, there has been a significant increase in the incidence of nutritional-dependent diseases, among which the metabolic syndrome (MS) holds the leading place. According to modern understanding, MS includes a combination of risk factors for the occurrence and progression of cardiovascular disease, including obesity, impaired glucose tolerance, dyslipidemia, pro-inflammatory and prothrombotic conditions. *Depending on the presence of MS components, patients are divided into two groups*:

with complete MS - a combination of visceral obesity (waist circumference in men over 94 cm, in women - 80 cm), insulin resistance, hyperglycemia (fasting blood glucose over 5.6 mmol/l), hypertension (blood pressure 140/90 mm Hg and above), atherogenic dyslipidemia (blood triglycerides >1,7 mmol/l, cholesterol (more than 5,2 mmol\l) of high-density lipoproteins 1,03 mmol/l or less - in women, 1,39 mmol/l and less - in men).

with incomplete MS, which includes visceral obesity and 2 of the 5 marked conditions.

Analysis of conditions and diseases included in the concept of MS shows that the lifestyle has a significant impact on their occurrence, in particular, hypodynamics with underlying stress and excessive malnutrition. Based on the analysis of a significant number of scientific studies, the contribution of each nutrient to the formation of MS is estimated. Occurrence of insulin resistance, hyperglycemia and obesity are associated with excessive carbohydrate intake. With food a human receives simple and complex carbohydrates, but from the intestine into the liver a human receives three most important monosaccharides - glucose, fructose and galactose. The blood contains the largest amount of glucose (almost 90%), so it plays a leading role in the development of diabetes, disorder of metabolism of lipids and other substances. The negative effects of glucose include hyperglycemia,

hyperinsulinemia, and increase of cholesterol levels. When rich in carbohydrates food is abused, in order to maintain normal blood glucose levels, the pancreas increases insulin secretion. Excessive intake of glucose with food activates the pentose phosphate pathway of its oxidation with the formation of fatty acids. One of the important compounds formed during pentose phosphate glycolysis of glucose is acetyl-CoA, which is oxidized in mitochondria. The intensity of acetyl-CoA oxidation in mitochondria depends on the presence of thiamine, lipoic acid, nicotinamide, riboflavin, pantothenate. Acetyl-CoA is also used for the synthesis of lipids, ketone bodies, acetylcholine. Excess carbohydrates and insulin stimulate the conversion of acetyl-CoA to lipids. Pentose phosphate conversion of glucose also occurs in the liver, activation of this pathway of glucose conversion leads to fatty infiltration of the liver, myocardium, muscles. In the event of increase of blood glucose level a glycosylation of proteins occurs, that is, addition of glucose to their polypeptide chain. The first cell structure affected by glucose is the cell membrane. In addition to enhanced glycosylation, glucose causes the activation of LPO processes, which is a universal factor in tissue damage and a number of lesions, including autoimmune lesions.

Treatment of patients with MS includes lifestyle changes, weight correction, normalization of carbohydrate and lipid metabolism, lowering blood pressure. The basis of treatment of patients is a diet with restriction of carbohydrates, fats and increase of consumption of essential nutrients that affect the pathogenetic mechanisms of MS. These nutrients (Table 5) include amino acids, vitamins, minerals.

Table 5

Greenization micronutrients and mechanism of their influence in case of MS

Nutrient	Mechanism of action
Vitamin C (ascorbic acid)	• Lowering of glycosylation of proteins • Reduction of microalbuminuria • Blocking aldose reductase, reduction of conversion of glucose to sorbitol
Vitamin E (tocopherol)	• Increase of tissue sensitivity to insulin, improvement of glucose transport to tissues • Lowering of glycosylation of proteins • Reduction of diacylglycerol content, reduction of severity of microangiopathy
Vitamin B_1 (thiamine)	• Cofactor of oxidative decarboxylation of glucose, improvement of its absorption by cells, reduction of accumulation of intermediate metabolites • Increase of tissue sensitivity to insulin, improvement of glucose transport to tissues • Prevention of glycosylation, protection of endothelium from hyperglycemic damage • Prevention of diabetic polyneuropathy
Vitamin B_2 (riboflavin)	• Hypoglycemic action • Reduction of insulin resistance • Reduction of severity of neuropathy • Increase of resistance to hypoxia
Vitamin PP (niacin)	• Regulation of cellular respiration • Improvement of microcirculation • Improvement of function of the nervous system
Vitamin B_5 (pantothenic acid)	• Inhibition of low-density lipoprotein synthesis in the liver

Vitamin B_6 (pyridoxine)	• Activation of glutathione synthesis and SH-group of proteins • Improvement of function of the nervous system
Vitamin B_{12} (cyanocobalamin) and folic acid	• Reduction of hyperhomocysteinemia (prevention of vascular complications) • Lipotropic action, reduction of hepatic steatosis • Reduction of severity of diabetic neuropathy
Inositol	• Restoration of myoinositol reserves of neurons • Increasing the physiological action of insulin • Reduction of hepatic steatosis
Choline	• Improvement of cell membranes • Synthesis of high density lipoproteins • Improvement of function of the nervous system • Reduction of hepatic steatosis
Omega-3 fatty acids	• Improvement of the composition of fatty acids in cell membranes, glucose transport • Improvement of metabolism of nervous tissue • Normalization of lipid metabolism • Reduction of platelet aggregation • Improvement of microcirculation due to changes in the balance of prostaglandins and thromboxanes
L-carnitine	• Increase of glucose uptake • Participation in beta-oxidation of fatty acids in mitochondria • Transport of fatty acids through the mitochondrial membrane • Increase of ATP synthesis • Antioxidant action
Coenzyme Q10	• Participation in energy production in mitochondria • Improvement of metabolic processes
Taurine	• Restoration of tissue sensitivity to insulin • Antioxidant action

	• Cardioprotective effect, normalization of blood pressure • Preservation of potassium in cells, anti-edematous effect
Arginine	• Nitric oxide synthesis, improvement of endothelial function • Lowering of blood pressure
Chrome	• Increase of sensitivity of insulin receptors • Hypolipidemic action
Zinc	• Integral part of insulin molecule • Restoration of tissue sensitivity to insulin
Selenium	• Prevention of vascular damage • Improvement of myocardial function • Antioxidant - involved in the synthesis of glutathione
Magnesium	• Normalization of vascular tone • Improvement of energy processes • Prevention of stroke and arrhythmia
Vanadium	• Hypocholesterolemic action • Lowering of blood pressure • Reduction of insulin resistance
Bioflavonoids	• Antioxidant protection of vascular endothelium

The diet supplemented by the use of Greenization multinutrient functional-peptide complex allows you to easily eliminate the deficiency of substances important for metabolism. The use of Greenization has a number of significant advantages over the consumption of certain vitamins, minerals, amino acids.

Algorithm of lifestyle changes and nutrition of patients with MS

1st stage: formation of healthy eating habits by limiting the energy value of the diet by 400-500 kcal by restricting consumption of carbohydrates (sweets, products made of white flour, refined groats) and fats (high-fat products, free fat), gradual increase

in physical activity (walking for 30-40 minutes a day). Use of Greenization in medium doses for 8-12 weeks.

2nd stage: with a decrease in body weight by 5%, adaptation to a balanced diet and a more active lifestyle, according to the indications, it is recommended to reduce the energy value of the diet by 600-700 kcal by restricting consumption of carbohydrates (sweets, products made of white flour, refined groats) and fats (high-fat products, free fat), increase in physical activity (fast walking for 30-40 minutes a day, other types of exercises). Use of Greenization in prophylactic doses for 4-6 months.

Performance criteria:

- weight loss by 7-10% during 6-8 months, maintenance of lost body weight (permissible fluctuations 1-2 kg during a year)
- reduction of waist volume by 4−5 cm
- normalization of blood glucose and blood lipid levels, lowering of blood pressure

USE OF GREENIZATION MULTINUTRIENT FUNCTIONAL-PEPTIDE COMPLEX IN THERAPEUTIC NUTRITION IN CASE OF CHRONIC PANCREATITIS

Chronic pancreatitis is one of the most common diseases of the digestive system. In recent years, some features of the epidemiology of this disease have been found: an increase in the incidence of primary chronic pancreatitis with frequent exacerbations, a high frequency of combined diseases, drug resistance. The main reasons for this situation are considered to be poor nutrition, nutritional deficiencies in basic nutrients, alcohol abuse, improper treatment, psychological factors, stress, declining living standards, other concomitant chronic diseases, etc. The medical and social significance of chronic pancreatitis is also due to the fact that in recent years the disease is diagnosed mainly in patients of working age, even in children and adolescents.

Chronic pancreatitis is a polyetiological disease, however, the main etiological factors are alcohol abuse and pathology of the biliary system.

Treatment of chronic pancreatitis is difficult, despite the development of modern medical technology. A significant number of patients have complications that lead to deterioration of quality of life or disability.

Chronic pancreatitis is often associated with obesity, which is now considered a global epidemic of non-infectious disease. Obesity can provoke various diseases of the digestive system, including chronic pancreatitis. Inflammation of the pancreas occurs with underlying fatty degeneration of the body, the course of pancreatitis becomes more severe, the risk of complications increases.

Greenization multinutrient functional-peptide complex is a pathogenetically well-founded product, which should be included in the treatment of patients with chronic pancreatitis with underlying obesity. This is justified by the following arguments:

- achieving maximum compliance of the composition, quality and energy value of nutrition with clinical and pathogenetic features of the disease, taking into account the most disturbed parts of the metabolism;
- improvement of assimilation of nutrients, which is important in the presence of insufficiency of exocrine function of the pancreas;
- partial hydrolysis of nutrients, provided that their functional properties are preserved;
- increase of digestibility of components;
- presence of complexes of lipotropic components;
- ability to stimulate the regeneration of acinar cells of the pancreas;
- restoration of optimal body weight and correction of disorders of the blood lipid profile;
- ability of Greenization multinutrient functional-peptide complex to correct the trophological and vitamin deficiency that is common to chronic pancreatitis.

Algorithm for use of Green Mix and Green Pro in patients with chronic pancreatitis with underlying obesity

Option 1. In case of chronic pancreatitis at the acute stage, it is recommended to use Greenization in medium doses for 3 weeks, followed by reduction of the dose to a minimum and use for another 4-6 weeks in combination with enzyme preparations (creon).

Option 2. In case of chronic pancreatitis in remission, it is recommended to prescribe Greenization for severe and moderate insufficiency of exocrine function of the pancreas in medium doses for 12-16 weeks, followed by reduction of the dose to a minimum and use for another 1-2 months.

Option 3. In case of mild insufficiency of exocrine function of the pancreas, it is recommended to use Greenization in medium doses for 6-8 weeks, followed by reduction of the dose to a minimum and use for another 3-4 weeks.

Due to the high degree of safety, the use of Greenization multinutrient functional-peptide complex can be recommended in the treatment of patients with

chronic pancreatitis and biliary and alcoholic etiology, in order to provide nutritional support, improve energy processes, activate antioxidant protection system and pancreas regeneration processes.

Performance criteria:

- reduction of the severity of pain and dyspeptic syndromes, asthenia;
- normalization of the activity of pancreatic enzymes in the blood and urine;
- improvement of the results of ultrasound and computed tomography of the pancreas;
- weight loss of 7−10% within 6−8 months;
- reduction of waist volume by 4−5 cm;
- improvement of blood lipid profile.

Advantages of Greenization in comparison with existing metabolic compounds

***Natural origin*:** most of the existing metabolic compounds are synthesized or isolated and presented in the form of monopreparations

No effect on the absorption and metabolism of nutrients in the diet: absorption of food nutrients depends on their ratio in the diet. The use of a single amino acid, such as arginine or taurine in therapeutic doses (EAA) impairs the absorption of other amino acids.

***Simplicity and safety of dosing*:** vitamins and minerals in composition of Greenization are represented by natural animal and herbal complexes present in the human diet throughout the period of its evolution. People do not consume vitamins A, E, omega-3 fatty acids separately, but as a solid fat complex, which is contained in natural proportions in all lipid substances (today almost 700 food components are discovered, of which more than 600 are carotenoids alone). Moreover, they enter the body along with amino acids, minerals, bioflavonoids and other substances.

COMPOSITION, PRODUCT FORM, PACKAGING OF GREENIZATION MULTINUTRIENT FUNCTIONAL-PEPTIDE COMPLEX

Composition of "Greenization Mix"

- extract of active substances of natural koumiss (mare's milk)
- spirulina, kelp, cucumaria
- omega complex of marine fish fats
- quail eggs powder
- oils of sea buckthorn, flaxseed, wheat germ, walnut, cedar, grape seed
- aqueous extracts: thyme, pepper fruits, lovage roots, horsetail, nettle leaves, plantain leaves, parsley leaves and roots, aloe stalks, onion, garlic, eleutherococcus root, flax seeds, milk thistle, burdock root, hop cones, buckthorn bark
- vitamins: B_1, B_2, B_6, B_{12}, D_3, K_3
- mussel complex
- grape seed extract
- stevia, cherry syrup.

Composition of "Greenization Pro"

- complex protein-peptide complex of animal origin
- quail egg powder
- artichoke powder, Jerusalem artichoke powder
- lecithin, lactulose
- seeds of milk thistle, spirulina, lentils
- ascorbic acid.

Product form and packaging of Greenization multinutrient functional-peptide complex

Product form

"Greenization Mix" - 100 ml bottle.

"Greenization Pro" - 400 mg bottle containing 70 capsules.

"Greenization Pro" - 50 g bottle (powder form).

Packaging

Greenization No.2: "Greenization Mix" 100 ml bottle and "Greenization Pro" - 400 mg bottle containing 70 capsules.

Greenization No.4: "Greenization Mix" - two 100 ml bottles and "Greenization Pro" - two 400 mg bottles containing 70 capsules.

Greenization No.20: "Greenization Mix" - ten 100 ml bottles and "Greenization Pro" - ten 50 g bottles (powder form).

DOSES AND METHOD OF ADMINISTRATION OF GREENIZATION MULTINUTRIENT FUNCTIONAL-PEPTIDE COMPLEX

Doses and duration of use of "Greenization Mix" and "Greenization Pro" depend on the purpose, nosology, body weight, sex and age.

Minimum dose

For prophylactic purposes, dietary correction and immune boosting

Green Mix - 5 to 10 ml a day,

Green Pro - 3-4 to 7 capsules a day or 2,5 to 5 g of powder a day.

Duration of use is unlimited.

Average dose

For treatment of chronic diseases and metabolic correction:

Green Mix - 15 ml a day,

Green Pro - 10 capsules a day or 7 g of powder a day.

Duration of use 1-6 months.

High dose

(Green Pro powder form is usually used)

As a therapeutic food for severe infections, exhaustion, burns, injuries and other serious conditions, as well as for radiation therapy, chemotherapy: Green Mix - 25 to 33 ml, Green Pro - 12 to 16 g a day.

In severe cases, the dose of Green Mix can be increased up to 50 ml a day, Green Pro - up to 25 g a day. Duration of use is 1-2 months with subsequent dose reduction on 1-2 months.

With significant depletion, high activity of the inflammatory process in the liver, severe intoxication during chemotherapy, the dose of Green Mix can be increased up to 100 ml a day, Green Pro - up to 50 g a day (i.e., almost up to the body's daily need for protein).

Rules of use

To achieve the maximum therapeutic effect when taking Greenization multinutrient functional-peptide complex it is recommended to keep the following requirements:

Daily concomitant use of Green Mix and Green Pro, i.e. simultaneous ending of the contents of both bottles of the product (powder and emulsion or capsules and emulsions);

It is recommended to keep interval of 30 minutes between using Green Mix and Green Pro.

Particulars of use of Green Mix. The product should be taken once a day, in the morning, with meals. It is also allowed to eat before meals. In case of intolerance to the taste properties of the product, it is allowed to dilute the emulsion in 40-50 ml of warm (up to 35°C) boiled water. Drivers and people engaged in complex production, due to the alcohol content, the product should be taken in the evening.

Particulars of use of Green Pro (capsules). The product should be taken 2-3 times a day, during or after meals.

*Particulars of use of Green Pro (powder).*The product should be taken 2-3 times a day, during or after meals. Dilute the powder in 50 - 100 ml of warm (up to 35-40°C) boiled water. When using large doses, Green Pro could be added to non-hot (up to 35°C) first meals.

To determine the individual sensitivity of the body to the product, persons who are prone to allergic reactions, severe renal and hepatic insufficiency, elderly people

(over 60 years old), it is recommended to begin with - 0,5 teaspoons of Green Mix and 1-2 capsules of Green Pro during the first three days, followed by increasing the dose to the recommended.

In case of concomitant use of allopathic drugs (antihypertensive, hormonal, hypoglycemic drugs, etc.), when a stable effect is achieved, it is allowed to reduce the dose of drugs.

Keep to a diet according to the disease.

It should be noted that for the elderly people, females, patients with weight loss, the daily need for Greenization MNFC is less, but the duration of use is longer than for young and middle-aged people, men and overweight patients.

Contraindications

Individual intolerance or allergy to some of its components, as well as end-stage liver and kidney failure, acute pancreatitis, conditions characterized as acute abdomen, the first days of acute myocardial infarction and stroke.

Potential side effects

As a rule, when keeping the requirement for use, Greenization MNFC is well tolerated and does not cause side effects. Some patients on day 3 to 5 of use of the product may feel discomfort in the right hypochondrium or in the abdomen, which does not require discontinuation of the product. In the event of increase of blood pressure dose should be reduced by half or the use of product should be discontinued for some days (until stabilization of condition). In the future, continue to take smaller doses.

Conclusions

According to origin, particulars of manufacturing technology and composition Greenization multinutrient functional-peptide complex belongs to the products of functional nutrition with high biological activity.

Greenization multinutrient functional-peptide complex is recommended for correction of diet in healthy people of different ages, patients from populations at high risk of internal diseases, for prevention and treatment of other diseases.

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