



## ENRICHMENT OF THE NUTRITIONAL COMPOSITION OF PREGNANT WOMEN WITH HEPATITIS WITH BIOLOGICALLY ACTIVE SUBSTANCES

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### ABSTRACT

*Many of the biologically active substances are found in food products in higher doses than they are used in the pharmacopoeia. At present, food should be considered not only as a source of energy and plastic (building) substances, but also as a very complex pharmacological complex.*

**Relevance of the problem.** Currently, the problem of hepatitis B remains relevant and is one of the socially significant infections in Uzbekistan. Despite the availability of effective means of preventing hepatitis B, such as active and passive immunization, antiviral drugs, according to data, more than 350 million people worldwide are chronically infected with the hepatitis B virus. One of the leading aspects of the hepatitis B problem is the genetic variability of the causative agent of this disease, which causes, in a number of cases, insufficient effectiveness of vaccination, serological diagnostics, and treatment with antiviral drugs. According to WHO statistics, various liver diseases, such as cirrhosis, chronic hepatitis, liver failure, hepatocellular carcinoma, etc., occupy a significant place among the causes of disability and mortality. The liver plays a leading role in the processes of transformation, accumulation and synthesis of proteins, fats, carbohydrates, biologically active substances (BAS), etc.

Recently, the medical practice has been intensively developing the direction associated with the use of biologically active substances (BAS), their complexes, in the production of biologically active food supplements (BAA) or for enriching food products for therapeutic and prophylactic nutrition. Food is a complex of millions of substances, each of which has a certain degree of biological activity. Many of the biologically active substances are found in food products in higher doses than they are used in the pharmacopoeia. At present, food should be considered not only as a source of energy and plastic (building) substances, but also as a very complex pharmacological complex. BAS that contribute to the improvement of the functional state of the liver, as well as the possible mechanisms of action of these substances are considered in this paper. BAS are able to influence certain functions of the body, providing a pronounced therapeutic and prophylactic effect. BAS with hepatotropic action currently produced by the food and pharmaceutical industries do not take into account the complex of disorders occurring in the body during inflammatory liver diseases and are mainly aimed at

correcting individual mechanisms of development and progression of the disease. An analysis of studies conducted around the world to assess the effectiveness of the listed biologically active substances allowed us to determine the optimal component composition of biologically active substances. In particular, biologically active substances may include:

- ☒ Vitamins of groups A, B and C
- ☒ Minerals (iron, magnesium, zinc, potassium, manganese, etc.)
- ☒ Nutrients (for example, amino acids and fatty acids)
- ☒ Substances that have a direct physiological effect on the patient's body (yeast spores, dried animal or plant cells, etc.).

**Objective of the study.** The objective of this work is to develop a food supplement for patients with inflammatory liver diseases (hepatitis B) and its production technology. To determine the main classes of biologically active substances that have a positive effect on the functioning of organs and systems of the body in inflammatory diseases of hepatitis B.

In accordance with the stated objective, the following tasks were solved in the work:

1. To analyze and systematize the processes occurring in inflammatory diseases of hepatitis B.
2. To determine the main classes of biologically active substances and formulate the component composition of the dietary supplement.
3. To develop a technology for the production of dietary supplements, recommendations for use.

**Materials and methods of the study.** The risk group includes patients with chronic viral hepatitis B, individuals with an increased risk of infection with blood-borne infections, as well as conditionally healthy population.

**Results of the study.** As a result of the studies, a dietary supplement for patients with inflammatory liver diseases (hepatitis) was created, and a technology for its production was developed. Based on the conducted clinical studies, recommendations are proposed for the use of amino acids and vitamins as a component of specialized products and dietary supplements for hepatitis. Tests of the developed dietary supplement on laboratory animals showed its high efficiency in viral liver damage.

**Biochemical analysis of blood serum.** The determined indicators of cytolytic syndrome (CS), in which damage to liver cells is observed, primarily the cytoplasm, as well as cell organelles with a pronounced violation of membrane permeability, were alanine (ALT) and aspartic (AST) aminotransferases.

According to the studies of ALT, AST in patients of the control group, a clear increase in the concentration of enzymes in the blood serum was noted in relation to a healthy person, which indicates the presence of cytolytic syndrome. Against the background of taking the product, the increase in the concentration of enzymes is insignificant. A decrease in the concentration of total protein and albumin in the blood serum of the control group was noted, which indicates a violation of the protein-synthetic function of the liver. Against the background of taking the dietary supplement, the protein content remained within the normal range. A biochemical study showed that the indices of the CS and protein-synthetic function of the liver in the control group changed compared to the indices of healthy rats. Taking dietary

supplements against the background of ethanol consumption restrained fluctuations in enzyme concentrations and protein content. Recently, the direction associated with the use of biologically active substances and their complexes in biologically active food supplements (BAS) or for enriching food products used in therapeutic and prophylactic nutrition has been intensively developing in medical practice. BAS that contribute to the improvement of the functional state of the liver, as well as the possible mechanisms of action of these substances, are discussed in this paper.

**Conclusions:**

1. The data on the main pathogenetic disorders in the body occurring with hepatitis of various origins are analyzed, systematized, summarized. Medical, biological and technological recommendations for dietary supplements for patients with hepatitis are formulated.

2. Based on theoretical studies, the component composition of the dietary supplement is substantiated, including arginine, phosphatidylcholine, gum arabic, glycyrrhizin.

3. The state of the amino acid spectrum of the blood plasma of patients with chronic viral hepatitis is established.

4. A comparative analysis of the technological and qualitative characteristics of the finished product samples obtained by the wet granulation method is carried out, the effect of the amount of added granulating liquid on the final characteristics of the granulate is determined. Using mathematical modeling methods, the optimal degree of moistening during wet granulation is substantiated and determined, equal to 13% of the mass of the mixture.

An analysis of the qualitative characteristics of the samples obtained by the hot granulation method is carried out in comparison with the wet granulation method. 5. A technology for producing a dietary supplement for patients with liver diseases using wet and hot granulation has been developed.

6. Hepatoprotective properties of the developed product have been revealed as a result of studies on laboratory animals - a decrease in the activity of cytolytic syndrome, a corrective effect on the protein-synthetic function of the liver, a protective effect on liver tissue.

7. As a result of studying the model of alcoholic liver damage in rats, negative changes in the composition of the intestinal microflora have been established.

As a result of using the product, a quantitative balance of representatives of all studied groups of microorganisms was maintained, and, above all, the content of lacto- and bifidobacteria

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