



## The Importance of Protein in the Prevention and Treatment of Diseases

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### Abstract

This article discusses and analyzes the results of a study concerning such an energy substrate as protein, the content of which should form the basis and foundation of the human diet. Each of us periodically pays attention to the quality of our own nutrition and wants to compose our diet in such a way that it does not harm our own bodies.

It has been established that the lack of a protein component in the diet is the mechanism that triggers the stoppage of weight loss, and the quality of the body is also reduced. Also it is the protein component in the human diet in many respects provides the normal operation and functioning of the mechanisms of the human body, which are responsible for the protective functions of the same body, which, in turn, assumes the normal vital activity of the person and allows him to be in a completely healthy state.

**Keywords:** Protein; Rational Diet; Human Body; Calories; Weight Loss; Energy Value

The quality of nutrition largely determines the quality of life for each of us, it is the diet that determines many of the most important functions of both individual organs and their systems as a whole.

The relevance of this study is confirmed by the fact that there is a deficit of dietary protein in the world.

The decrease in dietary protein intake is consistent with current global trends of declining protein availability.

The total protein deficit on the planet is estimated at 10-25 million tons per year. Approximately half of the world's population suffers from protein deficiency.

Protein shortages of eggs, meat, and milk are most acute in areas of tropical Africa, Latin America, and Asia.

Poor families on a low-calorie diet consume little protein, resulting in a dystrophy syndrome called kwashiorkor.

Kwashiorkor in humans develops with partial or complete starvation and with consumption of inferior proteins. The disease is accompanied by intestinal dysfunction, the process of digestion of food protein stops, a negative nitrogen balance develops, water-salt metabolism is disturbed, muscle atony and growth arrest appear.

This condition is especially dangerous for infants and can end in death.

The severe consequences of insufficient protein intake cannot be treated by therapeutic methods.

The basic method of correction of protein deficiency is normalization of nutrition, which is most relevant in short-term pathology.

In this case, the consumption of foods high in protein, which include meat, fish, and milk, is indicated. The advantage of

this method is the ease of implementation, accessibility. The disadvantages are that it will not be convenient for everyone to monitor their diet.

In more advanced cases of protein deficiency, special mixtures are prescribed, which include complexes of amino acids as well as protein elements of the blood. As a rule, these products are administered intravenously, which is carried out under the obligatory supervision of a physician.

This method is characterized by high efficiency, because the drugs have high bioavailability. But some patients are diagnosed with an intolerance to certain components of these drugs.

Our bodies are designed to digest mixed foods because this diet provides the most varied diet and intake of all nutrients, vitamins and minerals.

A healthy, complete, varied and blended diet remains the best way to lose weight safely and effectively.

Food that enters our digestive tract is broken down, transported, comes to a place of synthesis, and forms our own cells.

There are three main components of food: proteins, fats, and carbohydrates. It is no coincidence that they are arranged in this order.

### Protein is the main component of food

Protein is very important. After all, they are the building material for our body and also perform several other very important functions that support the vital functions of our body.

The main protein formation of our body is called a cell. Every living cell is a collection of various proteins.

### Three sources of protein

- Dairy - 20 amino acids
- Animal - 20 amino acids
- Plant - 12 amino acids

All proteins are molecules that undergo a series of transformations in the process of splitting.

The next stage is the polypeptide. It is part of a long molecule. Many proteins exist as polypeptides. When a protein molecule is built, it is assembled from polypeptide complexes.

There are many systems in the body that synthesize polypeptide complexes, including at local levels directly in the tissues.

In other words, there are cells that prepare polypeptides for other cells to use [9].

If a polypeptide is cleaved, it turns into an oligopeptide. This is already a small part of it. One polypeptide splits into 8-10 oligopeptides.

Oligopeptide is broken down into the smallest components of protein - these are amino acids, the building blocks of protein. It is no longer possible to break it down any finer.

Amino acids exist in our body in all proteins. There are 20 amino acids that make up the human body.

If at least one amino acid is missing, all proteins in which it should be present are built with a defect. The function of that protein is not fulfilled.

For the complete synthesis of all proteins in our body, 20 amino acids are constantly required.

If two amino acids are missing, the problem expands. If three or four amino acids are missing, there is a loss of basic protein structures. Such an organism cannot help getting sick [5,8].

Proteins are made up of amino acids.

It is the set of amino acids that make up a protein that determines its properties.

There are only 20 basic amino acids that make up protein molecules.

These amino acids are divided into two groups:

- Substitutable - the human body is capable of producing them itself;

- Non-essential - the human body is unable to produce them, or can produce only very small amounts of them. These amino acids can only come into the body with food. There are only nine of them.

Our bodies can get proteins from plant or animal foods.

Proteins of animal origin, such as proteins from meat, milk, fish, or eggs, contain essential amino acids in balanced and sufficient amounts [1,3].

That is why foods such as meat, fish, eggs and milk are called sources of complete protein.

Plant-based proteins, such as those from beans, soybeans, lentils, cereals, tofu, etc., are not complete proteins. This is why plant sources are referred to as incomplete protein sources.

To date, 26 amino acids have been discovered. Twenty amino acids are considered to be the main components in the formation of protein.

All living organisms form many different protein compounds.

#### Protein is 25-35% of the total calories in the diet

- No two people on the planet have the same proteins, so the protein requirement is also individual.
- It is essential that each person find exactly the sources of protein that he or she needs. Listen to your body, it will never deceive you [7].
- Without providing the body with protein, it is impossible to talk about beauty, health and longevity.
- We know about energy balance: if more calories come in than we spend, we gain weight. And vice versa.
- Try to diversify your diet as much as possible: to do this, try to visit different stores and markets, look for different recipes, cook together with your family, inventing new combinations, adding herbs, spices, and not being afraid to try new things [6].
- In addition to the energy value of food, which should not be less than 1200 calories per day (but no more than 3500 calories), it is necessary that the diet was varied and contained a certain amount of protein, fats and carbohydrates, vitamins and minerals.

- We'll talk about vitamins and minerals later, but here let's deal with the main components of food.
- The energy value of a diet is estimated by the amount of energy that can be obtained from the oxidation of dietary carbohydrates, fats and proteins to final products ( $\text{CO}_2$ ,  $\text{H}_2\text{O}$ ,  $\text{NH}_3$ ).
- Since the energy released during oxidation is often measured in kilocalories, the energy value of the diet is also called the caloric value of the diet.
- The energy values of proteins, fats, and carbohydrates are not the same. When 1 g of proteins is oxidized in the body to end products, 4.1 kcal is released and end products ( $\text{CO}_2$  and  $\text{H}_2\text{O}$ ) are formed.
- When 1 g of protein is burned in a calorimeter bomb, 5.6 kcal is released, while in the body only 4.1 kcal is released when the same amount of protein is oxidized.
- This is explained by the fact that during combustion in the bomb the nitrogenous part of proteins is destroyed in its entirety and reaches  $\text{NH}_3$ , while in the body only partial oxidation takes place, ending in the formation of urea, which still contains some energy reserves [2,4].
- In the case of a lack of protein component in the diet, you need the right approach in the therapy of this condition, which absolutely must be comprehensive and complete, which involves both the enrichment of the diet of protein, and a number of pharmacological methods.
- As for dietary enrichment, it is necessary to practice a diet high in protein, with protein should be 30% of calories, this is the proportion that will lead to the necessary weight loss.
- This diet will help you reach satiety more quickly because hunger is more effectively satisfied with less energy intake.
- The basis of the diet should be dairy drinks, cottage cheese, low-fat fish, eggs, tomatoes, apples, and hard cheeses.
- The second component of correcting protein deficiency is taking vitamin complexes, because vitamins are important micronutrients that promote better absorption of other components, which is explained by the fact that some vitamins act as coenzymes.
- The use of these elements was tested in practice, which was the observance of a diet of 12 days, with increased consumption of protein.

- As a result, fluctuations between feelings of hunger were minimized as much as possible, while at the same time the caloric content of the diet as a whole was also reduced.
- This diet allows you to maintain protein balance to ensure normal homeostasis, the work of the body as a whole.
- Thus, the protein component should constitute the main percentage of the entire daily diet, because protein is nothing but amino acids, both substitutable and essential, which support many important properties of the human body.
- With a competent approach to a protein diet, you can both compensate for the effects of protein deficiency and bring your BMI back to normal.
- It is important to practice such a diet only after consulting your doctor, as there may be a number of contraindications.
- The quality of the food you eat should be considered, which is an important part of a healthy lifestyle.

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