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THE ROLE OF IRON IN THE HUMAN ORGANISM

[1]Safarova Madina Lutfulla kizi, [2]Axmatova Moxira Jumaboy kizi, [3]Mukhamedova Sevara Nigmatulla kizi

[1]The student of Tashkent Pediatric Medical Institute, Department of Biochemistry
[2]The student of Tashkent Pediatric Medical Institute, Department of Biochemistry
[3]Research advisor, The assistant of Tashkent Pediatric Medical Institute, Department of Biochemistry

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Abstract*. Iron is a vital trace element. Iron is part of the hemoglobin of erythrocytes (red blood cells) and carries oxygen from the lungs to the tissues. Iron is necessary for every cell of the body, as it contributes to the process of its respiration. Iron is part of enzymes, ensuring their normal functioning and metabolic reactions. Adult men and women require only 8 mg/day. Women of childbearing age require a dose of 18 mg/day; during pregnancy, the need increases to 27 mg/day.*

Keywords*: iron, hemoglobin, heme and non-heme, Transferrin, Ferritin, TIBCS, immune system, oxygen,DNA, Lack of iron.*

Relevance.

There are two types of iron: heme and non-heme. Heme iron is found only in meat, poultry, fish and shellfish. Non-heme iron is found in plant sources that include dried lentils, beans, and peas; products made from whole grain flour; leafy green vegetables; dried fruits; nuts and seeds. The body absorbs heme iron better than non-heme iron, so vegetarians and those who refuse meat and animal foods have a higher iron requirement and amount to 32 mg/day.

It is necessary to include iron-rich foods in every meal. Eating foods high in vitamin C, such as oranges, strawberries, tomatoes, broccoli, cauliflower, kiwi and citrus juices, can increase your iron intake. The same effect is achieved by using cast iron or stainless steel cookware; iron can penetrate from them into the cooked food. Coffee and black tea inhibit the absorption of iron, so it is better to delay their intake for at least an hour after the main meal.If the body does not receive enough microelement, iron deficiency can develop, which in a mild form is manifested by depletion of iron reserves, in a severe form - iron deficiency anemia.

Materials and methods.

Transferrin is a transport protein that transports iron. Transferrin transports iron absorbed in intestinal cells and iron from destroyed red blood cells for reuse. Normally, transferrin is saturated with iron by only 33%. When iron reserves are depleted, transferrin synthesis is activated, and when it increases, it decreases.

Ferritin is the main form of iron storage. Cells of the liver, bone marrow, and small intestine synthesize ferritin, which binds and stores iron in a form that is non-toxic to the body. First of all, with an increasing need for iron, iron is consumed from tissues.At the initial stage of iron deficiency (prelatent), it is necessary to evaluate ferritin levels.

TIBCS-total iron binding capacity of serum. This study allows us to determine the degree of so-called Fe starvation in the blood serum. The second indicator, after ferritin, which allows one to suspect iron deficiency.The hemoglobin level is assessed together with the serum iron level. The joint interpretation of both results helps to make a differential diagnosis of anemia.All of the

above tests must be taken on an empty stomach or 6-8 hours after the last meal. On the eve of donating blood, it is advisable to avoid excessive physical and emotional stress and drinking alcohol.

RESULT AND DISCUSSIONS.

If the iron content is less than normal, but there is no anemia yet (mild form), then this is called latent (hidden) iron deficiency. It is characterized by a reduction or absence of iron reserves, an increase in the amount of absorbed iron, and the level of free erythrocyte porphyrin. This condition is dangerous due to the appearance of shortness of breath, tachycardia, muscle hypotension, and digestive disorders. This causes hair loss, destruction of nails and teeth, and pale skin. When iron deficiency anemia becomes severe, it is accompanied by microcytosis, hypochromia and epithelial changes. If the iron content is higher than normal, this indicates that excess Fe can cause thalassemia, hemochromatosis, hemolytic and aplastic anemia, and nephritis.The adult human body contains on average 4-5 g of Fe, of which about 70% is in hemoglobin, 5-10% in myoglobin, 20-25% of iron is stored as a reserve and 0.1% in blood plasma.Iron from food enters the duodenum in 2 forms:

Heme (absorbed most efficiently, found in animal products - meat, fish, makes up 40% of all iron).

Non-heme (absorbed less efficiently, found in fruits, vegetables, grains, nuts and plants, makes up 60% of all iron) forms.

As a rule, this is oxidized ferric iron Fe3+, which turns into divalent reduced Fe2+ under the influence of ceruloplasmin, which acts here as ferroxidase (ferro-reductase).In addition, heme iron takes part in a number of complex biochemical processes:

redox reactions;

hematopoiesis;

collagen synthesis;

the functioning of the immune system.

Failure in the functioning of at least one process leads to disruption of the functioning of the body as a whole. This is why iron testing is so important.

Conclusion.

Iron is an important trace element for our body. Iron is one of the main components of hemoglobin. Hemoglobin carries oxygen in the blood throughout the body. And iron is involved in the process of reproduction of healthy red blood cells containing hemoglobin.Without iron, many processes in the body are impossible, including energy metabolism and DNA repair.Iron helps maintain the immune system in good shape, allowing the body to fight infection, and takes part in tissue growth.

Lack of iron affects your appearance and well-being. The skin becomes pale, looks dry, and hair and nails begin to suffer. A person feels weak, lacks strength, and is often in a bad mood. Appetite disappears, and taste disturbances may appear. Patients with iron deficiency are more susceptible to colds, experience dizziness and dizziness, shortness of breath and rapid heartbeat.

A long stay in this state can be stressful for all organs and tissues, including the functioning of the brain, which as a result leads to various disruptions in the functioning of internal organs.

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