

9. THE PATHOPHYSIOLOGY OF IRON DEFICIENCY IN THE BODY, ENDANGERMENT OF THE ABSORPTION, TRANSPORT AND STORAGE OF THE CATION. THE MAIN MECHANISMS.



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Introduction. Iron plays an important role in a multitude of physiological processes, such as the transport of oxygen from the lungs to the tissues, the release of molecular oxygen from organic compounds, favors the exchange of electrons in the redox process as well as the regulation of gene expression. Iron deficiency is manifested by the depletion of iron in the body, especially the reserves in macrophages and hepatocytes. Iron homeostasis is regulated by the hormone hepcidin, which controls the entry of iron into the plasma. By binding to its receptor (FPN), this hormone induces its degradation. Due to the increased expression of FPN on macrophages and enterocytes, the inhibition of hepcidin, which occurs in iron deficiency, increases the uptake and release of iron from macrophages. The scientific value of this work lies in its topicality, as 27% of the world's population suffers from liver-deficiency anemia, the most affected people being among young and pregnant women, children and adolescents.

Aim of study. Identifying the mechanisms that endanger iron absorption, transport and storage.

Methods and materials. The literature review from the PubMed and Google Scholar scientific databases was used in the research. The selected sources are from the period 2017-2022. The selection of sources was made using the key words: hepcidin, iron deficiency, anemia, iron absorption.

Results. The pathophysiological mechanisms of iron deficiency are mainly due to unbalanced nutrition. Normally, in the adult body, the amount of iron is estimated to be between 4 and 5g, it being unevenly distributed, the largest amount of iron being present in the blood cells (hemoglobin). Since the human body absorbs iron with difficulty, about 1-2 mg per day, the individual's daily intake should be about 10-15 mg. We get our iron intake from various foods such as legumes, meat, vegetables and fruits. Iron absorption is strongly influenced by different dietary factors. Inhibitors of iron absorption being calcium, phytates (substances obtained by combining phytic acid with various minerals), oxalic acid and polyphenols. At the same time, we also have substances that facilitate the absorption of iron, such as ascorbic acid and some proteins.

Conclusion. There are 3 mechanisms responsible for iron deficiency in the body. The first is systemic regulation that occurs with the help of the hormone hepcidin. The second system is cellular regulation that is controlled by IRPs. The third system is iron-restricted erythropoiesis that occurs as a compensatory mechanism to maintain stores of iron in the body, which also becomes the source of anemia.