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The amount of iron can control the level of mitochondrial activity and subsequently the synthesis and expression of genes

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Iron plays an important role in electron transfer, cellular respiration, differentiation and regulation of gene transcription, DNA synthesis and repair and role in supporting the transcription of key genes required for cell growth and function [such as: nitric oxide synthase, protein kinase c-beta, p21(CIP1/WAF1)] Mitochondria are the main centers of iron accumulation and utilization. It can be concluded that it is the mitochondria that regulates the iron, but another conclusion is that it is the iron that controls the mitochondria, how much of the necessary enzymes to be made or how much of the genes involved in cellular activities are expressed. It can be concluded that the iron controls the mitochondria, how much of the necessary enzymes to be made or how much of the genes involved in cellular activities are expressed. This conclusion can be because it is stored in the form of ferritin in parts with high activity and gene expression and high differentiation, i.e. intestinal mucosa, liver, spleen, kidney, and bone marrow, or in nerve cells, red blood cells, and macrophages Entrusts export iron. considering that the regulation of iron metabolism is responsible for intestinal absorption of iron and stress has the greatest effect on stomach acid and digestive system and liver activity, with the increase of stomach acid, the environment becomes more suitable for dissolving iron. On the other hand, hepcidin of the liver, which is a peptide that controls the level of iron in the blood, by binding to ferroportin, prevents the release of iron from the cells. Therefore, an imbalance occurs because the iron entering the cells is high, but the outgoing iron is low. This can be the reason for the accumulation of iron in cancer cells. By iron increasing, all the above things, such as DNA synthesis and expression, and energy increase.

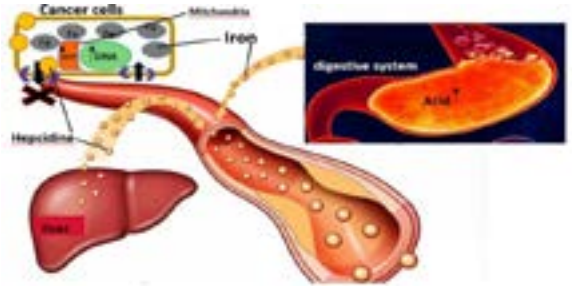

***Figure 1**: Many vital genes, including genes controlling cell division, respiration, DNA synthesis and repair, and regulation of gene expression, including oncogenes and tumor suppressor genes, are controlled by iron. Mitochondria, which is the control center of transcription, differentiation, respiration and energy production and cell death, the most iron is located in mitochondria. In the face of stress, when stomach acid, which is the most important factor in iron absorption, increases, we also see changes in the production and release of hepcidin in our liver due to stress. An increase in iron on the one hand and a decrease in the release of iron from the cell traps iron, and subsequently all the functions of iron become uncontrolled and become cancerous.*

Biography

Maryam Mousavi received her bachelor's degree in genetics from the University of Isfahan. During this time, she learned some laboratory work. she completed her master's degree at Ashrafi University of Isfahani with the same professors of Isfahan University. She wrote several articles on different topics and learned laboratory work in a more specialized way. By reading many articles, she try to find answers to her questions and present them in the form of articles for further follow-up by people with more information and capabilities.

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