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MAGNESIUM DEFICIENCY IN THE HUMAN BODY AND ITS IMPACT ON HUMAN HEALTH

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Abstract
This article analyzes the biological significance of magnesium, one of the essential macroelements in the human body, and the problems associated with its deficiency. Magnesium plays an important role in enzymatic reactions, energy metabolism, and the proper functioning of the nervous, muscular, and cardiovascular systems. In recent years, magnesium deficiency has become more common due to improper nutrition, stress, environmental factors, and certain diseases. The article discusses the main causes of magnesium deficiency, its clinical manifestations, and preventive measures. The importance of balanced nutrition and a healthy lifestyle in maintaining optimal magnesium levels in the body is also emphasized.

Keywords: Magnesium, hypomagnesemia, metabolism, nervous system, muscle function, cardiovascular system, prevention.

Introduction

In modern medicine, the study of the functioning of the human body places special importance on minerals and microelements. Mineral substances play an important role in ensuring the normal functioning of cells, the activity of enzymes, and the balance of metabolic processes. One of such essential elements is magnesium.

Magnesium is a widely distributed macroelement in the human body and participates in the activity of more than 300 enzyme systems. This element plays an important role in energy metabolism, protein synthesis, the formation of nucleic acids, and in maintaining the stability of cell membranes.

Approximately 24–25 grams of magnesium are present in the human body. The majority of it is located in bone tissues, while the remaining part is found in muscles and other soft tissues.

In recent years, cases of magnesium deficiency in the body have been increasing due to improper nutrition, the deterioration of the environmental environment, and the rise of stress factors. This, in turn, may lead to the development of various diseases.

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The Biological Importance of Magnesium in the Human Body Magnesium performs important biological functions in the body. First of all, it acts as a cofactor that activates the activity of many enzymes. Magnesium ions are essential for the normal course of enzymatic reactions.

Magnesium also plays an important role in energy metabolism. In cells, molecules of adenosine triphosphate (ATP), which serve as a source of energy, must be bound to magnesium ions in order to be biologically active.

In addition, magnesium ensures the normal functioning of the nervous system. It regulates the excitability of nerve cells and plays an important role in the transmission of nerve impulses. Magnesium is also crucial for muscle activity, helping to balance the processes of muscle contraction and relaxation.

The Role of Magnesium in Metabolic Processes

Magnesium is one of the elements that plays a crucial role in body metabolism. It actively participates in the metabolism of carbohydrates, proteins, and lipids. In particular, magnesium is essential for the entry of glucose into cells and its utilization as a source of energy.

Magnesium also participates in the synthesis of nucleic acids—DNA and RNA. For this reason, the processes of cell division and tissue renewal are closely associated with magnesium.

The Effect of Magnesium on the Cardiovascular System

Magnesium is an essential element for ensuring the normal functioning of the heart muscles. It regulates the processes of contraction and relaxation of the heart muscles and helps maintain a stable heart rhythm.

Magnesium deficiency can increase the risk of heart rhythm disturbances, arrhythmias, and the development of arterial hypertension. In addition, magnesium helps dilate blood vessels and plays an important role in maintaining normal blood pressure.

The Effect of Magnesium on the Nervous System

Magnesium is one of the important regulators of the nervous system. It regulates the excitability of nerve cells and ensures the stable functioning of the central nervous system.

Magnesium deficiency can manifest as irritability, insomnia, rapid fatigue, decreased attention, and reduced stress tolerance. Some scientific studies indicate that magnesium deficiency is associated with depression and anxiety disorders.

Causes of Magnesium Deficiency

Magnesium deficiency can arise due to various factors. One of the main causes is improper nutrition. An insufficient intake of minerals-rich foods in the diet leads to a lack of magnesium in the body.

In addition, stress, gastrointestinal diseases, and the long-term use of certain medications can reduce the absorption of magnesium.

Prevention of Magnesium Deficiency

Proper and balanced nutrition plays an important role in preventing magnesium deficiency. It is recommended to include magnesium-rich foods in the diet. Such foods include nuts, legumes,

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spinach, buckwheat, whole grains, bananas, and cocoa. In addition, adhering to a healthy lifestyle, reducing stress, and increasing physical activity help maintain magnesium balance in the body.

Conclusion

In conclusion, magnesium is an essential biological element for the human body. It participates in numerous metabolic processes and regulates the functioning of the nervous, muscular, and cardiovascular systems. Magnesium deficiency can lead to various functional disorders. Therefore, maintaining a healthy diet, consuming magnesium-rich foods, and adhering to a healthy lifestyle can help prevent magnesium deficiency.

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