LIFE ELEMENT – MAGNESIUM

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Annotation: *Magnesium is a vital element that is found in all tissues of the body and is necessary for the normal functioning of cells. Participates in most metabolic reactions, in the regulation of the transmission of nerve impulses and in muscle contraction, has an antispasmodic and antiplatelet effect.*

Key words: *magnesium, deficiency, bitter salt, polyphosphate compounds.*

Аннотация*: Магний – жизненно важный элемент, который содержится во всех тканях организма и необходим для нормального функционирования клеток. Участвует в большинстве метаболических реакций, в регуляции передачи нервных импульсов и в сокращении мышц, оказывает спазмолитическое и антиагрегантное действие.*

Ключевые слова: *магний, дефицит, горькая соль, полифосфатные соединения.*

Magnesium (chemical symbol - Mg, from lat. Magnesium) is a chemical element of the second group (according to the outdated classification - the second group of the main subgroup, IIA), the third period of the periodic system of chemical elements of D.I. Mendeleev, with atomic number 12.

The simple substance magnesium is a light, malleable alkaline earth metal of a silvery-white color. In 1695, salt was isolated from the mineral water of the Epsom Spring in England, which had a bitter taste and laxative effect. Apothecaries called it "bitter salt", as well as "English" or "Epsom salt". The mineral epsomite is a hydrated magnesium sulfate and has the chemical formula MgSO4*7H2O. The Latin name of the element comes from the name of the ancient city of Magnesia in Asia Minor, in the vicinity of which there are deposits of the mineral magnesite.

In 1792, Anton von Ruprecht isolated an unknown metal from white magnesia by reduction with coal, which he called austria. "Austrium" was later found to be

extremely low purity magnesium, since the original material was heavily contaminated with iron.

In 1809, the English chemist Humphry Davy, using the electrolysis of a moistened mixture of magnesia and mercury oxide, obtained an amalgam of an unknown metal, which he gave the name "magnesium", which has survived to this day in many countries. In 1829, the French chemist A. Bussy obtained magnesium by reducing its molten chloride with metallic potassium. In 1830, M. Faraday received magnesium by electrolysis of molten magnesium chloride.

Magnesium is an essential element in biological systems. Magnesium usually occurs as the Mg2+ ion. It is an essential mineral nutrient (i.e. element) for life and is present in every cell type, in every organism. For example, ATP (adenosine triphosphate), the main source of energy in cells, must bind to a magnesium ion to be biologically active. What is called ATP is often actually Mg-ATP. Thus, magnesium plays a role in the stability of all polyphosphate compounds in cells, including those associated with DNA and RNA synthesis.

More than 300 enzymes require the presence of magnesium ions for their catalytic action, including all enzymes that use or synthesize ATP, or those that use other nucleotides for DNA and RNA synthesis.

It is naturally found in the human body. The body of an adult contains approximately 22-26 grams. 60% is in the human skeleton, and the rest is in the extracellular and intracellular regions.

An estimated 2.5% to 15% of people are magnesium deficient. For good health, this mineral must be replaced regularly by consuming magnesium-rich foods or taking supplements.

There are many health benefits of magnesium. One of the benefits that will affect every aspect of our daily lifestyle is its effect on our bones. Not only will it keep our bones strong, but it will also improve bone density. This can reduce the risk of osteoporosis and reduce complications if a bone breaks.

This mineral will help the body absorb and use calcium and vitamin D. Calcium and vitamin D are more effective when there is enough magnesium in the

body. This can reduce your risk of heart disease, be less likely to get heart disease, and be less likely to have a stroke. If there is a heart attack, it can reduce the risk of complications.

Magnesium can regulate blood pressure, control blood sugar and reduce the risk of diabetes, and treat conditions like depression and migraines. It can treat insomnia and stress-related mental health issues. It can also prevent kidney stones. The nutrient is also associated with a healthy nervous system and reduced inflammation in the body.

This nutrient is not a miracle cure. It's not a cure at all. While it cannot cure every disease or prevent every disease, it can affect your overall health. You can have better health and a healthier lifestyle.

Nutrient deficiencies can cause a host of unnecessary health problems, and magnesium deficiency is no exception.

Insufficient absorption of magnesium often causes muscle spasms and has been associated with cardiovascular disease, diabetes, high blood pressure, anxiety disorders, migraines, osteoporosis, and cerebral infarction. Acute deficiency (see hypomagnesemia) is rare and more common as a drug side effect than with low food intake per se, but it can occur in people fed intravenously for long periods of time.

The most common symptom of excess oral magnesium intake is diarrhea. Amino acid chelate supplements (such as glycinate, lysinate) are much better tolerated by the digestive system and do not have the side effects of older compounds used, while sustained release nutritional supplements prevent diarrhea. Because the kidneys of adults efficiently excrete excess magnesium, oral magnesium poisoning in adults with normal kidney function is very rare. Infants, who have less ability to excrete excess magnesium, even when they are healthy, should not be given magnesium supplements except under medical supervision.

Magnesium pharmaceutical preparations are used to treat conditions including magnesium deficiency and hypomagnesemia, as well as eclampsia. Such preparations are usually in the form of magnesium sulfate or chloride when administered parenterally. Magnesium is absorbed by the body with reasonable efficiency (30% to

40%) from any soluble magnesium salt such as chloride or citrate. Magnesium is similarly absorbed from Epsom salts, although the sulfate in these salts increases their laxative effect at higher doses. Absorption of magnesium from insoluble oxide and hydroxide salts (milk of magnesia) is intermittent and less efficient, as it depends on neutralization and salt solution by stomach acid, which may be (and usually is not) complete.

Magnesium orotate can be used as an adjuvant therapy in patients who are optimally treated for severe congestive heart failure, increasing survival and improving the patient's clinical symptoms and quality of life.

References

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