

MAGOS

... INFO ...

Magnesium Info



Magnesium Therapy – the Basics

Main cause of Magnesium deficiency is our modern agriculture => depleted soils => poor quality of food (depleted of vital nutrition) which did provoke that the important Magnesium : Calcium ratio (Mg = anti-inflammatory agent, Ca = inflammatory agent) was gone totally out of balance over the last decades. The ratio should be ~1:1 but meanwhile it's more ~1:10!

Roughly 80% of the population in the developed world is more or less Magnesium deficient, which is the cause of many diseases. This mineral is responsible for over 3751!!! different enzyme reactions in the body (Human Magnesome).

The best start to overcome this deficiency would be to ask your GP for a Mg RBC (body tissue) test (optimal is 6.0-7.0mg/dl, 2.4-2.57 mol/L, 3.37-5.77mEq/L).

A Hair Tissue Mineral Analysis <http://gotmag.org/work-with-us/> would also be very helpful because chronically ill people often have to cope with a more complex electrolyte problem (imbalance of magnesium, copper, iron, potassium, zinc etc.). Asking for a blood serum test is absolutely worthless. Just 1% of the body's Mg is circulating in our bloodstream. The rest is hidden in our body tissue (60% in the bones 39% in soft tissue like heart, brain, liver, kidney, glands, & muscles with the highest concentration in the ventricles of the heart) and the body will do EVERYTHING (until it's too late/heart attack) to keep this level! There can even exist a 'Mg-paradox' if you are already highly deficient in this mineral but a simple blood test will come up with a 'too much' in blood serum. This shows only that your clever body is desperately trying everything to prevent the worse case scenario (heart attack) by sucking up the mineral from your bones/teeth/brain etc. to support vital body functions.

Magnesium Co-factors

- > B6 helps get Mg INSIDE the cell
- > Boron helps keep Mg INSIDE the cell
- > Bicarbonate helps get Mg INSIDE the Mitochondria

*“Without magnesium,
there is no energy,
no movement, no life.”* Dr Carol Dean

Functions of Magnesium in the Body

After Potassium, Magnesium is the second-most abundant positively charged ion inside the body's cells and Magnesium amounts are highest in bones (65%), teeth, heart and brain. Magnesium is necessary for the metabolism of carbohydrates, fats and amino acids, for the functions of muscles and nerves and for the formation of bones and teeth. It maintains the Cell “Battery”/ the ATP production to “power” the cell.

> **ATP (adenosine triphosphate) production** = the main source of energy in cells [produced by cell mitochondria]. It must be bound to a magnesium ion in order to be biologically active.

> **Cell “Battery”** = effective electrochemical gradients across the cell membrane. Mg is required in the mitochondrial respiration cycle to provide cellular energy and maintain the cell “battery”.

> **Mg regulates Calcium** – Adequate Mg is essential for calcium absorption and metabolism [natural calcium-channel-blocker]. It converts Vitamin D into its active form to assist calcium absorption. It keeps calcium dissolved in the blood and prevents soft tissue calcification.

> **Mg is a natural muscle relaxant** - Mg dilates and relaxes blood vessels [e.g. to treat Raynaud's syndrome] and Mg levels correlate with the ability to avoid High Blood Pressure.

> **Mg helps to transmit nerve signals** - Mg stabilizes abnormal nerve excitation and blood vessel spasms by preventing excessive calcium build-up inside cells, and its role in providing cellular energy.

> **Mg is one of the body's major alkalizing minerals**

> **Mg is involved in detoxification of the body** - Mg detoxifies Heavy Metals/other toxins and is therefore, an important neuro-protectant.

> **Mg is required for protein synthesis** - E.g. muscle-building

> **Mg needed to maintain hormonal balance** - Mg is needed for Cholesterol synthesis – this “mother” of all hormones, produced in the adrenal cortex, is a prerequisite for hormones:

-
- >> ALDOSTERONE – regulates the balance of salt and water in the body.
 - >> DHEA – pro-hormone for all steroid hormones.
 - >> CORTISOL - Stress hormone
 - >> INSULIN - Mg is necessary for production, function and transport of Insulin - thus preventing Insulin-resistance/Type 2 diabetes
 - >> SEROTONIN - Mg levels affect mood/emotions
-

> **Mg is crucial to the transmission of hormones:**

Insulin, Thyroid hormones, Estrogens, Testosterone, DHEA and Neurotransmitters: Dopamine, Catecholamines, Serotonin, GABA

> **Mg needed to activate 3,751 enzymes** - (HumanMagnesome: <http://www.ncbi.nlm.nih.gov/pubmed/23095498>) e.g. control of digestion, absorption, and for the utilization of proteins, fats, and carbohydrates, bone growth, activation of vitamins. etc. etc.

> **Mg has roles with DNA** - Most Mg inside the cell nucleus is closely connected with nucleic acids and mononucleotides [structural units of RNA and DNA].

> **Mg & Cholesterol metabolism** - lowering LDL cholesterol, raising HDL cholesterol and also lowers blood triglycerides, Mg-deficiency allows higher and/or uncontrolled cholesterol production

> **Mg is involved in signaling between cells**

> **Mg for Metabolism** - Mg is important for metabolism of Ca, K, P, Zn, Cu, Fe, Na, Pb, Cd, HCl, Acetylcholine, and Nitric Oxide (NO). Further Mg determines body's potassium levels - If Mg is insufficient potassium will be lost in the urine. Mg further maintains the permeability, flexibility and stability of membranes.

> **Mg required for production of body's major antioxidant** - Glutathione synthesis

> **Mg is anti-inflammatory**

What happens when Mg intake is insufficient?

If magnesium becomes depleted within the cell from its normal level, then calcium increases inside the cell - i.e. the intracellular Mg : Ca ratio decreases having an impact on cell functions, which incidentally also are all aspects of the stress response ("Fight-or-Flight" reaction). In a life-threatening crisis, such reactions can be life-saving as they allow a person to perform with unusual strength and speed, and then levels return to normal when the stress is over. However, when a low intracellular Mg : Ca ratio is due to nutrient deficiency, these become chronic conditions:

- => In blood vessel smooth muscle cells - causes vasoconstriction, arterial stiffness, and/or hypertension
- => In heart cells - causes enlargement (hypertrophy)
- => In blood platelet cells - causes increased aggregation, stickiness and clotting

references: "The Magnesium Factor",
by Mildred S. Seelig M.D., MPH, Andrea Rosanoff, PhD,
"The Magnesium Miracle", by Dr Carol Dean,
healyourselfathome.com

Magnesium compounds/supplements

- > Magnesium-Chloride – brilliant bioavailability! (1Tsp = ~ 450mg elemental Mg)
- > Magnesium-Glycinate, -Malate (at morning, during the day only because it gives you energy)
- > Mg-Taurate, -Orotate have all pretty good bio-availability
- > Magnesium-Sulfate [Epsom salt] is a brilliant detox (transdermal/bath) and in emergency cases [IV given for heart attacks] but not that good for oral use (you can overdose it and it's also difficult to restore your Mg-depot with this Mg-compound).

You can't overdose Mg as long as your kidneys are working well and transdermal given it's completely side effect free. You get the laxative effect only from too much or from the wrong oral supplements. The transdermal form of the Mg-application is also much more efficient than the oral one (%70/30) is! It's also nearly side-effect free because it is absorbed on a cellular level and does bypass the intestinal tract. At the beginning, you should always start LOWLY & SLOWLY!! particularly with oral supplementation otherwise you can get serious runs or you may crash your adrenals (Potassium loss). Work up the dosage of the mineral slowly until you feel better.

AVOID!

- > Mg-Oxide (only 4% bio-availability)
- > Mg-Citrate because of its inhibition of the ceruloplasmin ferroxidase activity
- > Mg-Glutamate & Mg-Aspartate (neurotoxic)
- > Most prescription drugs are MASSIVE Mg-killer, particularly cortisone and so are alcohol, stress, nicotine, sugar, and junk food

The logo for MAGOS, featuring the word "MAGOS" in a bold, black, hand-drawn style font.

Arne Kaminsky

www.magosminerals.com

www.magosminerals.co.nz

contact@magosminerals.co.nz

Raglan · New Zealand