Editorial

Magnesium and Health

Magnesium is an element and mineral found throughout the nature. In the body it is the fourth abundant mineral.

Magnesium was first isolated by English scientist Sir Humphrey Davy in 1808. It is named after magnesia, a district in Thessaly, Greece and is closely related to the minerals magnetite and manganese.

In human an adult body contains approximately 25gm magnesium, with 50-60% present in the bones and most of the rest in soft tissues.[1] Less than 1% of total magnesium is in blood serum and these levels are kept under tight control. The concentration of magnesium in ECF is only 1.2-2.5 meq/L.[2] Magnesium homeostasis is largely controlled by the kidney which typically excretes about 120 mg magnesium into the urine each day.[3] Urinary excretion is reduced when magnesium status is low.[4]

The daily requirements of magnesium for the children (9-13 years) is about 240 mg, for the adult male is about 420 mg and for the adult female is about 320 mg. However, the daily requirement of magnesium during pregnancy is about 360 mg. Therefore, to get adequate amount of magnesium in the diet it is necessary to know the foods which are rich sources of magnesium. The foods which contain high concentration of magnesium are nuts, whole grain, spinach, almonds, pumpkin seed, black beans, avocado, figs, banana and yogurts etc.

The mineral magnesium is required by virtually many processes in the body. It is an essential mineral that performs many vital functions which includes activating more than 300 enzymes which acts as catalyst for many intracellular enzymatic reactions, DNA synthesis, muscle contraction, blood pressure regulation, protein synthesis, insulin metabolism, nerve transmission and reproduction.[3,4,5]

It has been found that there are lots of benefits observed in those who are taking magnesium rich food.

Some studies have shown that magnesium may be able to help effectively reduces the symptoms of premenstrual syndrome (eg. mood swings, weight gain, food cravings, water retention, fatigue, irritability, sore breast and digestive issues).[6]

A study in Mexico revealed that taking magnesium supplement reduces both systolic and diastolic blood pressure.[7]

Physical performance of elderly women and athletes were found improved after supplementation of magnesium oxide.[8]

It is reported that low levels of magnesium have been linked to inflammation. Studies published in Archives of Medical research showed that taking magnesium chloride, it was possible to reduce levels of inflammation in 62 adult prediabetics.[9]

It has been also observed that low levels of magnesium contribute to migraine and some studies have found that magnesium supplementation could even reduce migraine frequency.[10]

In a study of more than 9500 men and women, the highest or lowest levels of magnesium appeared to increase the chances for dementia by as much 30 percent. Alzheimer's disease has been also linked with high/low levels of magnesium.[11]

A study published in the journal of Diabetes Care revealed that taking magnesium supplementation prevent insulin resistance thus helps to control blood sugar level.[12] Moreover it was observed that magnesium supplementation reduced insomnia severity thereby increases sleep time and decrease the amount of time to fall asleep.[13] Magnesium supplementation also prevent osteoporosis as magnesium is involved in bone formation and influencing the activities of osteoblast and osteoclast.[14]

Another beneficial effect of magnesium is that magnesium has potent mood boosting properties and can help to fight against depression.[15]

It should be remembered that a group of peoples are at risk of magnesium deficiency which may result from habitual low intake of magnesium or excessive loss of magnesium due to certain health condition like GI diseases, type 2 diabetes mellitus, hyperparathyroidism, chronic alcoholism, older adult and prolong diuretic therapy.[16]

Early signs of magnesium deficiency include loss of appetite, nausea, vomiting, fatigue and weakness. As magnesium deficiency worsen numbness, tingling, muscle cramps, seizures, personality changes, abnormal heart rhythms and coronary spasms can occur. Severe magnesium deficiency can result in hypocalcaemia or hypokalemia because mineral homeostasis is disrupted.[3] On the other hand magnesium excess occur along with K+ excess in acute and chronic renal failure as presumably contributed to the neurological manifestation.[16]

Considering the beneficial effects of magnesium in the body we must be aware to take adequate quantity of magnesium in our diet to prevent many diseases and enjoy a healthy life.

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