ALBION®
HUMAN NUTRITION

RESEARCH NOTES

A COMPILATION OF VITAL RESEARCH UPDATES ON HUMAN NUTRITION

September, 1992 Volume 1, No. 2

MAGNESIUM: Wide Spread Benefits

Over the past several years there has been an increased interest in magnesium, the fourth most abundant mineral in the human body. Magnesium plays an important role in a variety of enzyme systems, including the stimulation of Na-K ATPase-mediated active transport. Other functions of magnesium include: neurochemical transmission, cardiachomeostasis, skeletal muscle excitability, and maintaining normal intracellular calcium, sodium, and potassium levels.

Due to magnesium's involvement in so many critical systems, it stands to reason that a magnesium deficiency can have serious, or even fatal consequences. Unfortunately, magnesium deficiency is rarely diagnosed. It has long been one of the most under recognized electrolyte disorders in nutrition and medicine. One reason for this is that no laboratory test will unequivocally identify a magnesium deficiency. Several studies, using a variety of testing procedures, have reported anywhere from 7% to 65% of the populace they have tested to be hypomagnesemic. In the most recent USDA Food Consumption Survey, 74% of the people questioned where eating less than the RDA for magnesium.

People with severe magnesium deficiency usually develop some degree of anorexia, mental confusion, and vomiting. Other symptoms include neuromuscular irritability, tremors, seizures, vertigo, ataxia, nystagmus, dysarthria, and more. While symptoms of magnesium deficiency are clearly present in sever cases, many people who are at risk of the potentially serious cardiovascular consequences of magnesium deficiency have no outward symptoms.

Knowing the widespread requirements the body has for magnesium, it should come as no surprise that magnesium is being looked to more and more as an adjunct to several medical regimens. Following is a compilation of some of the most recent studies on the potential for magnesium supplementation as a helpful adjunct.

Cardiovascular Consequences of Magnesium Deficiency and Loss Histologic Lesions

According to Dr. M. Seelig, magnesium deficiency or loss can lead to:

- **Asterial or cardiac lesions**
- **Atherosclerotic changes**
- **Fibrotic complications (Thrombi)**
- **A predisposition to myocardial infarction**
- **A predisposition to sudden congestive heart failure**

Seeling M. Cardiovascular Complications of Magnesium Deficiency and Loss: Pathogenesis, Prevalence and Manifestations, Am J Cardio 1989; 63: 4G-21G.

Thiazide Treatment of Systemic Hypertension:

Effects on Serum Magnesium and Ventricular Ectopic Activity

THIS ISSUE OF ALBION RESEARCH NOTES CENTERS ON THE MACROMINERAL, MAGNESIUM.

Magnesium is an extremely versatile mineral. Its relative importance to health seems to grow with time.
The more magnesium is investigated, the more far reaching are its apparent benefits.

Clinicalandinvestigationalevidence has demonstrated an association between thiazide-induced electrolyte imbalances, such as magnesium, and ventricular arrhythmias. It is hypothesized that this increases the potential for sudden unexplained deaths. Elderly hypertensive patients are at particular risk because of their tendency to have significantly depressed serum magnesium levels, which decrease even further when treated with thiazide diuretics. Potassium Supplementation does not effectively restore electrolyte balance unless accompanied by magnesium. Therefore, concomitant administration of potassium and magnesium supplementation appears to be an approach to reducing the risk of arrhythmia and death in thiazide treated hypertensive patients.

Hollifield J, Am J Cardiol 1989; 63:22G-25G
Author Abstract

Short Term Study: Albion's® Magnesium Chelazorne®, Shows Promise in Angina Pectoris Trail

In a recent unpublished study conductedby Dr. H. Sandvad, et al., at the Hvidose Hospital of the University of Copenhagen (Denmark), the effect of magnesium therapy on angina pectoris was tested.

The researchers hypothesized that since synthetic calcium-antagonists, such as Verapamil, had a favorable effect on angina pectoris, it may be expected that oral magnesium, a physiological calcium antagonist, would also be of benefit to people with angina pectoris. The study was designed to be a prospective, randomized, double blind and placebo controlled project.

One half of the people with angina received a placebo and the other half received 50 mg of magnesium, as Albion's Magnesium Chelazome, per day. The researchers evaluated myocardial perfdrmance capacity (from ergometercycle performance readings and simultaneous ECG) as well as total nitroglycerin consumption throughout the trial.

The results of the study showed that the group on Albion's Magnesium Chelazome demonstrated a 25.6% higher myocardial performance capacity (as estimated from the work capacity testing). In addition, the placebo group required 28.9% more nitroglycerin to fend off anginal episodes than the group taking the Magnesium Chelazome.

Magnesium Deficiency Potentiates Coronary arterial Spasms Induced by Alcohol

Alcohol is known to cause myocardial depression and cardiomyopathy. Western civilization's diet is generally deficient in magnesium, which has been associated epidemiologically with heart disease and hypestension.

In this study, it was seen that the subjects, who were magnesium deficient, had enhanced coronary arterial vasospasm responses to alcohol.

Overall, these new data suggest that alcohol may cause serious cardiac complications if magnesium intake is deficient or its metabolism altered.

Altura BM, et al., Am J Coll of Nutr 1989; 22: 456.

A Common Problem with Some Forms of Orally Administered Magnesium

Magnesium sulfate, magnesium carbonate, magnesium oxide, magnesium citrate, magnesium hydroxide and magnesium phosphate are all listed in official compendia as laxatives or cathartic*. In fact, all salt forms of magnesium (including magnesium chloride and the complexed forms such as aspartate, etc.) are known for their ability to induce bowel evacuation. These salt or non chelated complexes are all slowly and incomptetely absorbed from the digestive tract.

Magnesium Supplements Notorious For Two Problematic Areas:

1. They have a propensity to cause gastointestinal side effects.

2. In general, they are very poorly absorbed.

For a magnesium supplement to be nutritionally useful, these problems must be overcome.

ALBION's Magnesium Chelazome® is the Solution!

They retain water in the intestinal lumen through osmotic forces. This causes an indirect increase in peristalsis. These forms of magnesium, in higher doses, are known to cause intestinal distress and diarrhea.**

**Goodman and Gilman, Pharmacological Basis of Therapeutics, 8th Edition; 1990: 918 MacMillan Publishing, NY, NY.*
***Lowenthal D, Clinical Pharmacology of Magnesium Chloride, The Role of Magnesium Chloride Therapy in Clinical Practice. Oxford Health Comm. 10, 1988, 9-10.*

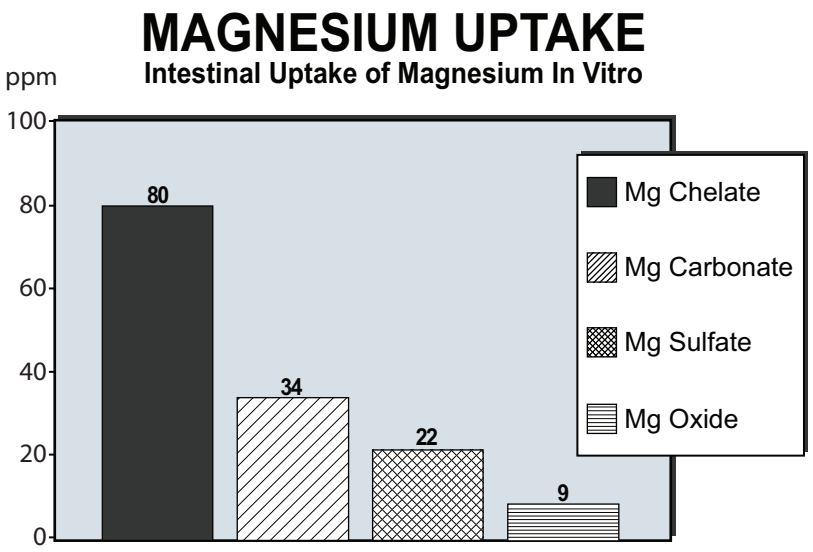
Magnesium Chelazome®:
An Oral Magnesium Supplement Without the Intestinal Distress

Magnesium Chelazome® from Albion Laboratories is a patented magnesium amino acid chelate. It does not ionize in the gut as do the other magnesiums such as the inorganic forms, or the chelated forms of excess molecular weight (over 1500 daltons). NOTE: Chelates over 1500 daltons in molecular weight cannot be absorbed intact. They must be digested before absorption. In the process of digestion, these larger chelates are destroyed, and the magnesium is treated like any other amgnesium salt would be.

Only ALBION has the patent on the formation of mineral amino acid chelates that weigh under 1500 daltons, and thus are capable of being absorbed as is. In addition, Magnesium Chelazome has a stability constant that allows it to stay intact throughout the gut due to a patented manufacturing process. Because Magnesium Chelazome does not ionize, nor draw excess fluid into the intestinal lumen, it does not exhibit the intestinal stress or diarrhea inducing side effects seen with the other magnesium forms.

Magnesium Chelazomem: Highest in Bioavailabiiity

Low molecular weight Magnesium Chelazome® is one of the more soluble forms of magnesium. Because of its solubility, low molecular weight, and lack of ionization in the gut, Magnesium Chelazome has the characteristics needed to be a highly bioavailable form of magnesium. In fact, a study reported by Professor Darrel Graff, et al., of Weber State University, has shown amino acid chelated magnesium to be absorbed at a rate that is significantly superior to other typical magnesiums.
(See graph)



Dr. D. Graff. Weber State University

Albion® Magnesium Amino Acid Chelate was absorbed at a rate that was:

*2.3 times greater than magnesium carbonate
*3.6 times greater than magnesium sulfate
*8.8 times greater than magnesium oxide

Albion Human Nutrition
100 Maple Park Blvd., Suite 110
St. Clair Shores, Michigan 48081 USA
[P] 586•774•9055 | [TF] 800•222•0733
[F] 586•774•8838
[e] info@AlbionMinerals.com