

Calming Your Life & Tinnitus with Magnesium **by Barry Keate**

Magnesium may be the most commonly deficient mineral in human nutrition. It is known as the calming or anti-stress mineral and is very important to many human functions. Magnesium is a mineral needed by every cell of the body. About half of the body's stores are found inside cells of body tissues and organs, and half are combined with calcium and phosphorus in bone.

Only 1 percent of the magnesium in the body is found in blood. The body works very hard to keep blood levels of magnesium constant. Because the body easily eliminates excess magnesium, toxicity is nearly unknown, although an excess can cause loose stools or diarrhea. Deficiency is quite common and can lead to muscle cramps, fatigue, irritability and insomnia.

The key body functions of magnesium are:

- Relaxes the muscles, including the heart;

- Works in concert with enzymes to carry out metabolic functions, including protein synthesis, energy production and neuromuscular function;

- Used for anxiety, high blood pressure, poor sleep, asthma attacks, menstrual and muscle cramps and abnormal heartbeats.

Eat Your Green Veggies

broccoli.jpg "

Green vegetables such as spinach provide magnesium because the center of the chlorophyll molecule contains it. Nuts, seeds, and some whole grains are also good sources of magnesium. Although magnesium is present in many foods, it usually occurs in small amounts. As with most nutrients, daily needs for magnesium cannot be met from a single food. Eating a wide variety of foods, including five servings of fruits and vegetables daily and plenty of whole grains, helps to ensure an adequate intake of magnesium. The magnesium content of refined foods is usually low. Whole-wheat bread, for example, has twice as much magnesium as white bread because the magnesium-rich germ and bran are removed

when white flour is processed.

Doctors will measure blood levels of magnesium whenever a deficiency is suspected. When levels are mildly depleted, increasing dietary intake of magnesium can help restore blood levels to normal. Eating at least five servings of fruits and vegetables daily, and choosing dark-green leafy vegetables often, as recommended by the Dietary Guidelines for Americans, the Food Guide Pyramid, and the Five-a-Day program, will help adults consume recommended amounts of magnesium. Magnesium tablets also may be prescribed, but some forms, in particular magnesium salts, can cause diarrhea. When in doubt, a doctor or qualified health-care provider can recommend the best way to get extra magnesium when it is needed.

Protection of the Inner Ear

Hair-cell.jpg "

Magnesium also protects the nerves in the inner ear and is a powerful glutamate inhibitor. Glutamate is a neurotransmitter, produced by the action of sound waves on the hair cells of the inner ear. The unregulated production of glutamate at sound frequencies for which there is no external stimulation is the cause of tinnitus.

Dr. Michael Seidman, in his excellent article, "Medicines to Treat the Inner Ear" states; "Decreased blood supply causes significant stress to the nerve tissue (of the inner ear) by causing the production of free radicals. *(Author's note: The major causes of tinnitus all result in decreased blood supply.)* These molecules are extremely damaging and are known to be responsible for over 100 human disorders. The accumulation of free radicals severely damages the inner ear and other tissues. Through a complex chain of events, this damage can then cause a release and accumulation of glutamate and calpains. These chemicals in high concentration are extremely destructive to the body.

"Studies have shown that excessive glutamate may play a role in the production of tinnitus. Studies also show that glutamate antagonists can have a protective effect on the inner ear and possibly be a treatment for peripheral tinnitus, that which is generated by the inner ear. Three such drugs are currently under investigation at the Henry Ford Health System for tinnitus, including magnesium.

"The protective effect of magnesium in preventing noise-induced hearing

loss has been studied since it was found that magnesium in inner ear fluid decreases significantly after intense noise exposure. The results of one placebo controlled study showed that subjects who took oral magnesium supplements displayed a significantly lower incidence of noise-induced hearing loss compared to the control group. In 1998 a highly motivated patient elected to undergo a catheter-delivered infusion of magnesium sulfate to the round window (of the inner ear). Within 60 seconds of the infusion she experienced complete resolution of her tinnitus. This effect lasted until the flow of medication was discontinued 48 hours later."(1) Another clinical trial of magnesium found that "Magnesium... exhibit(s) a statistically significant oto-neuro-protective action (inner ear protection) in noise-induced hearing loss and tinnitus."(2)

Blood Pressure Reduction

BPguage.jpg "

There are several clinical trials that show magnesium has a positive effect on reducing elevated blood pressure levels. High blood pressure, high cholesterol and stress are three of the primary aggravators of tinnitus. One study concludes, "Our meta-analysis detected dose-dependent blood pressure reductions from magnesium supplementation."(3) Another found ". . .calcium and magnesium may represent important components in the combination diet of the DASH study. It seems that it is the combination of these nutrients that is of crucial importance for the achievement of optimal blood-pressure reduction."(4) Finally, a third study states, "These findings suggest that Magnesium supplementation prevents blood pressure elevation. . . "(5)

Magnesium is very helpful in combination with calcium. Dr. Seidman also states, "Calcium supplementation has been shown to improve tinnitus symptoms in certain patients. In conjunction with magnesium, calcium also plays a vital role in the regulation of electrical impulses in the central nervous system."(6)

These products can be easily found on health food store shelves and are quite inexpensive. A recommended daily dosage is 400 mg magnesium and 1,000 mg calcium. Magnesium can be taken in therapeutic doses up to 600 mg daily. Because magnesium causes smooth muscle relaxation, it can loosen the bowels. If this happens, reduce the dosage a little.

It is very important to use a high quality magnesium product. For

instance, magnesium oxide has very low absorption. A good health food store will be able to recommend a high quality product.

References:

1 - Seidman M, Medicines to treat the inner ear, Tinnitus Today; March 2001:16-19 2 - Ehrenberger K, Felix D, Receptor pharmacological models for inner ear therapies with emphasis on glutamate receptors: a survey, Acta Otolaryngol 1995 Mar;115(2):236-40 3 - Jee SH, Miller ER 3rd, et al, The effect of magnesium supplementation on blood pressure; a meta-analysis of randomized clinical trials, Am J Hypertens 2002 Aug;15(8):691-6 4 - Suter PM, Siervo C, Vetter W, Nutritional factors in the control of blood pressure and hypertension, Nutr Clin Care 2002 Jan-Feb;5(1):9-19 5 - Berthon N, Laurant P, et al, Magnesium supplementation and deoxycorticosterone acetate-salt hypertension: effect on arterial mechanical properties and on activity of endothelin-1, Can J Physiol Pharmacol 2002 Jun;80(6):553-61 6 - Seidman M, Alternative management of tinnitus, Tinnitus Today; December 1999:11-13