

“The Magic of the Ca, Mg, Zn Ratio”

Viva™ VITAMINS' CAL>MAG>ZINC

Although it is well known that calcium, magnesium and zinc all complement each other when taken together in supplement form, not too many of us understand the importance of the right balance of this dynamic trio. We can't expect to start shoveling down all the calcium, magnesium and zinc we want and expect to have sturdy bones and teeth. Surprisingly, there is a method to the madness of the correct ratios of these three minerals to work their magic.

“WHY WORRY ABOUT RATIOS?”

If we know how much calcium is recommended for humans per RDA everyday, why can't we just take that amount and let magnesium and zinc tag along and work their magic too? This thought seems pretty reasonable if we just wanted a mediocre response from our calcium supplements. It's probably safe to say that most of us are going to want the maximum benefit from our mineral supplements. It turns out that there are certain proportions of these three minerals that yield higher bioavailability and mineral complementation than others.

“SO THEN, HOW MUCH DO I TAKE OF EACH?”

What would happen if we just took an RDA-recommended proportion of calcium in the morning, the same of magnesium in the afternoon and in like manner, the same of zinc at night? Would we get the maximum physiological benefits from all three? Probably not. This is because these three minerals surprisingly have an influence on each other's metabolism. In maintaining healthy bones, research suggests that changes in skeletal zinc content with age are related to alterations in bone morphology (J. M. Aitken, 1976). This means that the presence of zinc actually plays a role in the remodeling of bone. In addition, it is now observed that the correct ratios of these three minerals have direct influences on the metabolism of one another in fingernails as well (Shigeki Ohgitani et. al., 2004). It is also well understood that the ratio of calcium to magnesium is crucial in its

pharmacokinetics (Somer, 1995; Mahan et al, 1996).

So knowing all this, the question now is in what proportion do I take these three minerals? Well, luckily researchers at Viva Vitamins have done their homework in formulating their CAL>MAG>ZINC to take the guesswork out of the mineral proportion aspect of these three guys.

So now that I'm taking the right proportions of these minerals, what are they actually doing?

CALCIUM:

Calcium is an essential mineral for cardiac sustenance and plays a direct regulatory role in the Krebs cycle. Within the mitochondria, calcium acts as the on-off switch to several dehydrogenase enzymes involved in Krebs cycle reactions. Research indicates that calcium can increase the rate of Krebs cycle reactions in heart mitochondria. An increase in calcium can drive reactions toward completion, leading to a net increase in energy production (Wan B et. al., 1989). Calcium is also responsible for the sliding filament reaction in myocardial contraction, which is what drives the contraction-relaxation cycle of the pumping heart (Schaffer et. al., 1985). Besides calcium's critical importance in heart muscle physiology, supplemental calcium has demonstrated its required presence for the suppression of bone loss (Ruud G. L. de Sévaux, et. al., 2002).

MAGNESIUM:

Magnesium is essential to all living organisms, being required for DNA and RNA synthesis, among other things.

Magnesium also acts as a cofactor by certain ATP-utilizing enzymes. Magnesium also plays a pivotal role along with calcium in the myocardial relaxation-contraction process (Michailova et. al., 2004). It is therefore no surprise that clinical research has shown that magnesium promotes healthy heart rhythms (Pansin P et. al., 2002). Further, research has demonstrated magnesium's beneficial role in relaxation and lowering blood pressure (Jee SH et. al., 2002).

VITAMIN D

To make the bioavailability of calcium possible, this is where vitamin D comes in to play. 1,25-dihydroxcholecalciferol (the vitamin D hormone) stimulates the synthesis of epithelial calcium channels, plasma membrane calcium pumps, and induces the formation of calbindins (R. H. Wasserman, 2004). What this means is that vitamin D is basically setting up all major routes of transport to make calcium bioavailable. So, make sure to take supplemental vitamin D if your diet is poor in it or you don't get adequate sunlight throughout the day.

ZINC:

Zinc is responsible for numerous aspects of human physiology. It is a cofactor for hundreds of enzymes, it plays a substantial role in immune function (Solomons NW, 1998), protein synthesis, wound healing, cell division, etc. Zinc is also actively involved with normal growth and development during pregnancy and even on into childhood and adolescence (Simmer K et. al., 1985). We know that zinc is crucial for proper olfactory and gustatory function (Prasad AS et. al., 1997), meaning zinc is required for proper sense of taste and smell. A correct amount of zinc is necessary to be taken daily due to the fact that besides metallothionines, our bodies have no specialized mechanism for storing zinc (Rink L et. al., 2000).

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