



Happy New Year to all. I hope this year has started out on a healthy note and continues to be prosperous. We live in Colorado with over 300 days of sunshine, please take the time to spend a 10-15 minutes every few days in the sunshine to help improve your health.

I have had a lot of questions regarding Vitamin D. This vitamin is not a vitamin we need to consume in our diet. Our bodies make all that we need simply by spending about 10-30 minutes every couple of days out in the sunlight. Actually, even exposing as little as just your hands to the sunlight can be effective. This active vitamin D or supercharged D is regulated very precisely by our bodies and has many purposes.

#### Vitamin D's Mechanism of Action:

When sunshine hits your exposed skin, the skin produces vitamin D. The Vitamin D in our skin travels to our liver, where it is converted to by an enzyme to vitamin D metabolite. This metabolite's main function is to serve as the body's storage of vitamin D. When we need use of the vitamin D it is transported to the kidney and activated on by an enzyme and converts it into supercharged vitamin D, 1,25 D. This is a crucial reaction in our body in order to be able to use vitamin D. Supercharged vitamin D lasts only six to eight hours in our body while stored Vitamin D lasts for twenty days or more. The parathyroid hormone is used to regulate how much super D our bodies need. As a rule of thumb, if we expose our skin to sunshine and it turns red, we need only 1/4 of that amount of sunshine. Interestingly enough is that as we go further away from the equator, we have a higher rate of Type 1 diabetes, MS, rheumatoid arthritis, osteoporosis, breast cancer, prostate cancer, and colon cancer among other diseases. Sunshine isn't the only factor related to these disease, more importantly is the regulation of the process described above.

Now that I have explained the fine process of how vitamin D is used and controlled in the body what do we do to throw a wrench into the mechanism. There are several studies now showing that if super D remains at low levels in our bodies, the risk of several diseases increase. Animal protein containing foods create an acidic

environment in the blood that blocks the kidney enzyme from producing this metabolite thus decreasing super D.

The second factor that influences this process is calcium. Calcium in our blood is crucial for optimum muscle and nerve functioning, and it must maintain a fairly narrow range. Super D keep the blood levels of calcium operating within this narrow range by monitoring and regulating how much calcium is absorbed from food being digested, how much calcium is excreted in the urine and feces and how much is exchanged with the bones. Here is the kicker: if calcium consumption is unnecessarily high, it lowers the activity of the kidney enzyme and the levels of super D. Therefore, consuming high calcium diets is not in our best interest.

Interestingly enough, Cow's milk is high in animal protein and calcium. In fact one of the more extensive studies on MS that associated lower levels of super D, cow's milk was found to be as important a factor as latitude mentioned earlier. Consuming cow's milk has been shown to be associated with MS and Type 1 diabetes. Northern living people living along the coastline that consume vitamin-D rich fish have less occurrence of MS than people living inland. This is due in part to less cow's milk being consumed. This is independent of fish intake.

### Vitamin D and Osteoporosis:

Vitamin D is used as calcitriol in order to regulate the amount of calcium the body absorbs from food and how much it excretes and distributes to the bones. Calcitriol is considered a hormone; when more calcium is needed it enhances calcium absorption and restricts calcium excretion. Thus Vitamin D plays a critical role in osteoporosis. However, since our bodies have such a highly evolved mechanism in balancing calcium in the body, research indicates that too much intake of calcium over a long period of time may inhibit the bodies natural ability to regulate calcitriol which can permanently or temporally disrupt this mechanism. Ruining the natural regulatory mechanism of the body can be a recipe for osteoporosis in menopausal and post-menopausal women.

The information found in this article was taken from *The China Study* by T. Colin Cambell, PhD.