

VITAMIN D AND COVID

New findings uncover the important action of Vitamin D on our health
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UNDERSTANDING VITAMIN D

Vitamin D is a very specific and important vitamin. It is actually a hormone as it is part of the superfamily of the hormone receptor. It is even a steroid hormone that can penetrate the cell membrane, and bind to a receptor and penetrate the nucleus. As such, it can change the way the cell and the body behaves. It is present in many cells, including the immune system cells.

This vitamin cannot be made in our body. It can only be generated with sunlight or in a dietary form. You can eat it through fish oil, egg yolk or red meat which then goes to the liver, and is transformed into 25 (OH)2 D (25 Hydroxyl vitamin D). It can come from the sun when ultraviolet D radiation penetrates the skin and transforms a cholesterol derivative into pre-vitamin D and eventually into vitamin D which flows into the blood and circulate to the liver. The liver transforms both (eaten and Sun generated) into the 25 Hydroxyl vitamin D. From there it can go to the immune system in a 1.25 (OH) D form which is the active vitamin D, or go to the kidney. The kidneys can transform it as well to 1.25 OHD, but it is used differently. However, it can be deactivated by 24 (OH)2D. This deactivation can be triggered by for example High Fructose Corn Syrup as shown in one study.

One issue is that we currently spend in average 7.6% of our time outdoors. Of course there is variation in the winter with less time spent outdoors, and less sunlight given with greater angle of the sun to the earth. This is one reason why infectious diseases are more prevalent in the winter. Generally, all persons above the 35 parallel cannot get enough vitamin D from the sunlight in the winter. CDC details that winter months correlates the drop in vitamin D and the increase in influenza.

VITAMIN D AND HEALTH

There has been countless studies on the effect of vitamin D on health. Good reliable Data shows that

- Sunlight exposure increases Vitamin D levels
- There is an inverse correlation between Vitamin D levels and BMI
- Kidney diseased patients lose vitamin D
- Vitamin D deficiency increases susceptibility to infection and increase RTI(Respiratory tract infections)

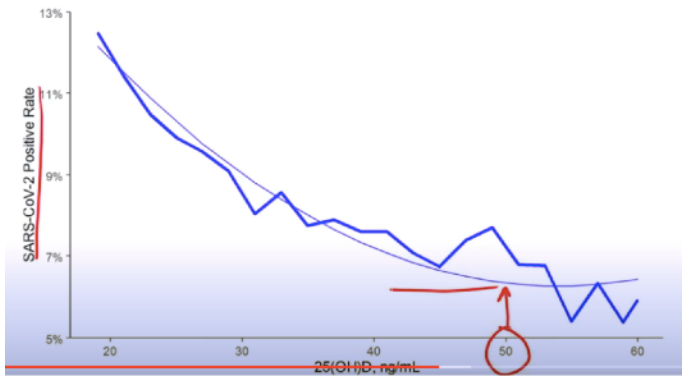
Unfortunately, the body's ability to generate vitamin D decreases by 2 past 60 to 70 years of age compared to persons in their 20s. There is also less capability in darker skin persons to metabolism vitamin D. Overweigh and obesity seem to affect the presence of vitamin D in the blood stream , as Vitamin D is stored in adipose tissue which leads to less availability in the blood.

Among others, a German study (Observational) covering over 15 years with 10,000 patients between 50 and 75 showed that person with more than 50 Nmole/L of vitamin D had significantly less chances of dying than people below the 35 level (Deficiency levels). Another published Meta analysis (25 trials) indicated a major positive impact of Vitamin D level on proportion of ARI (acute respiratory illnesses). A Japanese study proved that children given Vitamin D supplement had a very significant reduction in influenza.

VITAMIN D AND COVID 19

Age is the most significant factor for mortality related to COVID. Patients over 80 have significantly higher risk. For Obesity, BMI over 35 increases tremendously, and skin colors seems to influence dangerousness as well. This appears quite similar to the deficiency factors of vitamin D.

A global study showed that mortality from COVID is significantly lower in countries below the 35 parallel, and countries above have a significantly higher level. This parallels to the countries where low sun exposure in the winter affect vitamin D levels explaining why more industrial countries are more affected than countries in lower latitudes. However, within the industrial countries, above the 35 parallel, some northern countries have lower level of mortality than some southern countries like Italy and Spain. One explanation is that many northern countries have had systematic supplement of vitamin D, whereas Italy and Spain have a higher level of deficiency of vitamin D. A more specific study (published in May 2020) of 20 European countries showed a direct correlation in the number of cases and mortality from Covid 19, and lower level of vitamin D. An Israeli study of 8,000 patients which had level of vitamin D measured, showed first that Covid positive patients had almost all vitamin D deficiencies whereas negative patients had good level of vitamin D, and second that all elderly persons had deficiencies. A significant other study in the US with 200,000 persons showed curve of positivity directly related to the level of vitamin D as shown below



Many other studies seem to show this correlation.

A study of only 76 patients, in hospital setting divided into 2 groups with one given a heavy dose of vitamin supplement, resulted in 2 persons with supplement going to the intensive care unit, but 50 in the placebo group.

66 patients in a Nursing home in France which used to give Vitamin D supplement, showed that the ones having received the supplement within a month had a much better survival rate than those receiving it more than a month ago (the longer time the worse the outcome).

The Shade study (240 patients : randomized placebo) were given daily dose of vitamin D supplement daily for 7 days (control group), showed that at day 21 62.5% of the control group were negative whereas only 20.8% of the placebo group were.

CONCLUSION

Some countries (Finland, Norway, Sweden, Canada) have mandatory input of vitamin D in Milk or yogurt. Finland, also having little sunshine has virtually eliminated Vitamin D deficiency whereas Ireland which does not have such policy has great deficiencies and have strong issue with Covid 19.

The recommended international level of vitamin D is 4000 IU/d above 8 years of age (Lower of younger children). For information it was shown that there is no evidence of vitamin D toxicity (Polish and Canadian studies). The level of supplement raises the level of vitamin D (25 OH₂D) by 4.8Ng/ml with the first 1000IU, but 1/10 of that if one takes 15,000 IU. Of course, BMI influences greatly the need for more supplement (1.5 times if overweight and 3 times if obese).

With such obvious results and great proof and further expectations, it is obvious that vitamin D level are important to our health in general, and specifically important for all respiratory illnesses and Influenza, and seem to prevent both sensitivity to Covid 19 and, if affected, survivability.

The level 25 OH2D) level should be above 50Ng/ml. Maintaining that level is the be biggest contribution one can make to protect against Covid, and to prevent contamination to others as well. So instead of discussing confinement, the opposite should be true, especially in the winter in the northern hemisphere (above parallel 35):

- Do exercises to reduce BMI to normal level,
- Go outside as much as possible.
- Get a good diet rich in vitamin D including and supplements of vitamin D in the winter