



Vitamin D Reprise

The Most Misunderstood Hormone

By: Gary E Foresman, MD

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I find it amazing that people don't get the power of this steroid hormone, derived naturally from sunlight, and responsible for so much more than mineral metabolism, bone metabolism. I will be updating my 2007 article ([found here](#)), as so much has changed since then! What hasn't changed, worsened even, is that due to environmental toxicity, we just don't manufacture vitamin D the way we used to. Everyone is deficient (<30ng/ml), or insufficient (30-69 ng/ml) in vitamin D₃, independent of their level of sun exposure. This is especially true for people of color and elderly individuals as vitamin D₃ levels are even lower in these populations.

Briefly, as we get older, calcium starts going to the places we don't want it to, and not to the places we do. Think calcific inflammation in the form of calcific tendinitis found on X-rays and MRIs, vascular calcifications like found on your Coronary Artery Calcium score ([here's my article on Cardiac Calcium Score](#), and our [CardioMetabolic Wellness PowerPoint](#)), and calcific inflammation found in breast cancer, the basis of the mammogram. Also think of lower bone density with age as evidence of calcium not going where you want it to, *NOT* "too little calcium in your diet", as doctors tell you to sell the idea of miserable calcium supplements.

You clearly don't want to take more calcium if you frame the problem correctly. "Calcium is going where you don't want it to go, and not where you do", certainly helps you understand why calcium-only supplements are so unwise, dangerous and quite deadly (even more goes where you don't want it go). This is why the IOM recommends them, actually it's really that drug companies are the primary manufacturer of calcium "supplements" like Tums, Rolaids and Citracal. The IOM is under the control of corporate interests (Big Pharma in this case) and not an organization that cares about public health interests. The ongoing support of calcium-only supplements is supposed to wake you up to this fact.

We know that the answer is to correct the underlying metabolic defect, deficiencies and insufficiencies of D₃ and its sister nutrient vitamin K₂ (specifically MK₇). Grass-fed ghee (and natto which tastes horrible) is a great source of K₂, yet very few people eat enough of this. Every doctor should be aware, but usually aren't unfortunately, that the right dose of D₃ is whatever it takes to get blood levels in the range of 70-90 ng/ml. Please note that to convert nmol/L to ng/ml you multiply by 0.4, much of the international literature uses nmol/L. As of yet there is no "adequacy of K₂-MK₇" test, so an acceptable dose range is 180-360 mcg based on the functional medicine literature on preventing ectopic calcification.

This usually translates to K Force (OrthoMolecular-D₃ 5000IU/MK₇-180 mcg) plus 4000-5000IUD₃ in addition. It is less expensive to take separate D₃ capsules as MK₇ is pricier. Some people need more than this, some need less. Test. In correcting calcific inflammation nothing is more important than this combo. Clearly other hormones like PTH and calcitonin are involved, along with multiple other nutrients, especially magnesium, and myriad lifestyle choices. Furthermore, the success of any supplement program requires balance. That is why taking a good multivitamin like Maximum Vitality

(Rejuvenation Science) 2 tabs twice daily will provide vital carotenoids, vitamin A, and B complex to make our D3/K2 combo work better. Furthermore “fish oils” (EPA/DHA) like OrthOmega 2 caps daily will ensure healthy cell membranes and promote healthy cytokine balance.

If you are a man or a woman treating low bone density, start by correcting the flow of calcium, magnesium and all the minerals by following all our healthy lifestyle advice and the above supplements. Measure the urinary N-telopeptide test (UNTx-the bone-breakdown marker!) to assess whether bone turnover is optimized. If not yet optimized, a well-formulated multimineral (which does have calcium!) can be prescribed, my favorites include Ultra Bone Balance from Source Naturals and Rebuild from Metabolic Maintenance. Follow the UNTx every 3 months until the goal of <30 nmol BCE/mmol creatinine (BCE = Bone Collagen Equivalents) is obtained. Other nutrients might be required to reach this goal. Rarely are medicines needed to accomplish this.

Now, we finally get to why I was inspired to write this article. The real functionality of vitamin D has nothing to do with minerals, it has to do with its function as a steroid hormone! One of the simplest overviews, “Vitamin D: Nutrient, Hormone, and Immunomodulator”

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6266123/pdf/nutrients-10-01656.pdf> gives us a great look at the profound role vitamin D plays in health and immunity. I have inserted a few of the images from this article below especially for the more visual learners.

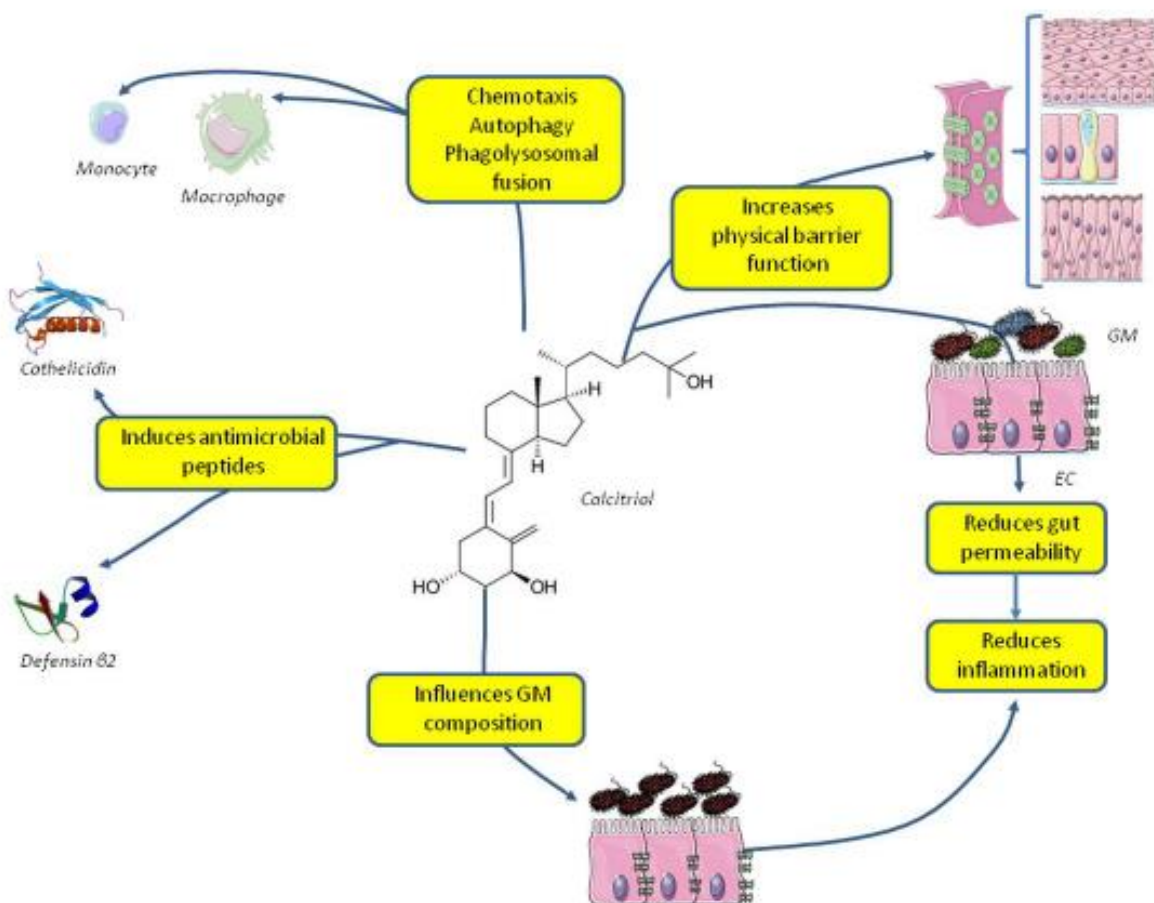


Figure 1. Effects of vitamin D on the innate immune system and gut microbiota. Abbreviations: EC, enteral cells; GM, gut microbiota.

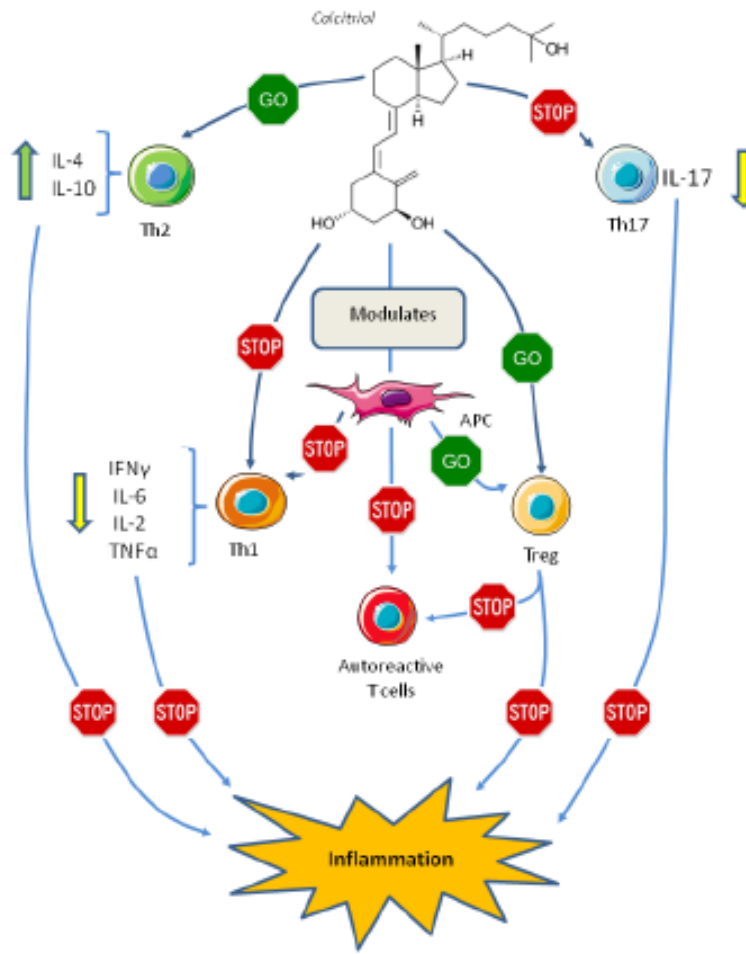


Figure 2. Effect of vitamin D on the adaptive immune system. Abbreviations: APC, antigen presenting cell; IFN, interferon; IL, interleukin; Th1, T helper 1 cell; Th2, T helper 2 cell; Th17, T helper 17 cell; TNE, tumor necrosis factor; Treg, T regulatory cell.

To summarize the above figures in a way that keeps it relatively simple:

- Vitamin D promotes the integrity of the healthy barrier functions of the GI tract whilst also interacting with the local gut microbiota, this is profoundly important for fighting off infections while decreasing food sensitivities, and all inflammatory triggers.
- Vitamin D is our best promoter of the innate immune system, which activates our acquired immune system. The induction of AntiMicrobial Peptides (AMPs) provide direct antiviral function, the stimulation of macrophage function activates the most important part of initiating our acquired immunity, all the while handling and suppressing the cytokine storm that can overwhelm the respiratory (and others) system.
- The upregulation of T Regulator cells underlies the primary role of vitamin D in preventing and treating autoimmune disease.

Please understand that if you were to devise the perfect nutrient for coronavirus or any respiratory illnesses, it would be vitamin D! I will repeat something I said recently, if anyone discourages you from high dose vitamin D (50,000 IU thrice daily for three days) at the onset of symptoms, they just don't understand vitamin D, or they're under the influence of Big Pharma!

For a little more on the AMPs I will refer you to "Human Antimicrobial Peptides as Therapeutics for Viral Infections" <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6722670/pdf/viruses-11->

[00704.pdf](#) and “Expression and Function of Host Defense Peptides at Sites of Inflammation”
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6982121/pdf/ijms-21-00104.pdf> .

These articles are probably a bit much for most of you, but my key in understanding all of the articles is that Vitamin D is the master regulator of the inflammatory and anti-inflammatory effects of these AMPs and related HDPs. It is part of why you see me utilizing the master regulator, vitamin D, as any of the current “peptide therapies” might have untoward consequences as each peptide needs regulation, which Vitamin D provides.

There are many articles stating vitamin D doesn't work. You might think of Dr Gary is to D3 as Linus Pauling is to vitamin C. What I mean by this is when studies give 10,000 to 30,000IU of D3, it doesn't work. Hell, I consider 10,000IU low-dose, maintenance, preventive therapy. Will you find research at 150,000IU daily for 3 days? No, it is the level necessary to get levels of D3 at local respiratory epithelium for the production of AMPs! I now have decades of experience using this dosage of D3 (with Viracid and vitamin C) showing profound benefits in the treatment of acute viral respiratory illnesses in my clinical practice. Similarly, when physicians used low doses of vitamin C and couldn't reproduce Pauling's results it actually just proved you must use the right dosage!

I know this is a long article, a bit technical, but worth the read and a reassurance that nutritive supportive therapies can have profound benefits. As always, listen to your own body whenever it comes to recommendations like this.

Your Journey to Health and Healing,

Gary E Foresman MD