

## COVID-19 and D3

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As a 75 year old, and a retired cell biologist, I know that I have an unacceptable existential risk from COVID-19. However, in what has turned out to be a stroke of good fortune, I was diagnosed with Parkinson's disease three years ago. It took little work on Google Scholar to uncover the huge range of broadly defensive actions of the hormone D3 ( the vitamin tag is historical). So for three years I have been taking lots of D3 supplement as it should defend my brain from several injurious processes. There is an added bonus: there are hints in the literature that I am raising my blood D3 level high enough to protect from the corona virus that causes COVID-19.

There are many clinical trials of supplementing with D3 that have failed to influence 'flu, which is why your doctor cannot recommend it. So why am I reasonably confident of success? The reason is I place especial emphasis on two studies in which the blood level of D3, which is measured as 25(OH)D3 by your clinic, was raised to physiological levels. D3 is a hormone and researchers in USA have found the natural, physiological level of 25(OH)D3 to be 100 to 125 nmol/l (“ nano moles per litre”, a unit of concentration). This talk by the late Professor Robert Heaney MD describes how he and a committee of experts defined the physiological level:

<https://ucsd.tv/search-details.aspx?showID=29077>

The two 'flu studies that meet my physiological criterion are here:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4463890/>

*“A colleague of mine and I have introduced vitamin D at doses that have achieved greater than 100 nmol/L in most of our patients for the past number of years, and we now see very few patients in our clinics with the flu or influenza like illness.”*

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0011088>

*“Maintenance of a 25-hydroxyvitamin D serum concentration of 38 ng/ml or higher should significantly reduce the incidence of acute viral respiratory tract infections significantly....”*  
(38 ng/ml is 100 nmol/L and physiological )

We have a pretty good idea of how D3 combats microbes. D3 is a hormone that controls around 2000 genes, 10% of our genome. Amongst the 5000 research papers on D3 published per year is evidence that it promotes production of anti-microbial peptides, including cathelicidin and defensins, that attack the membranes of bacteria, fungi and enveloped viruses, and kill them. Influenza and corona viruses are enveloped. Good, the clinical findings have sound support from cell biology.

My remaining question was: am I taking enough D3 supplements to reach that physiological blood level? I take lots for the Parkinson's so am well above 100-125 nmol/L, but I tell family and friends that around 2000 IU per day of D3 should be enough, or maybe 4000 IU pd for oldies who take it up less well from the gut. In USA 4000 IU per day is regarded as safe. Sunbathing before May wont make significant D3, and unless they eat a lot of oily fish, diet wont get them to 2000 IU. A tin of sardines including the oil contains about 2000 IU. Of course there is a snag: it takes 2 to 3 months for the blood level to stabilise after boosting uptake. So blood D3 rises too slowly to help anyone infected in the next month or so. D3 is not a substitute for the hygiene and social measures advised by the governments.

There's more background to D3 here, in a talk I gave to the Berwyn U3A:

<https://u3asites.org.uk/files/b/berwyn/docs/vitamind3deficiency.pdf>