High Dose Vitamin D in COVID - 19

Does 60,000 IUs of vitamin D Daily help reduce the Inflammatory markers of COVID -19?

This study cites 37 references.

COVID is a hot and controversial topic. Our job here is simple to cite the current research and provide information for patients to make informed decisions. We're not going to debate anyone about COVID, Chinese labs, vaccinations or treatments; we just are not knowledgeable enough. One anchoring tenet we would suggest however, is to get as healthy as you can. Improving your health will raise your natural immunity and make you more resistant to all viruses, bacterial and disease. It won't guarantee a specific outcome, but it might prevent a problem or at least possibly minimize your symptoms.

KEY POINTS OF THIS ARTICLE:

- All subjects were confirmed COVID-19 patients with low vitamin D levels (below 30 ng/ml)
    - NOTE: Test kits are available at our office or online to test your D level.
- COVID-19 causes a breakdown of the body's ability to control a normal immune response.
- COVID-19 can cause an increase in inflammation.
- A low vitamin d level could be a risk factor in COVID-19 infections.
- Vitamin D helps modulate an immune response to infections.
- Its possible that Vitamin D levels above 40-60 ng/ml could be COVID protective.
- Significant reduction of inflammatory markers occurred after a daily supplementation of 60,000 IUs per day for 8-10 days
    - Patients went from ~16 ng/ml to ~89 ng/ml.
- Both magnesium and vitamin D are helpful as magnesium activates vitamin D.
- There were no side affects or adverse reactions with the patients.

From Dr. Cerami: The best place to start is to measure your vitamin D levels; don't assume you have enough as 30 ng/ml is considered normal in many lab tests. Its and easy blood spot test, and you'll get results back with 2 weeks. We recommend a maintenance daily dose of 5000 IU, but you may need significantly more depending on your situation. YOU MUST monitor your levels to be safe.

To read the entire article go to:
UtahSportsandWellness.com/resources/articles or scan QR code.

Impact of Daily High Dose Oral Vitamin D Therapy on the Inflammatory Markers in Patients with COVID 19 Disease

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Maheshwar Lakkireddy, Srikanth Goud Gadiga, RD Malathi, Madhu Latha Karra, ISSV Prasad Murthy Raju, Ragini, Sangeetha Chinapaka, KSS Sai Baba, Manohar Kandakatla: from Nizam's Institute of Medical Sciences, and Gandhi Medical College, India. This study cites 37 references.

This study aims to objectively investigate the impact of daily supplementation of *60,000 IUs of vitamin D, for 8 or 10 days,* in reducing the inflammatory markers of COVID-19. The inflammatory markers assessed initially and on day 9/11, were:

- Vitamin D levels
- Neutrophil/lymphocyte (N/L) ratio
- C-reactive protein (CRP)
- Lactate dehydrogenase (LDH)
- Interleukin 6 (IL-6)
- Serum Ferritin

All subjects were confirmed COVID-19 patients with hypovitaminosis D (level below 30 ng/ml). Subjects were randomized into vitamin D (VD, n=44) and *no* vitamin D (NVD, n= 43) groups.

Between the 2 groups, there was no significant difference in age, BMI, the median duration of symptoms, or in levels of the measured inflammatory markers.

"There is a dearth of information from the randomized clinical trials in COVID-19." "Owing to the paucity of evidence from prospective randomized clinical trials, high dose vitamin D was not included in the existing treatment protocols of COVID-19." This is a randomized prospective clinical trial.

KEY POINTS FROM THIS ARTICLE:

1) "COVID-19 is known to cause immune dysregulation and vitamin D is a known immunomodulator."

2) "Serious consequences of COVID-19 are attributed to the immune dysregulation leading to the enhanced production of pro inflammatory mediators (cytokine storm)."

3) "The immune dysregulation caused by COVID-19 leads to respiratory failure and multi organ dysfunction syndrome."

- A "low vitamin D level is proposed to be an independent risk factor for acquiring COVID-19 infection, hospitalization and COVID-19 related mortality."

4) "Observational studies have reported that the patients with higher levels of serum vitamin D had less severe symptoms and vice versa and have postulated the usefulness of vitamin D in prevention and treatment of COVID-19."

- "The beneficial effects of vitamin D in COVID-19 were attributed to be mediated through its multiple actions on the immune system."

5) "Vitamin D is known to enhance the production of various anti-microbial peptides by the immune cells and vitamin D modulates the immune system according to the internal milieu."

- "It reduces the dysregulated production of self-damaging pro-inflammatory cytokines and promotes the expression of anti-inflammatory cytokines by immune cells."

- "The dynamic role of vitamin D can be of immense value in the context of immune dysfunction observed in COVID-19 patients with cytokine storm and acute respiratory distress syndrome."

6) Vitamin D has innumerable effects on human physiology.

- It promotes the innate immune response to infections and modulation of the adaptive immune response. **[Key Point]**

- It acts as a "switch to decrease the Th1 response and pro inflammatory cytokines while enhancing the production of anti-inflammatory cytokines in cases of immune dysregulation."

- It is "postulated that the levels of vitamin D above 40–60 ng/ml could be protective to tide over the COVID-19 crisis."

- "Hospitalized frail elderly patients who had regularly taken bolus vitamin D supplementation before hospitalization with COVID-19 had significantly better survival rates than others."

7) "Analysis of inflammatory markers before and after treatment in VD group has shown highly significant reduction in all the inflammatory markers after adjunctive vitamin D therapy." [daily supplementation of *60,000 IUs of vitamin D for 8 or 10 days*]

- Achievement of the targeted mean vitamin D level of 80-100 ng/ml "effectively reduced the inflammatory markers associated with cytokine storm and COVID-19 severity."

8) "Both magnesium and vitamin D are important to the immune system independently. Together, they may be beneficial in COVID-19 infection as magnesium is necessary to activate vitamin D." **[Key Point]**

9) "Vitamin D level has increased from 16 ± 6 ng/ml to 89 ± 32 ng/ml in the VD group and highly significant reduction of all the measured inflammatory markers was noted."

- "Improvement of serum vitamin D level to 80–100 ng/ml has significantly reduced the inflammatory markers without any side effects."
- "Reduction of [inflammatory] markers in NVD group was insignificant."
- "The difference in the reduction of markers between the groups (NVD vs VD) was highly significant."
- "No adverse reactions attributable to vitamin D toxicity were noted in any of the patients studied."
- Daily supplementation of *60,000 IUs of vitamin D for 8 or 10 days* "can be added safely to the existing treatment protocols of COVID-19."

10) "Therapeutic improvement in vitamin D to 80–100 ng/ml has significantly reduced the inflammatory markers associated with COVID-19 without any side effects." **[Key Point]**

COMMENTS FROM DAN MURPHY:

Article Review 27-20:
Vitamin D and Inflammation: Potential Implications for Severity of Covid-19

Article Review 29-20:
Evidence that Vitamin D Supplementation Could Reduce Risk of Influenza and COVID-19 Infections and Deaths

Article Review 9-21:
Zinc, Vitamin D and Vitamin C: Perspectives for COVID-19 with a Focus on Physical Tissue Barrier Integrity

Based on other studies we have reviewed, I believe that the synergy of zinc and vitamins C and D should extend to vitamin K2-4 and K2-7, magnesium, and omega-3 fatty acids.

I was impressed with the references of this article, many of which I have retrieved. I have included the first 12 on the following page:

Rastogi, A. et al. Short term, high-dose vitamin D supplementation for COVID-19 disease: A randomised, placebo-controlled, study (SHADE study). Postgrad. Med. J. (2020).

Aygun, H. Vitamin D can prevent COVID-19 infection-induced multiple organ damage. Naunyn. Schmiedebergs Arch. Pharmacol. 393(7), 1157–1160 (2020).

Jain, A. et al. Analysis of vitamin D level among asymptomatic and critically ill COVID-19 patients and its correlation with inflammatory markers. Sci. Rep. 10(1), (2020).

Huang, C. et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet 395(10223), 497–506 (2020).

Ye, Q., Wang, B. & Mao, J. The pathogenesis and treatment of the 'Cytokine Storm'' in COVID-19'. J. Infect. 80(6), 607–613 (2020).

Chen, L. et al. Analysis of clinical features of 29 patients with 2019 novel coronavirus pneumonia. Zhonghua Jie He He Hu Xi Za Zhi 43, E005 (2020).

Chen, G. et al. Clinical and immunological features of severe and moderate coronavirus disease 2019. J. Clin. Invest. 130(5), 2620–2629 (2020).

Grant, W. B. et al. Evidence that vitamin D supplementation could reduce risk of influenza and COVID-19 infections and deaths. Nutrients 12(4), 988 (2020).

De Smet, D., De Smet, K., Herroelen, P., Gryspeerdt, S. & Martens, G. A. Serum 25(OH)D level on hospital admission associated with COVID-19 stage and mortality. Am. J. Clin. Pathol (2020).

Merzon, E. et al. Low plasma 25(OH) vitamin D level is associated with increased risk of COVID-19 infection: An Israeli population-based study. FEBS J. 287(17), 3693–3702 (2020).

Maghbooli, Z. et al. Vitamin D sufficiency, a serum 25-hydroxyvitamin D at least 30 ng/mL reduced risk for adverse clinical outcomes in patients with COVID-19 infection. PLoS One 15(9), e0239799 (2020).

Carpagnano, G. E. et al. Vitamin D deficiency as a predictor of poor prognosis in patients with acute respiratory failure due to COVID-19. J. Endocrinol. Invest. 9, 1–7 (2020).