

FluTreat

Scientific articles in support of formulation

Summary:

FluTreat is a world breakthrough combination *Nutraceutical aid in the management of Respiratory Viral Diseases including Corona Virus- Covid 19.*

In contrast with other general multivitamin formulations that contain a multitude of elements, mostly at sub therapeutic dosages, FluTreat contains three Evidence based Nutraceuticals at science based dosages. These Nutraceuticals act synergistically to inhibit the further entry of viruses to the cells whilst inhibiting encapsulation of the virus and viral protease.

Furthermore it modulates the function of the immune system and in so doing it exerts a meaningfully protective effect against the Cytokine storm related complications that dramatically increases morbidity and mortality during Covid 19. Curcumin, N-Acetylcysteine (NAAC) and high dose Vitamin D exerts strong antioxidant, anti-inflammatory, antipyretic, and anti-fatigue effects that ensures that it is effective in managing the symptoms of the clinical course of patients suffering from Respiratory viral diseases including COVID-19. The adjunct proven Mucolytic effect of NAAC is an additional advantage in the management of complicated COVID 19 cases.

FluTreat is supplied in containers of 60, easy to swallow, Vegiecaps. This is enough to ensure a 15 day supplementation of 2 capsules twice per day. It is recommended that patients combine the intake of FluVert and FluTreat during the treatment of clinical Viral Respiratory Diseases including Covid 19.

For relevant information on the Function, Formulation, and efficacy of the three actives please find below a range of scientific Evidence Based scientific articles published on these subjects.

Curcumin:



Phytother Res 2020 Nov;34(11):2911-2920.

Potential effects of curcumin in the treatment of COVID-19 infection

Fatemeh Zahedipour¹, Seyede Atefe Hosseini¹, Thozhukat Sathyapalan², Muhammed Majeed³, Tannaz Jamialahmadi^{4 5 6}, Khalid Al-Rasadi⁷, Maciej Banach^{8 9}, Amirhossein Sahebkar^{9 10 11}

Abstract

Coronavirus disease 2019 (COVID-19) outbreak is an ongoing pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) with considerable mortality worldwide. The main clinical manifestation of COVID-19 is the presence of respiratory symptoms, but some patients develop severe cardiovascular and renal complications. There is an urgency to understand the mechanism by which this virus causes complications so as to develop treatment options. **Curcumin, a natural polyphenolic compound, could be a potential treatment option for patients with coronavirus disease. In this study, we review some of the potential effects of curcumin such as inhibiting the entry of virus to the cell, inhibiting encapsulation of the virus and viral protease, as well as modulating various cellular signaling pathways.** This review provides a basis for further research and development of clinical applications of curcumin for the treatment of newly emerged SARS-CoV-2.

Keywords: acute respiratory distress syndrome; curcuminoids; pulmonary fibrosis; viral infection.

Curcumin, a traditional spice component, can hold the promise against COVID-19?

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Abstract

The severity of the recent pandemic and the absence of any specific medication impelled the identification of existing drugs with potential in the treatment of Coronavirus disease-2019 (COVID-19), caused by severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2). **Curcumin, known for its pharmacological abilities especially as an anti-inflammatory agent, can be hypothesized as a potential candidate in the therapeutic regimen.** COVID-19 has an assorted range of pathophysiological consequences, including pulmonary damage, elevated inflammatory response, coagulopathy, and multi-organ damage. This review summarizes the several evidences for the pharmacological benefits of curcumin in COVID-19-associated clinical manifestations. **Curcumin can be appraised to hinder cellular entry, replication of SARS-CoV-2, and to prevent and repair COVID-19-associated damage of pneumocytes, renal cells, cardiomyocytes, hematopoietic stem cells, etc. The modulation and protective effect of curcumin on cytokine storm-related disorders are also discussed. Collectively, this review provides grounds for its clinical evaluation in the therapeutic management of SARS-CoV-2 infection.**

Keywords: COVID-19; Curcumin; Cytokine storm; Inflammation; Molecular targets.

Curcumin (a constituent of turmeric): New treatment option against COVID-19

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Abstract

In late December 2019, the outbreak of respiratory illness emerged in Wuhan, China, and spreads worldwide. World Health Organization (WHO) named this disease severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) caused by a new member of beta coronaviruses. Several medications are prescribed to patients, and some clinical trials are underway. Scientists are trying to find a specific drug against this virus. In this review, we summarize the pathogenesis, clinical features, and current treatments of coronavirus disease 2019 (COVID-19). Then, we describe the possible therapeutic effects of curcumin and its molecular mechanism against coronavirus-19. Curcumin, as an active constituent of *Curcuma longa* (turmeric), has been studied in several experimental and clinical trial studies. **Curcumin has some useful clinical effects such as antiviral, antinociceptive, anti-inflammatory, antipyretic, and antifatigue effects that could be effective to manage the symptoms of the infected patient with COVID-19. It has several molecular mechanisms including antioxidant, antiapoptotic, and antifibrotic properties with inhibitory effects on Toll-like receptors, NF- κ B, inflammatory cytokines and chemokines, and bradykinin. Scientific evidence suggests that curcumin could have a potential role to treat COVID-19. Thus, the use of curcumin in the clinical trial, as a new treatment option, should be considered.**

Keywords: Coronavirus-19; antiapoptotic; antifatigue; antifibrotic; antiviral; anti-inflammatory; curcumin.

Basic Clin Pharmacol Toxicol 2021 Jan;128(1):37-45.

COVID-19: A Case for Inhibiting NLRP3 Inflammasome, Suppression of Inflammation with Curcumin?

Ali Saeedi-Boroujeni^{1,2,3}, Mohammad-Reza Mahmoudian-Sani⁴, Mohammad Bahadoram⁴, Arash Alghasi⁴

Abstract

Curcumin is the effective ingredient of turmeric, sometimes used as a painkiller in traditional medicine. It has extensive biological properties such as

anti-inflammatory and antioxidant activities. SARS-CoV-2 is a betacoronavirus developing severe pneumonitis. Inflammasome is one of the most important components of innate immunity, which exacerbates inflammation by increasing IL-1 β and IL-18 production. Studies on viral infections have shown overactivity of inflammasome and thus the occurrence of destructive and systemic inflammation in patients. NLRP3 inflammasome has been shown to play a key role in the pathogenesis of viral diseases. The proliferation of SARS-CoV-2 in a wide range of cells can be combined with numerous observations of direct and indirect activation of inflammasome by other coronaviruses. Activation of the inflammasome is likely to be involved in the formation of cytokine storm. **Curcumin regulates several molecules in the intracellular signal transduction pathways involved in inflammation, including IBB, NF-kBERK1,2, AP-1, TGF- β , TXNIP, STAT3, PPAR γ , JAK2-STAT3, NLRP3, p38MAPK, Nrf2, Notch-1, AMPK, TLR-4 and MyD-88. Due to anti-inflammatory and anti-inflammasome properties without any special side effects, curcumin can potentially play a role in the treatment of COVID-19 infection along with other drug regimens.**

Keywords: COVID-19; Curcumin; NLRP3; SARS-CoV-2; acute lung injury; acute respiratory distress syndrome; inflammasome; inflammation.

Int Immunopharmacol 2020 Dec;89(Pt B):107088.

Nano-curcumin therapy, a promising method in modulating inflammatory cytokines in COVID-19 patients

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Abstract

Background: As an ongoing worldwide health issue, Coronavirus disease 2019 (COVID-19) has been causing serious complications, including pneumonia, acute respiratory distress syndrome (ARDS), and multi-organ failure. However, there is no decisive treatment approach available for this disorder, which is primarily attributed to the large amount of inflammatory cytokine production.

We aimed to identify the effects of Nano-curcumin on the modulation of inflammatory cytokines in COVID-19 patients.

Method: Forty COVID-19 patients and 40 healthy controls were recruited and evaluated for inflammatory cytokine expression and secretion. Subsequently, COVID-19 patients were divided into two groups: 20 patients receiving Nano-curcumin and 20 patients as the placebo group. The mRNA expression and cytokine secretion levels of IL-1 β , IL-6, TNF- α and IL-18 were assessed by Real-time PCR and ELISA, respectively.

Result: Our primary results indicated that the mRNA expression and cytokine secretion of IL-1 β , IL-6, TNF- α , and IL-18 were increased significantly in COVID-19 patients compared with healthy control group. After treatment with Nano-curcumin, a significant decrease in IL-6 expression and secretion in serum and in supernatant (P = 0.0003, 0.0038, and 0.0001, respectively) and IL-1 β gene expression and secretion level in serum and supernatant (P = 0.0017, 0.0082, and 0.0041, respectively) was observed. However, IL-18 mRNA expression and TNF- α concentration were not influenced by Nano-curcumin.

Conclusion: **Nano-curcumin, as an anti-inflammatory herbal based agent, may be able to modulate the increased rate of inflammatory cytokines especially IL-1 β and IL-6 mRNA expression and cytokine secretion in COVID-19 patients, which may cause an improvement in clinical manifestation and overall recovery.**

Keywords: COVID-19; Cytokine storm; IL-1 β ; IL-6; Nano-curcumin.

N-Acetylcysteine:



N-Acetylcysteine to Combat COVID-19: An Evidence Review

Zhongcheng Shi^{1,2}, Carlos A Puyo³

Abstract

The novel coronavirus disease (COVID-19) is caused by a virus (SARS-Cov-2) and is known for inducing multisystem organ dysfunction associated with significant morbidity and mortality. Current therapeutic strategies for COVID-19 have failed to effectively reduce mortality rate, especially for elderly patients. A newly developed vaccine against SARS-Cov-2 has been reported to induce the production of neutralizing antibodies in young volunteers. However, the vaccine has shown limited benefit in the elderly, suggesting an age-dependent immune response. As a result, exploring new applications of existing medications could potentially provide valuable treatments for COVID-19. **N-acetylcysteine (NAC) has been used in clinical practice to treat critically ill septic patients, and more recently for COVID-19 patients. NAC has antioxidant, anti-inflammatory and immune-modulating characteristics that may prove beneficial in the treatment and prevention of SARS-Cov-2.** This review offers a thorough analysis of NAC and discusses its potential use for treatment of COVID-19.

Conclusions

N-acetylcysteine (NAC) is inexpensive, has very low toxicity, has been FDA approved for many years, and has the potential to improve therapeutic strategies for COVID-19. NAC administered intravenously, orally, or inhaled, may suppress SARS-CoV-2 replication and may improve outcomes if used timely. Potential therapeutic benefits of NAC include, extracellularly scavenging ROS radicals, replenishing intracellular GSH, suppression of cytokine storm, and T cell protection, thus mitigating inflammation and tissue injury. NAC administration in combination with other antiviral agents may dramatically reduce hospital admission rate, mechanical ventilation and mortality.

Keywords: COVID-19; N-acetylcysteine; SARS-Cov-2.

Future Microbiol. 2020 Jun : 10.2217/fmb-2020-0074.

N-acetylcysteine as a potential treatment for novel coronavirus disease 2019

Rangel-Méndez Jorge-Aarón¹ and Moo-Puc Rosa-Ester^{*,1}

We propose N-acetylcysteine (NAC) as a potential treatment, preventive and/or adjuvant against SARS-CoV-2. It has two principal activities: NAC exhibits a mucolytic effect due to its free sulfhydryl group which reduces disulfide bonds in the cross-linked mucus glycoproteins matrix, thereby lowering mucus viscosity [7]; and NAC is a potent antioxidant with a direct effect on certain oxidant species, an indirect effect because it acts as a precursor to cysteine (required for glutathione synthesis), and the ability to restore thiol pools which in turn regulate redox state [7].

Basic laboratory and clinical studies are required to confirm possible use of NAC as an element in combating the disease caused by SARS-CoV-2. This would need to be one of myriad efforts to identify additional treatments (novel or not) aimed at halting the current COVID-19 pandemic, or at the very least slowing person-to-person contagion.

FASEB J 2020 Oct;34(10):13185-13193.

Rationale for the use of N-acetylcysteine in both prevention and adjuvant therapy of COVID-19

Silvio De Flora¹, Roumen Balansky², Sebastiano La Maestra¹

Abstract

COVID-19 may cause pneumonia, acute respiratory distress syndrome, cardiovascular alterations, and multiple organ failure, which have been ascribed to a cytokine storm, a systemic inflammatory response, and an attack by the immune system. Moreover, an oxidative stress imbalance has been demonstrated to occur in COVID-19 patients. N- Acetyl-L-cysteine (NAC) is a precursor of reduced glutathione (GSH). **Due to its tolerability, this pleiotropic drug has been proposed not only as a mucolytic agent, but also as a preventive/therapeutic agent in a variety of disorders involving GSH depletion and oxidative stress.** At very high doses, NAC is also used as an antidote against paracetamol intoxication. Thiols block the angiotensin-converting enzyme 2 thereby hampering penetration of SARS-CoV-2 into cells. **Based on a broad range of antioxidant and**

anti-inflammatory mechanisms, which are herein reviewed, the oral administration of NAC is likely to attenuate the risk of developing COVID-19, as it was previously demonstrated for influenza and influenza-like illnesses.

Moreover, high-dose intravenous NAC may be expected to play an adjuvant role in the treatment of severe COVID-19 cases and in the control of its lethal complications, also including pulmonary and cardiovascular adverse events. Keywords: COVID-19; N-acetyl-L-cysteine; glutathione; inflammation; oxidative stress.

Cleve Clin J Med 2020 Jun 8.

What is the role of supplementation with ascorbic acid, zinc, vitamin D, or N-acetylcysteine for prevention or treatment of COVID-19?

Seth R Bauer¹, Aanchal Kapoor², Mary Rath³, Suma A Thomas⁴

Abstract

Several agents intended to supplement dietary intake or endogenous molecules may have a theoretical role in preventing or treating COVID-19.

Because of their potential to influence immune response, ascorbic acid (vitamin C), zinc, vitamin D, and N-acetylcysteine have been hypothesized to be useful for prevention or treatment of COVID-19. The authors outline the biologic plausibility, applicable clinical data, and potential role of each of these agents.

Med Hypotheses 2020 Oct;143:109862.

N-Acetylcysteine: A potential therapeutic agent for SARS-CoV-2

Francis L Poe¹, Joshua Corn²

Abstract

COVID-19, a respiratory disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), continues to spread across the globe. Predisposing factors such as age, diabetes, cardiovascular disease, and lowered immune function increase the risk of disease severity. T cell exhaustion, high viral load, and high levels of TNF- α , IL1 β , IL6, IL10 have been associated with severe SARS-CoV-2. Cytokine and antigen overstimulation are potentially responsible

for poor humoral response to the virus. Lower cellular redox status, which leads to pro-inflammatory states mediated by TNF- α is also potentially implicated. In vivo, in vitro, and human clinical trials have demonstrated N-acetylcysteine (NAC) as an effective method of improving redox status, especially when under oxidative stress. In human clinical trials, NAC has been used to replenish glutathione stores and increase the proliferative response of T cells. NAC has also been shown to inhibit the NLRP3 inflammasome pathway (IL1 β and IL18) in vitro, and decrease plasma TNF- α in human clinical trials. Mediation of the viral load could occur through NAC's ability to increase cellular redox status via maximizing the rate limiting step of glutathione synthesis, and thereby potentially decreasing the effects of virally induced oxidative stress and cell death. **We hypothesize that NAC could act as a potential therapeutic agent in the treatment of COVID-19 through a variety of potential mechanisms, including increasing glutathione, improving T cell response, and modulating inflammation.** In this article, we present evidence to support the use of NAC as a potential therapeutic agent in the treatment of COVID-19.

Keywords: COVID-19; Coronavirus; Glutathione; N-acetylcysteine; NAC; NLRP3; Oxidative stress; Redox potential; Redox status; SARS-COV-2; T Cell Exhaustion; TNF- α .

Mini Rev Med Chem 2020 Oct 27.

Perspectives for the use of N-acetylcysteine as a candidate drug to treat COVID-19

Pan Luo¹, Yi Liu¹, Dong Liu¹, Juan Li¹

Abstract

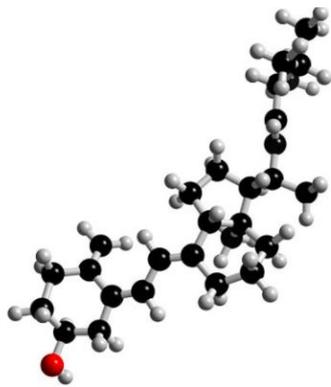
Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome-related coronavirus-2 (SARS-CoV-2) has become an ongoing pandemic worldwide. However, there are no vaccines or antiviral drugs with proven clinical efficacy. Therefore, a remedial measure is urgently needed to combat with the devastating COVID-19. **The pharmacological activities of N-acetylcysteine (NAC) and its potential functions in inhibiting the**

progression of COVID19 make it a promising therapeutic agent in COVID-19.

In this mini-review, we discussed the therapeutic potential of NAC in COVID-19 from the perspective of its multisite pharmacological actions.

Keywords: COVID-19; N-acetylcysteine; SARS-COV-2; inflammation; mental disorders; nitric oxide; oxidative stress; thrombosis.

Vitamin D:



Maturitas 2020 Oct;140:24-26.

Point of view: Should COVID-19 patients be supplemented with vitamin D?

Cédric Annweiler¹, Zhijian Cao², Jean-Marc Sabatier³

Affiliations expand

Abstract

Using Hill's methodology for exploring causality, we aimed to determine in early May 2020 whether evidence supports vitamin D as a biological determinant of COVID-19 outcomes. **Vitamin D is a secosteroid hormone theoretically able to reduce COVID-19 risk through regulation of (i) the renin-angiotensin system, (ii) cellular innate and adaptive immunity, and (iii)**

physical barriers. Inverse associations were found between 25-hydroxyvitamin D concentrations and COVID-19 incidence and mortality.

Randomized controlled trials testing vitamin D supplementation in the treatment of COVID-19 are in progress. Positive results in such studies would encourage the use of vitamin D supplements as an adjuvant treatment in COVID-19.

Keywords: Biomarker; COVID-19; Causality; SARS-CoV-2; Treatment; Vitamin

Mayo Clin Proc. 2020 Aug; 95(8): 1804–1805.

Vitamin D Supplementation During the COVID-19 Pandemic

Darko Siuka, MD

The coronavirus disease 2019 (COVID-19) pandemic has severe short-term and long-term consequences on individuals, health systems, and economies.

Considering the studies on the role of vitamin D in the prevention of acute respiratory infections, supplementation of vitamin D may be reasonable also for the prevention of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections and reducing morbidity and mortality in COVID-19 high-risk patients.

Vitamin D deficiency is more common in older age groups, smokers, those who are obese, and in patients with chronic diseases such as diabetes, hypertension, various gastroenterological diseases, and also in African Americans.¹ The high-risk groups that have more complications and higher mortality in COVID-19 coincide with groups that have a high incidence of vitamin D deficiency. We believe that vitamin D deficiency might be one of the important risk factors for COVID-19 complications and higher mortality.

Studies of vitamin D replacement have shown that vitamin D ameliorates innate immunity (the immediate response of macrophages to invading viruses and bacteria in the mucous membranes),² thereby reducing the incidence and severity of acute respiratory infections.³ This effect requires a sufficient serum level of 25(OH)D₃ being crucial for macrophages to activate it into hormone D (calcitriol), which activates genes for the synthesis of antimicrobial factors destroying viruses (such as SARS-CoV-2), fungi, and bacteria.² Also, vitamin D modulates the cellular immune response and, as expected, attenuates the cytokine storm,⁴ the event so fatal in SARS-CoV-2–induced pneumonia. Therefore, we suggest it would be reasonable to supplement vitamin D in

subpopulations at risk of vitamin D deficiency and unfavorable COVID-19 outcomes, as well as in individuals already infected with SARS-CoV-2 to achieve optimal 25(OH)D3 concentrations as quickly as possible.

It is challenging to conduct evidence-based medicine in cases such as the COVID-19 pandemic. To the best of our knowledge, there are no data on the effects of vitamin D in SARS-CoV-2 infection; then again, there are reliable data on the beneficial effects of cholecalciferol in attenuating viral respiratory infections in people with low levels of vitamin D. The European Centre for Disease Prevention and Control makes this argument and encourages health care professionals to take actions that are logical in their own right, based on previously known findings in related fields: “Public health authorities should recognize that extra-scientific factors (e.g. feasibility of implementing scientific advice, time pressure, socio-political factors, institutional factors, economic interests, pressure from neighboring countries etc.) are inherent to the decision-making process. These factors will also influence the implementation of any proposed response measures. **Decisions should therefore always be evidence informed, but they will very rarely be purely evidence based.**”⁵ **In Slovenia, in view of COVID-19 pandemic, medical doctors were urgently advised by leading experts to supplement vitamin D in high-risk and fragile individuals and in COVID-19 patients. With this letter to the editor we address the broader medical community to urgently consider vitamin D supplementation in high-risk patients for adverse COVID-19 outcomes.**

J Transl Med 2020 Aug 26;18(1):322.

The importance of vitamin d metabolism as a potential prophylactic, immunoregulatory and neuroprotective treatment for COVID-19

Yi Xu^{1,2,3}, David J Baylink⁴, Chien-Shing Chen^{5,6}, Mark E Reeves^{5,6}, Jeffrey Xiao⁴, Curtis Lacy⁵, Eric Lau⁵, Huynh Cao^{5,6}

Abstract

The coronavirus disease 2019 (COVID-19) pandemic has led to a declaration of a Public Health Emergency of International Concern by the World Health Organization. As of May 18, 2020, there have been more than 4.7 million cases and over 316,000 deaths worldwide. COVID-19 is caused by a highly infectious novel coronavirus known as severe acute respiratory syndrome coronavirus-2

(SARS-CoV-2), leading to an acute infectious disease with mild-to-severe clinical symptoms such as flu-like symptoms, fever, headache, dry cough, muscle pain, loss of smell and taste, increased shortness of breath, bilateral viral pneumonia, conjunctivitis, acute respiratory distress syndromes, respiratory failure, cytokine release syndrome (CRS), sepsis, etc. While physicians and scientists have yet to discover a treatment, it is imperative that we urgently address 2 questions: how to prevent infection in immunologically naive individuals and how to treat severe symptoms such as CRS, acute respiratory failure, and the loss of somatosensation. Previous studies from the 1918 influenza pandemic have suggested vitamin D's non-classical role in reducing lethal pneumonia and case fatality rates. **Recent clinical trials also reported that vitamin D supplementation can reduce incidence of acute respiratory infection and the severity of respiratory tract diseases in adults and children.** According to our literature search, there are no similar findings of clinical trials that have been published as of July 1st, 2020, in relation to the supplementation of vitamin D in the potential prevention and treatment for COVID-19. In this review, we summarize the potential role of vitamin D extra-renal metabolism in the prevention and treatment of the SARS-CoV-2 infection, helping to bring us slightly closer to fulfilling that goal. We will focus on 3 major topics here: 1. **Vitamin D might aid in preventing SARS-CoV-2 infection:** Vitamin D: Overview of Renal and Extra-renal metabolism and regulation. Vitamin D: Overview of molecular mechanism and multifaceted functions beyond skeletal homeostasis. Vitamin D: Overview of local immunomodulation in human infectious diseases. Anti-viral infection. Anti-malaria and anti-systemic lupus erythematosus (SLE). 2. Vitamin D might act as a strong immunosuppressant inhibiting cytokine release syndrome in COVID-19: Vitamin D: Suppression of key pro-inflammatory pathways including nuclear factor kappa B (NF- κ B), interleukin-6 (IL-6), and tumor necrosis factor (TNF). 3. Vitamin D might prevent loss of neural sensation in COVID-19 by stimulating expression of neurotrophins like Nerve Growth Factor (NGF): Vitamin D: Induction of key neurotrophic factors. .

Keywords: 1,25(OH) $_2$ D $_3$; 25(OH)D; COVID-19; Coronavirus; Extra-renal; IL-6; Immunomodulation; Infection; Metabolism; NF- κ B; NGF; TNF; Vitamin D.

Evidence that Vitamin D Supplementation Could Reduce Risk of Influenza and COVID-19 Infections and Deaths

William B Grant¹, Henry Lahore², Sharon L McDonnell³, Carole A Baggerly³, Christine B French³, Jennifer L Aliano³, Harjit P Bhattoa⁴

Abstract

The world is in the grip of the COVID-19 pandemic. Public health measures that can reduce the risk of infection and death in addition to quarantines are desperately needed. This article reviews the roles of vitamin D in reducing the risk of respiratory tract infections, knowledge about the epidemiology of influenza and COVID-19, and how vitamin D supplementation might be a useful measure to reduce risk. Through several mechanisms, vitamin D can reduce risk of infections. Those mechanisms include inducing cathelicidins and defensins that can lower viral replication rates and reducing concentrations of pro-inflammatory cytokines that produce the inflammation that injures the lining of the lungs, leading to pneumonia, as well as increasing concentrations of anti-inflammatory cytokines. **Several observational studies and clinical trials reported that vitamin D supplementation reduced the risk of influenza, whereas others did not. Evidence supporting the role of vitamin D in reducing risk of COVID-19 includes that the outbreak occurred in winter, a time when 25-hydroxyvitamin D (25(OH)D) concentrations are lowest; that the number of cases in the Southern Hemisphere near the end of summer are low; that vitamin D deficiency has been found to contribute to acute respiratory distress syndrome; and that case-fatality rates increase with age and with chronic disease comorbidity, both of which are associated with lower 25(OH)D concentration.** To reduce the risk of infection, it is recommended that people at risk of influenza and/or COVID-19 consider taking 10,000 IU/d of vitamin D₃ for a few weeks to rapidly raise 25(OH)D concentrations, followed by 5000 IU/d. The goal should be to raise 25(OH)D concentrations above 40-60 ng/mL (100-150 nmol/L). For treatment of people who become infected with COVID-19, higher vitamin D₃ doses might be useful. Randomized controlled trials and large population studies should be conducted to evaluate these recommendations.