

18 Best Supplements to Reduce Cytokine Storm, a Severe Complication from COVID-19 (July 2022)

By [Dr Frank Yap, MD](#) July 08, 2022

As of July 2022, there are more than 1,700 [early treatment studies](#) that have been published and shared with the whole world. New ones are being added every day.

This is a review of the literature to date, covering multiple observational studies, randomized controlled trials and references related to natural supplements and cytokine storm with more than 200 studies and references.

We know that while a large percentage of the population only experiences mild to moderate symptoms of COVID-19 and won't require hospitalization, others experience severe symptoms and complications, require hospitalization, or may even die.

It appears one of the differences between those who have a mild illness and severe illness is related to the body's ability to reduce the hyperimmune response that leads to a cytokine storm and the hyper-coagulability (tendency for blood clots) that often accompanies it. The cytokine storm may be one possible way to explain the severe reaction of those in hospitals. This may also explain why younger people and those with a healthy immune system and without preexisting health conditions tend to have an easier time. Their bodies may release lower levels of cytokines creating just enough inflammation for healing.

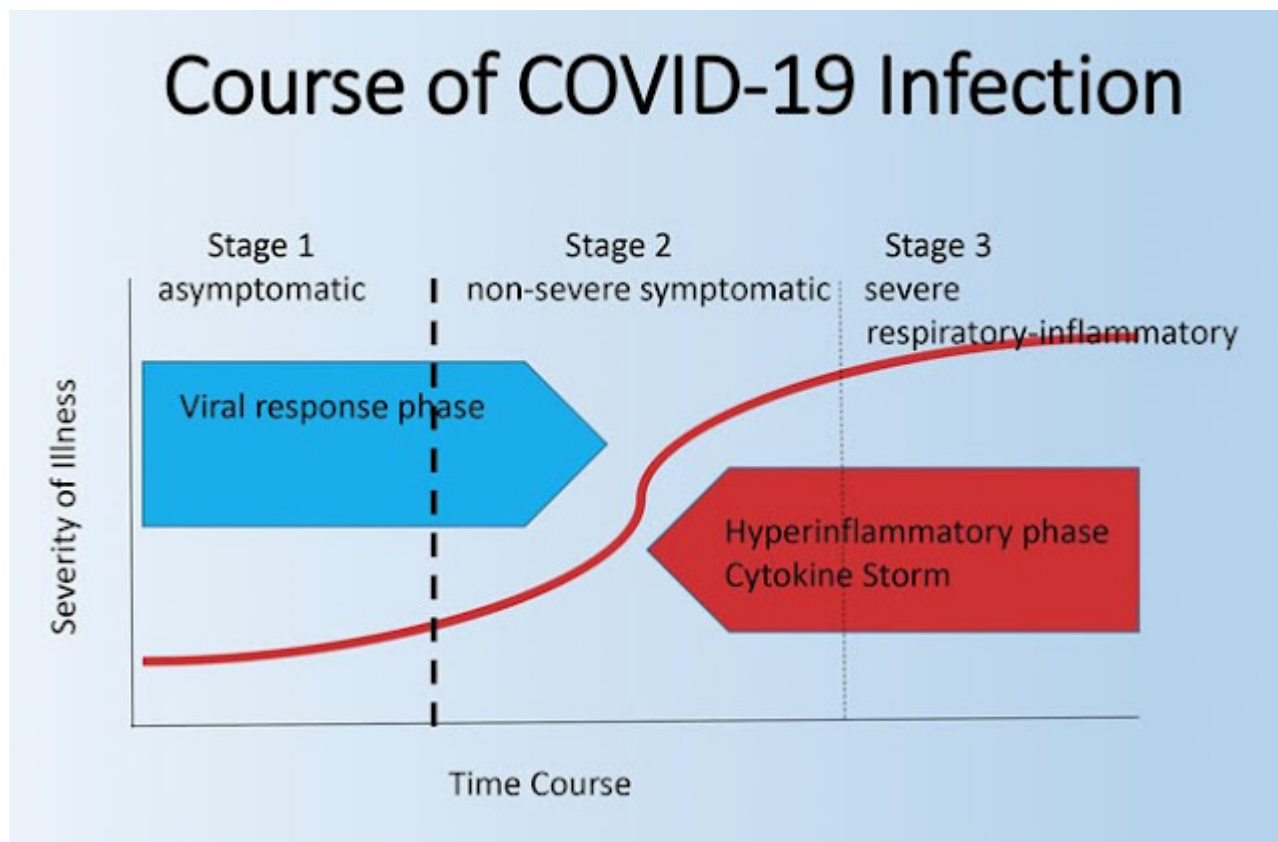
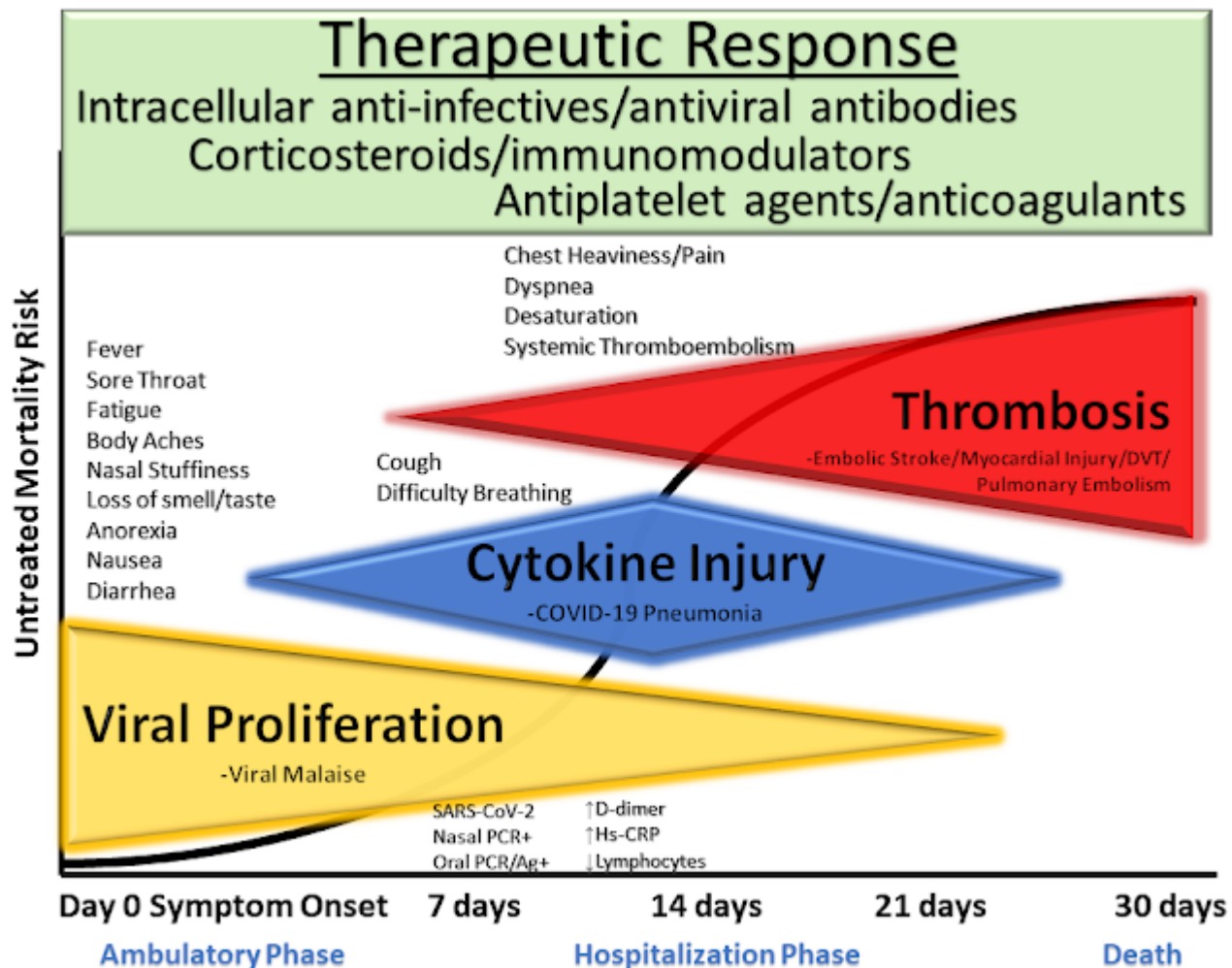


Image credit: ClevelandClinic

Our aim here isn't to cover what the doctors will do to prevent or stop a cytokine storm in the hospital environment. As this is a consumer-oriented article, our aim here is to cover actionable ways for you to reduce your risk of a cytokine storm. Do take note that supplements are not 100% protective or curative against COVID-19. Please consult your health care professional before using products based on this article.



McCullough et al. Reviews in Cardiovascular Medicine, 2020

With age, immune function markedly declines which means we must take steps to support a healthy immune response. Nutritional supplements are meant to tip the scales in favour of you in terms of your immune system and to improve your probability of a smooth recovery, if at all you do get COVID-19. You will still need to follow the advice given by CDC, WHO and your local authority in terms of local guidelines such as mask wearing, social distancing, vaccination and avoiding crowds.

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	Anti-Viral	Anti-Inflammatory	Anti-Coagulant
Vitamin D3		Yes	Yes
Quercetin	Yes	Yes	Yes
Zinc	Yes	Yes	
Melatonin	Yes	Yes	
Curcumin / Turmeric	Yes	Yes	
Vitamin C		Yes	
Black Seed Oil	Yes	Yes	
NAC (N Acetyl Cysteine)		Yes	Yes
Green Tea (EGCG)	Yes	Yes	
Thiamine (B1)		Yes	

Nutraceutical Therapy by Mode of Action

Immune Nutrients to Calm Cytokine Storm

If you want to optimize your immune health and reduce your risk of a cytokine storm, there are various immune nutrients and **foods that may reduce cytokines**.

While at this point, research is on-going and scientists are working hard to understand COVID-19 and find treatment options, these are some promising developments. The good news is that you don't have to wait to take steps to protect your health. There are a number of things that you can do to improve your immune system, including using immune nutrients that may help to calm a cytokine storm ([J Biol Regul Homeost Agents](#), [The Lancet](#), [Microbiol Mol Biol Rev](#)).

Related: [Cytokine Storm Signs and Symptoms](#)

1. Vitamin D3 and Cytokine Storm

Vitamin D deficiency affects the body's susceptibility to infection and has been associated with influenza, hepatitis C, human immunodeficiency virus (HIV) and other viral diseases [Source]. Surveys indicate that most people in the United States consume less than recommended amounts of vitamin D. Sun exposure, which increases serum 25(OH)D levels, is one of the reasons serum 25(OH)D levels are usually higher than would be predicted on the basis of dietary vitamin D intakes alone.

Vitamin D deficiency is also known to enhance a process known as the "cytokine storm" (Marik, Jun 2020, *Frontiers in Immunology*, Dec 2020).

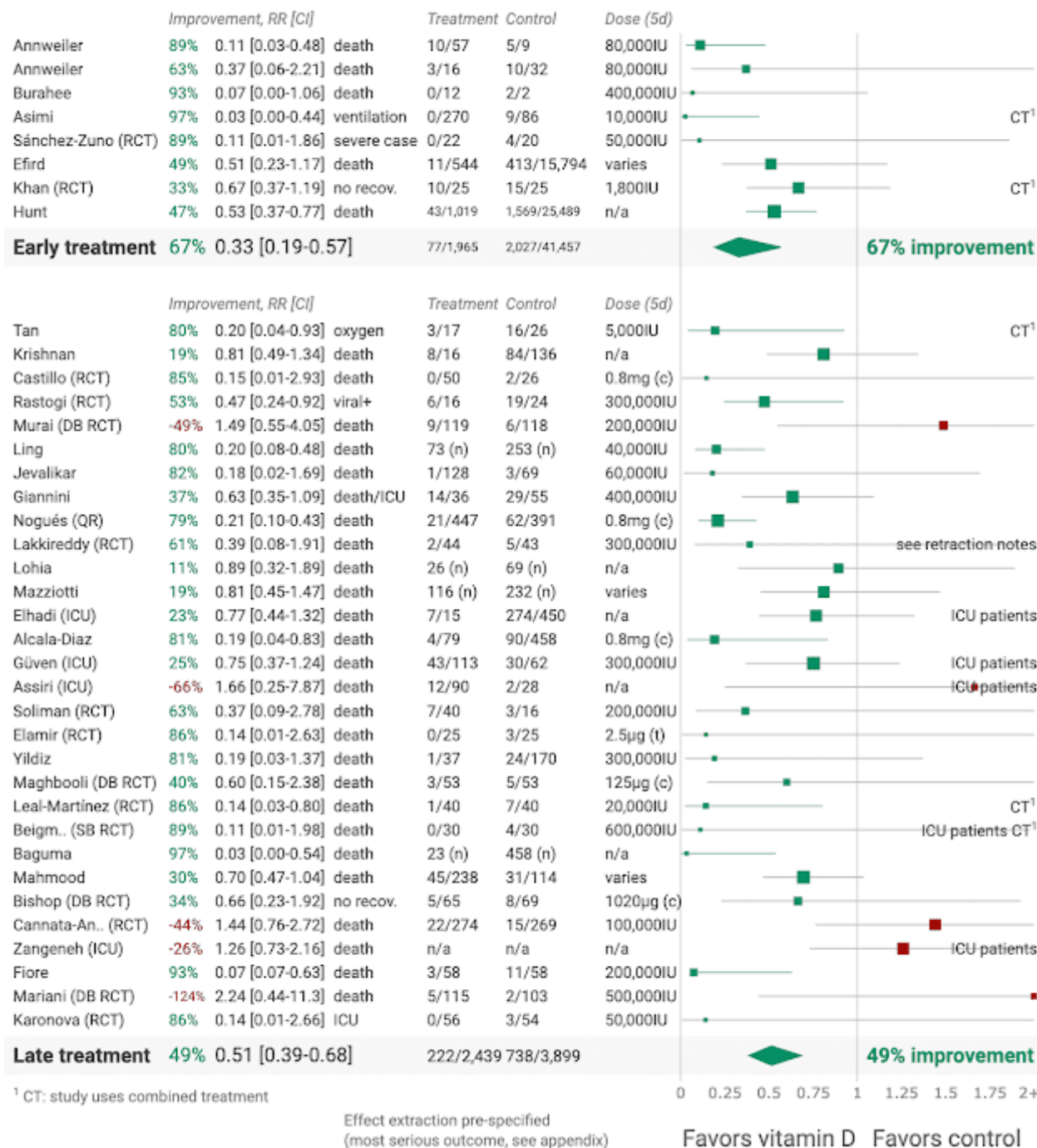
Vitamin D and COVID-19

Based on several publications and studies, vitamin D seems to be the "most promising" natural supplement for COVID-19 protection. Several studies suggest that people with lower levels of vitamin D are more likely to test positive for the coronavirus, have more severe symptoms, and may have a higher risk of dying from COVID-19.

Check out the evidence tracker on vitamin D and COVID-19 from c19vitamind.com (constantly updated), with more than 100 published studies by more than 900 scientists.

Vitamin D COVID-19 treatment studies

vdmeta.com Jul 2022



Results of a systematic review and meta-analysis ([Nutrients 2021](#)) suggested that COVID-19 mortality risk correlates inversely with vitamin D3 status, and a mortality rate **close to zero** could theoretically be achieved at 50 ng/ml 25(OH)D3.

Vitamin D has also been shown to have an anticoagulant effect. A decrease in 25-hydroxyvitamin D [25(OH)D] concentration has also been associated with an increased risk of venous thromboembolism ([PubMed](#)).

Safety: Daily intakes of up to **25–100 mcg (1,000 IU–4,000 IU)** vitamin D in foods and dietary supplements are safe for children (depending on their age) and up to 100 mcg (4,000 IU) are safe for adults. These values, however, do not apply to individuals receiving vitamin D treatment under the care of a physician. Higher intakes (usually from supplements) can lead to nausea, vomiting, muscle weakness, confusion, pain, loss of appetite, dehydration, excessive urination and thirst, and kidney stones. In extreme cases, vitamin D toxicity causes renal failure, calcification of soft tissues throughout the body (including in coronary vessels and heart valves), cardiac arrhythmias, and even death.

Vitamin D, Omicron and Deltacron

Will Vitamin D Work Against Omicron and Deltacron? Vitamin D is not variant specific because its primary mode of action is to support the body's immune system which reacts in a variety of ways against viral attack, not just in a specific antibody reaction to a specific spike protein.

Vitamin D, Resveratrol and Cytomegalovirus

Dormant cytomegalovirus (CMV) is **carried by 70-90% of the adult population and is reactivated by inflammation**. One third of patients in hospital intensive care units reactivate CMV which doubles their mortality rate. There is agreement that **Covid-19 co-infection with cytomegalovirus is associated with higher rates of mortality in older people** who have an aged (senescent) immune system.

Cytomegalovirus also dulls the vitamin D receptors thus preventing the active form of vitamin D to enter living cells.

Resveratrol inhibits replication of cytomegalovirus in infected lung cells. Resveratrol also binds to and activates the vitamin D receptors, thus allowing cells in the body to respond to vitamin D.

Buy Vitamin D Supplements on Amazon

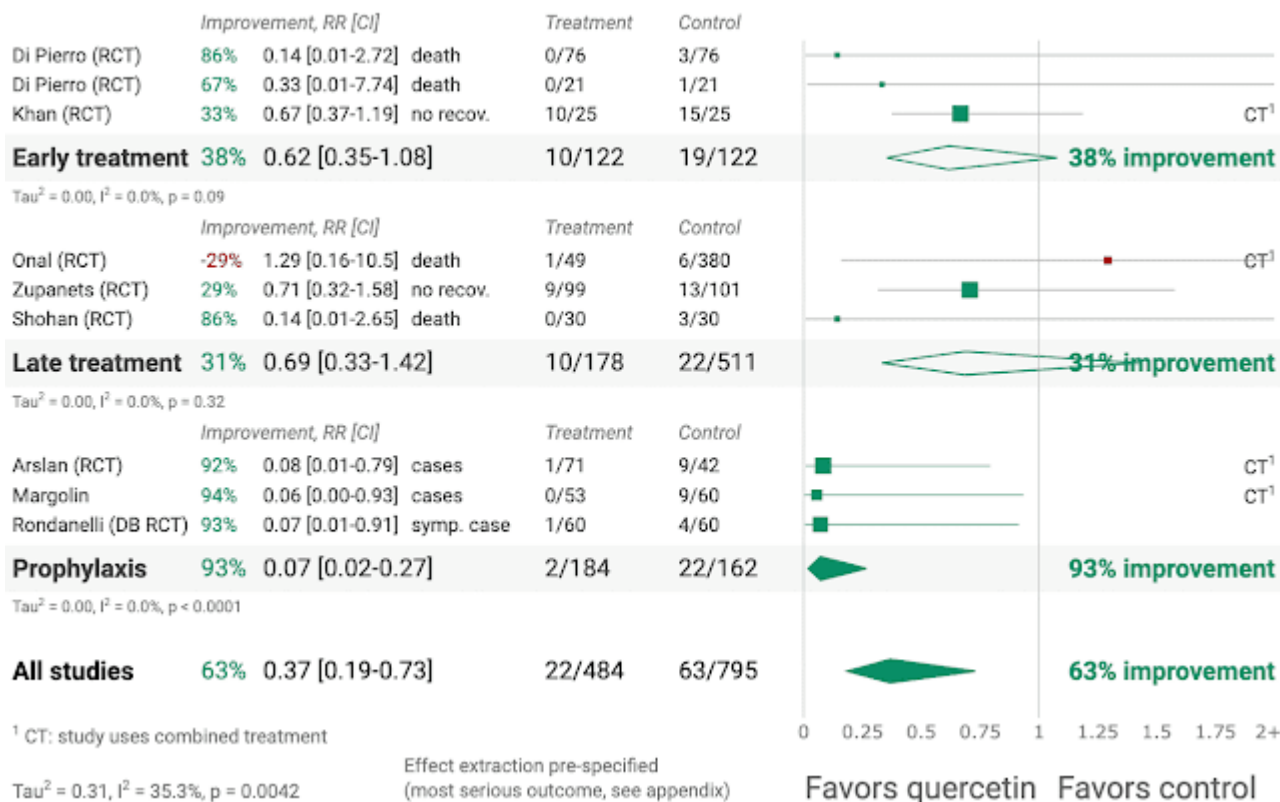
Related: Best Vitamin D Supplement

2. Quercetin

As of July 2022, there have been 9 published studies of quercetin and COVID-19 (c19quercetin.com)

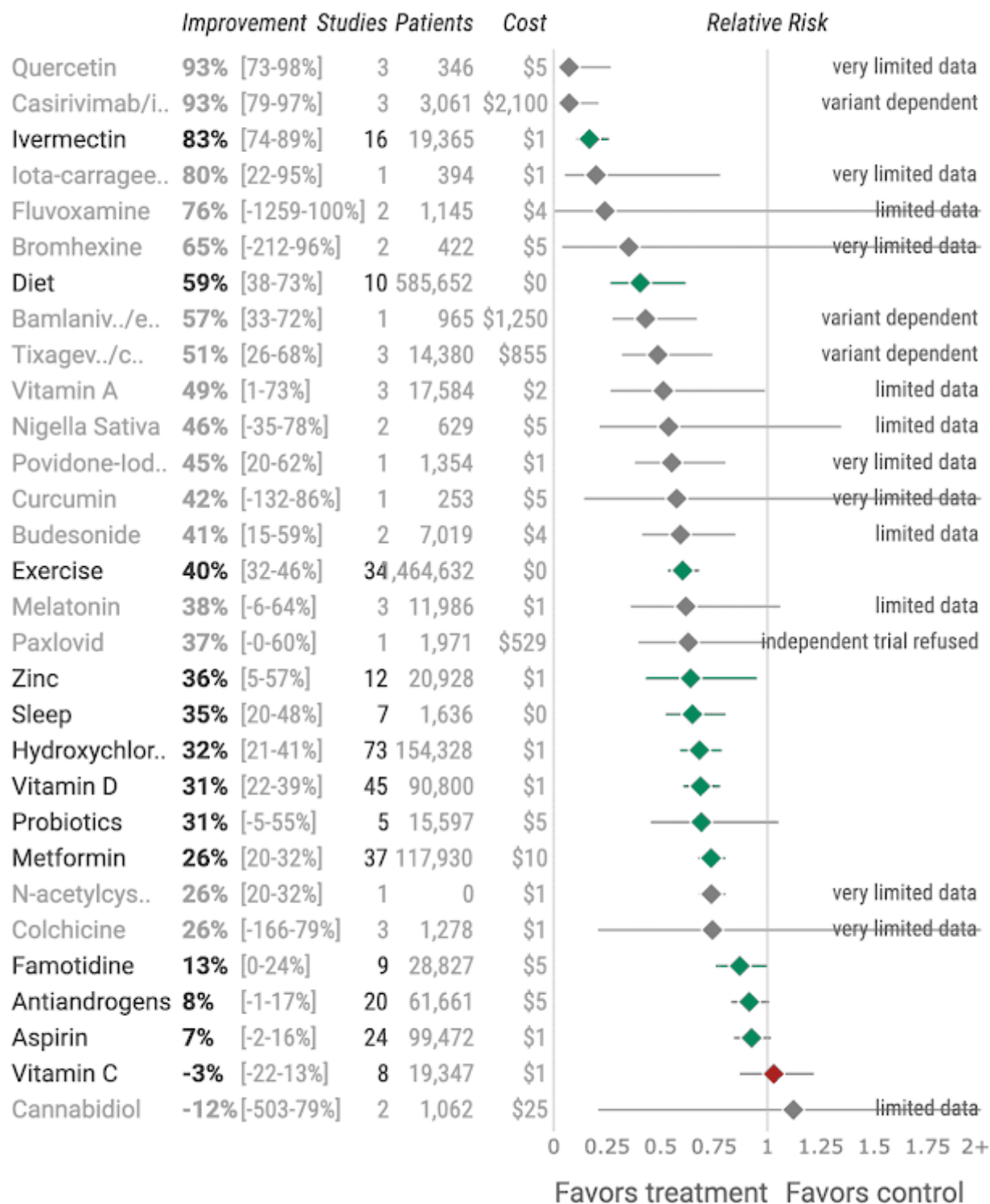
9 quercetin COVID-19 studies

c19quercetin.com Jun 2022



Quercetin is also no. 1 in this prevention studies league table:

Prophylaxis studies (pooled effects) c19early.com Jul 7, 2022



Quercetin is a pigment that is found in plants, vegetables, and fruits, and serves as an immune nutrient offering many health benefits. Elderberry, red onions, white onions and cranberries are the richest sources of quercetin. It is a flavonoid and antioxidant that may help to reduce inflammatory cytokines, infections, allergies and **anti-blood clot property**. Research has found that quercetin may be particularly beneficial for viral respiratory infections.

Quercetin **was initially found** to provide broad-spectrum protection against SARS coronavirus in the aftermath of the SARS epidemic that broke out across 26 countries in 2003.

Quercetin as a Zinc Ionophore

Quercetin was found to act as a zinc ionophore (**J Agric Food Chem. 2014**). A 2015 study found that that Quercetin shows inhibitory activity in the early stages of a wide range of influenza viruses, including H1N1 and H5N1 (**Viruses 2016**). Although influenza is not in the same family of viruses as the coronavirus, it's plausible that a similar mechanism could apply here. There is actually some evidence that Quercetin has **already proven effective** at treating Ebola and Zika viruses.

Quercetin and Vitamin C

Incidentally, ascorbic acid (vitamin C) and the bioflavonoid quercetin (originally labeled vitamin P) were both discovered by the same scientist — Nobel prize winner **Albert Szent-Györgyi**. Quercetin and vitamin C also act as an antiviral drug, effectively inactivating viruses.

Quercetin Dosage

The **FLCCC I-MASK+ protocol** recommends 250 mg daily for prevention and 250 mg twice daily for early treatment.

Quercetin works best when taken with vitamin C and Bromelain, as vitamin C helps activate it and bromelain helps with the absorption.

Precaution: Quercetin should be used with caution in patients with hypothyroidism (low thyroid hormone) and relevant thyroid hormone levels should be monitored.

Quercetin and ivermectin interactions? According to [Drugs.com](#): "No interactions were found between ivermectin and Quercetin. This does not necessarily mean no interactions exist. Always consult your healthcare provider."

Quercetin and COVID-19

For an updated list of studies, check out [c19quercetin.com](#).

A word about quercetin: Some physicians are recommending this supplement to reduce viral illnesses because quercetin acts as a zinc ionophore to improve zinc uptake into cells. It is much less potent than HCQ (hydroxychloroquine) as a zinc transporter, and it does not reach high concentrations in lung cells that HCQ does. Quercetin may help reduce risk of viral illness if you are basically healthy. But it is not potent enough to replace HCQ for treatment of COVID once you have symptoms, and it does not adequately get into lung tissue unless you take massive doses (3-5 grams a day), which cause significant GI (gastrointestinal) side effects such as diarrhea.

Buy Quercetin Supplements on Amazon

Related:

- [List of Doctors that will prescribe Ivermectin](#)
- [Best Quercetin Zinc Supplement](#)
- [Best Pulse Oximeter](#)

3. Zinc and Cytokine Storm

Zinc deficiency can significantly impact your immune system, but it can also result in a hyper inflammatory response from pro-inflammatory cytokines ([Nutrients. 2017](#)).

As early as 2010, zinc has been shown in a lab study to inhibit regular coronavirus (not the current SARS-CoV-2) in a [2010 publication](#).

Yet [another study from Belgium](#) (Nutrients 2021) has demonstrated the significance and importance of adequate levels of zinc and selenium in patients who have COVID-19, and especially in those who have underlined comorbidities identified to increase the severity of disease.

Zinc is another powerful immune nutrient known for its benefits for providing immune health support and inflammation reduction as well as for improving cold and respiratory symptoms,

wound healing, acne reduction, and lowering the risk of age-related diseases. This trace element is essential to cell function and involved in over 100 enzymes. Research on atherosclerosis and diabetes mellitus suggests that zinc deficiency may contribute to low-grade systemic inflammation.

Aging is associated with compromised immunity, that just means that your immune response to pathogens and infections starts to slow and is less robust, including a reduced vaccine immune response/efficacy.

Improving zinc intake/zinc status improves/modulates/enhances immune function. The flip side is, while some aspects of immunity slow, others increase. Uncontrolled immune responses drive excess inflammation. Zinc helps to balance all of this.

The **National Institutes of Health** (NIH) states:

“Zinc is involved in numerous aspects of cellular metabolism. It is required for the catalytic activity of approximately 100 enzymes and it plays a role in immune function, protein synthesis, wound healing, DNA synthesis, and cell division. Zinc also supports normal growth and development during pregnancy, childhood, and adolescence and is required for proper sense of taste and smell.”

Zinc and COVID-19

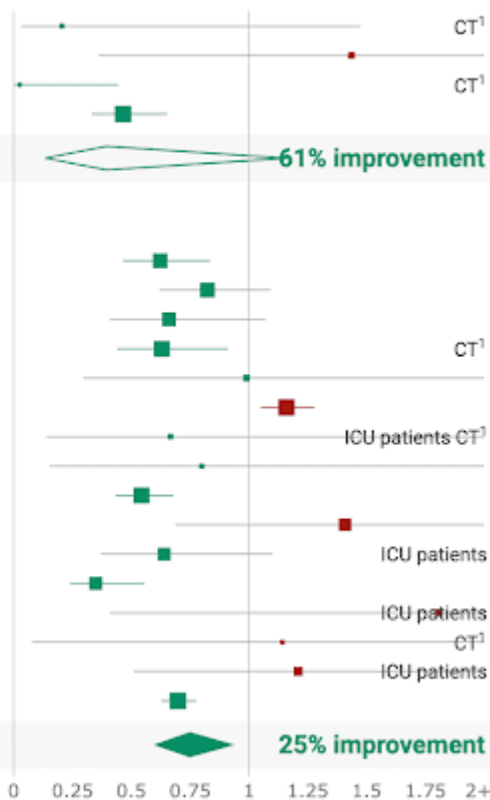
Check out the evidence tracker on zinc and COVID-19 from c19zinc.com (constantly updated).

Zinc COVID-19 treatment studies

c19zinc.com Jul 2022

	Improvement, RR [CI]			Treatment	Control
Derwand	79%	0.21 [0.03-1.47]	death	1/141	13/377
Thomas (RCT)	-44%	1.44 [0.36-5.71]	hosp.	5/58	3/50
Asimi	97%	0.03 [0.00-0.44]	ventilation	0/270	9/86
Mayberry	53%	0.47 [0.33-0.65]	death	938 (n)	1,090 (n)
Early treatment	61%	0.39 [0.13-1.16]		6/1,407	25/1,603

	Improvement, RR [CI]			Treatment	Control
Carlucci	38%	0.62 [0.46-0.84]	death/HPC	54/411	119/521
Krishnan	18%	0.82 [0.62-1.09]	death	31/58	61/94
Yao	34%	0.66 [0.41-1.07]	death	73/196	21/46
Frontera (PSM)	37%	0.63 [0.44-0.91]	death	121/1,006	424/2,467
Abd-El salam (RCT)	1%	0.99 [0.30-3.31]	death	5/96	5/95
Rosenthal	-16%	1.16 [1.05-1.28]	death	n/a	n/a
Darban (RCT)	33%	0.67 [0.14-3.17]	progression	2/10	3/10
Patel (DB RCT)	20%	0.80 [0.15-4.18]	death	2/15	3/18
Mulhem	46%	0.54 [0.43-0.68]	death	256/1,596	260/1,623
Gadhiya	-41%	1.41 [0.69-2.57]	death	21/54	34/229
Al Sulaiman (ICU)	36%	0.64 [0.37-1.10]	death	23/82	32/82
Elavarasi	65%	0.35 [0.24-0.56]	death	486 (n)	1,201 (n)
Assiri (ICU)	-81%	1.81 [0.41-6.97]	death	10/60	4/58
Kaplan (RCT)	-14%	1.14 [0.08-16.6]	ventilation	1/14	1/16
Zangeneh (ICU)	-21%	1.21 [0.51-2.90]	death	n/a	n/a
Alahmari	30%	0.70 [0.63-0.78]	hosp. time	130 (n)	847 (n)
Late treatment	25%	0.75 [0.61-0.93]		599/4,214	967/7,307



¹ CT: study uses combined treatment

Effect extraction pre-specified
(most serious outcome, see appendix)

Favors zinc Favors control

Foods that are high in zinc include oysters, crab, lobster, mussels, red meat, and poultry. Cereals are often fortified with zinc. Most multivitamin and nutritional supplements contain zinc.

Safety: Taking zinc long term is typically safe for healthy adults, as long as the daily dose is under the set upper limit of 40 mg of elemental zinc (PubMed). Be aware that typical daily doses of zinc provided by zinc lozenges generally exceed tolerable upper limits for zinc, and for this reason, they **should not be used for longer than about a week**.

Excessive doses may interfere with copper absorption, which could negatively affect your immune system as it **can cause copper deficiencies**, blood disorders and potentially permanent nerve damage. Zinc can also impair the absorption of antibiotics, and use of zinc nasal gels or swabs has been linked to temporary or permanent loss of smell.

Zinc Form and Dosage

There are several types of zinc supplements. Supplements contain several forms of zinc, including zinc gluconate, zinc citrate and zinc picolinate. The percentage of elemental zinc varies by form. To find out the percentage of elemental zinc in each form, check out **elemental zinc percentage**.

Chelated zinc is a general form of supplementary zinc in which the zinc is chelated — or bound — to a compound to make it easier for the body to absorb. Zinc picolinate or zinc gluconate are formed when zinc is chelated to picolinic acid or gluconic acid, so the main difference between zinc gluconate and picolinate is what compound it is bound to.

To find out which zinc supplement to consider, check out [best zinc supplement](#).

Most people do not lack an intake of zinc, but in disease state, there might be an increase in demand by the body. The [FLCCC I-MASK+](#) protocol recommends 30 mg a day for prevention and 100 mg a day for early treatment of COVID-19. This should not be taken long term without evaluation of your zinc/copper ratios.

The ideal dose for prevention while the COVID-19 risk is high is 40-100 mg/d, a portion of which comes from zinc lozenges to spread the zinc through the tissues of the nose, mouth and throat. It should be accompanied by at least 1 mg copper from food and supplements for every 15 mg zinc.

Do take note that you should keep the dosage back to within 40 mg/d once the exposure risk is back to normal.

[Buy Zinc Supplements on Amazon](#)

Related: [Is Zinc Picolinate Elemental Zinc](#)

4. Vitamin C and Cytokine Storm

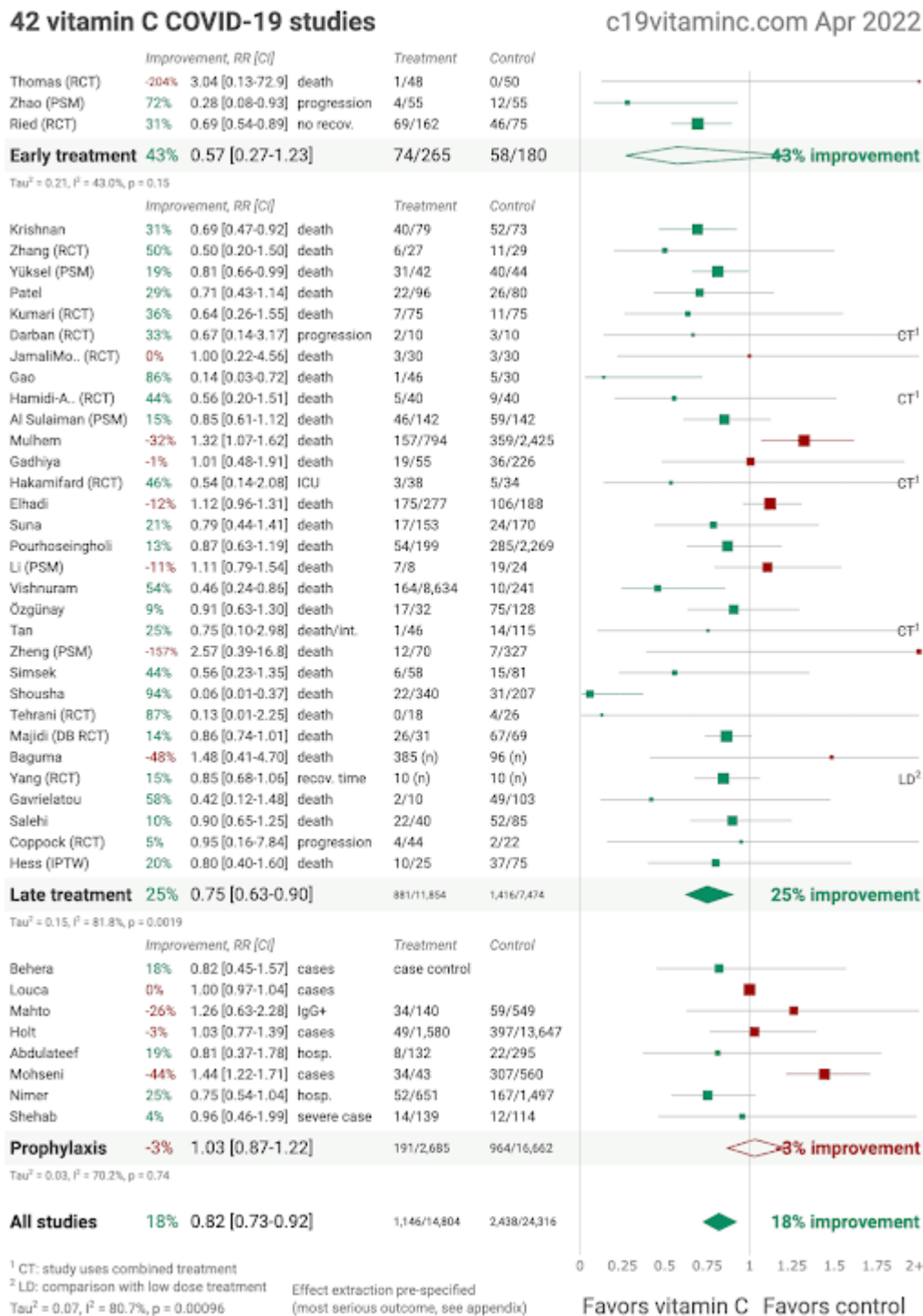
Vitamin C may be one of the most well-known immune nutrients that protect against immune deficiencies and which supports the prevention and recovery from the common cold and upper-respiratory issues, and also protects your cardiovascular system, eyes, skin, and other parts of your body. Research has found that vitamin C may help to optimize the innate and adaptive immune system.

Vitamin C might help prevent COVID-19 and also lessen the inflammatory reactions behind some severe COVID-19 cases, according to a [review of research on the topic](#) published in the latest issue of the journal Nutrition.

Do take note that the vitamin C dosages given in the hospitals intravenously are different from those over the counter vitamin C supplements. Therefore, when you come across studies on vitamin C, you need to differentiate those that are given intravenously vs oral vitamin C.

Vitamin C and COVID-19

Check out the evidence tracker on vitamin C and COVID-19 from c19vitaminc.com (constantly updated).



Safety: The U.S. Recommended Dietary Allowance (RDA) for vitamin C is 75 to 120 milligrams per day. Taking large doses of vitamin C (ascorbic acid) on a regular basis lowers your level of copper, so if you are already deficient in copper and take high doses of vitamin C, you can compromise your immune system.

While generally considered safe even in high doses, way too much vitamin C — anything above 2,000 milligrams daily—can cause headaches, insomnia, diarrhea, heartburn, and other issues.

Temporarily taking megadoses of vitamin C supplements to combat a case of the cold or flu is likely not going to cause a problem.

Many vitamin C supplements that are above the US RDA are sold in the market. It's important to seek a physician's advice if you intend to take high dose vitamin C on a long term basis. To be on the safe side, you may also request for your kidney functions to be monitored.

For long-term, daily use, your best bet is to eat a diet that is full of high quality organic vegetables and fruits that are minimally processed. Not only will you get vitamin C, but you will get all the other accessory nutrients and micronutrients that are needed to optimize it.

Vitamin C, Omicron and Deltacron

Will Vitamin C Work Against Omicron or Deltracron? Vitamin C is not variant specific because it's primary mode of action is to support the body's immune system which reacts in a variety of ways against viral attack, not just in a specific antibody reaction to a specific spike protein.

Buy Vitamin C Supplements on Amazon

Related: [Best Vitamin C Supplement](#)

5. Curcumin and Turmeric

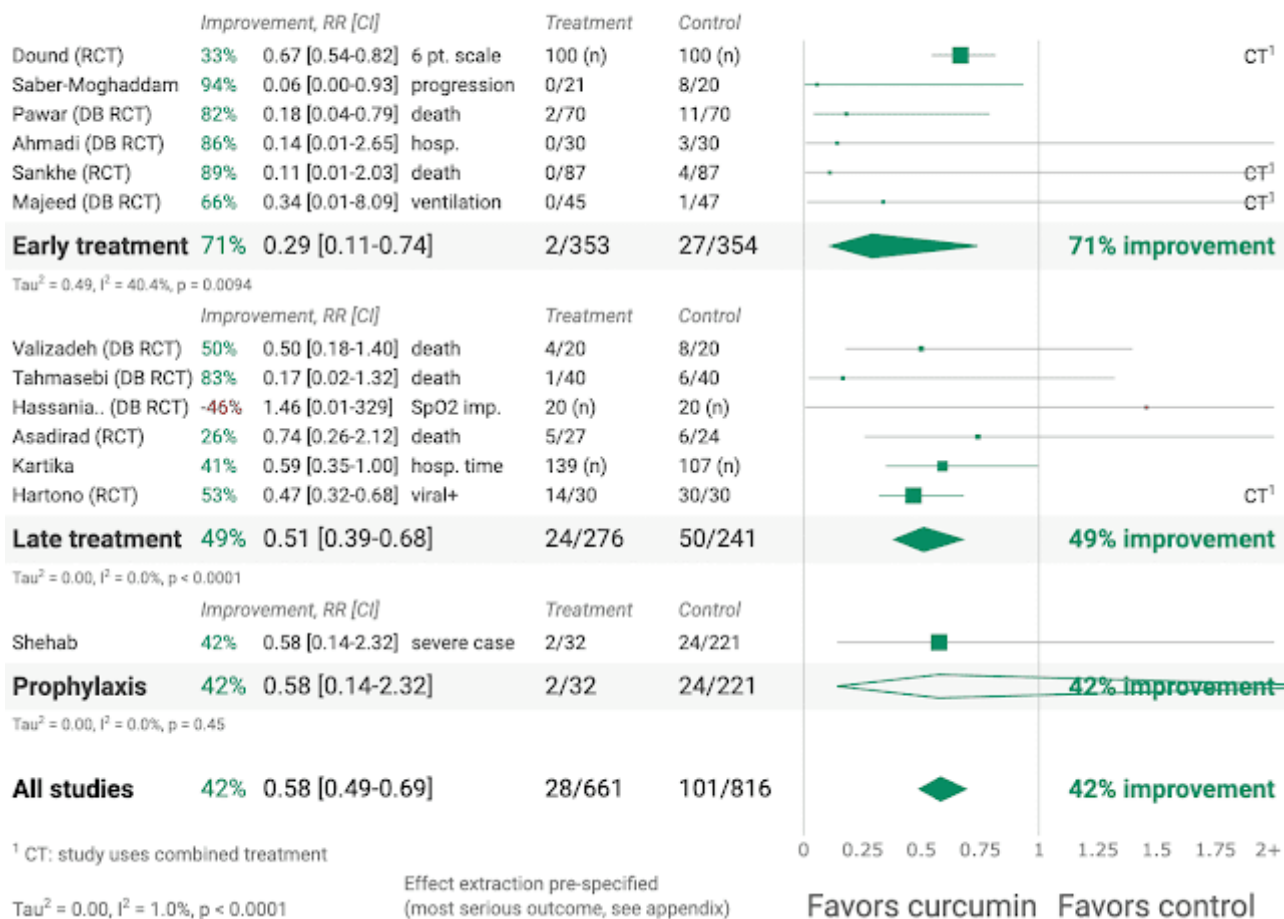
Can Turmeric Supplements Reduce Cytokine Storm? Curcumin, a yellow carotenoid from turmeric, is well known for its anti-inflammatory and free radical-scavenging effects.

Curcumin and COVID-19

There are 15 [studies](#) of curcumin in COVID-19 published. And the results are promising.

13 curcumin COVID-19 studies

c19curcumin.com Apr 2022



Curcumin also acts as natural zinc ionophores and can promote the cellular uptake of zinc and can be used with zinc to increase the effectiveness of these compounds in the inhibition of the virus (Ref).

It has also demonstrated antiviral effects against a range of respiratory viruses, including influenza A virus and others (Ref). Computer models suggest curcumin may interfere with viral entry into cells as well as viral replication inside cells (Ref).

Numerous preclinical studies indicate curcumin may activate antiviral immunity; at the same time, curcumin appears to inhibit infection-induced inflammatory signaling and promote anti-inflammatory processes, reducing the potential for a cytokine storm and ARDS and protecting other organ systems (Ref). By suppressing inflammation, curcumin has the potential to help mitigate complications and sequelae of severe acute viral respiratory infections (Ref).

Curcumin has been demonstrated (Ref) to suppress several inflammatory cytokines and mediators of their release such as tumor necrosis factor-alpha (TNF-alpha), IL-1, IL-8 and nitric oxide synthase.

Turmeric-derived curcumin is also one of the **natural blood thinners** as it is known to have powerful anti-coagulant properties. This is due to its ability to inhibit platelet aggregation and the formation of fibrinogen.

[Buy Curcumin Supplements on Amazon](#)

6. Nigella Sativa (Black Seed Oil) and Cytokine Storm

Nigella sativa (*N. sativa*) is a small flowering plant that grows in Southwest Asia, the Middle East, and Southern Europe ([Source](#)). This shrub produces fruit with tiny black seeds. Commonly referred to as black seed, *N. sativa* seeds go by many other names, such as black cumin, black caraway, nigella, fennel flower, and Roman coriander ([Source](#)).

FLCCC ALLIANCE FRONT LINE COVID-19 CRITICAL CARE ALLIANCE
PREVENTION & TREATMENT PROTOCOLS FOR COVID-19

I-MASK+
PREVENTION & EARLY OUTPATIENT
TREATMENT PROTOCOL FOR COVID-19

Page 1/3

PREVENTION PROTOCOL (for Delta variant)

ANTI-VIRALS & ANTISEPTICS

Ivermectin²
Chronic Prevention
 0.2 mg/kg per dose (take with or after a meal) — twice a week for as long as disease risk is elevated in your community.
Post COVID-19 Exposure Prevention³
 0.4 mg/kg per dose (take with or after a meal) — one dose today

Gargle mouthwash
 2 x daily — gargle (do not swallow) antiseptic mouthwash with benzalkonium chloride (e.g. Scope™, Act™, Crest™), 3% povidone/iodine solution or hydrogen peroxide with essential oils.

IMMUNE FORTIFYING / SUPPORTIVE THERAPY

Vitamin D3	1,000–3,000 IU/day
Vitamin C	500–1,000 mg 2 x daily
Quercetin	250 mg/day
Zinc	30–40 mg/day (elemental zinc)
Melatonin	6 mg before bedtime (causes drowsiness)

IVERMECTIN ALTERNATIVE

Nigella Sativa 40 mg/kg daily⁴
 (black cumin seed)
 To be used if ivermectin not available or added to ivermectin for optimal prevention.

EARLY TREATMENT PROTOCOL → see page 2

Supporting information
 Questions regarding the multiple additions to the I-MASK+ protocol for the Delta variant can be found in our Frequently Asked Questions page flccc.net/new-i-mask-faqs. Here you will find answers to the the critical role of anti-androgen therapy, the safety and need for higher dosing of ivermectin, and guidance on the number of components of the protocol that should be used in the treatment of an individual patient.

Efficacy of Ivermectin
 Ivermectin is a medication uniquely suited to treat COVID-19 given its now well-described, potent anti-viral and anti-inflammatory properties.

CONSULT HEALTH CARE PROVIDER
 Discuss all protocol elements as well as the role of vaccination.³

WEAR MASKS
 Wear both, surgical, N95 or equivalent when in confined, poorly ventilated crowded indoor spaces with non-household members.

KEEP DISTANCE
 Until the end of COVID-19 crisis, recommend keeping minimum distance approx. 2 m/6 ft from the public from people who are not from your household.

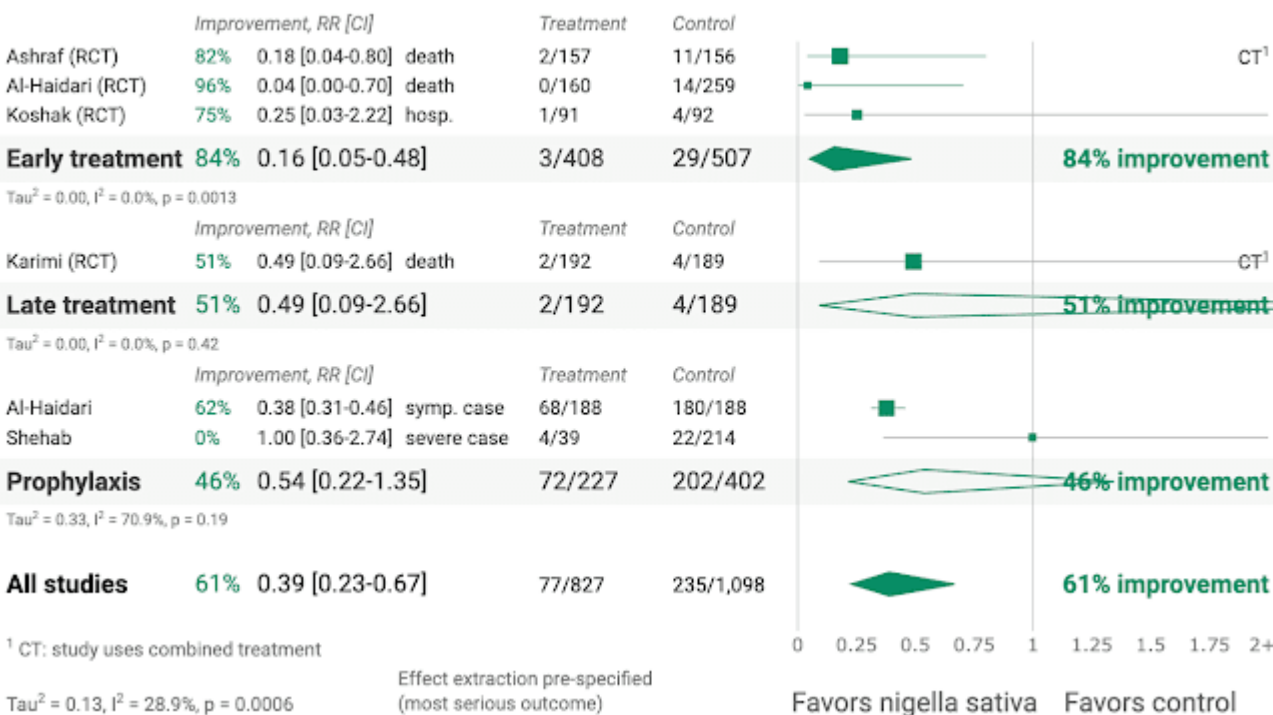
Black seed oil is extracted from *N. sativa* seeds and has been used in traditional medicine for over 2,000 years due to its many therapeutic benefits.

Thymoquinone which is the active ingredient in *N. sativa* seeds has demonstrated effects in significantly reducing the cytokine storm chances and consequent mortalities ([Source](#)).

Summary results of 6 published clinical studies are available on this dedicated webpage: c19ns.com. The 4 RCTs (Randomized Controlled Trials) provide evidence that *Nigella Sativa* was associated with an average improvement of 84% in decreasing the likelihood of death and hospitalization.

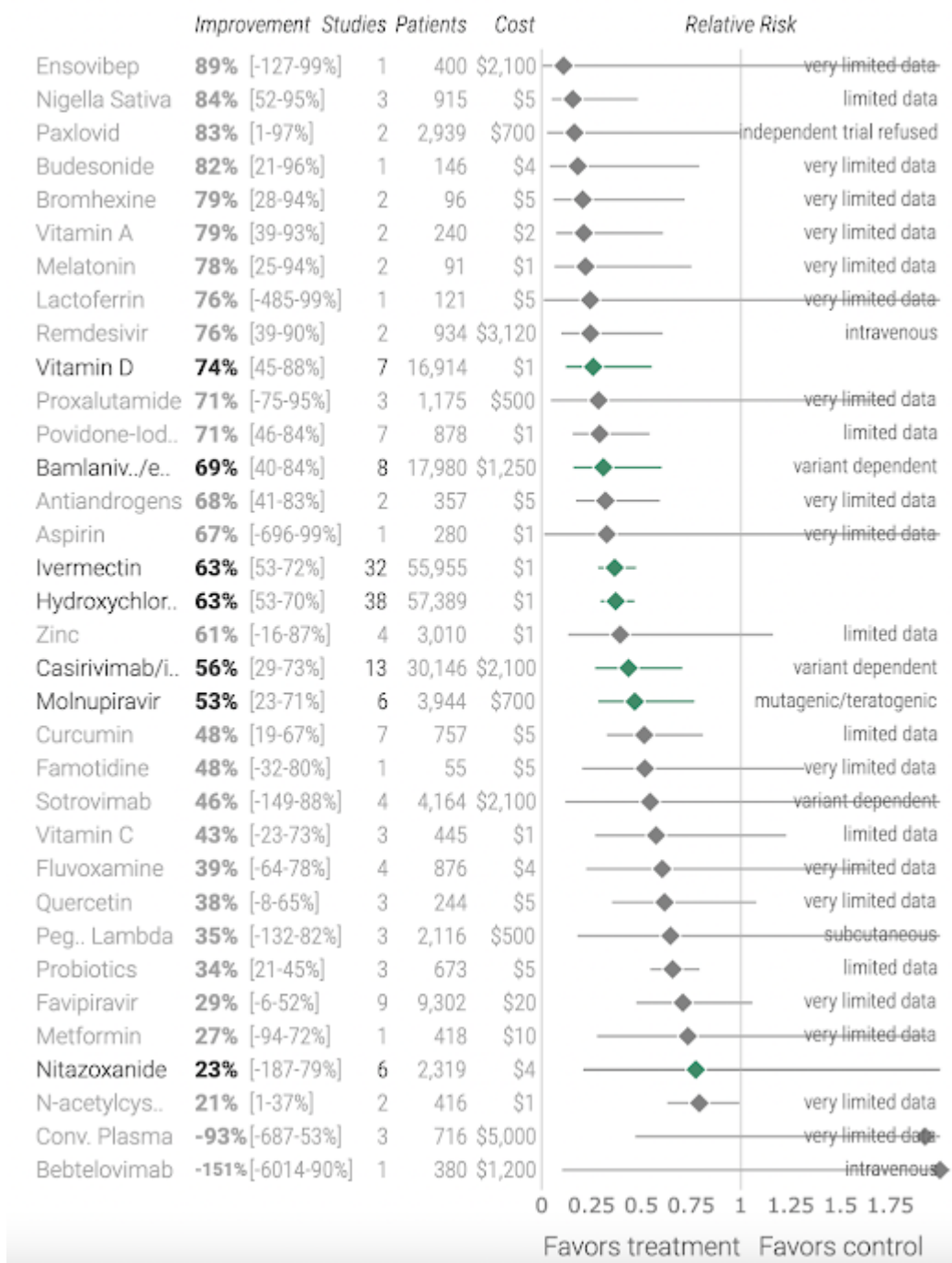
6 nigella sativa COVID-19 studies

c19ns.com Apr 2022



Nigella Sativa is also ranked no. 2 in this early treatment studies league table:

Early treatment studies (pooled effects) c19early.com May 4, 2022



Buy Black Seed Oil Supplements on Amazon

7. Melatonin and COVID-19

Melatonin is a hormone produced by the pineal gland in the brain, mainly during the night, that helps regulate circadian rhythms [Source]. Its levels decrease with aging. Most melatonin

supplementation studies have evaluated its ability to control sleep and wake cycles, promote sleep, and reduce jet lag.

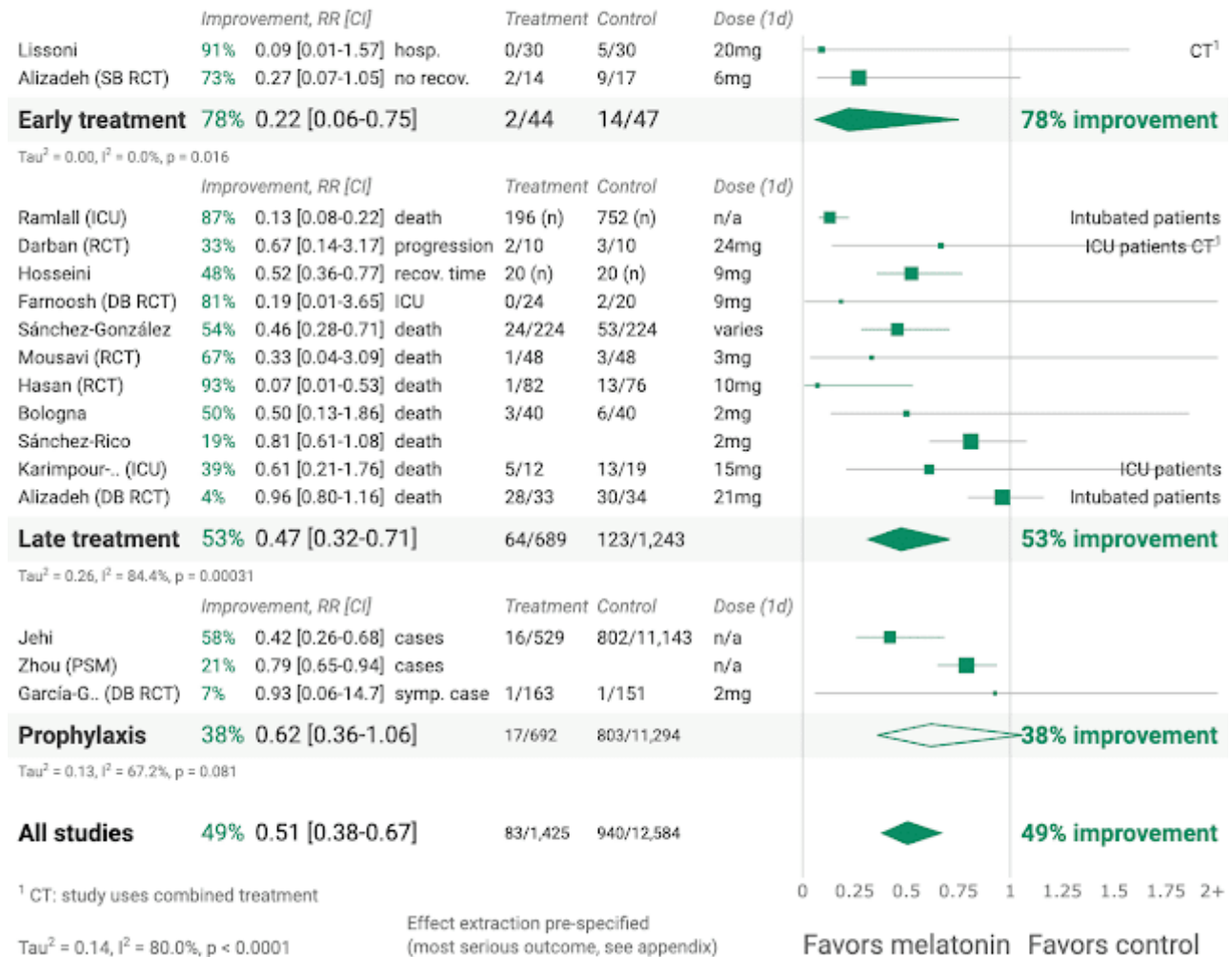
The potential utility of melatonin in treating COVID patients has not gone unnoticed, with a PubMed search combining melatonin and COVID producing more than 50 citations.

Check out the evidence tracker on melatonin and COVID-19 from c19melatonin.com (constantly updated).

As of June 2022, there are 16 published clinical studies of melatonin for treatment and prevention in COVID-19 and the results are promising even when it's given as a late treatment.

16 melatonin COVID-19 studies

c19melatonin.com Jun 2022



Melatonin and COVID-19

Melatonin is a hormone synthesized in your pineal gland and many other organs. While it is most well-known as a natural sleep regulator, it also has many other important functions. For example, melatonin is a potent antioxidant ([Antioxidants 2020](#)) with the rare ability to enter your

mitochondria, where it helps “prevent mitochondrial impairment, energy failure and apoptosis of mitochondria damaged by oxidation.” It also helps **recharge glutathione** and **glutathione deficiency has been linked to COVID-19 severity**.

Production of melatonin diminishes with age, contributing to immune dysfunction and increasing oxidative stress, inflammation, and infection susceptibility ([Ref](#)). In addition, infectious viruses can suppress melatonin production, disrupting circadian controls and impairing immune function ([Ref](#)).

A study published in the *Nature* ([Sefik 2022](#)) by researchers from Yale University (USA) has found that the SARS-CoV-2 virus directly infects certain immune cells that leads to inflammasome activation that ultimately contributes to the hyperinflammatory state of the lungs.

According to a study published in *Antioxidants* ([Arioz 2021](#)), melatonin is able to inhibit inflammasome activation.

According to a review ([Cardinali et al. 2020](#)), melatonin might also counteract the consequences of COVID-19 via salutary effects on the sleep/wake cycle and more generally on chronobiology, as well as through its antioxidant and anti-inflammatory effects.

Based on melatonin’s therapeutic potential and well-established safety profile, it has been suggested those at higher risk for severe illness and complications from viral respiratory infection, including the elderly and those with chronic medical conditions, may benefit most from regular use of 3–10 mg melatonin at bedtime ([Ref](#)).

Fluvoxamine (Selective Serotonin Reuptake Inhibitor) might also exert beneficial effects in COVID patients through its well-characterized ability to substantially increase (~2–3-fold) nighttime plasma levels of melatonin. This increase appears to result from fluvoxamine’s inhibition of the melatonin-metabolizing liver enzymes ([von Bahr et al. 2000](#)).

An **Iranian randomised controlled trial** (*Arch Med Res* 2021), studied 74 mild to moderate hospitalized patients. The study showed that adjuvant use of melatonin has a potential to improve clinical symptoms of COVID-19 patients and contribute to a faster return of patients to baseline health.

Some researchers have suggested high doses of melatonin, ranging from 50 to 200 mg twice daily, might help treat patients hospitalized for severe acute respiratory illness ([Ref](#)).

In a small **Philippine case series** study of 10 hospitalised COVID-19 patients, high dose melatonin (hdM) was given in addition (adjuvant) to standard therapy. According to the authors:

"High dose melatonin may have a beneficial role in patients treated for COVID19 pneumonia, in terms of shorter time to clinical improvement, less need for MV, shorter hospital stay, and possibly lower mortality."

Safety: If you take a melatonin supplement, be careful: **Too much can cause daytime sleepiness**. There is no federal RDA nor any formal advice on supplement dose ranges. Based on an on-going [Spanish study](#), a 2 mg daily dose protocol is being investigated for prevention of COVID-19. Do take note that the dosage for 'prevention' and 'treatment' is different, For prevention or maintenance, a lower dosage is normally recommended whereas a 'treatment' or 'therapeutic' dosage is normally higher.

Typical doses of 1–10 mg/day melatonin appear to be safe for short-term use ([Source](#)). Reported side effects, which are usually minor, include dizziness, headache, nausea, upset stomach, rash, and sleepiness. However, some reports have linked high blood levels of melatonin with delayed puberty and hypogonadism.

Studies have not evaluated melatonin supplementation during pregnancy and breastfeeding, but some research suggests that these supplements might inhibit ovarian function ([Source](#)). Therefore, some experts recommend that women who are pregnant or breastfeeding avoid taking melatonin.

Buy Melatonin Supplements on Amazon

- *Nature's Bounty Melatonin 5 mg > One tablet before bedtime* ([Amazon](#))

8. Glutathione, NAC and COVID-19

Does NAC prevent cytokine storm in COVID? According to this [paper](#) (2021), SARS-CoV2 infection impairs the metabolism and redox function of cellular glutathione. According to the authors, NAC can prevent this damage and the role of NAC in COVID-19 therapy is worth investigating.

NAC inhibits cellular entry and replication of some respiratory viruses, assists in clearing thickened mucous from the airways, suppresses inflammatory signaling, and may help mitigate viral infection-induced cytokine storm ([Ref](#)).

N-acetylcysteine ([NAC](#)) is a precursor to glutathione. It is an antioxidant and increases glutathione levels in the body ([Source](#)). NAC has mucolytic activity, so it helps reduce respiratory mucus levels. Laboratory research suggests that NAC might boost immune system function and

suppress viral replication. NAC also decreases levels of interleukin-6 and has other anti-inflammatory effects.

Much of the research on NAC has used an inhaled, liquid form of this compound. This form—which is classified as a drug, not a dietary supplement—is approved by the U.S. Food and Drug Administration (FDA) as a mucolytic agent and for decreasing respiratory secretion viscosity (Source). Products containing NAC are also sold as dietary supplements.

NAC and COVID-19

For a compilation of more than 10 studies of NAC and COVID-19, check out the list of studies [here](#) (constantly updated).

13 N-acetylcysteine COVID-19 studies

c19early.com/na Apr 2022



However, in terms of early treatment, the improvement rate is not as impressive as the other alternatives i.e. quercetin, black seed oil and vitamin A.

That said, NAC is a **natural alternative for aspirin** and an over-the-counter supplement that both prevents blood clots and breaks up existing ones i.e. anticoagulant effects. NAC also has other benefits that makes it useful against COVID-19.

Studies published in ACS Infectious Disease ([ACS Infect Dis. 2020](#)) and [Antioxidants](#) proposed that glutathione plays a crucial role in the body's fight against the severe inflammatory response triggered by the SARS-CoV-2 virus. The research group in the ACS Infectious Disease study called it the “most likely cause of serious manifestations and deaths in COVID-19 patients.”

Foods that have a positive impact on glutathione production include cruciferous vegetables such as broccoli, green tea, curcumin, rosemary and milk thistle. Getting quality sleep may also help.

Different types of exercise can influence your levels as well. In [one study](#), researchers enrolled 80 healthy but sedentary volunteers to measure the type of exercise that may have the greatest effect. They found that aerobic training in combination with circuit weight training showed the greatest benefit.

Consider taking around 500 milligrams/day of NAC, as it helps prevent blood clots and is a precursor for your body to produce the important antioxidant glutathione.

Why are some retailers and Amazon no longer selling NAC? The US FDA made it clear in 2020 that it considers NAC to be a drug and not a dietary supplement, so, for legal reasons, some companies have stopped selling it in United States.

What Is the Primary Cause of Severe COVID-19 Illness: Glutathione or Vitamin D Deficiency?

The hypothesis that vitamin D (VD) deficiency is responsible for severe manifestations and death in COVID-19 patients has been proposed and is actively being discussed by the scientific community.

Several studies reported that glutathione levels positively correlate with active vitamin D. ([PubMed](#), [PubMed](#))

Interestingly, a recent experimental study ([PubMed](#)) showed that Glutathione deficiency and the associated increased oxidative stress epigenetically alters vitamin D regulatory genes and, as a result, the suppressed gene expression decreases Vitamin D production, ultimately leading to a secondary deficiency of vitamin D. This study provides important information that glutathione is essential for the control of endogenous vitamin D production and demonstrates potential benefits of Glutathione treatment in reducing the deficiency of vitamin D. Taken together, these findings suggest that glutathione deficiency rather than vitamin D deficiency is a primary cause underlying biochemical abnormalities, including the decreased biosynthesis of vitamin D, and is responsible for serious manifestations and death in COVID-19 patients.

NAC (N-Acetyl Cysteine) vs Glutathione

N-acetyl L-cysteine (NAC), as a precursor of glutathione, helps to replenish intracellular glutathione, a vital cellular antioxidant. NAC has a low molecular weight and is well absorbed via

oral administration as compared to glutathione.

NAC may also protect against coagulation problems associated with COVID-19, as it counteracts hypercoagulation and breaks down blood clots.

Glutathione and Zinc

To improve your glutathione, you need zinc, and zinc in combination with hydroxychloroquine (a zinc ionophore or zinc transporter) has been shown effective in the treatment of COVID-19.

Glutathione and Molecular Hydrogen

One of the best ways to increase glutathione, though, is molecular hydrogen. Molecular hydrogen does so selectively and will not increase glutathione unnecessarily if you don't need it. You can view Tyler LeBaron's lecture on the details of how it does this in "[How Molecular Hydrogen Can Help Your Immune System.](#)"

Glutathione and Selenium

Selenium is also important, as some of the enzymes involved in glutathione production are selenium-dependent.

Glutathione and Blood Clot

Glutathione is also one of the **natural blood thinners** as it is known to reverse the build-up of plaque and lessen the tendency of abnormal blood clots.

Safety: As an FDA-approved drug, the safety profile of NAC has been evaluated ([Source](#)). Reported side effects of oral NAC include nausea, vomiting, abdominal pain, diarrhea, indigestion, and epigastric discomfort. No safety concerns have been reported for products labeled as dietary supplements that contain NAC. ([Source](#))

For NAC contra-indications, check out [here](#).

NB: NAC supplements are not available on Amazon US. You can buy NAC Supplements from [iHerb](#).

9. Green Tea (EGCG)

Quercetin and EGCG act as zinc ionophores ([J. Agric. Food Chem. 2014](#)), the same mechanism of action that hydroxychloroquine has via helping zinc pass the cell wall where it might halt viral replication.

Epigallocatechin-gallate (EGCG) 200mg (prevention) or 400 mg (early treatment) 1 time a day ([J. Agric. Food Chem. 2014](#)) is part of the [Zelenko protocol](#) for prevention and early treatment of COVID-19. EGCG acts as a zinc ionophore and therefore needs to be combined with zinc.

The strong oxidative stress-reducing and anti-inflammatory effects of green tea catechins, including epigallocatechin gallate (EGCG), have been well established. A solution of green tea catechins was found to inactivate COVID-19 virus in the laboratory ([Ref](#)).

Other laboratory and computer models suggest tea catechins may inhibit viral infectivity and growth ([Ref](#)). It has been proposed that EGCG, due to its immune-modulating effect, could have a role in suppressing hyper-inflammation and preventing lung fibrosis in patients with severe acute viral respiratory illness ([Ref](#)).

However, an underpowered [observational study from Japan](#) suggests that only a large consumption of green tea might be preventative against Covid, pointing to the bioavailability issue. Unfortunately, high green tea consumption is not recommended for your kidneys.

[Buy EGCG Supplements on Amazon](#)

10. Fish Oil (Omega-3 Fatty Acids) and Omega-6

That are more than a dozen studies on-going that examine the effect of EPA and/or DHA on the prevention of or lessening of symptoms of COVID-19. Check out the evidence tracker on Omega 3 and COVID-19 from [c19early.com](#) (constantly updated).

Omega-3 Fatty Acids are part of the [I-Recover treatment protocol](#) for Long Haul or Post-COVID syndrome, launched on June 16, 2021 by the FLCCC (Front Line COVID-19 Critical Care Alliance).

A [pilot study](#) (Jan 2021) suggests that patients with the most omega-3s in their system were 75% less likely to die from COVID-19. The pilot study was conducted using blood drawn from 100 patients treated for COVID-19 at the Cedars Sinai Medical Center in Los Angeles. The postulated mechanism of action is the well known anti inflammatory role of higher omega-3 levels, which may helped quell the so-called 'cytokine storm' observed in some severe and/or fatal COVID-19 cases.

This protection may have come from the effect EPA and DHA have on the body. An opinion paper published in June 2020 in the journal *Frontiers in Physiology* expounded on how "EPA and DHA supplementation can alter many biological pathways which may have a direct influence in the outcome of COVID-19." (*Front. Physiol.*, 19 June 2020) The writers listed the many nutrients that play a key role in managing a cytokine storm and continued:

"Among these micronutrients, LC-PUFAs (long-chain polyunsaturated fatty acids) such as EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) are noteworthy because of their direct influence in the immunological response to viral infections.

Among these complex immunomodulatory effects, interleukin-6 (IL-6) and interleukin-1 β (IL-1 β)—because of the suspected central regulatory role in the "cytokine storm"—should be highlighted."

The omega-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) modulate inflammatory processes in the body through a variety of mechanisms ([Ref](#), [Ref](#)). Severe acute viral respiratory infections can sometimes trigger cytokine storm, in which excessive production of inflammatory cytokines leads to uncontrolled systemic inflammation and life-threatening tissue and organ damage. Another phenomenon, called eicosanoid storm, has also been proposed to contribute to widespread inflammation, tissue damage, and organ failure. Eicosanoid storm is characterized by excessive production of pro-inflammatory and procoagulant eicosanoids made from arachidonic acid, an omega-6 fatty acid synthesized in the body and obtained from dietary animal fat ([Ref](#), [Ref](#)). By competing with arachidonic acid for metabolic enzymes, EPA and DHA decrease the production of pro-inflammatory and procoagulant eicosanoids and increase production of specialized inflammation-resolving compounds ([Ref](#), [Ref](#)).

Accumulating evidence shows omega-3 fatty acids, administered orally or intravenously, may help control inflammation and improve outcomes in critically ill patients, including those with ARDS.⁴⁸⁹ A meta-analysis of 12 randomized controlled trials with a total of 1,280 critically ill patients with ARDS found supplementation with omega-3 fatty acids, in combination with gamma-linolenic acid (a less-inflammatory omega-6 fatty acid) and antioxidants, improved markers of lung function; however, only hourly administration, rather than large bolus intravenous dosing, was associated with reduced mortality. Although reductions in mechanical ventilation and length of stay in intensive care were seen, these effects did not reach statistical significance ([Ref](#)).

An observational study in 100 patients hospitalized with a severe acute viral respiratory illness found higher levels of EPA plus DHA were associated with lower mortality, though the effect was

not statistically significant, possibly due to the small number of participants ([Ref](#)). During an outbreak of a severe viral respiratory infection, another study found countries with the highest intake of omega-3 fatty acids from marine sources had lower mortality rates than other regions of the world ([Ref](#)). The same research group used computer modeling to show how omega-3 fatty acids might bind to the highly infectious virus and interfere with its ability to enter cells ([Ref](#)).

Evidence suggests the omega-3 fats EPA and DHA affect biological pathways that may have direct influence in the outcome of COVID-19.

EPA and DHA have a direct influence in the immunological response to viral infections and can modulate immune response and function.

Animal-based omega-3 fats, especially DHA, also help prevent thrombosis (a blood clot within a blood vessel) by decreasing platelet aggregation. Hypercoagulation is another complication of severe COVID-19 infection that can have lethal consequences.

Omega-3 also lowers your risk of lung dysfunction, protects against lung damage and secondary bacterial infections, and improves mitochondrial function.

Research shows that by lowering triglycerides, the risk of developing a cytokine storm is diminished. Omega-3 supplementation is known to lower triglycerides, but krill oil does so more effectively than fish oil.

The British Rhinological Society's Guidelines for the Management of New Onset Loss of Sense of Smell During the COVID-19 Pandemic advises that that fish oil supplementation (2,000 mg of omega-3 fatty acids/day) may be beneficial when used in addition to standard treatment (olfactory training, oral steroids and steroid rinses) ([Hopkins, Clin Otolaryngol 2020](#)). This position is not based on a clinical trial of fish oil in COVID-19 patients but on limited animal and human research suggesting that omega-3 fatty acids may be beneficial for loss of smell due to olfactory nerve damage.

An interesting development published in [Science, Nov 2020](#) revealed that linoleic acid (omega-6) binds with the 'spike protein' of the COVID-19 virus and interferes with the entrance of the virus into a human cell via the ACE-2 receptors. The study also revealed that in human cells, Linoleic Acid supplementation synergizes with the COVID-19 drug remdesivir in suppressing SARS-CoV-2 replication.

[Buy Fish Oil on Amazon](#)

Related: [Best Fish Oil Supplements](#)

11. B Vitamins and COVID-19

Thiamine (vitamin B1), a water-soluble B-complex vitamin, is rapidly depleted during times of metabolic stress, including severe illness. Thiamine deficiency is common in hospitalized patients, especially those with critical illness (Ref). Thiamine is needed for cellular energy production and helps regulate reduction-oxidation balance, immune function, nervous system function, and vascular function (Ref).

Thiamine, at 200 mg twice daily, reduced mortality in patients with septic shock and thiamine deficiency, and laboratory research suggests it may inhibit the hyper-inflammatory immune response that accompanies cytokine storm (Ref). It is a key therapeutic in the MATH+ protocol (methylprednisolone, ascorbic acid [vitamin C], thiamine, and heparin, plus other supportive nutrients and medications), a treatment strategy proposed for managing advanced stages of severe acute viral respiratory illness (Ref). Although high-quality clinical evidence is lacking, two US hospitals implementing the MATH+ protocol in patients with a severe acute viral respiratory illness reported mortality rates that were approximately one-quarter of those reported from other US hospitals using standard care (Ref).

In a study in Saudi Arabia (Al Sulaiman et al. Crit Care 2021), 738 critically ill COVID-19 patients from two centers were included in the study. The in-hospital death rate and 30-day death rate were significantly lower in the group that received thiamine as an adjunctive treatment (a therapy given in addition to standard therapy). In addition, the thiamine group also were less likely to have blood clot during ICU stay.

Another study of COVID-19 patients with severe symptoms found **26.3% among diabetics with COVID-19** were vitamin B1 deficient.

A study published in November 2020 from Singapore ([CW Tan, Nutrition 2020](#)), found that those who were started on a daily oral dose of vitamin D3 (1,000 IU), magnesium (150 mg) and vitamin B12 (500 mcg) within the first day of hospitalisation and continued up to 14 days were significantly less likely to require oxygen therapy and further intensive care.

A **case series** (published in September 2020) of 9 elderly COVID-19 patients treated with a combination of NMN, zinc, betaine and sodium chloride resulted in rapid improvement.

The topic 'B vitamins' is a complicated subject and that's probably why they are called 'B Complex'.

B vitamins may constitute a long list, but each one is important for different reasons. B vitamins are especially effective in boosting your immunity when you combine the foods containing them so they can all work together for maximum effect. These include vitamin B1 (thiamin), B2 (riboflavin), B3 (niacin), B5 (pantothenic acid) and B7 (biotin).

B12, also known as cobalamin, is a powerful cold- and flu-fighting nutrient in your system, as is vitamin B6, another important, germ-combating vitamin that naturally benefits and strengthens your immune system and even protects against the damaging effects of air pollution.

Vitamin B9 and folic acid help repair tissues and aid in cell metabolism and immune support. They're found in dark leafy greens, wild-caught, cold water fish like herring, mackerel, sardines, anchovies and wild-caught Alaskan salmon, and pastured, organic chicken.

Niacin or vitamin B3 is a precursor to nicotinamide adenine dinucleotide (NAD⁺). There are **three main forms of niacin**, which are dietary precursors to nicotinamide adenine dinucleotide (NAD). These are nicotinamide riboside, nicotinic acid and nicotinamide.

Nicotinamide adenine dinucleotide (NAD⁺) is an essential cofactor in all living cells that is involved in fundamental biological processes. NMN (Nicotinamide MonoNucleotide), is also another precursor to NAD.

Adequate amounts of folate, vitamin B6 and vitamin B12 are also needed for your body to make the amino acid cysteine. N-acetyl cysteine (NAC) is a supplement form of cysteine. Consuming adequate cysteine and NAC is important for a variety of health reasons — including replenishing the most powerful antioxidant in your body, glutathione.

Buy Vitamin B Supplements on Amazon

Related: [Niacin and COVID-19 - Is Niacin a Missing Piece of the COVID Puzzle?](#)

12. Probiotics

Probiotics are living non-pathogenic microorganisms that, when administered in adequate amounts, can have a positive impact on health. Bacteria in the Lactobacillus and Bifidobacterium genera, as well as Streptococcus thermophiles and Saccharomyces boulardii, are examples of common probiotics (Ref).

A paper, published in *BMJ Open Gastroenterology* in April 2022 by Dr. Sabine Hazan, concluded that the following were protective against severe COVID-19 infection:

- High gut diversity of bacteria type
- Abundance of bifidobacteria ($p < 0.0001$ which means the effect was “highly statistically significant” and unlikely to have happened “by chance”)

You can find a list of 16 published clinical studies (7 RCTs) on probiotics and COVID-19 from c19probiotics.com (constantly updated).

15 probiotics COVID-19 studies

c19probiotics.com Apr 2022

	Improvement, RR [CI]	Treatment	Control
Haran (RCT)	67% 0.33 [0.01-8.16] death	0/174	1/176
Gutiérrez.. (DB RCT)	35% 0.65 [0.53-0.80] no recov.	69/147	105/146
Veterini	29% 0.71 [0.41-1.22] viral time	15 (n)	15 (n)
Early treatment	34% 0.66 [0.55-0.79]	69/336	106/337

Tau² = 0.00, I² = 0.0%, p < 0.0001

	Improvement, RR [CI]	Treatment	Control
d’Ettorre	87% 0.13 [0.01-2.33] death	0/28	4/42
Ceccarelli	64% 0.36 [0.18-0.68] death	10/88	34/112
Shah (RCT)	11% 0.89 [0.75-1.06] recov. time	30 (n)	30 (n)
Li	-12% 1.12 [0.74-1.69] no disch.	30/123	41/188
Zhang	14% 0.86 [0.77-0.96] hosp. time	150 (n)	150 (n)
Ceccarelli	70% 0.30 [0.01-7.02] death	0/40	1/29
Ivashkin (RCT)	-2% 1.02 [0.26-3.97] death	4/99	4/101

Late treatment	16% 0.84 [0.69-1.02]	44/558	84/652
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Tau² = 0.02, I² = 44.9%, p = 0.08

	Improvement, RR [CI]	Treatment	Control
Louca	8% 0.92 [0.85-0.99] cases		
Di Pierro (RCT)	98% 0.02 [0.00-0.33] cases	0/64	24/64
Holt	30% 0.70 [0.45-1.10] cases	20/909	426/14,318
Ahanchian (DB RCT)	73% 0.27 [0.03-2.25] symp. case	1/29	4/31
Wischme.. (DB RCT)	33% 0.67 [0.38-1.17] m/s case	16/91	24/91

Prophylaxis	31% 0.69 [0.45-1.05]	37/1,093	478/14,504
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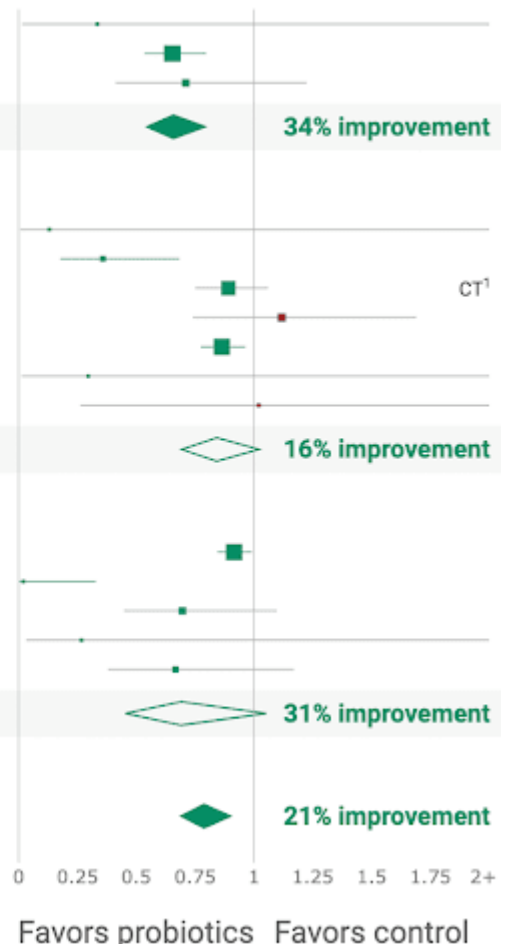
Tau² = 0.11, I² = 63.4%, p = 0.085

All studies	21% 0.79 [0.69-0.90]	150/1,987	668/15,493
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¹ CT: study uses combined treatment

Tau² = 0.02, I² = 55.1%, p = 0.00051

Effect extraction pre-specified (most serious outcome)



Physiological changes in the human microbiota with age leads to a “physiological dysbiosis”, with less diversification in microbial composition, aggravated in case of comorbidity (hypertension,

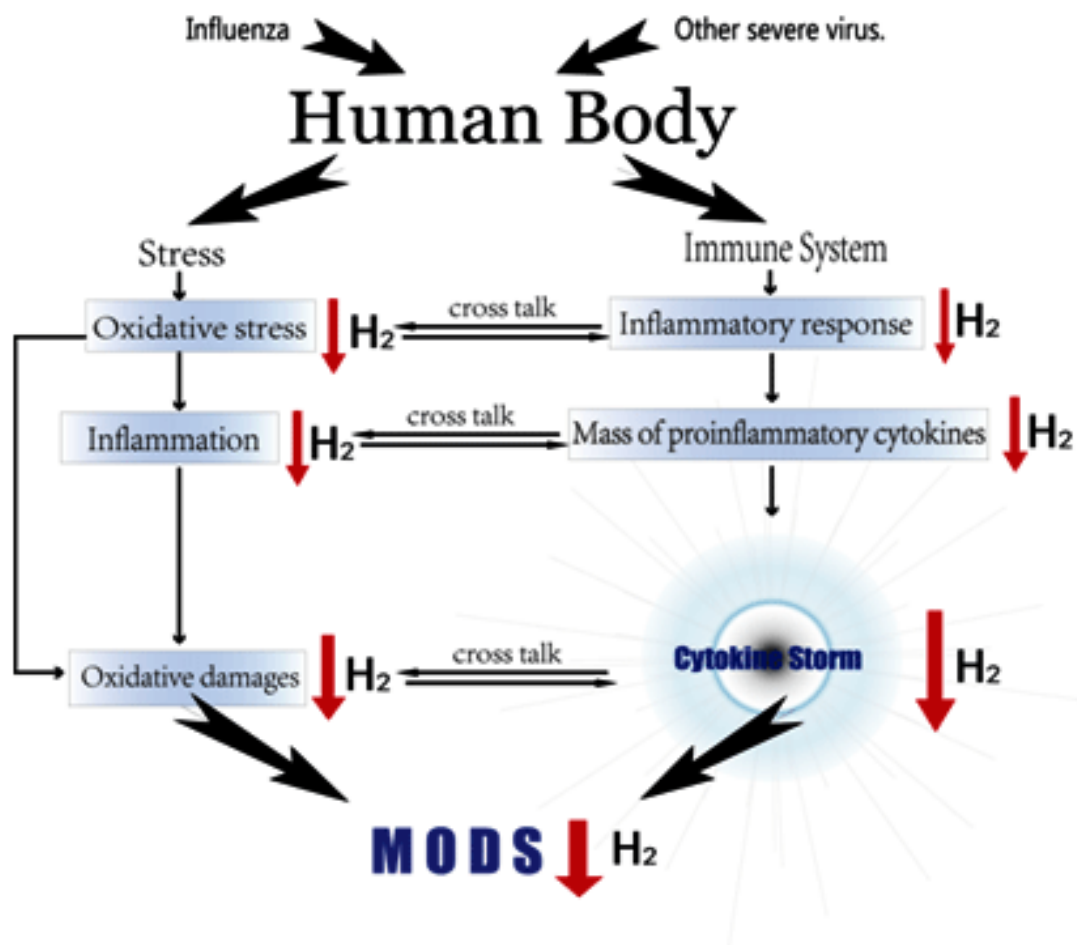
diabetes, chronic inflammatory bowel diseases, etc.) (Ref). Therefore, to establish the condition of eubiosis (healthy condition), “good” bacteria are required. The concept of probiotics as a food with positive effects was firstly used by Parker RB in 1974 and then recognized by the Food and Agriculture Organization (FAO), and more recently by the World Health Organization (WHO) (Ref).

The first quadrupled blinded randomised controlled trial (Gutiérrez-Castrellón et al., Gut Microbes) on a novel probiotic formulation demonstrated that complete remission on day 30 was boosted from 28% to 53%.

Buy Probiotics Supplements on Amazon

13. Molecular Hydrogen

Molecular hydrogen has been tested in several registered clinical trials right now as a potential treatment option for COVID-19.



There have been a plethora of studies on hydrogen's effects on inflammation, in particular in regulating/controlling inflammatory cytokines. For example:

- A group of scientists in China suggested that hydrogen-rich solution therapy may be a safe, reliable, and effective treatment for Multiple Organ Dysfunction Syndrome (MODS) induced by influenza and other viral infectious diseases ([SOJ Microbiol Infect Dis. 2017](#)).
- [In a 2017 lab study published in the World Journal of Gastroenterology](#), "HRW (hydrogen rich water) treatment significantly reduced EtOH-induced increases in serum alanine amino transferase, aspartate aminotransferase, triglycerol and total cholesterol levels, hepatic lipid accumulation and inflammatory cytokines, including tumor necrosis factor-alpha (TNF- α) and interleukin (IL)-6."
- [Another study in 2013](#) stated "The serum levels of cytokines such as IL-10, TNF- α , IL-12p70, and GM-CSF of mice administered with HW (hydrogen water) was significantly reduced as compared to PW (placebo water) group."

There are at least 30 other high-impact scientific studies that mention hydrogen's observed balancing and lowering effect on inflammatory cytokines.

Beyond the existing scientific studies that show a reason for excitement, hydrogen gas is also now being recommended in China as a therapy for individuals suffering from COVID-19, and there are very positive recorded anecdotal reports from patients.

- The epidemiologist who discovered the SARS Coronavirus back in 2003, Dr. Zhong Nanshan, is now recommending H₂ therapy for COVID-19 — [you can watch the video where he does so here](#).
- [Other individuals in the scientific community](#) are talking about hydrogen as a possible treatment for COVID-19.

The first preliminary report on COVID-19 patients (n=90) from China has been published demonstrating that Hydrogen/Oxygen mixed gas inhalation has superior effects compared to Oxygen alone ([Journal of Thoracic Disease. 2020](#)).

The science behind the virus and potential treatment is, of course, far more complex than this, and we do not intend to simplify the situation whatsoever. Nonetheless, the potential here is interesting — especially when you factor in the safety factor of molecular hydrogen. We will have to see what happens as the science develops and the clinical trials are conducted, and we will update this article with more information as it becomes available.

[Get Molecular Hydrogen infused Water on Amazon](#)

14. Lactoferrin

Summary results of 4 Lactoferrin and COVID-19 studies are available on this dedicated webpage: <https://c19early.com/lf> .

Lactoferrin is an iron-binding protein made by cells such as those in secretory glands and activated neutrophils (a type of immune cell). It is found in most bodily fluids, including tears and breast milk, and lactoferrin derived from bovine whey is frequently used in supplements (Ref). Lactoferrin is an immune modulator, capable of enhancing antimicrobial immune activity while reducing inflammation, and has exhibited a broad spectrum of activity against bacteria, fungi, protozoa, and viruses (Ref). Laboratory research also suggested lactoferrin may inhibit entry of a highly infectious respiratory virus into cells by blocking its interactions with cell membrane components (Ref).

Lactoferrin may slow pathogen multiplication through its iron binding capacity. While iron is required for DNA replication and energy production, the presence of excess iron increases free radical generation, stimulates inflammatory processes, and exacerbates viral infection by promoting increased viral replication (Ref). Furthermore, patients with a severe acute viral respiratory infection have been found to have elevated levels of ferritin, and these levels correlated with increased risk of death (Ref). In its iron-free state (apolactoferrin), lactoferrin can sequester pro-oxidant free iron, lowering oxidative stress and suppressing the growth of pathogens, and possibly mitigating the serious complications of infection (Ref).

In a pilot trial, 75 patients who tested positive for an acute viral respiratory tract infection were treated at home with a liposomal preparation of a combination of 32 mg bovine lactoferrin with 12 mg vitamin C, with or without 10 mg liposomal zinc, four to six times daily for 10 days. In addition, lactoferrin nasal drops, mouth spray, and aerosol were used as needed by participants with headaches, loss of sense of smell and taste, nasal congestion, dry cough, or difficulty breathing. After 48 hours, all symptoms had diminished except loss of smell and taste, and by day five, all infected participants recovered from their illness with only loss of smell and taste remaining as residual symptoms (Ref).

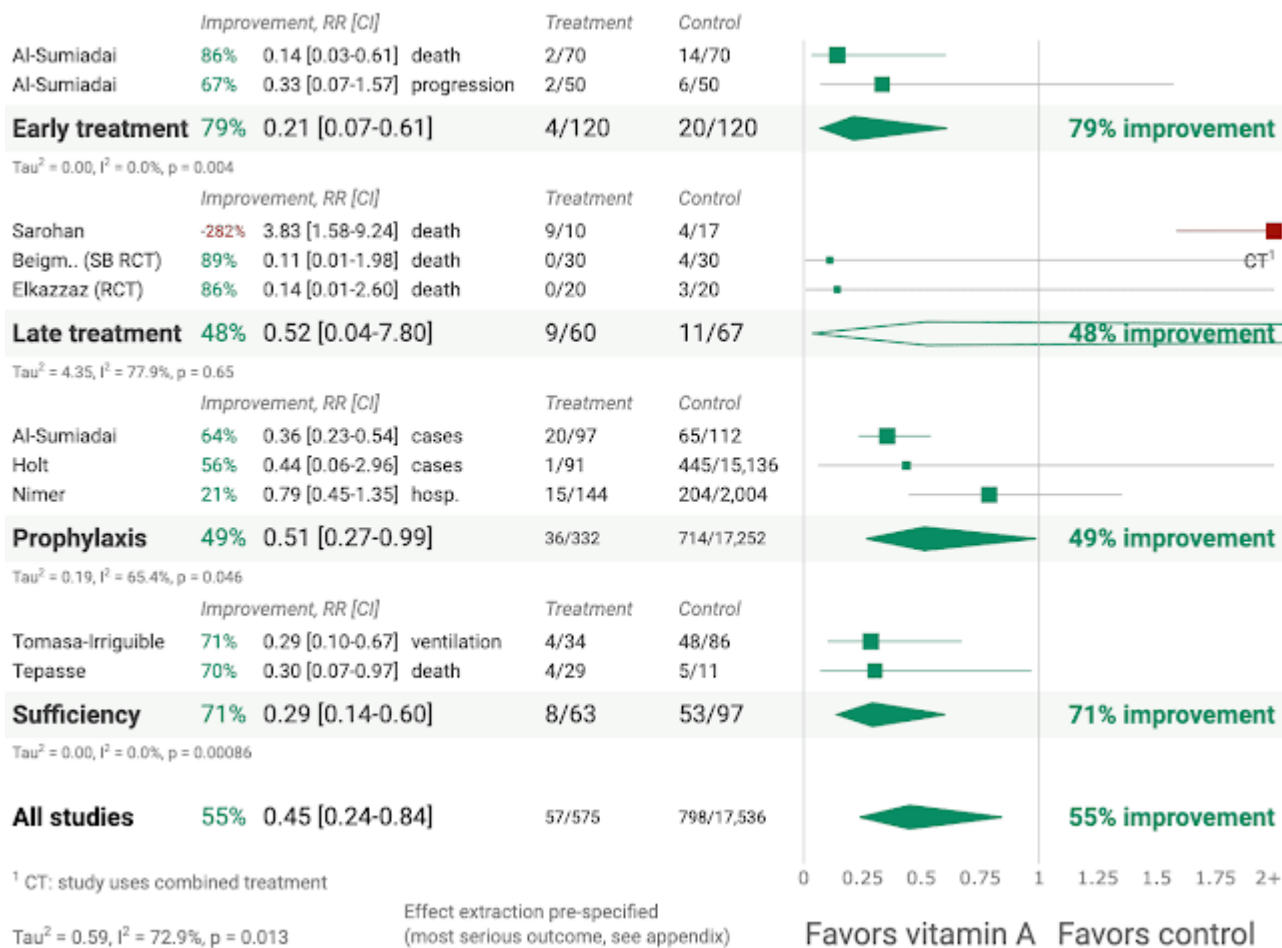
[Buy Lactoferrin Supplements on Amazon](#)

15. Vitamin A and COVID-19

Summary results of 10 vitamin A and COVID-19 studies are available on this dedicated webpage: c19early.com/va.

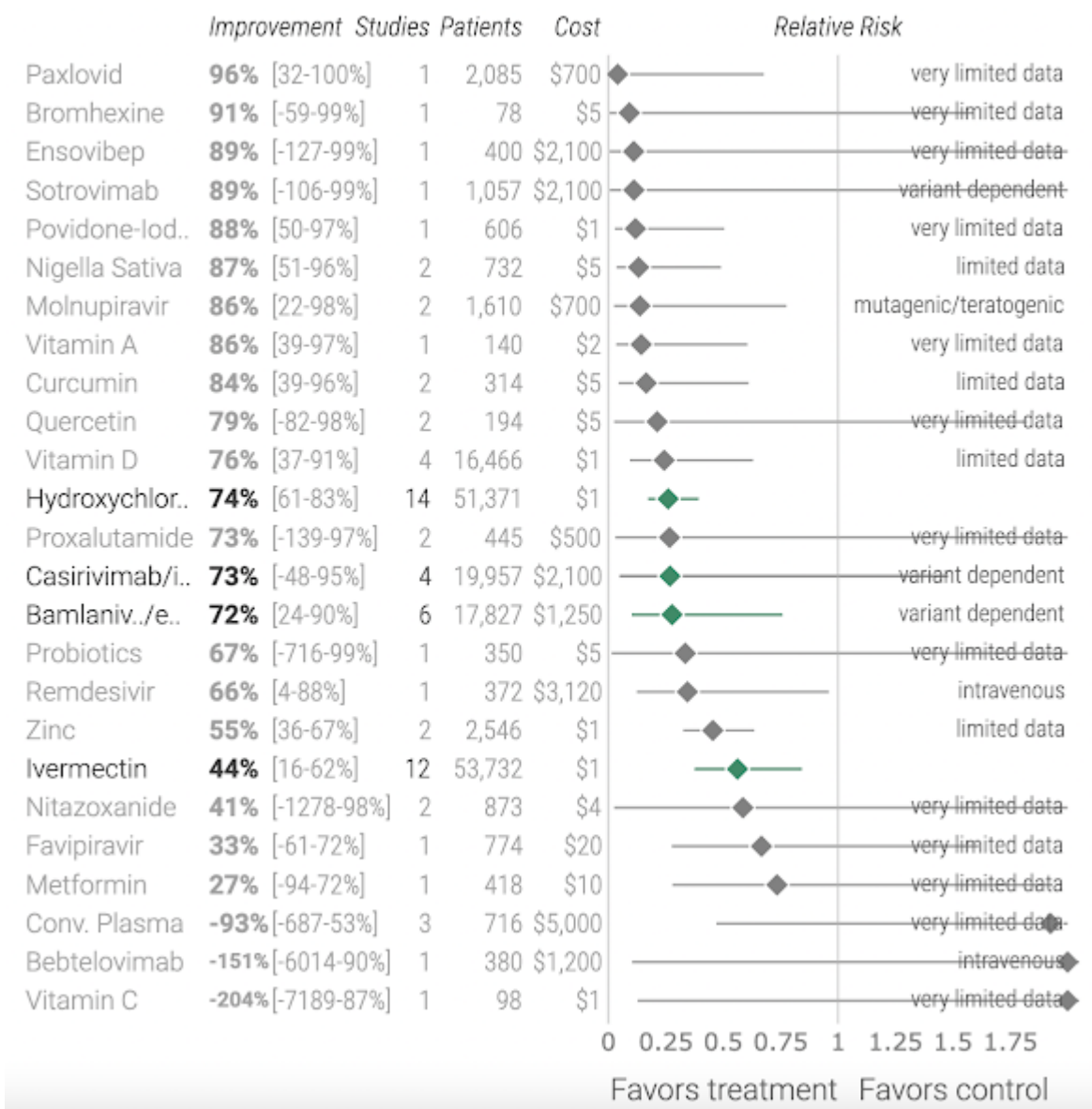
10 vitamin A COVID-19 studies

c19early.com/va Apr 2022



Based on this early treatment mortality studies drug league table, vitamin A might even out-perform vitamin D, ivermectin and hydroxychloroquine:

Early treatment mortality results c19early.com Mar 16, 2022



Scientists are also investigating if taking vitamin A could aid patients who have lost their sense of smell due to COVID-19. The 12-week 'Apollo study' would use nasal drops containing the vitamin to treat individuals who have lost or changed their sense of smell.

Buy Vitamin A Supplements on Amazon

16. Selenium

Selenium plays a role in immune cell function and activation through its incorporation into enzymes and other proteins. It also reduces infectivity, replication, and virulence of several respiratory viruses (Ref). Sodium selenite, a form often used in supplements, has been found to

block an infectious respiratory virus from entering cells by interacting with its spike protein in the laboratory (Ref).

Selenium works closely with vitamin E and cysteine to regulate oxidation and reduction balance and neutralize free radicals, and can help reduce inflammatory signaling by controlling oxidative stress (Ref). Poor selenium status may also increase the likelihood of induction of excess inflammation due to cytokine storm (Ref).

The soil concentration of selenium varies geographically around the world, affecting selenium status and resulting in endemic insufficiency and deficiency (Ref). A study comparing COVID-19 survival to regional selenium status during a major outbreak in China found survival was more likely in high-selenium regions (Ref). A study done during an outbreak in Germany found higher selenium and selenium-containing protein levels in COVID-19 infection survivors versus non-survivors (Ref).

Blood selenium levels have been noted to diminish in patients with critical illness, and lower levels are correlated with more severe illness and lower chance of survival (Ref). A meta-analysis of 19 randomized controlled trials found intravenous selenium supplementation in critically ill patients reduced total mortality (but not 28-day mortality) and shortened the length of hospital (but not intensive care unit) stay (Ref).

In a randomized controlled trial in 40 patients with ARDS, those who received sodium selenite intravenously for 10 days had increased glutathione levels, decreased inflammatory cytokine levels, and improved lung function compared with those who received saline (placebo). However, there were no differences in survival or intensive care unit stay (Ref).

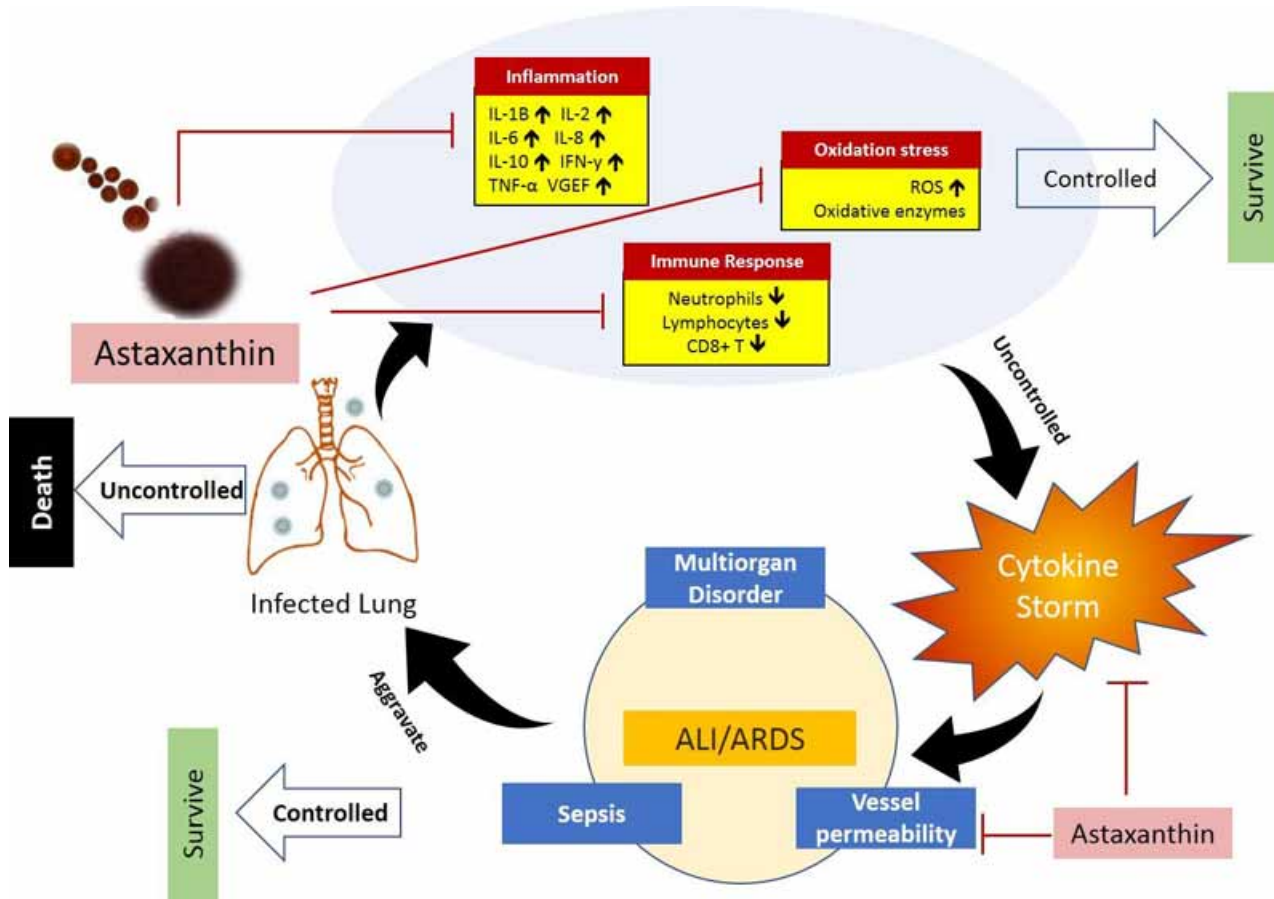
Buy Selenium Supplements on Amazon

17. Astaxanthin

The paper (SSRN) “COVID-19: Potential of Microalgae Derived Natural Astaxanthin as Adjunctive Supplement in Alleviating Cytokine Storm,” published April 21, 2020, on the research library website SSRN, addresses the use of astaxanthin, a potent antioxidant supplement derived from microalgae. The full paper is downloadable from the link.

As explained in this paper, astaxanthin has a very unique molecular structure that allows it to penetrate the bilayer membrane of cells. The ability to quench reactive oxygen species (ROS) and free radicals in both the inner and outer layers of the cellular membrane allows it to provide superior protection against oxidative stress, compared to other antioxidants.

Vitamin E and beta-carotene, for example, only work in the inner side of the membrane, and vitamin C only works on the outer side.



In short, astaxanthin ticks many important boxes when it comes to ameliorating COVID-19, including immune response regulation and the enhancement of both cell-mediated and humoral immune responses, as well as the simultaneous protection against oxidative damage and inflammation.

[Buy Astaxanthin Supplement on Amazon](#)

18. Resveratrol

Resveratrol inhibits replication of cytomegalovirus in infected lung cells.

Dormant cytomegalovirus (CMV) is **carried by 70-90% of the adult population and is reactivated by inflammation**. One third of patients in hospital intensive care units reactivate CMV which doubles their mortality rate. There is agreement that **Covid-19 co-infection with cytomegalovirus is**

associated with higher rates of mortality in older people who have an aged (senescent) immune system.

Cytomegalovirus also dulls the vitamin D receptors thus preventing the active form of vitamin D to enter living cells.

Resveratrol binds to and activates the vitamin D receptors, thus allowing cells in the body to respond to vitamin D.

The daily value (DV) of resveratrol has not been established. Recommended dosages from manufacturers vary from 150 mg to 300 mg daily.

Resveratrol also inhibits blood clots associated with Covid-19 infection.

[Buy Resveratrol Supplement on Amazon](#)

Best Supplements to Reduce Cytokine Storm - Online Shopping Guide

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Frequently Asked Questions

Elderberry and Cytokine Storm

There have been several warnings circulating about the potential catastrophic effects of taking elderberry extracts with COVID-19. Does elderberry increase cytokine response? The concern is that elderberry extracts may cause a fatal “cytokine storm” in patients affected by COVID-19.

Elderberry is considered generally safe and in influenza B (cause of common cold), use of elderberry shortens the duration of symptoms. However, as a part of its immune supportive actions, elderberry increases immune cell release of tiny chemicals called cytokines. Specifically, elderberry increases the release of a cytokine called IL-1B which is a part of the inflammatory reaction to COVID-19 that can result in acute respiratory distress. For this reason, to minimize the possibility that elderberry could aggravate the inflammatory “cytokine storm” associated with the more severe COVID-19 infections, it is recommended to stop elderberry at the first signs of infection (fever, cough, sore throat) and/or if you test positive for the virus.

There do not appear to be studies on the effects of elderberry extract on cytokine levels in people with severe respiratory infections, and there are no published reports of elderberry extract being associated with, or suspected of causing or worsening, a cytokine storm in people. Furthermore, the link between “cytokine storm” and COVID-19 severity has been [disputed by some research](#) (Kox, JAMA, Sep 2020).

Does Hydroxychloroquine Calm the Cytokine Storm?

So far, there is not enough evidence that hydroxychloroquine alone is effective in calming the cytokine storm. The latest **MATH+ hospital treatment protocol** by the FLCCC Alliance does not include hydroxychloroquine in their combination treatment protocol.

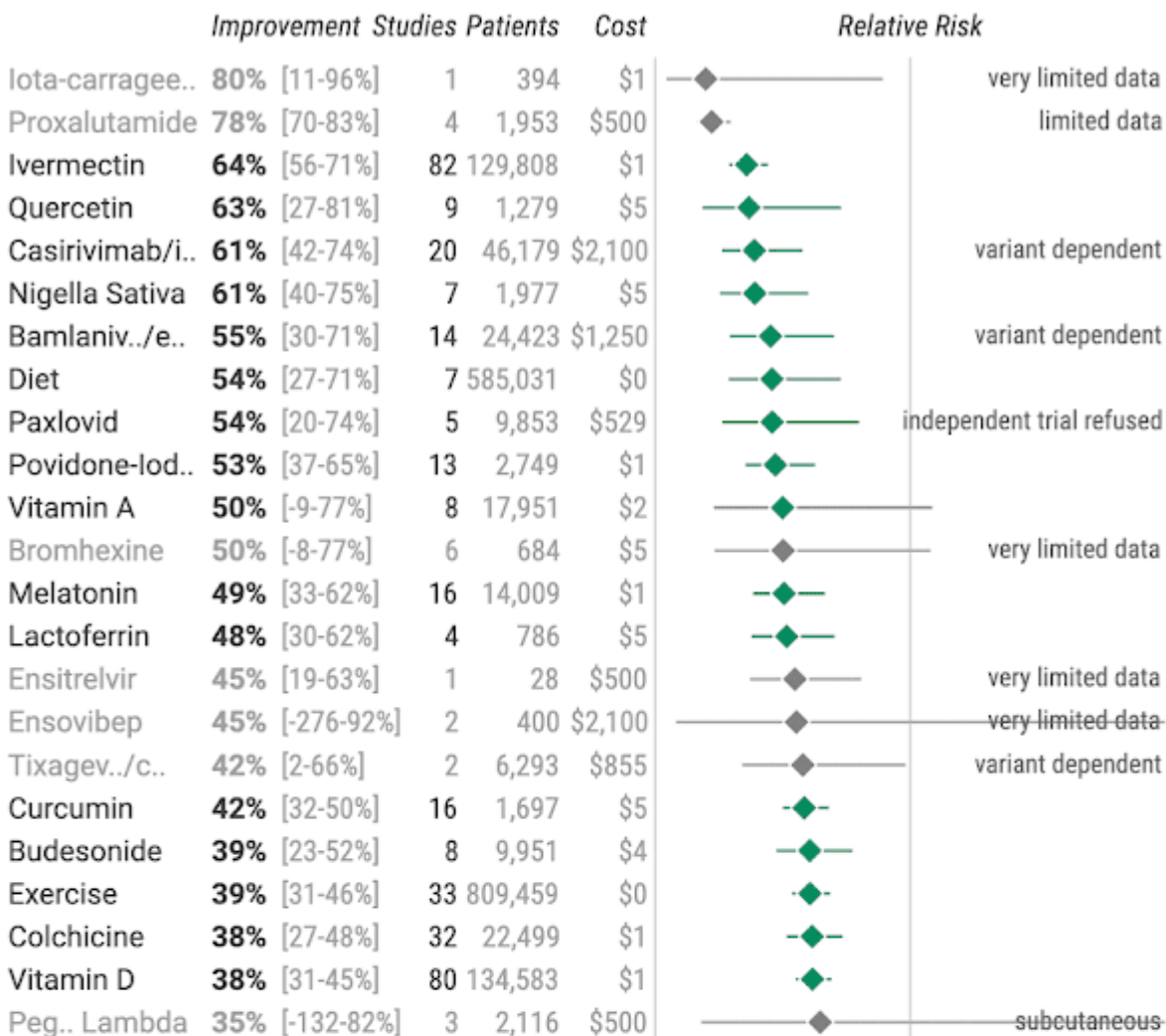
UK's Recovery Trial (University of Oxford) concluded that "there is no beneficial effect of hydroxychloroquine in patients hospitalised with Covid-19" and the drug has been pulled from the trial.

WHO trial (Solidarity) **interim trial results** (NEJM, Dec 2020) reported that remdesivir, hydroxychloroquine, lopinavir/ritonavir and interferon regimens appeared to have little or no beneficial effect among hospitalized COVID-19 patients.

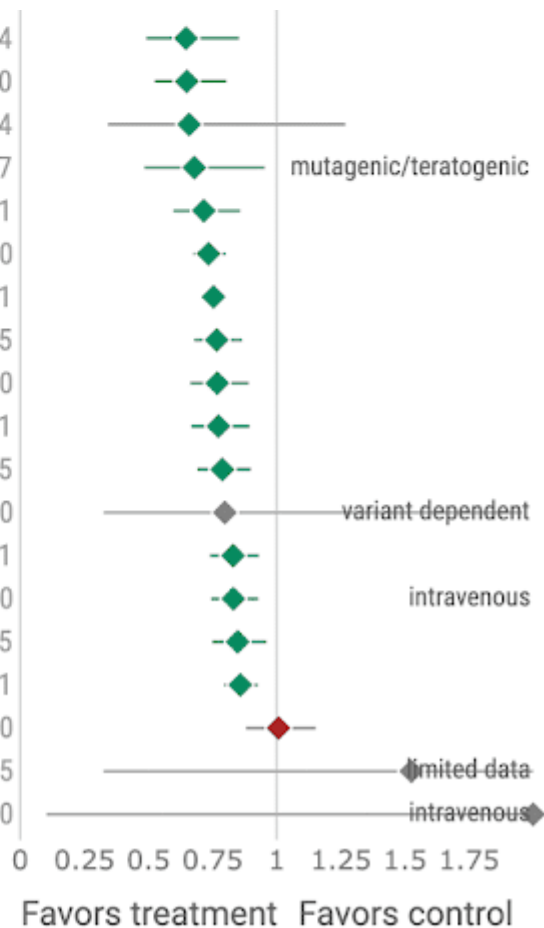
Any Alternate Treatments?

For a list of COVID-19 early treatment studies, check out c19early.com (constantly updated).

All studies (pooled effects, all stages) c19early.com May 25, 2022



Fluvoxamine	35%	[15-51%]	7	2,651	\$4
Sleep	35%	[20-48%]	7	1,636	\$0
Nitazoxanide	34%	[-27-66%]	11	3,025	\$4
Molnupiravir	32%	[5-52%]	11	14,747	\$707
Zinc	28%	[14-40%]	30	55,226	\$1
Metformin	27%	[20-33%]	39	118,536	\$10
Hydroxychlor..	25%	[21-28%]	345	457,932	\$1
Antiandrogens	23%	[13-32%]	34	62,864	\$5
Favipiravir	23%	[11-34%]	40	17,123	\$20
N-acetylcys..	23%	[11-33%]	13	24,349	\$1
Probiotics	21%	[10-31%]	16	17,535	\$5
Sotrovimab	20%	[-96-67%]	5	4,524	\$2,100
Vitamin C	17%	[7-26%]	44	39,120	\$1
Remdesivir	17%	[7-26%]	36	123,330	\$3,120
Famotidine	15%	[4-25%]	23	76,267	\$5
Aspirin	14%	[7-20%]	44	120,131	\$1
Conv. Plasma	-1%	[-15-12%]	14	15,607	\$5,000
Cannabidiol	-53%	[-616-68%]	3	1,153	\$25
Bebtelovimab	-151%	[-6014-90%]	1	380	\$1,200



Summary of Early Treatment Studies (including cost)

As you can see from the drug league table above, some of the 'natural alternatives' might even perform better than synthetic drugs.

Conclusion

Macronutrients and micronutrients are essential nutrients to a human body. Low levels of essential nutrients cause the immune system to be operating at a sub-optimal level.

Optimizing your immune system is critical to improve your health whether there is a pandemic or not.

Cytokines are an important part of your immune response. However, when your body releases excessive or uncontrolled levels of cytokines it results in hyper-inflammation called a cytokine storm. A cytokine storm may lead to serious complications and even death in serious COVID-19 cases and in other infections.

Optimizing your immune system with diet and lifestyle changes are critical to improving your health and to decrease your risk of a cytokine storm. However, therapeutics, vaccines and other physical strategies such as social distancing and mask wearing are also needed in order to

protect yourself and your loved ones. It doesn't have to be an 'either or' situation. Combination strategies are normally more effective.

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Inspired by FLCCC



Nature's Bounty Melatonin 3mg, 100% Drug Free Sleep Aids for Adults, Suppo...

\$7.74 ~~\$10.89~~

(18212)



Nature's Bounty Vitamin D, Immune Support, 2000 IU, Softgels, 350 Ct

\$13.64 ~~\$20.99~~

(53172)

All Go


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Zinc Quercetin 120 Vegetarian Capsules

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Wonder Laboratories Zinc Lozenges with Vitamin C - Fru...

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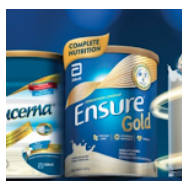


NMN stands for nicotinamide mononucleotide, a molecule naturally occurring in all life forms. NMN is the direct precursor of the essential molecule nicotinamide adenine dinucleotide (NAD+) and is considered a k

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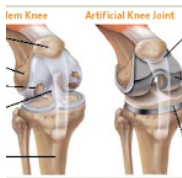


Glucerna vs Ensure Glucerna vs Ensure is a common question we get. A key difference is that Ensure is not designed for diabetes condition users. Both Ensure liquid (or Plus and Life) are all designed by Abbott, but w

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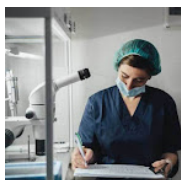


Formula milk, is commonly made from cow's milk that has been processed to make it more acceptable for babies. In stores, you may find a broad variety of brands and types of formula. Always read the labels to ensure yc

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