

## Integrative Immune Support

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*This document is intended for educational purposes only and does not constitute medical care. It does not recommend any treatments, nor have any of these modalities been proven effective against coronavirus. Always consult your family physician or integrative provider prior to introducing herbs and supplements because they may interact with your daily medications. For up-to-date information on COVID-19, please consult the Centers for Disease Control and Prevention at [www.cdc.gov](http://www.cdc.gov).*

With special thanks to IFM (<sup>1</sup>)

### Natural Ways to Boost your Immunity

If you develop signs of covid infection, please contact your healthcare provider immediately. If you take daily medications, please consult your healthcare provider before taking any new herbs or supplements.

In a British study, using an at-home pulse oximeter was a safe and effective way to monitor covid and reduce risk of death<sup>2</sup>. People newly diagnosed with covid were instructed to check their oxygen saturation 3 x daily and call their primary care provider if it was 93-95%. If their pulse oxygen was 92% or lower, they were instructed to contact emergency services immediately. An example of an at-home pulse oximeter is [Amazon.com: ClinicalGuard CMS-50DL Fingertip Pulse Oximeter Blood Oxygen Saturation and Heart Rate Monitor with Batteries, Soft Case, Silicon Cover, Lanyard : Health & Household](https://www.amazon.com/ClinicalGuard-CMS-50DL-Fingertip-Pulse-Oximeter-Blood-Oxygen-Saturation-and-Heart-Rate-Monitor-with-Batteries-Soft-Case-Silicon-Cover-Lanyard-Health-Household/dp/B07WZLXH4P). Please note: a risk of using an at-home pulse oximeter is starting to get check compulsively throughout the day which can reinforce anxiety. Please aim to only check 3 x daily. Also, if reading on the lower end, lying on your stomach or walking around usually raise pulse oxygen levels.

**Lying on your belly:** In a clinical trial, prone positioning was effective in rapidly improving blood oxygenation in awake patients with COVID-19-related pneumonia requiring oxygen supplementation.<sup>3</sup> Empirically this has proven true also for patients managing covid at home. The goal is to spend as much time sleeping and awake lying prone (on your belly).

**Quercetin phytosome:** In an RCT, using quercetin phytosome 1000mg daily in outpatients with covid 19 reduced frequency and length of hospitalization, need for oxygen therapy, frequency of progression to intensive care units and in number of deaths.<sup>4</sup> In an RCT, using quercetin phytosome 1000mg daily in outpatients with covid 19 reduced symptom severity and time to molecular test conversion from positive to negative.<sup>5</sup> In an RCT, hospitalized covid patients who took quercetin 500mg by Jarrow twice daily in combination with remdesivir and favipiravir

compared to remdesivir and favipiravir alone did not change ICU admission or death rates, but did reduce time of hospitalization by 1.5 days.<sup>6</sup>

**NAC:** In a cohort study, hospitalized Covid patients who took NAC 600mg granules in water twice daily for 2 weeks had lower risk of mechanical ventilation and lower mortality.<sup>7</sup>

**Zinc:** In an observational study in NYC, the addition of 50mg elemental zinc twice daily for five days to hydroxychloroquine and azithromycin did not impact ICU duration, but did increase the frequency of patients being discharged home, decreased the need for ventilation, decreased admission to the ICU, and lowered mortality or transfer to hospice.<sup>8</sup> In the elderly and in children, zinc is helpful in reducing the risk of pneumonia and common cold and the incidence of respiratory tract infections.<sup>9</sup> In children, zinc 20 mg/day speeds recovery from severe pneumonia.<sup>10</sup> Often available as lozenges, zinc can help to reduce the frequency of infections as well as the duration and severity of the common cold when taken within 24 hours of onset. Safety notes; As an adult, do not take more than 60mg zinc daily ongoing because high doses of zinc can become immune suppressive.<sup>11,12</sup> Always take zinc with food because it can cause nausea on an empty stomach. Zinc deficiency is more common with vegans/vegetarians, people with chronic diarrhea, and cancer patients. Zinc interacts with some antibiotics such as cipro and doxycycline.

**Vitamin C:** Vitamin C may help to prevent infections, including those caused by viruses and bacteria. Vitamin C has been shown to lower frequency of the common cold and pneumonia<sup>13</sup>, and shorten the length of time that people are sick with colds<sup>14</sup>. Vit C supplementation in pneumonia patients showed a linear dose response on length of hospital stay.<sup>15</sup> Vitamin C levels were severely or undetectable in Covid19 patients hospitalized for acute respiratory distress syndrome.<sup>16</sup> Common doses in research on viral infections are 1-2g daily for common colds.<sup>17</sup> If you take too much Vitamin C at one time, you can get diarrhea. Therefore, if you want to use higher doses for a severe infection, it is better to take vitamin C 1000mg every 1-2 hours for 6 doses spread out throughout the day.

**Vitamin D:** Vitamin D is an extremely common deficiency in Michigan because it comes from sunshine. It is an important and necessary nutrient for supporting the immune system. Numerous studies have shown that routine Vitamin D3 supplementation reduces the risk of colds and flu.<sup>18,19</sup> Vitamin D insufficiency is highly prevalent in severe COVID-19 patients<sup>20,21</sup> and is a risk factor for severe covid.<sup>22</sup> In an observational study, hospitalized COVID-19 patients aged 50 and over who received oral vitamin D3 1000 IU, magnesium 150mg and vitamin B12 500mcg upon admission had less need for oxygen therapy (17.6% vs 61.5%, P=0.006).<sup>23</sup> In French nursing homes, residents given 80,000 IU vitamin D3 every 2-3 months had improved mortality rates from covid19.<sup>24</sup> In Britain, people with covid who took 800-2000Iu vitamin D3 daily had a 52% lower chance of dying.<sup>25</sup> In a small double blind randomized controlled trial, giving calcifediol to

hospitalized COVID-19 patients significantly reduced intensive care unit admissions and severity of COVID-19.<sup>26</sup> The mean level of vitamin D in countries around the world was strongly associated with the number of Covid19 cases and mortality from covid.<sup>27</sup> For Covid 19 prevention only in people who have deficient vitamin D, some researchers suggest 10,000IU daily for 2-3 weeks followed by 5000IU daily in order to quickly raise the level.<sup>28</sup> If you are sufficient, you would not need this much. There is a wide variety of vitamin D doses needed by different people to keep their level optimal in the blood. Vitamin D3 can be toxic at high doses.

**Probiotics:** In a trial of covid patients, using 200 mg of Inulin and 10 Billion Colony Forming Units (CFU's) of *Lactobacillus plantarum* (Lp90), *Lactobacillus rhamnosus* (LRa05), *Lactobacillus bulgaricus* (LB42), *Lactococcus lactis* (La61), and *Lactobacillus paracasei* (LC86) for one month reduced the severity of early and chronic Covid-19 symptoms.<sup>29</sup> Probiotics contain “good bacteria” that not only support the health of the gut but also influence immune system functioning and regulation. Studies have shown that probiotic use over the winter months can decrease the number of respiratory infections, particularly in children<sup>30</sup> and the elderly<sup>31</sup>. Coronavirus does infect the digestive tract, and some hospitalized coronavirus patients with digestive symptoms in China were found to have lower levels of *Lactobacillus* and *Bifidobacterium*.<sup>32</sup> Safety note: There are huge quality control issues with probiotics because they need to be refrigerated or specially encapsulated to keep them alive. The majority of brands (especially ones not in the fridge) are mostly dead bacteria instead of live bacteria.

**L Arginine:** L arginine is an amino acid that supports endothelial function. In a double blind RCT, adding oral L-arginine 1.66g twice daily to standard therapy in patients with severe COVID-19 significantly decreased length of hospitalization and reduced the respiratory support at day 10 but not day 20<sup>33</sup>.

**Respiratory congestion & sinuses:** For respiratory congestion, use a humidifier, vaporizer, steam inhaler, or spend time in steamy baths or showers. Vaporizers and inhalers can also be used with essential oils such as oregano, hyssop, eucalyptus, thyme, peppermint, or frankincense<sup>34</sup>. Nasal xylitol sprays are very beneficial, as is nasal irrigation using a neti pot or nasal irrigation bottle. Buffered saline is easy to make or can be purchased in packets and eliminates any irritation to delicate, irritated nasal passages. Safety note: Nebulizers for asthma can aerosolize the virus and easily spread it to other people in the area.

**Hot baths/Fever management:** Please contact your provider if you develop a fever. If it is not interfering with sleep, allowing a fever to run while staying hydrated will help your immune system control viruses better than suppressing a fever.

**Hydration:** When facing respiratory infections, the top priorities are lots of rest and water. Drink plenty of fluids; homemade vegetable or bone broths and herbal teas. Good tea choices include chamomile, peppermint, ginger, lemonbalm, astragalus and licorice root. Based on animal studies, licorice root tea<sup>3536</sup> and astragalus root<sup>3738</sup> powdered tea are especially indicated for coronavirus and are moistening for dry tissues. Safety notes: Licorice Root at higher doses can raise blood pressure, and also can cause potassium wasting, so check with your provider before using.<sup>39</sup> Some people are allergic to chamomile tea. Ginger may aggravate heartburn in sensitive individuals.

**Sore throats:** Hot teas, raw honey in water, and lozenges containing slippery elm are excellent demulcents for soothing irritated sore throats. Marshmallow root, slippery elm, plantain leaf, violet leaf and licorice root all encourage healthy mucus production. Remember that snot is our friend...it has antimicrobial enzymes and is a first line of defense to slow viral and bacterial invasion into tissues.

**Melatonin:** Melatonin is a sleep hormone that regulates the immune system. In multiple animal studies, melatonin reduces lung injury during viral infections and prevents lung fibrosis. A recent study found that intubated covid patients who were given melatonin had a 13% lower risk of dying.<sup>40</sup> Two papers have already been published recommending melatonin as a coronavirus treatment (one clinical trial is underway).<sup>41,42</sup> Safety note: Melatonin should only be taken at night and is not advised for people with blood cancers. Speak to your provider about dosing and appropriateness for you.

**Elderberry:** Elderberry is a gentle safe herb especially indicated for children to prevent viral infections. In an animal study, elderberry lowered coronavirus levels<sup>43</sup>. There is mixed research about whether elderberry increases<sup>44</sup> or decreases inflammation signaling<sup>45</sup>, but historically it has always been regarded as a good anti-inflammatory. It is useful for flu prevention and it shortens the length of time that people are sick with influenza.<sup>46</sup>

**Omega 3 fatty acids/ Fish oil:** Cytokine storms from covid are related to excess levels of non-purposeful inflammation. For people with underlying inflammation (asthma, diabetes, cardiovascular disease, autoimmune conditions, IBD), omega 3 fatty acids are an anti-inflammatory strategy that also encourages resolution of infections.<sup>47</sup> In a systematic review of 19 clinical trials, high dose fish oil decreased anxiety.<sup>48</sup> In an observational study of hospitalized covid patients, higher levels of omega 3 in the blood was associated with a lower risk of dying from Covid.<sup>49</sup>

**Traditional Chinese Medicine:** We are learning a lot from Chinese physicians about integrating Traditional Chinese herbs into coronavirus treatment. In China, Jade Windscreen formula is one of the most commonly used formulas for coronavirus prevention. It is made from 3 herbs; Astragalus honey fried 7g, Atractylodes macrocephala root 7 g, and Saposhnikovia divaricata root 4 g.<sup>50</sup> In Traditional Chinese Medicine, treatment of an existing respiratory infection is

tailored to the individual symptoms, so contact your integrative provider for a customized formula and brand recommendation. Note that licorice root and astragalus are two of the most commonly used herbs for covid19 in all of the provinces of China.<sup>51</sup> Safety note: Licorice Root at higher doses can raise blood pressure, and also can cause potassium wasting.<sup>52</sup>

**Garlic:** Garlic contains a variety of compounds that help with colds and flus. Aged garlic reduced the severity of viral colds and flu and boosted immunity when taken for 3 months over the winter.<sup>53</sup> Garlic concentrates well in the lungs. Safety note: Garlic may interact with some medications.

**Vitamin A:** Both deficient and excess Vitamin A can suppress immunity so please be very mindful with dosing. Vitamin A supplementation is very important for people who are deficient in it, but in children with normal levels, high dose Vit A can make their respiratory infections worse.<sup>54 55</sup> High dose Vitamin A is also not safe for pregnant women. Vitamin A deficiency is more common in people with autoimmune conditions, inflammatory bowel disease, people who take statin drugs and people with cancer. If you at risk of being deficient, fasting serum retinol is a blood test that can tell you your level.

**IV Vitamin C:** The “Expert Group on Clinical Treatment of New Corona Virus Disease in Shanghai” (Shanghai, 2019) details the use of IV vitamin C as safe and effective adjunctive care of hospitalized COVID-19 patients. In the IV vitamin C treated group, there was no mortality, no reported side effects of IV vitamin C, and shorter hospital stays.<sup>56</sup> IV Vitamin C is suggested as a safe way to decrease risk of cytokine storm<sup>57</sup> and reduce ICU stay in pneumonia patients<sup>58</sup>, however no clinical trials have confirmed this yet. A case report showed that IVC successfully treated acute respiratory distress syndrome from enterovirus/rhinovirus.<sup>59</sup>

### **Interesting asides**

IL-6 is an inflammatory cytokine that rises when people get more severe coronavirus. Drugs that lower IL-6 are being studied in ICU's now for coronavirus. Supplements that lower IL-6 in humans include vitamin C, vitamin D, fish oil, curcumin, CoQ10 and melatonin.

### **Standard advice for Covid prevention**

**Frequent Hand washing:** The most well-established way to prevent respiratory infections such as influenza and coronavirus is frequent and thorough hand washing with soap and water. Scrub your hands thoroughly with soap and water for at least 20 seconds.

**Hand sanitizer:** Handwashing with soap and water is the best way to reduce germs, but if they are not available, alcohol-based hand sanitizers that contain at least 60% alcohol can help to reduce the spread of infection. Note: avoid any products containing triclosan, a known hormone-disrupting chemical.

**Covering your mouth and nose:** Cover your mouth and nose with a tissue when coughing or sneezing; if your hands are not free or you don't have a tissue, cough or sneeze into your sleeve. Wear a mask in any indoor public spaces.

**Not touching your face:** Avoid touching your eyes, nose, and mouth with unwashed hands, which can help provide the virus with a route of entry into the body.

**Keeping surfaces clean:** Clean and disinfect frequently touched surfaces.

### **Lifestyle Recommendations**

**Stress reduction:** Stress can lower our immune function. Aim to take short “peace breaks” throughout the day where you bring your body into the relaxation response (ideas include; deep breathing, yoga, having a lavender bath, walking barefoot on the earth, alpha stim, drumming, prayer, singing, meditation).

**Exercise:** Regular physical activity helps to boost immune function by raising white blood cells and antibodies, increasing circulation, and lowering stress hormones. Exercise not only helps prevent respiratory infections, but also really helps mental distress.

**Sleep:** Sleep really influences immune function, so it is essential to get plenty of sleep (7 hours or more!) Practice good sleep hygiene and maintain consistent sleep hours—turn off screens, ensure the room is dark, and set a reminder to help yourself go to bed on time. Melatonin may be especially useful for falling asleep (it doesn't help you stay asleep). Discuss melatonin with your healthcare provider to see if it's appropriate for you.

**Real food:** Aim for a Mediterranean Diet with minimal processed food/white sugar. Research indicates that brightly colored vegetables and fruits boost immunity - aim for 10 servings per day (a serving is a half cup cooked veggies or 1 cup raw, 1 fruit). Include fermented vegetables or other probiotic-containing foods. If brazil nuts are available, 4 nuts daily are a great source of selenium, which is a key nutrient to support immune function. In China there was an association between Covid19 cure rates and dietary selenium status.<sup>60</sup> Fish and seaweed have iodine sources to support immunity. Gut microbial diversity is encouraged by eating a high fiber diet<sup>61</sup> with

fruits, vegetables, nuts, and fish. Blood sugar is balanced with regular meals that are higher in fiber (Mediterranean Diet).

**If you would like to support grassroots efforts to get much needed Covid19 supplies (hand sanitizers, cleaning supplies, masks, basic necessities) to inner city Detroit, please donate to:  
<https://detroit2nepal.org>**

<sup>1</sup> <https://www.ifm.org/news-insights/boosting-immunity-functional-medicine-tips-prevention-immunity-boosting-covid-19-coronavirus-outbreak/?hsCtaTracking=f67e5ea3-450a-4bce-910f-0f98b20455a0%7Cd58f65bc-698f-4a03-8d77-30e0da010351>

<sup>2</sup> [Evaluating the impact of a pulse oximetry remote monitoring programme on mortality and healthcare utilisation in patients with covid-19 assessed in Accident and Emergency departments in England: a retrospective matched cohort study | medRxiv](#)

<sup>3</sup> [Feasibility and physiological effects of prone positioning in non-intubated patients with acute respiratory failure due to COVID-19 \(PRON-COVID\): a prospective cohort study - PubMed \(nih.gov\)](#)

<sup>4</sup> [Possible Therapeutic Effects of Adjuvant Quercetin Supplementation Against Early-Stage COVID-19 Infection: A Prospective, Randomized, Controlled, and Open-Label Study \(nih.gov\)](#)

<sup>5</sup> [Potential Clinical Benefits of Quercetin in the Early Stage of COVID-19: Results of a Second, Pilot, Randomized, Controlled and Open-Label Clinical Trial \(nih.gov\)](#)

<sup>6</sup> [The therapeutic efficacy of quercetin in combination with antiviral drugs in hospitalized COVID-19 patients: A randomized controlled trial - ScienceDirect](#)

<sup>7</sup> [N-acetyl-cysteine reduces the risk for mechanical ventilation and mortality in patients with COVID-19 pneumonia: a two-center retrospective cohort study - PubMed \(nih.gov\)](#)

<sup>8</sup> <https://www.medrxiv.org/content/10.1101/2020.05.02.20080036v1.full.pdf+html>

<sup>9</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5949172/>

<sup>10</sup> <https://www.ncbi.nlm.nih.gov/pubmed/15158629>

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<sup>20</sup> <https://www.medrxiv.org/content/10.1101/2020.04.24.20075838v1>

<sup>21</sup> <https://pubmed.ncbi.nlm.nih.gov/32772324/>

<sup>22</sup> <https://pubmed.ncbi.nlm.nih.gov/32976513/>

<sup>23</sup> <https://www.medrxiv.org/content/10.1101/2020.06.01.20112334v1>

<sup>24</sup> <https://www.sciencedirect.com/science/article/pii/S096007602030296X>

<sup>25</sup> [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3690902](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3690902)

<sup>26</sup>

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<sup>27</sup> <https://www.researchsquare.com/article/rs-21211/v1>

<sup>28</sup> <https://www.mdpi.com/2072-6643/12/4/988>

<sup>29</sup> [The influence of a blend of probiotic lactobacillus and prebiotic inulin on the duration and severity of symptoms among individuals with covid-19 \(gavinpublishers.com\)](#)

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- <sup>31</sup> <https://www.ncbi.nlm.nih.gov/pubmed/29124387>
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- <sup>33</sup> [Effects of adding L-arginine orally to standard therapy in patients with COVID-19: A randomized, double-blind, placebo-controlled, parallel-group trial. Results of the first interim analysis - EClinicalMedicine \(thelancet.com\)](#)
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