

## **Lifestyle Strategies to Support Your Immune System During COVID-19 and Beyond**

*A Functional & Integrative Perspective On Supporting the Immune System*

Written by Julie Bender-Sibbio RDN, LDN

As 2020 progress and concerns about coronavirus continue, individuals are looking for ways to prioritize their health amidst this pandemic. While conventional medicine and the government race to look for a vaccine, perhaps we need to turn inward to our own biology and past and present science for insight into building a healthy defense. It is clear that a strong immune system is paramount to preventing or minimizing the impact of a contagious virus like COVID-19. It is unfortunate, at least to date, that the immune-supporting lifestyle strategies presented to the American public go no deeper than diligent handwashing and social distancing.

Research is clear that lifestyle, environmental factors, and the health of your gut are key to optimal immune health. The immune system is a complex network of cells, tissues, organs, glands, and chemical messengers all working together to prevent infections and promote healing. The immune system is designed to run like an intricate and elaborate machine, working in concert with the rest of your body to keep you safe.

Because your immune system is so interconnected and complicated, it requires support in a number of ways to run smoothly and optimally. Lifestyle factors are at the heart of immune wellness and function to safeguard your well-being.

In simplest terms, the best immune boosting strategies can be classified into 5 categories, yet all are inter-related.

- 1. *Providing essential nutrients through food and supplements***
- 2. *Optimizing gut function and supporting a healthy microbiome***
3. Managing stress and prioritizing quality sleep
4. Reducing toxic burden
5. Establishing a healthy community of support and human connection

Although much can be shared about each of these categories, this article will focus on the first two. The following discussion provides a detailed overview, key strategies, and practical tools to build your defense from the inside out.

### ***1.(a) Essential Nutrients from Food***

Food is medicine. I often tell clients, “Your body is a bundle of biochemistry.” Vitamins, minerals, antioxidants, and phytonutrients are all important and part of regulating each and every body system. Optimal nutrient levels in the body can be negatively impacted by medicine, stress/trauma, aging, environmental toxins, and diet. The type and quality of food you choose, your preparation method, the type of and temperature at which you heat cooking oil, the environment in which you eat, and more can trigger an inflammatory response affecting the health and resilience of your body.

Food can positively or negatively impact inflammatory pathways, oxidative stress, and antioxidant levels. Chronic low-level inflammation and activation of the immune response are mechanisms for increased risk of lifestyle induced diseases such as type 2 diabetes [1]. This is

why shifting away from a typical Standard American Diet (SAD) to a diet rich in essential nutrients such as the well-studied Mediterranean diet [2] or similar can be life changing. It is not enough to merely omit foods shown to negatively impact the inflammatory response such as sugar, diet soft drinks, salt, trans fat, refined grains and high glycemic foods, processed meats, gluten, and much of conventional dairy. It is equally important to include a plentiful array of plant-based foods such as vegetables, fruits, legumes, nuts/seeds, spices/herbs [3], while maintaining adequate quality sources of protein. Given that pesticides are known to impact immune function, increasing consumption of organically and/or locally grown produce (where financially feasible) may lower the inflammatory burden. [4]

The initial phase of a viral infection may present with an abundance of oxidative stress, which produces compounds damaging to the body system. Changing your cooking strategies can help mitigate oxidative stress and these oxidative compounds. Consuming grilled, fried, or broiled foods can provoke an inflammatory response from human immune cells. [5]. Instead, focus on steaming, boiling, or lightly sautéing your food.

Certain oils, often found in process foods, contain high levels of omega-6 fatty acids (sunflower, corn, soybean and cottonseed oils). These oils, when consumed unproportionally to omega 3 fatty acids (fish, cod, flaxseed, walnut, avocado oils), have been shown to lead to an inflammatory response in the body. Research has found that maintaining an omega-6:omega-3 ratio of 1:1 or 2:1 can help balance inflammatory levels and promote healthy inflammation in the body.[6]

To further counter oxidative stress, it is most important to include nutrient-dense, colorful foods coming from plants such as fruits, vegetables, and legumes. These contain phytonutrients and antioxidants shown to have anti-inflammatory properties which are derived from polyphenols and flavonoids [7,8]. Antioxidants can be vitamins or phytonutrients that may be water-soluble (vitamin C) or fat soluble (carotenoids, tocopherols, tocotrienols) in nature. Mindfully and generously adding antioxidant rich foods to your daily diet will help crowd out nutrient-depleted foods and reduce the impact of oxidative stress. [9]

### **Here are practical steps you can take to use food to help reduce inflammation and support your body.**

- Stay hydrated to help with better assimilation and utilization of nutrients coming from food.
  - Start your day with 10-16 oz of water with lemon. Consider a smoothie filled with greens, fruits, and plant-based protein powder. Drink homemade broths, filtered water, and/or coconut water.
- Over 75% of your diet should come from plant-based foods free of immune offenders such as added sugar, processed dairy, gluten, alcohol, corn, excess saturated fat, and processed soy — all which can increase the inflammatory response.
  - Aim for 6-8 cups of veggies, with emphasis on cruciferous types (ie. broccoli, cauliflower, Brussel sprouts, arugula, asparagus) as well as leafy greens (ie. bok choy, spinach, swiss chard).
  - Include ½ cup whole fruit 1-3x daily.

- Complement your meal with whole grains or tubers such as brown rice, quinoa, oats, buckwheat, sweet potato, red/purple/yellow potato.
- Based on your eating style, ensure adequate protein from sources such as beans/lentils, grass-fed/organic eggs, fish, poultry, and beef.
- Choose organic produce (when able) as well as wholesome grains.
  - At minimum, avoid the produce highest in pesticides. (Refer to [The Dirty Dozen List](#).)
- Include fresh or dried herbs and spices shown to naturally support immunity with special focus on garlic, ginger, turmeric, rosemary, oregano, basil, parsley, and cinnamon.
  - This is a perfect time to grow your own in your kitchen, patio, or back yard!
- Consume adequate fiber and aim for 28-35 grams per day.
- Choose to broil, steam, or lightly sauté your foods and limit frying, grilling or broiling at high heat.
  - Prepare at least 90% of your meals at home.
- Select the proper cooking oils to avoid oxidation of oils:
  - Olive oil is a low heat oil for use below 375 degrees.
  - Grapeseed, coconut, avocado, and sesame oil are safe for high heat cooking.
    - Vary cooking oils and healthy fat sources for a good balance of fatty acids.
- Include healthy omega 3 fatty acid sources such as fish, avocado, walnuts, nuts and seeds.
- Avoid refined oils and limit packaged foods using soybean, cottonseed, and sunflower oils.

**1. (b) Supportive Benefits of Supplements**

Another very powerful way to support the immune system is to include supplements shown to provide immune boosting benefits and help bolster your defenses against germs. As mentioned earlier, medication, aging, stress, environmental toxins and more rob the body of critical nutrients impacting optimal immune function. Therefore, higher doses of vitamins, minerals, phytochemicals, and botanicals, beyond what we can derive from food, may be valuable to help with prevention and/or treatment of viral infections and inflammatory conditions. [1] To date, there is no cure for COVID-19, but past and present research sheds light on many botanical and nutraceutical agents proven to help improve the body’s ability to fight off and/or recover from similar types of illness.

Here you will find 10 of the top supplements in the fight for a robust immune system and virus protection. If you consider supplementation, it is important that you work with a nutrition-educated licensed practitioner or MD to determine the most appropriate intervention based on your circumstance and unique needs. It is also necessary to procure supplements from highly reputable companies with strict quality standards.

**Here are practical and evidenced-based considerations for how you can use supplements to reduce inflammation and support your body.**

<b>Nutraceutical or botanical product</b>	<b>Potential Benefits</b>	<b>**Suggested Dose</b>
Vitamin C	Vitamin C supports various cellular functions that can help to strengthen the immune system, reduce symptoms, and decrease viral growth [2]. <a href="#">Vitamin C</a>	1-3g orally/day

	<a href="#">has been used successfully in hospital ICUs to treat COVID-19.</a> Currently there is a clinical trial in process. **	
Zinc	Research on zinc has found strong antiviral properties against many viruses. Zinc enhances the immune system while also reducing symptoms and spread of viruses.[3,4,5] <a href="#">This has also been used in some protocols throughout the country to treat COVID-19.</a> **	20-60mg orally daily – divided doses
Vitamin D	Activated Vitamin D, a steroid hormone, has been found to enhance immune system function, and reduce viral growth and upper respiratory infections. [6,7,8] Many patients with COVID-19 have shown to be deficient in Vitamin D. [9]	5000 IU orally, (more may be needed if deficient)
Vitamin A	Vitamin A is a micronutrient and fat-soluble vitamin that is crucial for maintaining vision, promoting growth and development, and protecting the gut lining. Vitamin A is known as an anti-inflammatory vitamin because of its critical role in enhancing immune function and supporting the lining of the respiratory tract. [10,11]	10,000 – 25,000 IU Daily
Elderberry (Sambucus nigra)	Elderberry is packed with Vitamin C, dietary fiber, and antioxidants. It has been used extensively in many medicinal preparations and has widespread historical use as an antiviral herb. [12] Based on animal research, elderberry is likely most preventative in the early stages of infection. [13,14]	500mg orally, daily
Melatonin	Melatonin has long been used to promote restful sleep and balanced circadian rhythm, but most recently it has been shown to reduce inflammation. [15] This has caught the attention of the COVID-19 research community, with two recently published papers proposing the use of melatonin as a therapeutic agent in the treatment of patients with COVID-19. [16,17]	5-20mg, liquid or orally 30-60 min before bed
Green Tea – EGCG (epigallocatechin gallate)	Green tea has been known to help reduce inflammation, prevent influenza in healthcare workers, and reduce viral replication of the COVID-19 virus. [18,19]	4 cups organic green tea or 225mg orally daily
N-Acetylcysteine (NAC)	N-acetylcysteine promotes the production of glutathione, a master antioxidant that supports immune function. It has been shown to reduce the severity of the flu. [20]	600-900mg 2x/day
Curcumin	Curcumin, the active component of turmeric, has been used for centuries to treat inflammation and has	500-1000mg 2x daily

	been show to slow down the viral replication of COVID-19. [21,22]	
Quercetin	Quercetin, found in fruits and vegetable, has anti-inflammatory and antioxidant properties as well as a range of other benefits, including antiviral effects against RNA (ie. influenza and coronavirus) and DNA viruses (ie. herpesvirus) [23, 24, 25, 26]	Preferably the phytosome form: 500mg, 2x daily

\*Suggested doses are based on optimizing levels with the intent to prevent illness vs. treatment.

\*\* Click here to learn more about the [Front Line Covid19 Critical Care Working Group and the Math+ Protocol.](#)

## ***2. Optimizing gut function and supporting a healthy microbiome***

The health of the gut and the immune system are directly and intricately linked. [1] It is estimated that 80% of your immune system is modulated by the gut microbiome (the name given to the trillions of bacteria, protozoa, and microbes that live in your digestive tract). Microbes are involved in every aspect of your health, from ensuring good defenses against viral and other pathogens, to promoting digestive wellbeing, influencing your weight, and impacting your risk of developing asthma, sinusitis, thyroid disease or diabetes [2,3]— Research even shows us they play a role in brain chemistry and mental and emotional well-being. [4,5]

A diverse garden of healthy bacteria is essential to optimal health and a robust immune system. Today’s changing world is negatively influencing our precious internal ecosystem. Diet, medications, stress, lifestyle habits, lack of sleep and exercise, nutrient deficiencies, exposure to toxins, reoccurring infection, food poisoning, travel, and more have an effect. Our standard Western living and super-sanitized lifestyles are starving our microbiomes, depleting the “good bugs” that are so essential in maintaining health. When bad bacteria begins to overpopulate and overtake the beneficial bacteria, it can disrupt this delicate balance and dampen the immune system and lead to autoimmune, inflammatory, and chronic disease. [6,7]

Harmonizing the gut microbiome includes incorporating key foods, supplements, and lifestyle habits to promote homeostasis and balance. Short chain fatty acids (SCFA) are derived from microbial fermentation of indigestible fibers found in food. SCFA are fermented in the colon and are the main energy source of colonocytes, which are essential for digestive health and reducing risk of disease. [8] SCFA are crucial to ensuring the health of our barrier gut function, whose role is to keep us protected from any foreign invader or pathogen. In particular, the SCFA called butyrate has significant immune regulating activities. High fiber diets can directly modulate immune function and increase short chain fatty acids. It is key to consume a diverse variety of undigested fibers from plant foods including root vegetables and resistant starch which have been shown to promote SCFA production. [9,10]

Fermented foods may also be helpful for immune response and reducing the incident and duration of respiratory infections. [11] However, some individuals do not tolerate these well, including those who have histamine intolerance or are experiencing an unhealthy and unbalanced gut.

A group of phytonutrients called polyphenols have been shown to be helpful for gut immunity. Polyphenols are a group of plant-based compounds found in fruits, vegetables, nuts, seeds, legumes, and whole grains. They are thought to regulate immune function through several mechanisms that help lower inflammation and promote anti-inflammatory activity. [12,13]

There is a key message in all this. Food can help feed and support your gut and immune function. However, what you eat is not enough. It is important that proper digestion function is occurring and your body is able to extract the nutrients and benefits from the food consumed. Therefore, focusing on optimal digestive function, key foods as part of a well-balanced diet, and supplemental support all may be imperative for optimizing immune health.

**Here are practical steps you can take to promote a healthy, happy, and supportive gut to enhance your immune system.**

- Pause before meals, chew food well, and eat in a relaxed and calm environment to support secretion of key enzymes and processes to aid in digestion and absorption of nutrients.
- Eat every 3-4 hours to provide the digestive system a chance to “reset” between meals. Avoid grazing and fast 12-16 hours overnight.
- Include a probiotic supplement to help “crowd out” harmful microorganisms and include prebiotic foods daily such as garlic, onions, beans/lentils, artichokes, oats, sweet potatoes, and cabbage.
  - It is important you select a probiotic that is right for you and your situation.
  - [\*Enjoy my free anti-inflammatory shopping list which includes pre-biotic foods.\*](#)
- Include fermented foods (for a healthy gut only) such as kefir, kimchi, sauerkraut, plain yogurt, and miso.
- Plan your meals and try to consume at least 20-30 different plant-based foods/day - focus on diversity of types and colors.
- Include polyphenol rich foods such as quercetin (ie. apples and onions), resveratrol (i.e. grapes, organic wine), epigallocatechin-3-gallate (green tea), and curcumin (turmeric).
- Consider adding immunoglobulin G in a supplement form, also known as IgG, which is an antibody naturally produced by your immune system. One of IgG's most prominent roles in the immune response is its ability to bind to any foreign invaders. IgG binds to bacteria, viruses, fungi, or toxins so that your immune cells can neutralize and eliminate them from the body. [14]
- If you are having digestive concerns, work with a licensed practitioner to help you uncover the root causes of your digestive distress and create a personalized plan to support the health and well-being of your gut.

2020 is the time to make positive and nourishing lifestyle habits a top priority as we safeguard and protect one of our most valuable assets in this present time...our health. If you need help creating a personalized immune supporting plan focusing on what is most appropriate for you and your situation, reach out and connect with a practitioner in your area who will encourage and

support your efforts. YOU are valuable and YOU are worth it. Now is the time to rise stronger than ever to meet your health and wellness goals.

If you are interested in connecting with me and subscribing to my list, visit my [website to connect with my community](#).

### References Cited:

Intro and Food:

1. doi:[1093/ajcn.82.3.675](#)
2. doi:[3390/nu11061239](#)
3. doi:[1016/j.immuni.2019.09.020](#)
4. doi:[3390/nu11061239](#)
5. doi:[3390/nu11102373](#)
6. Simopoulos AP. Omega-3 fatty acids and athletics. *Curr Sports Med Rep*. 2007;6(4):230-236
7. doi:[1111/bcp.12986](#)
8. doi:[1080/10408398.2017.1345853](#)
9. doi:[3390/nu11102373](#)
10. doi:[3390/nu10050606](#)

Supplements:

1. <https://doi.org/10.3390/nu12041181>
2. doi: [10.1186/s13054-020-02851-4](#)
3. doi:[10.1093/jn/130.5.1399S](#)
4. doi:[10.1155/2018/6872621](#)
5. doi:[10.1093/jn/130.5.1399S](#)
6. doi:[10.5402/2013/246737](#)
7. doi:[10.3310/hta23020](#)
8. doi:[10.1016/j.pupt.2019.01.003](#)
9. doi: [10.1017/S0007114520001749](#)
10. doi:[10.3390/jcm7090258](#)
11. doi:[10.1093/jn/130.5.1132](#)
12. doi:[10.1002/ptr.5782](#)
13. doi:[10.1186/1746-6148-10-24](#)
14. doi:[10.1016/j.fct.2019.110922](#)
15. doi:[10.1155/2017/1835195](#)
16. doi:[10.1038/s41421-020-0153-3](#)
17. doi:[10.1016/j.lfs.2020.117583](#)
18. doi:[10.1186/1472-6882-11-15](#)
19. Chow HH, Cai Y, Hakim IA, et al. Pharmacokinetics and safety of green tea polyphenols after multiple-dose administration of epigallocatechin gallate and polyphenon E in healthy individuals. *Clin Cancer Res*.2003;9(9):3312-3319.
20. doi:[10.1016/j.pcad.2020.02.007](#)
21. doi:[10.1155/2016/5460302](#)
22. doi:[10.20944/preprints202003.0226.v1](#)
23. doi:[10.5507/bp.2019.030](#)
24. doi:[10.3390/v8010006](#)
25. doi:[10.3945/an.115.010538](#)
26. doi:[10.1002/mnfr.201800147](#)

Gut Function:

1. DOI: [10.1186/s40779-017-0122-9](https://doi.org/10.1186/s40779-017-0122-9)
2. DOI: [10.1080/17474124.2019.1543023](https://doi.org/10.1080/17474124.2019.1543023)
3. DOI: [10.1136/gutjnl-2015-309990](https://doi.org/10.1136/gutjnl-2015-309990)
4. DOI: [10.1186/s40779-017-0122-9](https://doi.org/10.1186/s40779-017-0122-9)
5. DOI: [10.1089/omi.2017.0077](https://doi.org/10.1089/omi.2017.0077)
6. DOI: [10.1111/imr.12567](https://doi.org/10.1111/imr.12567)
7. DOI: [10.1136/gut.52.7.988](https://doi.org/10.1136/gut.52.7.988)
8. DOI: [10.3390/nu10101499](https://doi.org/10.3390/nu10101499)
9. DOI: [10.1159/000477386](https://doi.org/10.1159/000477386)
10. DOI: [10.1097/MCO.0000000000000223](https://doi.org/10.1097/MCO.0000000000000223)
11. doi:[1093/nutrit/nuy056](https://doi.org/10.1093/nutrit/nuy056)
12. doi:[3390/nu10111618](https://doi.org/10.3390/nu10111618)
13. doi:[3390/nu10111618](https://doi.org/10.3390/nu10111618)
14. <https://doi.org/10.3389/fimmu.2019.00805>