Can You Boost Your Immune System to Fight the Coronavirus?

In the midst of the current global COVID-19 pandemic, people are worried and looking for anything that might help.

April 14, 2020 By Danielle Penick

As I sit in quarantine trying to distract myself with social media, I've seen more than a few friends and others post folk wisdom and home remedies to boost their immune system. I've seen friends take shots of elderberry syrup, scarf down raw garlic, take megadoses of vitamin C, and drink potions containing colloidal silver. Some of these may sound stranger than others, but do any have any scientific basis as a treatment of viruses? And if so, would you even want to boost your immune system anyway?

Let's start with the question about whether any of these home remedies are likely to work. Scientists—and mothers—have been trying to cure, or at least ease the symptoms, of viruses like the common cold and flu for centuries. There have literarily been thousands of studies on the potential benefits of vitamin C, echinacea, zinc, and even chicken noodle soup. So far all of these home remedies have come up short. The best case scenario is that some, such as zinc, may reduce the duration of symptoms of viral infections by a day or so. Others, such as chicken noodle soup and hot liquids, may help ease symptoms, but have little effect on our immune response.

In the midst of the current global pandemic surrounding COVID-19, people are understandably worried and looking for anything that might help no matter what the chances. Simultaneously, companies almost over night have swarmed the internet and social media to make a quick buck on the panic, get more clicks for their social media profile, or are genuinely trying to help. Many make claims about how to prevent, cure, and treat COVID-19. Declarations include that this disease can be prevented, treated, or cured by many different natural therapies including essential oils, superfoods, supplements, homeopathy, and certain protocols by "boosting" the immune system.

The idea of immune boosting foods and supplements has been a popular trend promoted by TV doctors, all-natural salesmen, celebrities, wellness gurus, and even well-meaning friends. But, an important distinction is that internet influencers and companies thrive off of good marketing and our confusion. Their formula is simple: attract people who are nervous about a health issue and always offer a simple solution for said problem! Fear is a powerful motivator and companies and salesmen know this so they often prey upon consumer fear. So is there merit to using any food,

supplements, or other health products to “boost” your immune system? My patients have been inquiring about these very topics. And they are fair questions!

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While some of the people who are selling these products are likely well intentioned, many are equally as misinformed. The short answer is that you can't "boost" your immune system. This urban legend isn't scientific and it doesn't exist in science based medicine practices as this idea is a significant misunderstanding of immunity. The immune system is extremely complex and it's one of the bodies most sophisticated systems, and influencers promoting products oversimplify it. But even if some of these products did have the chance to boost our immune system, do any of us stop to think if we actually want to?

It's important to know that immunity is very much a double-edged sword. A well functioning immune system will fight off invaders, while a the same time it will try to minimize the damage that's done to our own tissue. When our immune systems are attempting to fight something off it creates inflammation in the body and this can be good in the short term to fight off bacteria or viruses, but it can be bad in the long term as in the case of autoimmune diseases. So even if you could rev up your immune system you wouldn't want to. When your immune system is functioning at a higher level then it can attack your bodies own tissues, and you can be at risk for developing things like lupus, type 1 diabetes, rheumatoid arthritis, irritable bowel disease, Celiac disease, or thyroid disease. So we really should think twice before doing something to disrupt the delicate balance.

Our immune system cannot be turned on and off at will. Your immune system is not one entity, but instead it is massively interconnected. Scientists are a long way away from understanding the complex interactions of cells and organs that allow the immune system to perform at its optimal level. So if you see any study that purports to show a change in some measure of the immune function and it concludes it's a good thing, and then deduces that this is a "boosting" of your immunity, you should be very wary. Avoid any product that claims to "boost" your immune system as these claims are not reviewed by the FDA and they are medically meaningless.

It's important to remember that alternative medicine is over a 30 billion dollar industry. With its rapid growth and acceptance due to its popularity people are inclined to trust questionable interventions. Pseudoscientific cures can pose a real threat and the problem has become so prominent that the World Health Organization has even singled out some of the biggest urban legends for COVID-19 on their website. Additionally Amazon removed 1 million products for making fake Coronavirus claims and the US FDA and FTC have already issued warning letters to seven companies for making fraudulent claims or selling fraudulent products in regards to COVID-19. To me, it's quite frustrating to see people getting taken advantage of at such a vulnerable time. Sadly, many of the products and foods have zero to razor thin evidence that are packaged to sound science-y so it sounds more legit. Often comparisons are made to something else that is considered "well known" for a similar condition. If any of this stuff worked doctors and scientists would be recommending it to prevent people from overloading the hospitals right now as they are bursting at the seams.

So what can you do to support your immune system?

As mentioned previously, what you want is a healthy immune system and not an overachieving one. Ignoring the fact that boosting the immune system is not something that most of us want to do, some parts of the immune system do require vitamins and minerals to function normally. So instead what you want to do is help support our immune system. The good news is there is evidence that you can support your immune system to keep it in good working order. The best COVID-19 defenses at this time aren't usually marketable or nearly as seductive, which is why you don't hear about them as much. Here are the things that you can do to optimize and support your immune function:

1. **Maintain adequate nutrition.** To maintain a well functioning immune system you first need to be well nourished. Those who don't eat enough calories and are undernourished are more at risk for a poor functioning immune system. Good nutrition definitely plays a role with good immune support and it is important. Sticking to the basics is key! Eat the rainbow and include whole grains, fruits, veggies, nuts, legumes, and lean proteins. There are no quick fixes.

2. **Sleep well.** Sleep deprivation can reduce your immune function. Adults should aim for 7-9 hours per night.

3. **Supplement only if deficient or at risk for deficiency.** Nutrients such as vitamin A, C, D, B6, zinc, selenium, iron, and copper help support your immune system. But an important distinction is that high doses have not been shown to make the immune system function better, especially if you already have optimal levels. Often people think that a little is good, so more is better, but this is too simplistic of an approach.

4. **Quit smoking.** Nicotine suppresses the immune system.

5. **Manage stress.** Try to reduce stress as best as you can as this can impact your immune system. I know it's easier said than done sometimes however.

6. **Get vaccinated.** Vaccines help your body to fight off infections faster and more effectively. Unfortunately we don't have a COVID-19 vaccine yet, but keeping up to date on your other vaccines helps your immune system focus on other areas of importance.

What else can you do to prevent COVID-19?

1. Wash your hands with soap and water for at least 20 seconds often.
2. Use an 60% alcohol based hand sanitizer if soap and water are not available.
3. Quarantine yourself at home as much as possible.
4. Keep physical distance from people when walking outside your home. At least 6 feet apart.
5. Wear a mask if advised to do so.
6. Don't touch your face (mouth, nose, eyes) with unwashed hands.
7. Don't invite people into your home, hang out with them at their home or in close proximity if you don't already live together. This is not physical distancing.

Science based resources:

Federal Trade Commission and Coronavirus scams

World Health Organization

Centers for Disease Control

For those interested in a more detailed look at the current evidence for the common immune boosting foods or products claims for COVID-19

Mega doses of Vitamin C: It is indeed an essential nutrient and plays a significant role in our health and immune function. But if you aren't deficient (which is rare in the US), more is not better. There is no strong evidence that high doses of any vitamins are protective against viruses for the general population. Vitamin C has promoted for a long time to treat, cure, or prevent other diseases, but has not shown to have any positive benefits thus far in major large clinical trials. Yet this idea is promoted every flu and cold season even by big companies. For example, Emergen-C was sued for making false claims about this. Thus far, it's possible that vitamin C can decrease the duration of a cold by about one day. However, there may be benefit for individuals with short term extreme physical exertion. Unless this is you, or you are deficient, or at risk for a deficiency then there really isn't a reason to take it. High doses can cause diarrhea, nausea, cramping, and kidney stones.

It's also unlikely that taking large amounts of it will cure COVID-19 infection or have a large effect at all. However, despite this there are currently clinical trials being conducted to rule it out. Chinese scientists have launched dozens of clinical trials too. But if people want to eat more vitamin C rich produce, then this is a good thing for overall health! For more on high dose vitamin C you can read a recent Forbes article here.

Zinc: Currently there is zero evidence that it will fight COVID-19, but people are promoting this based off of some pre-existing research studies that it helps fight symptoms of the common cold. Attempting to make comparisons for outcomes with different viruses or diseases often doesn't pan out. Taking a little zinc may not hurt, but if you take too much it can cause a toxicity.

Elderberry: This is also heavily promoted online to cure the cold and flu for decades as elderberry is known for containing antioxidants. But as you would expect, there are zero studies on it for COVID-19 since it's such a new strain of the Coronavirus. Other research trials have been hit or miss. Most research that has been done is in animal or in petri dish studies, but very few humans trials and there are no large human trials currently. At best it's been shown to reduce viral symptoms. Often what happens in animal and petri dishes don't happen the same way in the human body. This is why we need more rigorous and long term human data to make strong and reliable recommendations. Currently it's being promoted by the well known pseudoscientific company Goop if that tells you much. It may not hurt, but could be a waste of money.

Colloidal Silver: This is another product that is popular within the alternative medicine world that is widely promoted as being anti-microbial. Users often believe that it will cure many things from cancer, to HIV, and herpes. As it stands, the scientific evidence doesn't support the use of colloidal silver for any disease or virus. To be fair, it can have some medical uses topically on the skin, but

if you ingest it orally long term or in high amounts it can lead you to turning a blue-grey color, and that condition is often permanent.

Additionally, it can interact with other medications people are taking. Silver solutions have no known functions or benefits in the body when taken by mouth, it is not an essential nutrient, and has not been proven safe or effective orally.

Most recently televangelist snake oil salesman, Jim Bakker, was touting his silver solution claiming it is a potential cure all. He stated that it kills, eliminates, and deactivates the COVID-19 since it "boosts" your immune system. He was recently served a cease and detest letter, chose to ignore it, and is now being sued by the state of Missouri as this violates state and federal law. But this is not his first offense either, as he served 4 years in prison in the past for fraud. Sadly, it looks like he's back at it again.

Essential Oils: It seems like there's an essential oil for everything doesn't there? They sure do smell good and can be relaxing which is great, but don't expect a miraculous outcome from these oils. The FDA has already issued warnings to some companies making outlandish claims about COVID-19. For example, some companies have been promoting "anti-viral" essential oils. In vitro studies (in a test tube) have shown some possible benefits here and here in regards to our immune system, but these have not been replicated in humans. In vitro data can be interesting and may lead to something, but it often doesn't translate the same way in humans however.

Homeopathy: Homeopathy has been around for a while and is still heavily promoted across many natural websites despite their being zero reliable scientific evidence that homeopathy has any curative properties for any condition. Researchers have also found that there's also no physical proposed mechanism in which it can work either. Almost all homeopathy products are so diluted that not a single molecule of the original substance remains. For example, when chemists analyze the products, they have been found to be chemically indistinguishable from the diluent, which is usually sugar, ethanol, or distilled water. The implausibility of homeopathy and a lack of demonstrable effectiveness has resulted in it being classified within the scientific community as non-sense and quackery. No individual homeopathy preparation has been shown to function better than placebo.

Garlic: Claims that because garlic contains allicin, it stimulates some immune cells to attack microbial invaders. The scientific evidence is weak for claims that garlic treat things like the cold and flu. The World Health Organization has even addressed it in their myth busting guide to COVID-19. It sure does taste good, but sadly it will not prevent you from getting sick.

Superfoods: Often foods such as honey, garlic, ginger, yogurt, turmeric, green tea, echinacea etc are given this label. But the term superfood is more of a marketing term than anything. No single food or natural remedy has been proven to bolster someone's immune system or ward off disease. Some small studies have thin evidence, but the strong evidence is lacking. It makes little scientific evidence based off the way the immune system works. Unfortunately none of these will have an impact on your immune system response and won't eliminate the virus. They might make you feel calmer and healthier so that's always a positive worth considering. These cannot hurt, unless you are avoiding seeking medical care.

Drinking or gargling with water or hot water: This isn't necessarily being promoted to "boost" your immune system, but it's popular enough that I decided to include it in the list of urban legends. It's an idea that is being promoted far and wide. The recommendation is to drink water (or hot water) every 15 minutes to "flush out the virus from your throat into your stomach so that the stomach acid kills it." This can include sodium, vinegar, or lemon in the water. But you cannot flush out the virus as the virus works inside of cells and we don't know if stomach acid kills the COVID-19 virus yet or not. There's a big difference in sanitizing a surface versus yourself. The virus is not waiting around in your nostrils, it's further down in your airway. Currently there is no evidence to support this idea and it can provide a false sense of security to people trying it. Fluids can be good for keeping you hydrated though!

A final word of advice…focus on eating a balanced diet, sleep well, stop smoking, use good hand hygiene and physical distancing, but DON'T share claims unless you have validated it with a reliable government organization like the WHO or CDC. Google your topic and add myth, debunked, or pseudoscience at the end of the search to see what comes up. You might be surprised to see what your sharing is not true. When in doubt, don't re-share posts, links, or emails as you may be spreading misinformation and causing others to panic unnecessarily.

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