Can Diet Boost Immune System to Better Protect Against COVID-19?

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April 20, 2020 By Karen Collins

Can Your Diet Boost Your Immune System and Provide Better Protection Against COVID-19?

Amidst the dangers of COVID-19, it’s no surprise that there is renewed interest in boosting the immune system. But can you boost your immune system with certain nutrients or supplements? For decades, AICR has funded studies to look into how eating habits can reduce cancer risk, improve survivorship and impact our immune system in general.

Let’s look at some common questions and misconceptions regarding the role of nutrition in strengthening the immune system.

Can you boost your immune system through nutrition?

When you envision your immune system chasing after a Coronavirus or cancer cells, perhaps you picture it like the video game when Pac-Man is running through mazes gobbling up dots. Can what you eat super-energize those immune cells to provide better protection for your body?

Actually, the immune system is far more complex than Pac-Man. Yes, there are certain immune cells that do “gobble up” bacteria and abnormal cells that the body has destroyed (including cancer cells that have been triggered to self-destruct).

But our immune system is more than that. It is made up of different types of immune cells, antibodies, receptors and organs that all work together to defend the body.

Picture your immune system like your car’s engine, which needs gas to run. Adding more gas to your tank does not suddenly enable the car to run any more powerfully than the engine capacity allows.

Like gas for your car, a healthy diet is crucial to provide the nutrients your immune system needs to keep functioning. It may even slow the gradual decline in immune function that tends to occur with aging. However, this doesn’t mean you can load up on nutrients to super-charge your immune system.

How can your diet affect immune health?

Your body produces highly reactive molecules called free radicals as part of normal metabolic processes and in response to exposures like pollution and tobacco smoke. Immune cells produce them as a way to fight infections, too. High levels of free radicals trigger inflammation, which creates more free radicals and further increases oxidative stress and inflammation. This amplifies an unhealthy cycle.

Your day-to-day eating habits provide many opportunities for you to support your immune system's power to protect you.

- Plant-focused eating habits support antioxidant, anti-inflammatory defenses. At one time, we thought a few basic nutrients, such as vitamin C, held the key to our antioxidant protection. Research now shows that a wide range of nutrients and natural phytocompounds, like carotenoids and polyphenols, seem to act as antioxidants themselves or trigger body antioxidant defenses and anti-inflammatory signals. Throughout your daily eating, you should include a variety of vegetables, fruits and whole grains. To expand the range of protective compounds, try to incorporate pulses (dry beans and lentils), nuts and seeds into your diet as well.
- High-fiber diets can nurture gut microbes that provide anti-inflammatory protection. These microbes use certain types of fiber to produce short-chain fatty acids that protect cells within the colon, and seem likely to help protect against inflammation throughout the body.
- ***Make nutrient-dense foods the majority of your plate to provide the wide range of nutrients needed for immune system cells and function.*** This includes – but is not limited to – minerals like zinc, selenium, iron and copper; omega-3 fats; and protein.

The catch? More isn't always better.

Free radicals are normal. They are important signals within cells and "turn on" body antioxidant defenses, but excessive levels of free radicals can damage cells and promote inflammation. Likewise, short-term inflammation is part of how the body clears an infection. If inflammation builds out of control, however, it can create cell and tissue damage that is difficult to reverse.

Whether you are worried about COVID-19 or chronic diseases like cancer that are related to oxidative stress and inflammation, you may be tempted to assume, "if some is good, more is better," to fight these diseases. But that's not what evidence shows.

- Antioxidant nutrients consumed in excess may actually interfere with the body's antioxidant defenses. We've seen an example of unexpected consequences caused by high doses of antioxidant nutrients in the SELECT trial. Too little selenium seems to increase cancer risk, so supplements were initially expected to reduce risk of prostate cancer. Instead, high doses of selenium or vitamin E were not protective, and in some men it increased the risk of high-grade prostate cancer.
- High doses of one nutrient can create deficiencies of other nutrients, including those needed by the immune system. For example, zinc is a mineral that's essential for immune function. High doses of zinc supplements taken for an extended period of time can lead to a deficiency of copper, which is another nutrient needed for proper immune system function.
- Studies in isolated cells or laboratory animals provide a foundation for learning and potentially testing in humans, not recommendations for action. Laboratory studies do not directly translate to optimal recommendations for the average person. For example, garlic contains natural phytocompounds that may enhance immune protection and may act against cancer development. However, as noted in a myth-busting statement from the World Health Organization (WHO), "There is no evidence from the current outbreak that eating garlic has protected people from the new coronavirus."

Everyone's needs differ.

"Boosting" your immune system is not the goal. To stay healthy, you need an immune system that can attack harmful bacteria and viruses, as well as abnormal cells when needed. But an immune system on over-drive results in allergies and autoimmune diseases, and promotes chronic inflammation.

Of course, some people who have weakened immune systems due to illness, surgery or malnutrition may benefit from immunonutrition. The immune system can be weakened by cancer or its treatment. This is an emerging field that holds exciting promise, as it explores how increasing specific nutrients might be used to fine-tune immune function in certain situations. But there is still much to learn and optimal approaches are not yet known.

The European Society of Clinical Nutrition and Metabolism guidelines on nutrition in cancer patients emphasize that their nutritional needs should be met through a balanced diet, adjusted as needed to meet each individual's condition and needs. For some, that could involve supplements to increase particular nutrients. But in general, the guidelines say that use of single high-dose

micronutrients should be avoided.

What’s the bottom line?

There is no clear evidence that you can “boost” your immune system with a nutrient supplement or any particular food.

Your eating and lifestyle choices do make a difference for a healthy immune system, however. Get some form of physical activity every day. Go to bed at a time that will allow you to get the sleep that is so important for sustaining a strong immune system. Maintain a healthy weight. Use walks, yoga, meditation or other tools to cope with anxiety and fear, so that stress hormones are kept at healthy levels.

For protection against COVID-19, following hand washing recommendations and social distancing recommendations is key. Reduce, instead of adding to, the work your immune system has to do to protect you.

As for nutrition, the eating habits encouraged in the AICR Cancer Prevention Recommendations are consistent with the current best advice to help support your immune system. Center your eating around nutrient-rich plant foods. Limit sugar-sweetened drinks, red and processed meats, “fast foods” and ultra-processed choices and alcohol. Making these recommendations a blueprint for your diet is a great way to help your immune system protect your body against infections, including COVID-19, as well as continue the long-term path to reducing your risk of cancer.

This announcement was originally released on April 15, 2020, by the American Institute for Cancer Research. It is republished with permission.

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