

NUTRITION FOR IMMUNITY SUPPORT

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As people around the world cope with the Coronavirus pandemic, we find ourselves asking whether there are any particular foods we can eat to boost our body's natural defense system.

While regular handwashing and self-isolating have now become part of our daily routines, there are several key nutrients we can focus on, which support a strong and healthy immune system.

Protein

Immunity Functions:

- Amino acids (the building block of protein), play an important role in immune response by activating the “killer” cells that destroy bacteria and harmful cells
- Amino acids regulate the production of antibodies, which are proteins in the blood that bind to specific invaders, such as germs, viruses, or tumor cells. Without antibodies, bacteria and viruses would be free to multiply in the body

Recommended Daily Amount (RDA):

- Adults 18+ years: 0.8 grams/kg body weight
- More is needed during pregnancy, lactation, illness, sports, and advanced age

Dietary Sources of Protein:

- Animal (contain all 9 essential amino acids): meat, chicken, fish, eggs, milk
- Plant-based (contain all 9 essential amino acids): tofu, tempeh, edamame, quinoa, amaranth, buckwheat, hemp seeds
- Plant-based (missing 1 or more essential amino acid): Nuts, seeds, whole grains, beans, lentils

Supplemental Facts:

- Protein supplements are generally not needed because most Americans consume more than the RDA
- Ensure you eat a variety of protein sources from the options listed above

Vitamin C

Immunity Functions:

- Our bodies cannot make the vitamin; therefore, we must obtain it from food
- Serves as an antioxidant that fights against free radicals in the body
- Stimulates white blood cells at the site of infection and enhances microbial killing
- Helps prevent or delay certain cancers and heart disease, promote healthy aging, and prevent and treat respiratory and full-body infections
- Vitamin C intake cannot prevent a common cold; however, some evidence shows that doses of >200 mg/day may decrease the length or severity of symptoms by >1 day. Taking Vitamin C after symptoms begin does not appear to be beneficial

Recommended Daily Allowance (RDA):

- Men 19+ years of age: 90 milligrams
- Women 19+ years of age: 75 milligrams

Dietary Sources of Vitamin C:

- Citrus fruits such as oranges, grapefruit and tangerines, red/yellow bell peppers, papaya, strawberries, berries, cantaloupe, tomatoes, broccoli, cherries, guavas, spinach, kale, kiwis

Supplemental Facts:

- Make sure to look at the labels of Vitamin C boosting products such as: Emergen-C, Ester-C, and Airborne. They often contain syrups, added sugar, dyes, and other additives
- Vitamin C is a water-soluble vitamin, meaning the body does not store it. This is particularly important for those who overload on supplements, for the body will just excrete any excess via the urine
- Always ensure you obtain Vitamin C through food sources first, before resorting to a supplement

Probiotics

Immunity Functions:

- Live microorganisms or “good” bacteria that support a healthy microbiome
- Inhibit the growth of harmful microorganisms in the GI tract, neutralize toxins, produce cytokines (messenger molecules that help immune cells work together against an infection)
- A 2015 evaluation of 12 studies with 3,720 total participants found that people taking probiotics may have fewer and shorter upper respiratory infections. However, the quality of evidence was low. *Lactobacillus* and *Bifidobacterium* have the strongest antiviral activity against respiratory viruses, particularly influenza virus type A

Recommended Daily Allowance (RDA):

- More research is needed on the recommended dosage, however 1 - 10 billion colony-forming units (CFU)— the amount contained in a capsule or two — can be safely taken several days per week

Dietary Sources of Probiotics:

- Cultured dairy products such as yogurt and fermented foods such as: kimchi, kombucha (a fermented tea), sauerkraut (fermented cabbage), miso (a fermented soybean-based paste), and raw unfiltered apple cider vinegar

Supplemental Facts:

- Always ensure you obtain probiotics through food sources first, before resorting to a supplement
- Supplements can be found in different forms. Ensure the supplement has a variety of bacterial strains and does not include any additives

Vitamin A

Immunity Functions:

- A fat-soluble vitamin that helps protect against infections by keeping skin and tissues in the mouth, stomach, intestines, and respiratory system healthy
- Beta-carotene is an antioxidant which protects cells from free radical damage
- Involved in the production and function of white blood cells, which help capture and clear bacteria and other pathogens from your bloodstream

Recommended Daily Amount (RDA):

- Men 18+ years of age: 900 micrograms
- Women 18+ years of age: 700 micrograms

Dietary Sources of Vitamin A:

- Sweet potatoes, carrots, broccoli, spinach, red bell peppers, squash, pumpkin, cantaloupe, apricots, mangoes
- Dairy/meat: beef liver, eggs, salmon, tuna, fortified milks, yogurt, cheese

Supplemental Facts:

- Always ensure you obtain Vitamin A through food sources first, before resorting to a supplement

Vitamin E

Immunity Functions:

- A fat-soluble vitamin that increase the body's immune response and function by acting as a powerful antioxidant against free radicals

Recommended Daily Amount (RDA):

- Men and women 14+ years of age: 15 milligrams

Dietary Sources of Vitamin E:

- Fortified cereals, wheat germ, sunflower seeds, almonds, vegetable oils (such as sunflower or safflower oil), hazelnuts, peanut butter, peanuts, broccoli, spinach

Supplemental Facts:

- Always ensure you obtain Vitamin E through food sources first, before resorting to a supplement

Vitamin D

Immunity Functions:

- A fat-soluble vitamin naturally produced in the body via sun exposure
- Can help reduce the risk of acute respiratory infections, including the cold and flu, particularly among people who are severely deficient or those with little exposure to sunlight
- Immune cells (B and T cells) from multiple autoimmune diseases appear to respond well to Vitamin D

Recommended Daily Amount (RDA):

- Adults 19-70 years of age: 600 IU
- Adults 71+ years of age: 800 IU
- Upper limit: 4,000 IU/day

Dietary Sources of Vitamin D: There are very limited food sources of Vitamin D, so it is important to incorporate them as frequently as possible

- Fatty fish such as: salmon, tuna, mackerel, swordfish, cod liver oil, dairy (choose non-fat options): milk, yogurt, cheese, beef liver, mushrooms exposed to UV light for at least 10 minutes, and fortified non-dairy milks and 100% orange juice

Supplemental Facts:

- Vitamin D is made from cholesterol when your skin is exposed to the sun's UVB rays. Spend 10-30 minutes in the sun daily without sunscreen, then immediately apply sunscreen. The best time of day to get sun is midday 10am - 3pm
- At nutritional doses Vitamins D2 and D3 are equivalent, but at higher doses Vitamin D2 is less potent. If you need purchase a supplement, choose Vitamin D3
- Always ensure you obtain Vitamin D through food sources first, before resorting to a supplement

Zinc

Immunity Functions:

- A mineral that helps the immune system fight off invading bacteria and viruses
- There is no evidence that zinc doses >100 mg/day leads to better treatment of the cold. However, taking zinc at the beginning of a cold may shorten its duration

Recommended Daily Amount (RDA):

- Men 19+ years of age: 11 mg
- Women 19+ years of age: 8 mg

Dietary Sources of Zinc:

- Oysters, beef, crab, lobster, beans, chicken, pumpkin seeds, cashews, chickpeas, whole-grains
- Zinc is best absorbed from animal sources. Foods such as whole-grains and legumes have phytates, which bind to zinc and inhibit its absorption

Supplemental Facts:

- Aside from vegetarians and vegans, most Americans get enough zinc in their diet
- Supplements may interfere with certain medications and could cause side effects such as loss of taste
- Long-term zinc consumption over 40 mg/day for adults can result in copper deficiency
- Always ensure you obtain zinc through food sources first, before resorting to a supplement

Other nutrients that support a healthy immune response include: Vitamin B6, Vitamin B12, copper, folate, selenium, and iron. Several herbs have also been linked to an increased immune response including: ginger, ginseng, elderberry, turmeric, and garlic. In addition to eating a diet rich in the immune-supporting nutrients listed above, ensure you sleep 7-9 hours a night and keep your stress levels to a minimum. By following these recommendations, you can help reinforce your body's fight against infection and foreign invaders.

Sources:

<https://www.ncbi.nlm.nih.gov/pubmed/17403271>
https://www.cancerresearch.org/blog/april-2019/how-does-the-immune-system-work-cancer?gclid=Cj0KCQjwmdzzBRC7ARIsANdqRRmjs7AI9DORNJdvPPfwYYPNeKc29F3jvgUs28tOGzvTjeFu8cBJnMaAhBUEALw_wcB
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2790195/#S2title>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5707683/>
<https://ods.od.nih.gov/factsheets/VitaminC-HealthProfessional/>
<https://www.health.harvard.edu/staying-healthy/whats-the-right-amount-of-vitamin-c-for-me>
<https://www.eatright.org/food/vitamins-and-supplements/types-of-vitamins-and-nutrients/how-vitamin-c-supports-a-healthy-immune-system>
https://www.health.harvard.edu/press_releases/benefit_of_probiotics_should_you_take_a_daily_dose_of_bacteria
<https://www.ncbi.nlm.nih.gov/pubmed/12801956>
<https://ods.od.nih.gov/factsheets/Probiotics-HealthProfessional/>
<https://nccih.nih.gov/health/probiotics/introduction.htm#hed1>
https://link.springer.com/chapter/10.1007/978-3-319-49688-7_1
<https://ods.od.nih.gov/factsheets/VitaminA-Consumer/>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6162863/>
<https://ods.od.nih.gov/factsheets/VitaminE-HealthProfessional/>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6266234/>
<https://ods.od.nih.gov/factsheets/VitaminD-Consumer/>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5949172/>
<https://www.bmj.com/content/356/bmj.i6583>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3166406/>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3756814/>
<https://www.npr.org/sections/health-shots/2017/02/16/515428944/a-bit-more-vitamin-d-might-reduce-winter-colds-and-flu>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4417560/>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5031164/>
<https://ods.od.nih.gov/factsheets/Zinc-HealthProfessional/#en51>
<https://ods.od.nih.gov/factsheets/Zinc-Consumer/>