

## **NUTRITIONAL MEDICINE IN IMMUNITY**

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Based on peer-reviewed scientific evidence for COVID-19.

Vit C, E, Selenium & Vit D – levels higher than recommended daily intake are required

Genetics, environment, lifestyle, nutrition impact healthy functioning of immune system.

### **FACTORS THAT IMPACT IMMUNE SYSTEM COMPETENCY:**

1. Aging
  - a. Immune system becomes weaker after 55-60 yrs – T-lymphocytes become less intelligent with age
  - b. Free radical damage accumulates – antioxidants help to counteract
  - c. Decreased respiratory bursts neutrophils after age of 60 – Vitamin C intake improves neutrophil function
2. Drugs
  - a. Corticosteroids (prednisone), TNF-inhibitors for autoimmune disease (humira, remicade), anti-rejection drugs used by transplant patients
3. Compromised immune States - eg. HIV
4. Alcohol, drugs, smoking, CBD & THC – CBD and THC are immunosuppressive
5. Supplements
6. Physical activity
7. Lack of Sleep
8. Stress/depression – feeling hopeless, high cortisol, etc.
9. Overtraining
10. Certain Nutrients May depress immune function (omega-3 fats, green tea catechins, vit D)

### **PROACTIVE STRATEGIES TO MAINTAIN A STRONG IMMUNE SYSTEM**

1. Get enough sleep – your immune system recharges during sleep
2. Don't overtrain – light to moderate exercise strengthens immunity

### **NUTRITENTS SUPPORTING IMMUNE FUNCTION**

1. Antioxidants
  - a. Immune cells have high requirement, esp Vit C, E and beta-carotene, esp VITAMIN C
  - b. Vit C helps to create a physical barrier to viruses and other hostile bacteria
  - c. Optimal functioning immune system – Vitamin C blood level above 50 umol/L; many people at 23 umol/L
  - d. as you get older, need 1000 mg vitamin C and 200 IU of E / day to improve immune function in people over 60

- e. COVID-19 – 50-100 mg/kg of body weight of Vit C infused continuously over a 24-hour period for hospitalized patients; 200mg/kg to help control cytokine storm in patients with more severe disease
- f. Vitamin C deficiency is common among Covid-19 patients; 1-3g/day required for critically ill patients in ICU
- g. Vitamin C – Practical Approach During Pandemic
  - i. 1,000 mg/day - two divided doses of 500 mg
- h. Nutrients to support immunity – A, Beta-carotene, D, B6, B12 iron, selenium, zinc
- i. Vitamin E – works synergistically with C
  - i. 100-400 IU/day important for optimizing immune system function
- j. Zinc – critical – 15 mg zinc per day in a multi-vitamin; will get 10 mg from diet
  - i. Both zinc deficiency and zinc overload impair immune function
  - ii. Symptoms of zinc deficiency – decreased immune function, taste acuity, dark adaptation, lean mass, wound healing
- k. Selenium – selenium prevents virus from mutating once in the body
  - i. People with low selenium status having worst complications with COVID-19
  - ii. 200 mcg/day for 3 weeks followed by maintenance dose of 200mcg throughout active circulation of COVID-19
- l. Vitamin D – 75-80 nmol/L(30-32 ng/ml) critical for immune function
  - i. 140 nmol/L (56ng/ml) inhibits the immune system; may be desirable for auto-immune
  - ii. Sweet spot is 80-140 nmol/L blood level
  - iii. Oct-May making 0 Vitamin D in skin if live above 40 degrees latitude
  - iv. People w/liver and kidney disease cannot make Vitamin D very well.
  - v. Vitamin D toxicity calcifies internal organs
  - vi. Some health conditions make a lot of vitamin D – eg. tuberculosis,
  - vii. Some conditions like MS require high levels of Vitamin D
  - viii. 1000 - 3000 IU is much more effective to enhance immune function than giving a high dose for 1 week, month or 3 months
  - ix. Vitamin D may help block COVID-19 from entering the cell
  - x. Who is at risk for low vitamin D?
    - 1. Individuals over 80 yrs
    - 2. Darker skinned individuals – pigment in skin blocks UV-light from generating vitamin D synthesis in the skin
    - 3. Overweight, esp with type 2 diabetes – D is a fat soluble vitamin and gets stored in fat cells
- m. Probiotics – reduces viral infections
  - i. Improves efficacy of vaccinations
  - ii. Highly effective in younger populations/kids
  - iii. 2-10 billion/day
- n. Medicinal Mushrooms – shiitake, maitake, cordyceps, trametes, versicolor, turkey tail and others
  - i. Contain unique ingredients that fit perfectly into immune cell receptors
  - ii. Generates an immune response to help combat viruses

- iii. [www.mushroomharvest.com](http://www.mushroomharvest.com) – Mushroom Blend Product
  - iv. Om FIT mushroom superfood – mushroom blend product
- o. Astragalus
- p. Milk Thistle – supports liver detoxification and has immune-modulating properties
- q. Indole-3-carbinol – in cruciferous vegetables
  - i. Adeeva Immuno-Detox Prime contains mushroom extract, astragalus, milk thistle and indol-3-carbinol
- r. Melatonin – declines with age; immune function declines also; this decline starts at puberty; by 40 yrs, melatonin is low and more prone to cancer and infection
  - i. Over the age of 40, consider a low dose
- s. L-glutamine and Immunity in Athletes
  - i. Glutamine gets shunted to liver to be converted to glucose during exercise
  - ii. Lymphocytes and antibodies are decreased for 36-48 hrs post exercise
  - iii. 2-5 g/day
- t. Refine Sugar – suppresses immune system
- u. Alcohol – increased risk of pneumonia, suppresses immune system – do not drink during pandemic
  - i. Can impair key immune cells in the lungs
  - ii. Disrupts microflora, killing off good bacteria
- v. Sleep & Immunity
  - i. Less sleep = more prone to infection
  - ii. 6-8 hours
- w. Exercise
  - i. Moderate activity strengthens immune system
  - ii. Must be consistent
  - iii. Overtraining increases upper respiratory tract infection
- x. Quercetin
  - i. Is recycled by vitamin C to antioxidant form
  - ii. Has anti-viral effects
  - iii. Always take with Vitamin C
  - iv. 250 mg quercetin with 500 mg of Vit C concurrently