Immunity Nutritional “cheat sheet”

3 John 2 (New Living Translation)
Dear friend, I hope all is well with you and that you are as healthy in body as you are strong in spirit.

**What, exactly, IS a virus?**
A virus isn’t “alive” in a typical sense. It doesn't need to eat, drink, or breathe. It's just a collection of genetic material (DNA or RNA) and a small toolbox of proteins. Most flu and cold viruses — including COVID-19 — are contained in a shell called a capsid.
A virus uses its proteins to perform two critical tasks: to get inside the cells of its animal host; and then to hijack that cell’s own genetic machinery in order to produce thousands and thousands of copies of itself. It's as if it jumps up on a cell’s internal printer, selects “millions” on the number of copies, and then hits the “print” button.

What does COVID-19 stand for?
In COVID-19, 'CO' stands for 'corona,' 'VI' for 'virus,' and 'D' for disease. Formerly, this disease was referred to as “2019 novel coronavirus” or “2019-nCoV”. There are many types of human coronaviruses including some that commonly cause mild upper-respiratory tract illnesses.

5 science based Health Tips to consider:

1. **Vitamin C (with citrus bioflavonoids)**

L-ascorbic acid (vitamin C) is one of the well-known anti-viral agents, especially to influenza virus. Vitamin C shows in vivo anti-viral immune responses at the early time of infection, especially against influenza virus, through increased production of IFN-α/β.

Ref:
Vitamin C Is an Essential Factor on the Anti-viral Immune Responses through the Production of Interferon-α/β at the Initial Stage of Influenza A Virus (H3N2) Infection
Yejin Kim, Hyemin Kim, [...], and Wang Jae Lee

In the early literature, vitamin C deficiency was associated with pneumonia. After its identification, a number of studies investigated the effects of vitamin C on diverse infections. A total of 148 animal studies indicated that vitamin C may alleviate or prevent infections caused by bacteria, viruses, and protozoa.
Citrus Bioflavonoids
A 1955 study by Dr. Biskind looked at 69 cases of acute respiratory infections that were treated with a whole water soluble citrus bioflavonoid complex. The disorders included the common cold, acute follicular tonsillitis, and influenza. Within 48 hours all but three cases saw a significant decline in infection.

Foods rich in vitamin C include:
broccoli, cantaloupe, cauliflower, kale, kiwi, orange juice, papaya, red, green or yellow pepper, sweet potato, strawberries, and tomatoes.


Reduced exposure to solar radiation, leading to a deficiency of vitamin D and hence impaired innate immunity, has been suggested as a trigger for influenza viral replication and as an explanation of seasonal influenza. Although this hypothesis accounts for many unexplained facts about the epidemiology of influenza, gaps remain in understanding the pathogenesis and manifestations of the disease. Several observations suggest a role for vitamin A compounds (retinoids) in the disease. This paper presents a new model of the etiopathogenesis of influenza, suggesting that host resistance and susceptibility depend importantly on the ratio of vitamin D to vitamin A activity. Retinoid concentrations within normal physiological limits appear to inhibit influenza pathogenesis whereas higher background concentrations (i.e., very low vitamin D : A ratios) increase the risk of severe complications of the disease.
Activated vitamin D, 1,25(OH)2D, a steroid hormone, is an immune system modulator that reduces the expression of inflammatory cytokines and increases macrophage function. Vitamin D also stimulates the expression of potent antimicrobial peptides (AMPs), which exist in neutrophils, monocytes, natural killer cells, and epithelial cells of the respiratory tract [37]

**Role of Fat-Soluble Vitamins A and D in the Pathogenesis of Influenza: A New Perspective**

**Anthony R. Mawson** Volume 2013 | Article ID 246737

**Foods that provide vitamin D include:**

- **Fatty fish**, like tuna, mackerel, and salmon
- Foods fortified with vitamin D
- Beef liver
- Cheese
- Egg yolks

**3. Zinc**

Zinc is required for multiple cellular tasks, and especially the immune system depends on a sufficient availability of this essential trace element. During the last decades, many studies attempted to affect the outcome of various diseases by zinc supplementation. These efforts either aimed at supporting immunity by zinc administration or at correcting a loss of zinc secondary to the disease to restore the zinc-dependent functions of the immune system. This review aims to summarize the respective findings and to discuss possible molecular mechanisms by which zinc could influence viral, bacterial, and parasitic infections, autoimmune diseases, and the response to vaccination. Zinc supplementation in diseases such as diarrhea, chronic hepatitis C, shigellosis, leprosy, tuberculosis, pneumonia, acute lower respiratory infection, and leishmaniasis seems beneficial.

Ref.:
Modulating the immune response by oral zinc supplementation: a single approach for multiple diseases
Silke Overbeck, Lothar Rink and Hajo Haase
Institute of Immunology, RWTH Aachen University Hospital, Aachen, Germany
Received: 2007.10.16, Accepted: 2007.11.19, Published online first: 2008.02.05

Important:
Zinc is antagonistic to copper and if consumed should be balanced with the correct ratio (The normal copper/zinc [Cu/Zn] ratio, in children and adults, is close to 0.07:1.0) in supplemental form or it may lower normal copper levels.

Here are some of the best foods that are high zinc.

1. **Meat.** Meat is an excellent source of zinc (4)
2. Shellfish. Shellfish are low-calorie sources of zinc
3. Legumes. Legumes like chickpeas, lentils and beans all contain substantial amounts of zinc
4. Seeds
5. **Nuts**
6. Dairy
7. Eggs
8. Whole Grains

### 4. Vitamin E

Influenza is an infectious disease causing huge medical and economic losses. Influenza pathogenesis is associated with two processes in the human body: (i) lung damage due to viral replication in the columnar ciliary epithelium of bronchi and bronchioles and (ii) inflammatory burst inducing an increase in reactive oxygen species generation that causes extensive damage in cellular membranes of the small vessels. The oxidative stress in influenza virus-infected organism provokes free-radical oxidation of unsaturated lipid chains in the cell membranes. As vitamin E is a lipid-soluble substance and possesses a hydrophobic tail, it tends to accumulate within lipid membranes. There, it acts as the most important chain breaker, reacting with lipid peroxyl radicals much faster than they can react with adjacent fatty acid side chains. Among the antioxidants tested in influenza virus infections in mice, vitamin E occupies the leading position because of its efficacy in preventing oxidative damage through its free-radical scavenging activity. Although vitamin E is not possessing specific antiviral action, its antioxidant effect probably plays important role in lung and liver protection. Vitamin E could be recommended as a component in multitarget influenza therapy.

Ref:
Vitamin E and Influenza Virus Infection. DOI: 10.5772/intechopen.80954, DOI: 10.5772/intechopen.80954
In book: Vitamin E in Health and Disease, Publisher: IntechOpen, pp.67 - 82

**Food Sources**

- Vegetable oils (such as wheat germ, sunflower, safflower, corn, and soybean oils)
• Nuts (such as almonds, peanuts, and hazelnuts/filberts)
• Seeds (such as sunflower seeds)
• Green leafy vegetables (such as spinach and broccoli)
• Fortified breakfast cereals, fruit juices, margarine, and spreads.

5. Proanthocyanidins

A lesser-known but extremely powerful antioxidant is the proanthocyanidin complex found in pine bark and grape seed extract. Extensive research* has shown that proanthocyanidins are not only of the most powerful antioxidants available today, but can play a significant role in preventing diseases. This complex is so powerful because it’s a mixture of several types of antioxidants that function effectively in different regions of the body.

- They help to strengthen the immune system and stimulate the formation of T-cells (immune cells that fight infection)
- They can help to prevent coronary heart diseases as they help to strengthen the artery walls, preventing atherosclerosis (hardening of artery walls).
- They have anti-inflammatory properties
- They may benefit diabetics since they help to improve blood circulation
- They can help stabilize blood sugar levels

Many of these attributes can important for building a healthy immune system. These compounds enhance immune function in a variety of ways, but the antioxidant effect of protecting membranes from inflammation and oxidation is probably one of the most important aspects of how they truly contribute. Cellular damage from the cytokine onslaught poses a significant health risk as well as increases the chance of morbidity in patients with these violent strains of flu. Proanthocyanidins may play an important role in the prevention of these oxidative processes.

Proanthocyanidins: Biological Activities Associated with Human Health
Gary R. Beecher
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Food sources of proanthocyanidins include:

- Red grapes.
• Black grapes
• **Grape seeds**
• Red wine
• Bilberries
• **Cranberries**
• Strawberries
• **Blueberries**

Avoid:
(Science shows these substances can lower immune function)

1. Refined sugar and sugar products
2. Smoking and tobacco products
3. Alcoholic beverages
4. Inhaling any chemicals, cleaning sprays, pesticides, etc.
5. Immune suppressing drugs. Check all prescriptions to see if they lower immune function (If so, consult your physician).

* The Content is not intended to be a substitute for professional **medical** advice, diagnosis, or treatment. Always seek the advice of your physician or other qualified health provider with any questions you may have regarding a **medical** condition.

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