Nutrition and Immunity

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Outline:

1. What is Our Immune System?
2. Risk Factors for Weakened Immune System
3. Nutrients and Immunity
4. The Microbiome
5. Fact Checking Herbal Supplements
What is Our Immune System?

Humans have two types of immune systems:

- **Innate immunity** is a first-line defense from pathogens that try to enter our bodies, achieved through protective barriers.

- **Adaptive or acquired immunity** is a system that learns to recognize a pathogen. It is regulated by cells and organs in our body like the spleen, thymus, bone marrow, and lymph nodes.
What is Our Immune System?

Other conditions that trigger an immune response:

- **Antigens**
  ○ Allergens

- **Inflammation**
  ○ Release of histamines, may generate pain, swelling and release of fluids

- **Autoimmune disorders**
  ○ Lupus, rheumatoid arthritis, type 1 diabetes, celiac

- **Immunodeficiency disorders**
  ○ AIDS, leukemia, multiple myeloma
What Factors Depress Our Immune System?

- Older age
- Environmental toxins
- Poor diet
- Chronic diseases
- Chronic mental stress
- Lack of sleep and rest
Nutrition and Immunity

● Focus on whole diet, no singular food offers special protection

● Essential micronutrients for immune response include but are not limited to:
  ○ zinc, selenium, iron, copper, folic acid, and vitamins A, B6, C, D, and E

● Protein helps build antibodies and immune system cells and plays an important role in healing and recovery
Micronutrient Highlight: Vitamin C

- helps build healthy skin, which is a barrier to microorganisms, and helps protect cells from damage due to its role as an antioxidant.

- High-heat cooking temperatures or prolonged cook times can break down the vitamin C. This nutrient is water-soluble and can seep into cooking liquid.

- **Sources:** Citrus fruits (oranges, grapefruits, tangerines), strawberries, papaya, bell peppers, and Brussels sprouts

- **Megadosing vitamin C:**
  - Studies have shown that absorption of vitamin C decreases to less than 50% when taking amounts greater than 1000 mg
Micronutrient Highlight: Vitamin D

● Vitamin D helps with properly regulating immune cell function and reducing inflammation

● A meta-analysis of randomized controlled trials that compared the effects of vitamin D2 and D3 supplements on blood levels found that D3 supplements tended to raise blood concentrations of the vitamin more and sustained those levels longer than D2.

● **Sources**: Fortified foods (milk, cereal, orange juice), fatty fish (salmon, mackerel, tuna), and sunshine
Micronutrient Highlight: Vitamin E

- Protects immune cells from damage due to its role as an antioxidant.
- Because vitamin E is found in a variety of foods and supplements, a deficiency in the U.S. is rare.
- **Sources:** Almonds, sunflower seeds, peanut butter, vegetable oil, spinach, and broccoli
Micronutrient Highlight: Vitamin A

- Vitamin A keeps the skin, tissues in the mouth, stomach, and intestines, and the respiratory system healthy, and it helps regulate the immune system.

- It is fat-soluble, meaning that any amount not immediately needed by the body is absorbed and stored in fat tissue or the liver. If too much is stored, it can become toxic.

- **Sources:** Colorful foods like carrots, sweet potatoes, broccoli, spinach, pumpkin, squash, and cantaloupe
Micronutrient Highlight: Zinc

- Zinc supports creation of new immune cells, which contributes to the body’s ability to heal from wounds.

- Excess zinc can interfere with the absorption of iron and copper

- **Sources:** Lean meats, chicken, turkey, crab, oysters, milk, whole grains, seeds

- **Zinc lozenges:** A Cochrane review of clinical trials found that zinc lozenges did not prevent colds, but if taken within a day of the onset of cold symptoms (sore throat, sniffles), the lozenges could tame its severity
The Microbiome

- The microbiome is an internal metropolis of trillions of microorganisms or microbes that live in our bodies, mostly in the intestines.
- The gut is a major site of immune activity and the production of antimicrobial proteins.
- **Probiotic foods**: Kefir, yogurt with live active cultures, fermented vegetables, sauerkraut, tempeh, kombucha tea, kimchi, and miso.
- **Prebiotic foods**: Garlic, onions, leeks, asparagus, Jerusalem artichokes, dandelion greens, bananas, and seaweed. However, a more general rule is to eat a variety of fruits, vegetables, beans, and whole grains for dietary prebiotics.
Herbal Supplements

**Echinacea:** Taking echinacea after catching a cold has not been shown to shorten its duration, but taking it while healthy may offer a small chance of protection from catching a cold.

**Garlic:** Those taking the garlic supplement for 3 months had fewer occurrences of the common cold than those taking a placebo, but after contracting the cold virus, both groups had a similar duration of illness.

**Tea catechins:** Two randomized controlled trials found that green tea capsules produced less cold/flu symptoms or incidence of flu than a placebo; however both studies were funded or had author affiliations with tea industries.

**Elderberries:** Clinical research shows that some elderberry extracts might reduce flu-like symptoms. No published research studies have evaluated the use of elderberry for COVID-19.
Thanks!

Any questions?

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