Dynamic Chiropractic

IMMUNE STRENGTH

Nutrition and Immunity: An Evidence-Based Review (Pt. 2)

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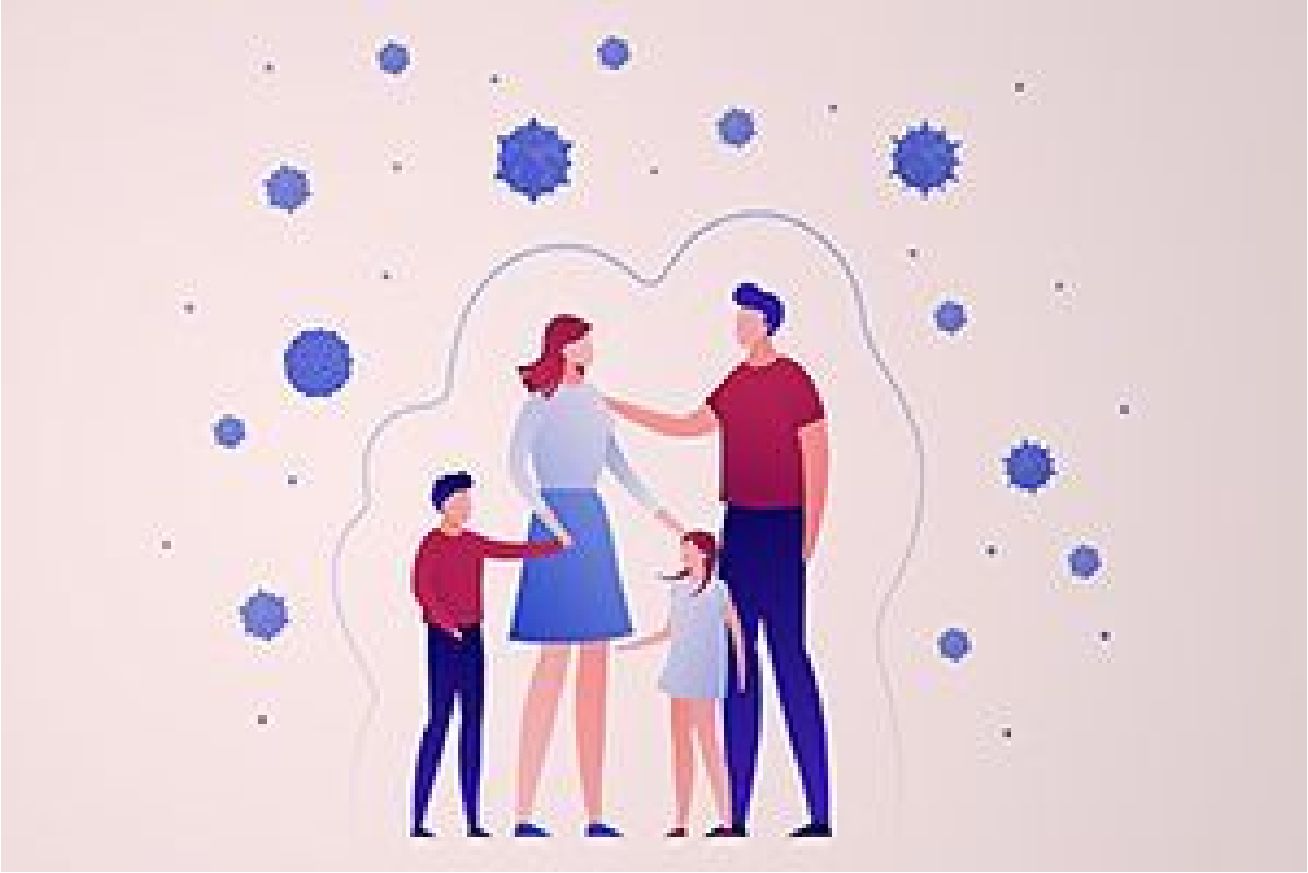
Editor's Note: Part 1 of this article appeared in the June issue and focused on vitamins C and D.

Other Micronutrients of Importance

Other antioxidants in addition to vitamins C and D have also been shown to be critical to immune function. For example, supplementation of healthy individuals over age 60 with 200 IU vitamin E per day improved many aspects of immune function and reversed some key age-related features of immune system decline. In short, they had more youthful immune function with vitamin E supplementation. Supplementation with other nutrients has also shown improved immune function in human subjects, including zinc and beta-carotene. Animal studies also show the importance of selenium to immune function.

Various researchers have conducted research providing healthy, elderly individuals with supplement combinations such as vitamin A, vitamin C and vitamin E, or with a multiple vitamin/trace mineral supplement. In many of these studies, the participants ingesting the supplements showed improved function of many immune parameters compared to their baseline values and compared to those who ingested the placebo.



Moreover, human and animal studies have proven that even marginal deficiencies of certain vitamins and minerals cause a significant decline in immune function or immunocompetence. These nutrients include vitamin A, beta-carotene, folic acid, vitamin B_6, vitamin B_{12}, vitamin C, vitamin E, riboflavin, iron, zinc, and selenium. The National Health and Nutrition Examination Surveys (NHANES) show that many people are walking around with marginal deficiencies of some of these nutrients unless they are taking a well-formulated multiple vitamin and mineral supplement.[14-15]

Key Phytonutrients

In addition to vitamins and minerals, certain herbal products also have proven immune-modulating properties. To that end, let's review the research supporting astragalus, medicinal mushrooms (like reishi mushroom extract), milk thistle and indole-3-carbinol.

1. *Astragalus*: The Memorial Sloan Kettering Cancer Center website provides an important summary of the research on astragalus and immunity. It cites studies showing that the medicinal constituents in astragalus can boost immune system competency and exert direct antiviral effects.[16]

A 2012 review of all astragalus studies showed the many ways that astragalus enhances immune system function, including boosting the release of interferon and interleukin-2 from key immune cells, which are well-established strong boosters of immune function.[17]

2. *Reishi mushroom extract and other medicinal mushrooms* (shiitake, maitake, cordyceps, trametes versicolor turkey tail, and others): Medicinal mushrooms contain unique ingredients that not only

stimulate immune cells to work more efficiently, but in some cases, also have constituents that fit perfectly into immune cell receptors. The binding of these constituents to the immune cell receptor generates a response from the immune cell that heightens and greatly optimizes its ability to combat foreign viral, bacterial and other dangerous cells.

I provide several references at the end of this article which explain in detail the immune-enhancing properties of medicinal mushrooms. As one of the researchers stated, "[Medicinal mushrooms] have been shown to have the ability to stimulate the immune system, modulate humoral and cellular immunity, and potentiate antimutagenic and antitumorigenic activity, as well as rejuvenating the immune system weakened by radiotherapy and chemotherapy in cancer treatment."[18-20]

3. *Milk thistle*: The herb milk thistle has also shown impressive immune-modulating properties in recent years. Milk thistle has primarily been used to support liver detoxification function and to help repair damaged liver cells, if the damage is not beyond repair.

However, the silymarin flavonoid in milk thistle has also been shown to be immunostimulatory. It increases lymphocyte proliferation – an important factor in preventing and fighting infections; and it boosts secretions of immune modulating chemicals or cytokines, particularly interferon gamma, interleukin-4 and interleukin-10. These responses are required when the body is facing a virus that is trying to take hold and start an infection. As researchers state, "Our study has uncovered a novel effect of milk thistle on the immune system. This immunostimulatory effect may be of benefit in increasing the immunity to infectious diseases."[21-22]

4. *Indole-3-carbinol*: I am also impressed with the research pertaining to indole-3-carbinol, which is a constituent unique to cruciferous vegetables, such as broccoli, brussels sprouts, cabbage, cauliflower, bok choy, and turnips. Supplementation with indole-3-carbinol has been shown to activate the aryl hydrocarbon receptors on the adaptive immune system, which stimulates immune cells to better respond to and fight any virus or foreign cell that enters the body.

More specifically, it helps the T-lymphocytes proliferate faster and improves the ability of other immune cells to ingest and devour any threatening viruses or bacteria deemed threatening to the body.[23-24]

A word of caution: For individuals with an autoimmune disease (5-7 percent of the population) and individuals on immunosuppressive drugs (mostly transplant patients), it may be unwise to supplement with the herbal agents I have spoken about here, as they may overstimulate the immune system and worsen the autoimmune condition or counteract the effects of immunosuppressive drugs.[25]

Probiotics

Probiotics are another important consideration in human immunity. According to the World Health Organization, "Probiotics are live microorganisms that, when administered in adequate amounts, confer a health benefit on the host" (host = our human cells). More specifically, probiotics are live microorganisms (specific strains of friendly gut bacteria and yeast) that may improve health by bolstering local and systemic immunity.

Their mechanism of action is thought to occur through enhanced phagocytic capacity and activity, stimulation of higher levels of specific immunoglobulins, and enhancement of gut barrier functions.

This means probiotics have been shown to boost the ability of certain immune cells to identify, engulf and destroy many types of pathogens, including viruses that cause respiratory tract infections. It also means probiotics increase levels of immunoglobulin A, which is a crucial antibody that protects the respiratory passages and the intestinal tract against infectious agents, including viruses.

As outlined in a review paper in the journal *Current Opinion in Gastroenterology*, "[P]robiotics showed therapeutic potential for diseases, including several immune response-related diseases, such as allergy, eczema, viral infection, and potentiating vaccination responses." This means probiotic supplements have in many cases toned down allergic sensitivities, improved cases of eczema – a skin condition often triggered by food or environmental allergies, intolerances or sensitivities – reduced viral infections, and improved the efficacy of certain vaccinations, including the influenza vaccine.

The researchers cite the studies showing that probiotics regulate our innate and adaptive immune responses by modulating the functions of dendritic cells, macrophages, and T and B lymphocytes. It's the dendritic and macrophage immune cells which identify and gobble up viruses that are trying to invade the body; and our T and B lymphocytes mount an antibody attack against viruses that are trying to infect us. Thus, the type of immune modulation we get from probiotic supplements may be an important consideration in optimizing immune function from day to day.

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