Multi-Targeted Disease Defense: Using *Phytonutrients*

By Victoria Dolby Toews, MPH

Over the past decade, a wealth of scientific validation has emerged to support the role of *diverse phytonutrients* (plant-based nutritional compounds) as frontline defenses against a host of age-related diseases, from atherosclerosis to cancer.1,2

Researchers are focusing on the benefits of a novel group of “superfoods” for *multi-targeted* support against degenerative disease. Together they have been shown to *lower cholesterol* and *blood pressure*, *reduce C-reactive protein levels*, *inhibit tumor growth*, *increase “killer” immune cell counts*, and *block cancer-causing toxins*.

It is virtually impossible to incorporate these beneficial foods into your diet in sufficient amounts, as many of them are obtained from remote locations around the globe. These include micro-algae, grasses, seeds, and mushrooms whose abundant phytonutrient content affords *optimal* immune protection. Fortunately, they are available in food concentrate powder forms.

In this article we present the latest research on this group of superfoods—and their unique ability to favorably modify the body’s response to today’s most common pathologies.

**A “PERFECT” FOOD**

*Chia* is often referred to as “Nature’s perfect food.” It is a desert plant native to Central America whose edible seeds have a pleasing, nutty flavor. A relative of the mint family, the chia plant’s seeds were a staple in the ancient Aztec diet.

Modern scientific analysis has revealed chia to be a remarkably well-rounded nutritional source, providing *protein*, *fiber*, *essential fatty acids* (especially *omega-3*), *antioxidants*, and *magnesium*.

A substantial body of research documents chia’s power to prevent a host of diseases, from weight gain and cardiovascular disorders to cancer.

**Fifty-seven million** Americans are currently pre-diabetic, according to some estimates.3 Their blood sugar has reached abnormally high levels that fall just short of diagnosis for type 2 diabetes.

Pre-clinical research suggests that chia supplementation can prevent the insulin resistance that leads to diabetes. In animals fed a sugar-rich diet, chia has also been shown to favorably modify blood lipid changes.4

Diabetes and its associated risk factors greatly increase cardiovascular disease risk. For those with type 2 diabetes, *conventional medications* and *lifestyle changes* alone often fail to significantly reduce heart disease risk. Cutting-edge research indicates that chia supplementation can provide enhanced protection.

Vladimir Vuksan, PhD, of the Risk Factor Modification Center at the *University of Toronto* has devoted significant resources to the study of chia’s beneficial effects on diabetics at risk for cardiovascular disease.

In Vuksan’s most recent clinical trial, 20 adults with type 2 diabetes took supplements of either chia or wheat bran daily for three months.5 By the end of the study period, the chia group saw significant improvement across a range of disease markers, including blood pressure, lipid profiles, and inflammatory and clotting factors.
Systolic blood pressure in the chia group dropped by 6 points, while the wheat bran group’s blood pressure was unchanged. C-reactive protein and clotting factors were also markedly reduced compared to the wheat bran group.

Chia has shown additional promise in cancer prevention. In a pre-clinical study involving breast cancer models, researchers found that dietary chia resulted in smaller tumors and fewer metastasized tumors. Chia was found to inhibit both the overall growth and spread of cancer.

**THE LIFEBLOOD OF THE PLANT KINGDOM**

The term “green foods” refers to plants rich in chlorophyll. This category includes the edible micro-algae spirulina and chlorella, and cereal grasses, including barley grass and wheatgrass. A growing body of research indicates that “green” phytonutrients constitute a formidable defense against a broad spectrum of clinical pathologies, from cancer and diabetes to hepatitis and HIV.

While beneficial in their own right, green foods' high chlorophyll content accounts for much of their nutritional value. Chlorophyll is the pigment that gives plants and algae their green color and plays a central role in converting light into energy. Because its molecular structure bears a striking resemblance to hemoglobin—the iron transport in red blood cells that delivers oxygen in all mammals—chlorophyll has been called the “lifeblood of the plant kingdom.”

Chlorophyll binds with several known and suspected carcinogens, including the polycyclic aromatic hydrocarbons in tobacco smoke, heterocyclic amines in meat, and aflatoxin-B1, preventing these carcinogens from reaching areas of the body where they would otherwise contribute to cancer development.

In animal models, aflatoxin-related liver cancer is inhibited in the presence of chlorophyll. In humans, supplementation with chlorophyllin—a water-soluble derivative of chlorophyll—significantly reduces urinary levels of a compound that indicates liver cancer risk.

**SPIRULINA AND CHLORELLA**

Cultivated around the world, spirulina is also considered by some to be nature’s richest and most complete source of vital nutrients. It contains protein, B vitamins, minerals, essential fatty acids, and antioxidants in abundance. Its antioxidant, antibacterial, antiviral, anticancer, anti-inflammatory, and anti-diabetic effects have been documented in clinical studies. It also acts as a prebiotic, encouraging the growth of healthy gut bacteria.

Spirulina may play a significant role in preventing cardiovascular diseases. In a recent human trial, it lowered blood pressure and favorably altered blood lipid levels, particularly triglycerides and low-density lipoprotein (LDL). According to double-blind, placebo-controlled research, spirulina can serve as an effective treatment for allergic rhinitis (hay fever), improving symptoms of nasal discharge, sneezing, nasal congestion, and itching.

Spirulina shows promise as a tonic for the liver. A recent study of 60 people with various liver disorders revealed that it can protect the liver and prevent the progression of hepatitis into cirrhosis.

Daily supplementation with chlorella has been shown to lower blood pressure, reduce cholesterol levels, accelerate wound healing, boost immunity, and improve quality of life for individuals suffering from fibromyalgia. There is also evidence that chlorella can help prevent peptic ulcers.

**CEREAL GRASSES**

**Barley grass** has been shown to lower cholesterol levels and reduce several risk factors for cardiovascular disease in multiple studies. The same effect has been observed in individuals at higher risk for heart disease, including diabetics.

Barley grass is particularly rich in fiber; when compared to other whole grains in animal models, it provides superior support for healthy bowel movements. Clinical research also confirms that barley increases fecal bulk, resulting in an overall improvement to digestive health.

**Wheatgrass** is an effective treatment for ulcerative colitis. It has also been investigated for thalassemia (a group of genetic blood disorders) and found to reduce the need for blood transfusions.

Individuals undergoing chemotherapy may also derive significant benefits from wheatgrass. **Myelotoxicity** (bone marrow suppression) is a potentially life-threatening side effect of chemotherapy that results in low production of white and red blood...
A pilot study with breast cancer patients found that wheatgrass juice prevents myelotoxicity when used during chemotherapy treatment.

**MUSHROOMS ENHANCE IMMUNE DEFENSE**

Several species of mushroom have been found to provide powerful immune support, including the popular edibles maitake (also known as Hen of the Woods) and shiitake, along with cordyceps, a staple of traditional Tibetan medicine.27-29

There is ample evidence to suggest that the specific phytonutrients in these mushrooms optimize the immune response to cancer and pathogenic microorganisms—including HIV.

Chief among these are beta glucan and other polysaccharides. These natural compounds stimulate a system-wide immune response—activating macrophages, interferon, T cells, and natural killer cells—to prevent the proliferation and spread of cancer cells.30 Beta glucan also reinforces the body’s resistance to infectious disease by increasing the activity of phagocytes (specialized immune cells that engulf and destroy germs).31 In animal models, it has also been shown to boost resistance to viral infections.32

One pre-clinical study assessing the anti-tumor effects of numerous mushrooms further revealed that mushroom polysaccharides are biological response modifiers, meaning they inhibit the growth of cancer cells by activating and reinforcing the immune function of the host.33

As with other medicinal mushrooms, maitake is a rich source of immune-boosting polysaccharides.

A polysaccharide unique to maitake, called D-fraction, stimulates immune cells that fight off cancerous cells. Research suggests that maitake may help inhibit tumors that are already growing and prevent growth of new cancers.34

In one long-term trial involving 35 HIV-positive patients, 20 patients taking maitake showed a significant increase in CD4+ counts, the immune cells HIV normally destroys. After a year of maitake supplementation, 85% reported an increase in well being.35

**LEM** (Lentinus edodes mycelium), the vegetative component of the shiitake mushroom, also effectively combats HIV and other viruses. It strongly enhances the immune system and counteracts tumor growth.36-38 Shiitake also promotes cardiovascular health by preventing platelet aggregation.39

Another shiitake extract, active hexose correlated compound (AHCC), increases the activity of natural killer cells. Natural killer cells target and eliminate tumor cells and a wide variety of infectious agents. AHCC even shows promise for fighting the flu.40

Traditional Tibetan and Chinese Medicine have relied on cordyceps for centuries as a general health tonic and immune booster. It can be harvested in the wild, although commercially cultivated cordyceps fungus is now available as a dietary supplement.

Several compounds in cordyceps (including cordycepin and polysaccharides) enhance immune function, inhibit tumor growth, lower blood sugar, and ease inflammation.41-44 Cordyceps has also been studied as a potential treatment for asthma.

A group of 60 adults with moderate persistent asthma used standard asthma medications during a two-month study period, while half of the group also supplemented with cordyceps capsules daily.45 Cordyceps lessened airway inflammation in the supplemented individuals, as well as reversed airway remodeling (undesirable structural changes that can happen in difficult asthma cases).

Additional research suggests a promising role for cordyceps for improving renal function in kidney transplant patients, treating cancers at numerous sites by inducing death of cancer cells, lessening the chances of developing lupus, and reducing the risk of atherosclerosis.46-50

**SUMMARY**

A wealth of scientific research shows that phytonutrients offer multi-targeted defense against a host of age-related diseases. Superfoods are rich in these compounds. The latest clinical studies show that chia, spirulina, chlorella, and various mushroom species may reduce the risk of heart disease, cancer, diabetes, infectious disease, and a variety of immune disorders.

*If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-3027.*
References


25. Indian Ped. 2004;41:716-20


