

Medicinal Mushrooms



Beneficial Fungi That Can Improve Immune Function and Enhance Your Health

Most of us think of mushrooms as food. If you grew up in the sixties, you might even think of “shrooms” as a way to get high. But few people recognize what powerful medicines mushrooms (also known as fungi) can be. Yet, mushrooms have been used for healing for thousands of years, most notably in Traditional Chinese Medicine (TCM). Today, scientific research has confirmed that more than 270 species of fungi have therapeutic value.

Mushrooms have many healing properties, especially for the immune system. Various species can both stimulate the immune system to help the body fight infections and cancer, as well as modulate the immune system to reduce excess immune activity in autoimmune disorders. Many medicinal mushrooms have adaptogenic, antioxidant and anti-inflammatory effects, making them great for promoting overall health and reducing the effects of stress.

Mushrooms can also be hepatoprotective, which means they protect the liver (and other organs) from environmental toxins. They can lower blood pressure and cholesterol to benefit the heart and circulation, too. Some even have calming effects on the nerves.

Medicinal Compounds in Mushrooms

Medicinal mushrooms contain a number of bioactive compounds, including triterpenoids, proteins, and complex polysaccharides such as beta glucans. In dried form, tonic fungi are composed of about 80% polysaccharides, 10%-15% protein, 2%-3% oil, and 2%-6% minerals and other compounds. Medicinal mushrooms can be important sources of B vitamins such as riboflavin, folate, thiamine, pantothenic acid and niacin. They also provide trace minerals such as selenium, copper and iron.

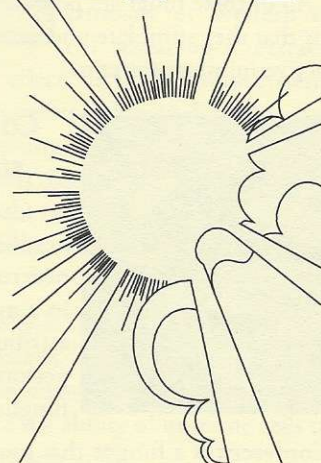
The cell walls of tonic fungi contain polysaccharides called 1,3 beta-glucans, which have been studied for their role in enhancing immunity, improving insulin resistance and lowering cholesterol. These polysaccharides have powerful immune-modulating action, unlike the 1,3 beta glucans found in barley, oats and other cereals. The level of beta glucan content varies in each type of fungi. For instance, it is about 9% in the almond portobello, 14.5% in maitake, and 41% in reishi. A level of about 9% is needed for a fungus extract to have immune-modulating activity.

Beta glucans are not directly antiviral or cytotoxic to cancer cells, but they are effective in stimulating natural killer cell (NK cell) activity. In fact, tonic mushroom preparations can increase NK cell activity by as much as 400% and can stimulate production of tumor necrosis factor alpha (TNF-a) and other substances used by NK cells to initiate programmed cell death and destroy cancerous and viral-infected cells. The resulting localized cytokine concentration draws macrophages, cytotoxic T cells, and more NK cells to the area, thereby mobilizing the immune system.

Unfortunately, the beta glucans in fungi are so tightly bound to the chitin in the cell wall that they pass through the body largely unabsorbed unless the chemicals are extracted and broken off the cell wall by prolonged steam or hot water. So, simply grinding up the mushrooms and ingesting them does not make these compounds bioavailable. They are also not alcohol soluble, so you cannot get them from tinctures. They must be extracted by boiling or steaming the fungi, which breaks down the chitin into its N-acetylglucosamine building blocks and frees the 1,3 beta glucans from the cell wall, converting them to small, bioavailable fragments.

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Important Notice

The information in *Sunshine Sharing* is for educational purposes only and should not be used to diagnose and treat diseases. If you have a health problem, we recommend you consult a competent health practitioner before embarking on any course of treatment.

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In addition to beta glucans, the polysaccharide fraction of tonic mushrooms includes resistant starch, essential sugars and other constituents. Resistant starch, which makes up about 15% dry weight of many fungi, is an excellent prebiotic for promoting beneficial bacteria in the large intestine.

Essential sugars, or glyconutrients, make up about 10% dry weight of many fungi. These sugars have a stimulating effect on white blood cells and the formation of antibodies. They help the immune system recognize pathogens and cancer cells and communicate these discoveries to the rest of the immune system so it can perform its job more effectively.

Meet the Medicinal Mushrooms

There are many species of medicinal fungi, but we'll focus on only four in this newsletter: cordyceps, reishi, maitake and shiitake. All of these fungi are potent immune "amphoterics," which means that they stimulate underactive immune systems and calm overactive immune systems.



Cordyceps (*Cordyceps sinensis*, *C. militaris*)

Cordyceps made international headlines in 1993, when female Chinese runners decimated world records in a major competition. Their coach attributed this remarkable athletic performance to the use of caterpillar fungus, or cordyceps.

Cordyceps is a fungus that grows on the larvae of a caterpillar. While the caterpillar is hibernating underground, the fungus invades the organism and consumes the bug. The result is a caterpillar shaped mushroom. In the spring, it puts up a stem-like mushroom, which gives the herb its Chinese name—dong chong xia cao. Literally translated this means, "winter bug, summer grass."

Cordyceps is an energy tonic in Chinese medicine and has been used for about 1,500 years. It enhances both the yin and the yang energy in the body and it supports the Chinese kidney (water) and lung (metal) energy. In Western terms, it possesses adaptogenic, antioxidant, sedative and immune balancing characteristics. It also has an hepatoprotective effect, enhances kidney and lymphatic function and helps balance blood sugar levels.

The Chinese kidney system includes some aspects of adrenal function, because it relates to basic energy and stamina. There is also an aspect of reproductive function in the Chinese kidney energy system. Cordyceps helps in all these areas. It increases energy, improves stamina and can overcome sexual dysfunction. Researchers have shown that cordyceps increases ATP production, which enhances cellular energy. This helps explain its traditional use in enhancing strength and endurance.

Other studies suggest that cordyceps has potent antioxidant and anti-inflammatory properties. It measures 12,000 on the ORAC scale and can be helpful for inflammation associated with asthma

and rheumatoid arthritis. It also has a protective effect on the liver and kidneys and is a tonic for the heart, cardiovascular system and lungs. It can help to improve blood flow, normalize cholesterol levels and may help reduce blood pressure.

Cordyceps stimulated testosterone production in laboratory animals and increased a type of estrogen essential to fertility in another study. This correlates with its Chinese reputation as a tonic for sexual weakness and reduced libido.

The lung or metal energy in the Chinese system relates to the immune function in Western medicine and cordyceps definitely aids the immune system. It enhances the ability of the body to prevent and fight infection and is very helpful for people who have weak lungs and are constantly getting sick.

It is also helpful in asthma and COPD (chronic obstructive pulmonary disease). Improvements in symptoms such as shortness of breath, cough, appetite and energy have been reported.

Cordyceps may also enhance the immune function in both cancer and autoimmune disorders. One study showed cordyceps helpful for animals with systemic lupus. It can strengthen a person undergoing chemotherapy and reduces blood vessel growth to the tumors.

Cordyceps is a good remedy for the elderly. Doses of just 3 grams per day (about 6 capsules) have resulted in improvements in energy, libido, memory, and reductions in dizziness, cold intolerance, tinnitus and frequent nighttime urination. A typical dose for enhancing respiratory or immune function would be 2-3 capsules three times daily. There are no known side-effects or drug interactions. Cordyceps is one of the medicinal fungi in **Immune Stimulator**.

Reishi (*Ganoderma lucidum*)

Japanese researchers began studying reishi, also known as ganoderma, in the mid-1980s. Their published findings caught the attention of Western researchers, who began to study the fungus, which has been used for thousands of years in Traditional Chinese Medicine. Reishi has consistently impressed the biomedical community as a potential source for hypertension, diabetes, hepatitis, cancer and AIDS drugs.



Clinical studies show that reishi has a wide range of actions. For starters, it boosts the immune function (via natural killer cells, macrophages and interferon) to fight both viral and bacterial infections. It also balances or modulates the immune system in auto-immune disorders. Because of this, reishi is widely used for conditions of immune deficiency such as cancer, AIDS and chronic fatigue syndrome, as well as autoimmune conditions such as lupus, rheumatoid arthritis, Crohn's disease and Ankylosing spondylitis. It may also be helpful in treating allergies, bronchitis, inflammation and HIV.

Reishi's anticancer activity is unique in that its triterpenes and polysaccharides limit tumor growth by blocking the abnormal reproductive cycles of cancer cells. Some of its compounds induce

apoptosis (programmed cell death) in cancer cells, while sparing healthy tissue. Other compounds in reishi inhibit metastatic processes and decrease the expression of genes involved in cancer cell survival, proliferation, invasion and metastasis.

In vitro studies using synovial fluid from patients with rheumatoid arthritis found that reishi's polysaccharides have an inhibitory effect on the proliferation of synovial fibroblasts, possibly via the nuclear factor-kappa B transcription pathway. Polysaccharides isolated from reishi have also proven effective in vitro against herpes simplex virus types 1 and 2. Reishi isolates have also been tested against other viral strains, including influenza A, and demonstrated effectiveness against their replication.

Reishi also offers cardiovascular support, lowering blood pressure and serum cholesterol, reducing blood pressure and protecting the heart. It has been used in the treatment of heart deficiency, angina pectoris, heart palpitations and arrhythmia.

Reishi is hepatoprotective, protecting the liver against radiation and damage by toxins. It has an ORAC value of 4,000. Reishi also has neuroprotective properties and has a significant ability to stimulate brain neurons.

Reishi can help to balance blood sugar and prevent the development of new fat cells in obese individuals. In a study involving diabetic rats, reishi enhanced carbohydrate metabolism and promoted insulin secretion. In a clinical trial of patients with type II diabetes, 1800 mg of reishi given 3 times daily reduced glucose levels. In other clinical studies, the glucans in reishi inhibited hypoglycemia.

Reishi (ganoderma) is key ingredient in **Chinese Blood Stimulator**. This blend is helpful for people who are weak, anemic and deficient. It strengthens the liver, helps improve the quality of the blood and enhance the immune system.

Reishi is blended with ethically harvested shark cartilage in the **SC Formula**, which may help inhibit angiogenesis, a key

characteristic of tumor growth. The formula may also be helpful for some cases of arthritis and eczema.

Ganoderma (reishi) is also a key ingredient in **Trigger Immune**, a formula that builds up people who are weak and deficient, strengthening immunity and enhancing energy. This blend is good for people who are depleted due to long term stress or illness, or from undergoing chemotherapy or radiation treatments.

This mushroom is also an ingredient in **Defense Maintenance**, an immune-enhancing formula, and Immune Stimulator.

Maitake (*Grifola frondosa*)



Maitake is a soft polypore mushroom typically found growing at the base of aging oaks, elms and maple trees. It has been used in traditional Japanese medicine for centuries. After arousing the curiosity of Western medical researchers, extracts of

maitake were studied for their effects on the immune system and various cancers. The research suggests that maitake induces apoptosis of cancer cells and has anti-angiogenic properties, restricting the proliferation of blood vessels that feed tumors. Other studies show that maitake can shorten the course of cancer chemotherapy, prevent chemotherapy side effects, and prevent destruction of T cells by HIV.

The fruiting body of maitake is rich in complex polysaccharides, especially the beta-D-glucans. The mycelium contains low molecular weight sugars and exopolysaccharides, known to activate immune responses and enhance the ability of immune cells to kill and consume lung and breast cancer cells.

Besides enhancing immunity, maitake may also help control both high blood pressure and blood sugar levels. The α -glucosidase inhibitors it contains are believed to be responsible for these benefits.

Immune Stimulator contains maitake, along with reishi and cordyceps. It also contains beta glucans, arabinogalactan and colostrum. By boosting white blood cell count, and enhancing antibody and white blood cell activity, Immune Stimulator can enhance the body's natural ability to destroy viruses, bacteria, fungus and even cancer cells. It can be helpful for problems as simple as warding off a cold in the early stages or as difficult as dealing with serious infections such as pneumonia. Immune Stimulator can even be helpful when dealing with immune disorders such as AIDS and cancer.

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Did You Know?

Did you know that fungi, such as mushrooms, are not plants? In fact, in 2003 they were reclassified as relatives of animals. Fungi do not produce chloroplasts and therefore cannot photosynthesize like plants. Furthermore, fungi contain chitin (similar to insects) instead of cellulose like plants. Fungi also eat other organisms and their by-products. However, instead of ingesting and then digesting them as animals do, fungi digest their food first and then absorb it. Finally, instead of storing energy in the form of starch like plants, fungi store energy as glycogen, similar to animals.

The close relationship of fungi to animal life means they have amazing potential for improving human health. George Hudler, professor in Cornell University's Department of Plant Pathology and Plant-Microbe Biology, recently predicted, "In the next 10 years, we will see an incredible expansion of our awareness of the valuable chemicals in mushrooms, hopefully even their use in conventional medicine."

Additional Help and Information

For more information about medicinal mushrooms and supplements containing them contact the person who gave you this newsletter. You can also consult the following resources:

The Comprehensive Guide to Nature's Sunshine Products, 6th edition by Steven Horne and Kimberly Balas

Mycelium Running: How Mushrooms Can Help Save the World by Paul Stamets
Medicinal Mushrooms by Christopher Hobbs



Mushrooms Aren't Just for Food They Can Also Be Powerful Medicine

Medicinal mushrooms have been shown to stimulate deficient immune function to help the body fight infections and cancer, and modulate excessive immune function in allergies and auto-immune disorders. They can also be adaptogenic, enhance circulation and balance blood sugar levels. Learn about the amazing benefits of medicinal fungi in this month's *Sunshine Sharing*.

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Reishi and maitake are also found in **Sunshine Heroes Elderberry Immune**, a chewable product for boosting immunity in children. This blend also contains elderberry, astragalus and echinacea.

Shiitake (*Lentinula edodes*)

Famous for its rich texture and meaty flavor, shiitake may be the most researched fungi in terms of potential health benefits. Studies show that shiitake is rich in vitamins, minerals, antioxidants and phytonutrients, but it also contains powerful compounds that discourage inflammation and "bad" bacteria, inhibit tumor growth, and destroy harmful



viruses and fungi. Studies show that shiitake also has antiviral and anticancer effects. Shiitake mushrooms can often be found in supermarkets, making them easy to consume as an immune and health enhancing food. **Colostrum with Immune Factors** utilizes shiitake and maitake, along with astragalus root, IP-6 (inositol) and colostrum to stimulate the immune system.

There are many beneficial mushrooms besides those mentioned in this newsletter. Other varieties that may benefit human health include: turkey tail, lion's mane, morels, chaga, agaricus and oyster mushrooms. Mushrooms are extremely safe remedies, but don't harvest them from the wild unless you know what you are doing, as there are many toxic fungi as well. Remember the old saying, "There are old mushroom hunters, and bold mushroom hunters, but there are no old, bold mushroom hunters." So, get your medicinal mushrooms from quality suppliers who can guarantee you've got the right fungi.