

HIGH-DEMAND ORGANIC MUSHROOM BLEND for Boosting Immunity and Reducing Inflammation

EXECUTIVE SUMMARY

INTRODUCTION – MODERN HEALTH ISSUES OF MOST CONCERN

- 1) THE IMMUNE SYSTEM
 - a. Modern Medical Approach
 - b. Natural Approach

- 2) INFLAMMATION

THE MUSHROOM SOLUTION

- 1) From Ancient Medicine to Modern Science
- 2) The Five Key Mushrooms
 - a. CORDYCEPS (*Ophiocordyceps sinensis*/Cordy-Gen®)
 - b. REISHI (*Ganoderma lucidum*)
 - c. TURKEY TAILS (*Coriolus versicolor*)
 - d. SHIITAKE (*Lentinula edodes*)
 - e. MUSHROOM OF LIFE (*Agaricus blazei*)

- 3) Adaptogenic Bonus

- 4) The BioPerine® Boost

IMMUNE 5™+ WITH CORDY-GEN® AND BIOPERPINE®

- 1) Active Mycelia
- 2) Clean Label

SUMMARY

EXECUTIVE SUMMARY

The number of people seeking health benefits from supplements is at an all-time high and growing. An increasingly important supplement category entails products that boost immunity and reduce inflammation. Consumers are currently challenged by an overwhelming number of product choices. More than ever, discerning buyers choose products that meet a host of criteria regarding their efficacy and safety. Mushroom-based blends lead the way in meeting these criteria. The most powerful blend of bioactive mushrooms currently available for meeting public demand is the organically grown mushroom formula, Immune 5™+ with Cordy-Gen® and BioPerine® by ProActive Nutra.

INTRODUCTION – MODERN HEALTH ISSUES OF MOST CONCERN

The two areas of concern that underlie a majority of health issues in modern times are, 1) the immune system; and, 2) chronic inflammation.

1) THE IMMUNE SYSTEM

Public concern for immune system health has been influenced by many sources, not the least of which have been two Time Magazine cover stories. The public started becoming

PAN Science Advisory Board

aware of the importance of the immune system in a multitude of health issues in 1988, with this cover story in Time Magazine:

- *The Battle Inside Your Body: New discoveries show how the immune system fights off disease.* (May 23, 1988)

This overview summarized the **components of the immune system** and how they work together to keep people healthy. It laid the foundation for building public awareness about the three main components:

- Organs of the immune system: bone marrow, thymus, spleen, lymph nodes
- Cells of the immune system: T-cells, natural killer cells, B-cells, granulocytes or polymorphonuclear (PMN) leukocytes, macrophages, dendritic cells
- The immune response: antigen-antibody signaling, mobilizing natural killer cells

The complexities of these components and their interactions present a technical challenge to the lay public. Nevertheless, at every turn, concern for regulating the immune system points to the prevention of a multitude of immune-related failures. The list accounts for some of the most worrisome **immune-related health problems** in modern times, including:

- Allergic diseases (allergic rhinitis, asthma, eczema)
- Autoimmune diseases (rheumatoid arthritis, lupus, Hashimoto's thyroiditis, Type 1 diabetes)
- Inflammatory diseases (ALS, MS, Alzheimer's Disease, dementia, Crohn's Disease, heart and cardiovascular disease, obesity)
- Cancer
- AIDS
- Chronic infection

The second Time Magazine cover story of interest about this topic shows how far we have come in understanding and capitalizing on what our immune system can do for us. This story epitomizes the latest approaches in using the immune system for treating one of the most worrisome diseases of time, cancer:

- *What if your immune system could be taught to kill cancer? Inside the brutally selective, hugely expensive, lifesaving trials of immunotherapy.* (April 4, 2016)

The intervening time, between 1988 and 2016, has seen a tremendous boost in research on immunotherapy for achieving optimal health in the face of modern disease.

Modern Medical Approach

Research on mainstream medical treatments for treating immune-related diseases typically results in expensive drugs or protocols. As mentioned above, the most recent example of this approach involves harnessing the immune system to fight cancer.

PAN Science Advisory Board

It turns out, however, that the process of “teaching” the immune system to kill cancer cells is unnecessary. It already “knows” how to kill cancer cells and does so constantly, every day. The need for lifesaving trials of high-priced immunotherapy becomes moot when the immune system prevents cancer in the first place.

Natural Approach

The key for preventing cancer in the first place is to live a disease-preventing lifestyle that supports a healthy immune system. This includes natural supplements such as mushroom blends that are designed to do exactly that. To modernize the old adage, in this case a few pennies’ worth of prevention is better than million dollars’ worth of treatment.

This is the approach that more people are seeking over time. Supporting your body’s immune system is not just for cancer prevention. It is for every aspect of health that prevents chronic diseases in general.

Regulating the immune system with the right supplements lies at the core of this approach.

2) INFLAMMATION

Once again, Time Magazine has alerted the public to the role of inflammation in disease with a cover article, as follows:

- *The Secret Killer: The surprising link between inflammation and heart attacks, cancer, Alzheimer’s and other diseases.* (February 23, 2004).

It turns out that **inflammation is the root cause of nearly every modern disease.** Inflammation is intimately tied to the immune system. Acute (short-term) inflammation represents healing responses that are mediated by the immune system. They usually occur over a few seconds, minutes, hours, or days. These responses include, for example, responses to physical injury and infection that normally come and go.

Chronic inflammation, however, is the hallmark of chronic disease. It is characterized, in part, by either the immune system’s unrelenting over-response or its under-response to external and internal stimuli.

The following is a short list of the typical symptoms of chronic inflammation:

- Visible signs of aging, such as wrinkles
- Susceptibility to bacterial, fungal, and viral infections
- Acid reflux
- Cancer
- Skin conditions such as psoriasis and acne
- Arthritis
- Bronchitis
- Chronic pain

PAN Science Advisory Board

- Diabetes
- High blood pressure
- Osteoporosis
- Heart disease
- Candidiasis

Note that *susceptibility to infections* is a chronic inflammatory condition that is modulated by the immune system. Infections themselves are acute inflammatory conditions that are normally resolved in the short-term by a healthy immune response.

THE MUSHROOM SOLUTION

The landscape of natural products for immune health is crowded with many successful products. This reflects the growing awareness of and increasing demand by the public for supplements that aid the immune system.

Mushrooms stand out among immune-enhancing botanicals. As a group they are more well-known for such properties. In addition, they continue to attract considerable attention from modern science.

The ideal candidates for mushroom-based supplements are those species that have a strong base in traditional medicine and whose activities have been subject to modern scientific research.

1. From Ancient Medicine to Modern Science

Traditional Oriental Medicine lists more than 200 species of mushrooms as having healing properties. Their uses cover a wide range of health issues. In modern terms this breadth of application underscores a multiplicity of beneficial effects on the immune system.

The breadth of their immune system benefits explains why a phenomenal 25 percent of medicinal mushrooms are credited with tumor-fighting capabilities. This observation links ancient wisdom about medicinal mushrooms to current concepts behind the latest immunotherapy-based treatments for cancer in mainstream medicine.

Just five of these species account for an astounding number of modern studies. At last count these species are listed in more than 3,600 studies that are currently referred to in PubMed, the online medical database of the U.S. National Institutes of Health.

The effects of these five mushrooms on the immune system and inflammation are of key interest to modern science. In addition, scientists from around the world have also discovered many other properties that underlie their important roles in ancient medicine.

2) The Five Key Mushrooms

CORDYCEPS (*Ophiocordyceps sinensis*/Cordy-Gen®)

PAN Science Advisory Board

1,100+ published articles on PubMed

Cordyceps is one of the better-known of the Traditional Oriental Medicines. It is commonly used for the replenishment of general body health. Its main actions are on the liver, kidneys, heart, and immune system. Cordyceps has a broad range of pharmacological and biological actions on the liver, kidneys, heart, and immune system. It also has antioxidant activity.

The documented benefits of Cordyceps in modern research include:

- Anti-aging and longevity
- Anti-inflammatory
- Antioxidant
- Testosterone boost
- Asthma
- Cancer treatment
- Diabetes
- Energy and endurance
- Fertility
- Hepatitis B
- Kidney disease
- Leukemia
- Lupus

Cordyceps has begun to show potential for dissolving blood clots, fighting fatigue, and treating cardiovascular diseases, respiratory diseases, hypertension, high lipid levels, high blood sugar, kidney failure.

The pharmacological actions of Cordyceps are due mainly to its bioactive polysaccharides, modified nucleosides, and cyclosporin-like metabolites.

REISHI (*Ganoderma lucidum*)

1,200+ articles on PubMed

Traditionally reishi is used for general tonifying, for enhancing vital energy, for strengthening cardiac function, for increasing memory, and for anti-aging. It is also used for relieving cough and asthma and is recommended for treating dizziness, insomnia, palpitation, and shortness of breath.

The documented benefits of reishi mushrooms in modern research include:

- Cancer treatment
- Antidepressant
- Regulating blood lipids

PAN Science Advisory Board

- Prostate health
- Immune system boost
- Antioxidant
- Diabetes
- Healing liver and gastric injury
- Reducing bacterial and viral infections

The main classes of physiologically active constituents in reishi mushrooms are polysaccharides, peptidoglycans, and triterpenes.

TURKEY TAILS (*Coriolus versicolor*)

330+ articles on PubMed

The main traditional uses of turkey tails mushroom are for arresting cough, easing difficulty with breathing, and boosting energy.

The documented benefits of turkey tails mushrooms in modern research include:

- Cancer treatment
- Immune system boost
- Liver health
- Treatment for hepatitis B

The key active ingredients of turkey tails mushroom are polysaccharides and a proteoglycan.

SHIITAKE (*Lentinula edodes*)

640+ articles on PubMed

Traditional medicinal uses of shiitake are for enhancing immunity, preventing cirrhosis, and reducing blood pressure.

The documented benefits of shiitake in modern research include:

- Regulating blood lipids
- Antioxidant (esp. for increasing nitric oxide concentration)
- Cancer treatment
- Immune system boost
-

The most highly researched bioactive molecule from shiitake is the a polysaccharide, beta(1-3)-D-glucan, called lentinan.

MUSHROOM OF LIFE (*Agaricus blazei*)

PAN Science Advisory Board

240+ articles on PubMed

Agaricus blazei is native and now widely cultivated in Japan for its medicinal properties. Traditionally this mushroom is used for disorders such as atherosclerosis, hepatitis, dermatitis, and cancer.

The documented benefits of *Agaricus blazei* in modern research include:

- Immune system boost
- Obesity
- Diabetes
- Cancer treatment
- Ulcerative colitis
- Hepatitis

The bioactive chemical composition of *Agaricus blazei* consists mostly of complex mixtures of various polysaccharides. Other potentially bioactives include unique terpenoids that are classified as blazeispirane derivatives.

3) Adaptogenic Bonus

It is clear that modern research reveals a number of medicinal properties of mushrooms. In addition, many traditional uses now indicate their overall adaptogenic nature.

Although mushroom adaptogens have been in use for centuries, the term adaptogen wasn't coined until the mid-20th century. Since then thousands of research studies have been conducted on adaptogenic botanical, mostly in China, Korea, and the former Soviet Union.

Adaptogens are phenomenal multi-taskers for human health. They are known for their ability to improve physical stamina and mental alertness. They help the body recover from chronic illness, surgery, hormonal imbalances, altitude sickness, and a number of heart, lung and digestive problems.

Adaptogens work by binding to receptor sites on cells in the gut, triggering the release of chemicals that stimulate and balance the hormonal, immune and nervous systems.

Adaptogens increase numbers and activity of immune cells (including natural killer cells, T-cells, macrophages and white blood cells), thereby enabling the body to better combat viruses, bacteria, and cancer cells. Adaptogens also counteract the damaging effects of stress hormones like cortisol.

And here's the icing on the cake: adaptogens improve the function of mitochondria in the production of key cellular energy molecules (i.e., ATP) and boost the delivery of oxygen to cells. This makes adaptogens ideal not only for the hardcore athlete, but also for the senior citizen recovering from hip surgery, or the exhausted mother of twin toddlers.

PAN Science Advisory Board

The wide variety of health benefits from the top five medicinal mushrooms relies on their roles as adaptogens.

4) The BioPerine® Boost

An underlying key to enjoying the health benefits of mushrooms is making sure that their bioactive ingredients are actually absorbed after ingestion. This is exactly what a substance called piperine does. It is the most active ingredient in black pepper (*Piper nigrum*).

BioPerine® is the only piperine product to obtain a patented status for its ability to increase the bioavailability of nutritional compounds in botanical formulations. Moreover, BioPiperine® is the only source of piperine to have undergone clinical studies in the U.S. for confirming its safety and efficacy for nutritional use.

The power of BioPerine® relies on its increased piperine content, which is standardized to be 95%. Plain black pepper contains 5-9% piperine.

The high level of piperine in BioPerine® significantly increases the absorption of various supplements nutrients, by 31.8% to 229%. This is an especially important property for aging adults as their digestive systems gradually diminish in their ability to absorb nutrients over time.

The 'BioPerine® boost' is therefore a crucial additional ingredient for enhancing the powerful health effects of mushrooms.

IMMUNE 5™+ WITH CORDY-GEN® AND BIOPERPINE®

Immune 5™+ with Cordy-Gen® and BioPerine® is the only mushroom blend that capitalizes on all five of the top immune-boosting and anti-inflammatory mushrooms. It is also an enhanced formula due to the inclusion of BioPerine® for greater bioavailability.

It is a scientifically designed, proprietary formula by ProActive Nutra. Immune 5™+ exclusively utilizes the mycelial biomass of the mushrooms, with no fruiting bodies or extracts.

1) Active Mycelia

Mycelia for inclusion into Immune 5™+ are cultivated aseptically in an organic brown rice substrate within a strictly controlled environment in the U.S.A. This process enables harvesting of mycelia during the most active growth phase, when primary growth is producing peak amounts of their bioactive secondary metabolites.

2) Clean Label

Immune 5™+ also includes a clean label. The mushrooms are organically grown and the product is non-GMO, gluten free, lactose free allergy-free, contains no chemical additives, and is packaged in vegetarian capsules.

SUMMARY

PAN Science Advisory Board

Health concerns regarding the immune system and inflammation are on the rise. The public is increasingly embracing natural approaches for the prevention of these issues.

Development of ancient botanical medicines into modern nutraceuticals is the foundation of thousands of scientific studies. A phenomenal number of these studies focus on mushrooms for their wide variety of health benefits, particularly those involving the immune system.

Consumers have the daunting task of finding the best nutraceuticals among an overwhelming array of possibilities. Superior products such as high-quality organically grown mushroom blends satisfy this need.

Five key mushroom species lead the way:

- *Ophiocordyceps sinensis* (Cordyceps)
- *Ganoderma lucidum* (Reishi)
- *Coriolus versicolor* (Turkey Tails)
- *Lentinula edodes* (Shiitake)
- *Agaricus blazei* (Mushroom of Life)

These are the top five mushroom species, out of more than 200 listed in Traditional Oriental medical formulas, based on the support of modern scientific research on their wide variety of health benefits.

In addition to the currently established pharmacological activities of these five mushrooms, they also act as adaptogens. Adaptogenic nutritional act to stimulate and balance the hormonal, immune and nervous systems. Indeed, many of the traditional medicinal uses of mushrooms overlap with their uses in modern times due to their adaptogenic properties.

The most powerful blend of bioactive mushrooms currently available for meeting public demand is the formula, Immune 5™+ with Cordy-Gen® and BioPerine® by ProActive Nutra. It is a scientifically formulated, proprietary blend that contains the most active growth phase of the aseptically-grown mycelial biomass of all of the top five mushrooms for immune health.

In addition, this formula is enhanced by the inclusion of BioPerine® for greater bioavailability.

Immune 5™+ also includes a clean label. The mushrooms are organically grown and the product is non-GMO, gluten free, lactose free allergy-free, contains no chemical additives, and is packaged in vegetarian capsules.

