



Qore™ *defense*

Qore™ Defense Product Profile

*Supports healthy
immune function
while increasing
energy, endurance,
and stamina**

Qivana's Qore™ Defense

The Qore Defense Organic Mushroom Complex is a combination of six of the most immune-potent varieties of medicinal mushrooms known in the world. Recognized for their nutritional content, medicinal mushrooms have a well-documented history of supporting immune system activity in humans. Each mushroom variety has a very specific role in this formula. Together, they complement and enhance one another and work synergistically to accomplish outstanding and incomparable immune support. Each mushroom variety has been extensively researched, validated, and is known to have very specific health benefits. This powerful complex is designed in harmony with the principles of ancient Tibetan and traditional Chinese medicine.

Qore™ Defense is designed to:

*Support healthy immune function**

*Activate the Natural Killer cells (NK) of your immune system**

*Help maintain health during challenging seasonal changes**

*Increase energy, endurance, and stamina**

*Protect against chronic infection**

Key Ingredients: The medicinal mushrooms utilized in the formula are: Reishi (*Ganoderma lucidum*), Cordyceps (*Cordyceps sinensis*), Coriolus (*Coriolus versicolor*), Zhu Ling (*Polyporus umbellatus*), Maitake (*Grifola frondosus*), and Shiitake (*Lentinus edodes*). These mushrooms are all organically grown and cultivated in the United States, under fully controlled conditions, and without the use of harsh herbicides or pesticides.

Introduction to Medicinal Mushrooms

When most people think of mushrooms, they consider only the handful of varieties available in a grocery store used in common food applications. However, the use and relevance of mushrooms reaches far beyond the edible species. According to a recent publication, the number of identified mushroom species on earth is estimated at about 140,000, with only about 10% of the total species known and identified on the planet. Of those known, about 50% are considered to possess some degree of edibility and over 1,800 species are estimated to have some known medicinal benefit.^{7,14} While medicinal mushrooms are not recommended for eating because of their unpleasant taste, they do make up a significant portion of the total mushroom species. They are

**Qore™** defense

distinguished for their unique, complex, and potent nutritional content. They can deliver a wide variety of health benefits, yet they are best known for their ability to activate immune-defense mechanisms.

Examining the life cycle of mushrooms, the logic of their immune effects becomes intuitive. Mushrooms are among the lowest level of vegetation in the ecosystem, thriving on decaying materials in an antagonistic environment. Because the mushroom must absorb the food through its cells to survive, it has to first deactivate any potentially harmful pathogens. Therefore, mushrooms become proficient at expelling undesirable chemicals and contaminants absorbed during ingestion. In order for a mushroom to continue to exist, it must have an aggressive, proactive, innate immune system.

Traditional Uses of Mushrooms

Mushrooms are considered one of the most ancient of medicines, with a history of use dating back many millennia. While mushrooms have always been consumed as food, in the Far East ancient healers were more concerned with its distinctive healing properties, above and beyond that of traditional food. The earliest book on medicinal materials in China, the Shen Nong's Herbal Classic (Shen Nong Pen Ts'ao Jing) (100-200AD), recorded the medicinal effects of several mushrooms.¹⁷ Historically these mushrooms were prepared with hot water-soluble fractions, known as decoctions.⁸ Long before they were available commercially, many of the rare varieties were sought out and reserved only for use by emperors.⁴ Nowadays, almost all of the important medicinal mushrooms have been subjected to large-scale cultivation, thus removing the historical scarcity factor. In the past few decades the world-wide scientific community has taken note and research has exploded on mushrooms, isolating and exploring the value of its treasured components, particularly that of its biologically active polysaccharides.¹⁴

Qore Defense Combines Proven Medicinal Mushrooms with Adaptogenic Herbs

In the early stages of growth, mushrooms actively assimilate nutrients from their surroundings, digest them, and store them for later use. Using a breakthrough cultivating technology, the mushrooms in the Qore Defense formula are grown on a bed of potent, immune-modulating adaptogenic herbs with valuable nutrients. Naturally, this means that as the mushrooms grow, they are absorbing the powerful benefits from these herbs and nutrients. These herbs and nutrients are specifically designed to strengthen the potency of the mushrooms, as well as advance their nutritional content and enhance their intrinsic benefits.



Qore™ defense

The Modern Immune System

When a person's immune system weakens due to stress from daily living or exposure to pollution and contaminants, opportunistic pathogens can invade, gain the upper hand, and cause sickness. While a single incident of illness carries insignificant consequence, the long-term effects of accumulated bouts of illness may pose a more serious problem. With today's challenges it is best to be prepared.

Most of us today live in an artificially cleansed environment with hand sanitizers, harsh soaps, disinfectants, detergents, filtered air, processed foods, and frequent antibiotic treatments. This can create several significant implications on our immune system. Our immune systems are designed to constantly monitor and respond to foreign invaders and pathogens. Once discovered this pathogen data is stored in our immune data bank, allowing our defense system to mount a fast immune response. But a meager data base in an under-trained immune system can make one incapable of dealing with many pathogens. A slow, uncoordinated immune response will not be able to cope with a sudden onslaught from new or clever pathogens.¹⁸

More often than not, nature holds the answers to many of our challenges. Regular mushroom supplementation could hold the key to keeping our immune systems alert, active, and more prepared to defend. Mushrooms play a critical role at the bottom of the ecosystem. They grow most often in an extremely hostile environment, among dead and decaying matter, and are active in recycling and purifying organic matter. To protect themselves against the variety of harmful pathogens they encounter mushrooms must have an extremely powerful chemical immune and detoxification system. Their very survival depends on its ability to protect itself by deactivating these toxins. Their secret to a strong immune system is a special chemical, called a polysaccharide, which resides inside the mushroom's cell wall through which food travels. This process is thought to be the source of its well-documented immune supporting power in humans.¹⁶

Mushrooms Hold an Important Key to a Vibrant Immune System

Research in the 1980's began to make the connection between medicinal mushrooms and the activation and stimulation of the immune system.¹⁶ Interestingly, the polysaccharide molecules in mushrooms are very similar to the ones found in harmful bacteria, and thus cause our immune systems to mount an immune response without their being an actual threat. Thus, mushrooms provide a constant challenge to the immune system by presenting many different molecules to the system in a non-hostile manner.^{15,18} This is of deep importance and growing significance since the immune defenses of the aging population are in a weakening state and in need of constant nourishing, stimulation, and strengthening. Mushrooms may literally hold the key to the strengthening immune defenses.

**Qore™** defense

Immune system modulators work mainly by increasing the macrophage activity. Macrophages are a type of white blood cell that serve several important functions such as the removal of cell debris and the killing of pathogenic microorganisms.^{1,2} When the body is stimulated by pathologic stimuli or injury, macrophages release proinflammatory cytokines, chemokines and chemoattractants that allow it to literally eat and destroy harmful pathogens.³ Therefore, the activation of macrophages is a key event for proper immune system function. Macrophages are the body's own version of the marine corps.¹⁵

Researchers from Harvard University observed how beta-glucans, specific polysaccharide components of the mushroom cell-wall, have an immune-enhancing effect. The beta-glucans found in medicinal mushrooms are typically far more complex than those found in plants. Mushroom beta-glucans are sometimes called “long-chain” because they are made up of spiraling, repeating patterns of molecular molecules.¹⁶ Most common to mushrooms are the beta 1-3 and beta 1-4, which are named to describe the molecular structure. The 1-3 beta-glucan means that it has links from the first to the third carbon atom, while the 1-4 has links going from the first to the fourth.¹⁶

Beta-glucan molecules have a “lock and key” relationship with the surface receptors of important immune cells.¹⁶ The beta-glucan molecule latches on the surface of macrophage, and this linking-up process with the beta-glucan molecule stimulates macrophage activity.¹⁶ Continued research found other receptor sites on other immune cells, such as the natural killer cells, and neutrophils, which demonstrated that different shaped beta-glucan molecules produced different immune responses that dramatically improved immune responses to a number of different conditions and pathogens.

Qore Defense's Proprietary Cultivation and Processing Method

Qivana's Qore Defense is the first on the market to ever combine the power and value of adaptogenic herbs with proven medicinal mushrooms. Because mushrooms are known to assimilate and recycle nutrients from their environment, this powerful complex is made up of a combination of six potent varieties of medicinal mushrooms which are grown organically on a matrix of immune enhancing, adaptogenic, circulatory and balancing botanicals, and organic brown rice. Clinical observations of the novel growing approach suggest that the health benefits of the mushrooms are greatly increased when the nutrients from medicinal herbs are used as a primary food source and assimilated by the mushrooms during cultivation.

One approach to creating dietary supplements and pharmaceuticals has been to isolate, extract, and delivery a highly-purified, single active compound in extremely high concentrations. While this may have some limited therapeutic value, several studies have suggested that the broader spectrum nutrient extracts may have additive and even synergistic effects, above and beyond a single purified compound.⁸ In fact, there are numerous studies in which mushrooms prepared with traditional water-extract decoctions, containing a full complement of bioactive components,

**Qore™** defense

deliver significant health benefits, confirming their efficacy.⁹ Phytonutrients in mushrooms play a specific role and eliminating any of the compounds potentially compromises the benefits. The benefit of mushrooms, “could be attributed to several compounds present...the tetero-glucans, lectins, terpenoids, steroids, nucleic acids, and immunomodulatory proteins.” This means that the synergistic effects of several components are responsible for the therapeutic or prophylactic properties rather than a single active chemical ingredient.¹⁴

As a result, Qivana’s Qore Defense does not process or extract single nutrients from the mushrooms, but rather mills each mushroom whole, thus capturing the complete spectrum of nutrients for synergistic effect.

Qore Defense is Made with Organic Ingredients

The mushrooms in Qivana’s Qore Defense are all organically grown and cultivated in a greenhouse environment under fully controlled conditions in the United States. Unlike many of their counterparts that are grown in Asia, the mushrooms in this complex are grown without the use of harsh herbicides or pesticides and are free of pollutants and contaminants, such as heavy metals. While the wisdom and powerful advantages of these medicinal mushrooms are legendary, the Qore Defense formula has leveraged these benefits using a revolutionary cultivating technology. The mushrooms in Qore Defense formula are grown on a bed of potent, immune-enhancing adaptogenic herbs with valuable nutrients. As the mushrooms grow, they assimilate the powerful benefits from these herbs and nutrients, which are specifically designed to strengthen the potency of the mushrooms, advance their nutritional content, and enhance their intrinsic benefits.

Modern Research on Medicinal Mushrooms

Reishi (*Ganoderma lucidum*) and Shiitake (*Lentinus edodes*) have the oldest pedigree and traditional use, they are the most well-known, and are among the most researched mushrooms in the world. These mushrooms exhibit extraordinary ability. According to a study commissioned in the UK on medicinal mushrooms, “Several mushroom compounds have been shown to potentiate the host’s innate (non-specific) and acquired (specific) immune responses and activate many kinds of immune cells that are important for the maintenance of homeostasis, e.g. host cells (such as cytotoxic macrophages, monocytes, neutrophils, natural killer cells, dendritic cells) and chemical messengers (cytokines such as interleukins, interferon, colony stimulating factors) that trigger complement (a biochemical process that helps to clear pathogens) and acute phase responses. They can also be considered as multi-cytokine inducers able to induce gene expression of various immunomodulatory cytokines and cytokine receptors. Lymphocytes governing antibody production (β -cells) and cell-mediated cytotoxicity (T-cells) are also stimulated.”¹⁷



qore™ defense

In one of the most comprehensive human studies on mushrooms ever conducted, Reishi efficacy was tested on 2,000 patients with chronic respiratory health concerns. Amazingly, this mushroom brought about a marked improvement in 60-90% of the patients, with the elderly benefiting the most.¹⁵ The immune stimulating effects of Shiitake are also well documented in vitro, in vivo, and in human clinical trials. For example, in a human study of patients with compromised immune systems, an extract of Lentinula edodes was administered and patients had an increase in T-cells from a baseline of 1,250/mm³ to 2,045/mm³ after 30 days and then up to 2,542/mm³ after 60 days with improvements in symptoms noted.¹⁵

A recent in-vitro study at a University in Korea found that one of the components of Lentinus edodes enhance the host immune system by activating various mechanisms in immune cells, including macrophages. In this study, polysaccharides from Lentinus edodes were found to stimulate the functional activation of macrophages to secrete inflammatory mediators and cytokines and increase the phagocytotic uptake.⁵

Another recent in-vitro model, confirmed with several in-vivo experiments demonstrated that a specific immunomodulatory protein (LZ-8) found in Reishi (*Ganoderma lucidum*) can effectively promote the activation and maturation of immature Dendritic Cells, important antigen-presenting cells, which suggests that this specific protein molecule in Reishi may possess a beneficial effect in upregulating immune responses.⁶

Wang et al.¹⁰ reported that after treatment of macrophage cultures with a polysaccharide from fresh fruiting bodies of *G lucidum*, the levels of IL-1 β , TNF- α , and IL-6 were 5.1-, 9.8-, and 29-fold higher than in cultures of untreated cells. In addition, the release of INF- γ from T lymphocytes was also greatly enhanced in the presence of this polysaccharide.⁹

Maitake mushroom extracts stimulated the natural immunity related to the activation of NK cells indirectly through IL-12 produced by macrophages and DCs in normal mice.¹¹ IFN- γ production by splenic NK cells increased significantly 3 days after administration. Additionally, Kodama et al.¹² reported the activation of macrophages and DCs in normal mice as well. Based on this encouraging research, it has been suggested that administration of Maitake extracts to healthy individuals may serve to prevent infection by microorganisms.⁹

The medicinal fungus water extract (FWE) is made from a variety of mushrooms in equal amounts, including *Coriolus versicolor*, *Cordyceps sinensis*, *L edodes*, *A blazei*, and *G lucidum*. Zhang et al.¹³ reported that FWE enhanced the phagocytosis of peritoneal macrophages and promoted NK activity in mice.⁹



References

1. Cutolo, M. "Macrophages as effectors of the immunoendocrinologic interactions in autoimmune rheumatic diseases." *Ann. NY Acad Sci.* 1999;876: 32-41; discussion 41-42.
2. Gordon, S. B. and Read. R. C. "Macrophage defences against respiratory tract infections." *Br. Med. Bull.* 2002;61: 45-61.
3. Lee, Ji Yeon. "Molecular Mechanism of Macrophage Activation by Exopolysaccharides from Liquid Culture of *Lentinus edodes*." *J. Microbiol. Biotechnol.* 2008; 18(2), 355-364.
4. Lull, C., Wichers, H. J. and Savelkoul, H. F. "Antiinflammatory and immunomodulating properties of fungal metabolites." *Mediators Inflamm.* 2005;63-80.
5. Lee et al. "Structural Characteristics of Immunostimulating Polysaccharides from *Lentinus edodes*." *J. Microbiol. Biotechnol.* 2009; 19(5), 455-461.
6. Lin et al. "An immunomodulatory protein, Ling Zhi-8, induced activation and maturation of human monocyte-derived dendritic cells by the NF- κ B and MAPK pathways." 2009.
7. Lull et al. "Antiinflammatory and Immunomodulating Properties of Fungal Metabolites." *Mediators of Inflammation* 2005;2:63-80.
8. Vickers, A. "Botanical medicines for the treatment of cancer: rationale, overview of current data, and methodological considerations for phase I and II trials." *Cancer Invest.* 2002;20(7-8):1069-1079.
9. Borchers, A.T., Keen, C.L., Gershwin, M.E. "Mushrooms, tumors, and immunity: an update." *Exp Biol Med (Maywood).* 2004;229(5):393-406.
10. Wang S.Y., Hsu, M.L., Hsu, H.C., et al. "The anti-tumor effect of *Ganoderma lucidum* is mediated by cytokines released from activated macrophages and T lymphocytes." *Int J Cancer.* 1997;70(6):699-705.
11. Kodama, N., Kakuno, T., Nanba, H. "Stimulation of the natural immune system in normal mice by polysaccharide from Maitake mushroom." *Mycoscience.* 2003;44(3):257-261.
12. Kodama, N., Murata, Y., Nanba, H. "Administration of a polysaccharide from *Grifola frondosa* stimulates immune function of normal mice." *JMed Food.* 2004;7(2):141-145.
13. Zhang, W., Wang, Y., Hou, Y. "Effects of Chinese medicinal fungus water extract on tumor metastasis and some parameters of immune function." *Int Immunopharmacol.* 2004;4(3):461-468.
14. Shu-Ting, Chang, Miles, Phillip G. "Mushrooms: Cultivation, Nutritional Value, Medicinal Effect, and Environmental Impact." Boca Raton FL: CRC Press LLC. 2004.
15. Hobbs, Christopher L.Ac. "Medicinal Mushrooms: An exploration of Tradition, Healing & Culture." Williams, OR: Botanica Press. 1986.
16. Strenghler, Mark, N.D. "The Health Benefits of Medicinal Mushrooms." Laguna Beach, CA: Basic Health Publications, Inc. 2005.
17. Smith, John E. et al. "Medicinal mushrooms: their therapeutic properties and current medical usage with special emphasis on cancer treatments." *Cancer Research UK Monograph.* http://sci.cancerresearchuk.org/labs/med_mush/med_mush.html. Accessed September 2009.
18. Law, David. "Fungi as a Platform for New Medicine", *Mushrooms, Fungi & Medicine.* <http://www.gmushrooms.com/HEALTH.HTM>. Accessed September 11, 2009.



Qore™ *defense*