

# Mycoplex 5250



Multi-Medicinal Mushroom Complex

VA-165 / VA-982

## Key Features:

- Features Highly Concentrated Extracts (**5,250 mg DHE\*/capsule**) of **Reishi, Lion's Mane, Maitake, Shiitake, and Turkey Tail**.
- Utilizes **hot-water extraction + ethanol precipitation processes** to retain the most bioactive constituents (i.e. adenosine, triterpenes, and polysaccharides) stored within.

## Indications:

- Support healthy immune function, neurological health and cognition, liver health, and convalesce from physical and mental exertions.
- Improve quality of life and immune function as an adjunct therapy to chemotherapy, targeted therapy, and radiation therapy.

## Description:

Mushrooms have a long history of human use for medicinal purposes. From an evolutionary perspective, this isn't surprising; humans share a closer ancestor with fungi than with any of the other kingdoms, and we share many mutual microbial enemies.

Research on the medicinal use of mushrooms is still in its relative infancy although they have already been **used in adjunctive cancer therapy in Asia for more than 30 years**. The future of medicinal mushrooms is immense in scope and very promising.

## Mechanisms of Actions on the Immune System

Medicinal mushrooms are best known for their immune-modulating properties, which are mediated by the host's immune response to the **polysaccharides**, as well as the **triterpenoids, adenosines, flavonoids, and ergosterols**.<sup>[1-5]</sup> The response is mediated through the complement system, macrophage and T cells (CD4+, CD8+, and Natural Killer cells), upregulation of cytokines (interferon, interleukin, and tumor necrosis factors), and effects on B lymphocytes and mast cells.<sup>[1-8]</sup>

## Why a Multiple Mushroom Formula?

Among a myriad of bioactive compounds, polysaccharides have attracted the most attention. They are an extremely diverse array of sugar polymers that vary between mushroom species and also between the fruiting body and mycelium within a species.

Beta-glucan is among the most recognized polysaccharides for its immune-supporting benefits. However, this does not translate into beta-glucan isolate supplements being superior to multi-mushroom formulas.

Combinations of mushrooms have been shown to maximize host-mediated immune response. **Each species has a unique polysaccharide composition, and a variety of polysaccharides has been shown to activate a wider spectrum of immune system receptor sites**. A study by Vetzicka and Vetzickova showed a Maitake-Shiitake combination was the most active stimulator of host defense reactions, followed by Maitake alone, and then Shiitake alone.<sup>[9]</sup>

## Quantity: 126 Vegetarian Capsules

### Ingredients (per capsule) (5,250 mg DHE\*):

Reishi Extract (16:1) (40% polysaccharides)	.....	85 mg ( <i>Ganoderma lucidum</i> ) (1,360 mg DHE*)
Turkey Tail Extract (10:1) (30% polysaccharides)	.....	100 mg ( <i>Trametes versicolor</i> ) (1,000 mg DHE*)
Maitake Extract (8:1) (40% polysaccharides)	.....	105 mg ( <i>Grifola frondosa</i> ) (840 mg DHE*)
Lion's Mane Extract (10:1) (30% polysaccharides)	.....	85 mg ( <i>Hericium erinaceus</i> ) (850 mg DHE*)
Shiitake Extract (12:1) (30% polysaccharides)	.....	100 mg ( <i>Lentinula edodes</i> ) (1,200 DHE*)

\*DHE - Dried Herb Equivalent

**Non-medicinal Ingredients:** L-Leucine, silicon dioxide, apple fibre, hypromellose (capsule)

**Suggested Use:** Adults - Take 2 capsules with food, 3 times per day, or as directed by your health care practitioner.

An abundance of various polysaccharides maximizes the activity and quantity of macrophages, killer T cells, and NK lymphocytes.<sup>[5]</sup> Combining mushrooms allows for broader therapeutic effects and greater effects than would be obtained using single mushrooms.

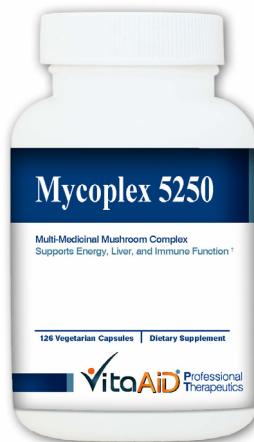
## Is Hot-Water Extraction the Best Method of Preparation for Medicinal Mushrooms?

Hot-water extraction is the most common method used in mushroom extracts. While it can obtain most of the 'polysaccharides' and other water-soluble nutrients, **it cannot separate the 'bioactive' ones (e.g. beta-glucan, triterpenoids, adenosines) from the 'non-bioactive' ones, such as sugars and starch**.

However, combining hot-water extraction with an additional process called '**ethanol precipitation**' **can further isolate the bioactive compounds by effectively removing the non-active, highly polar molecules including sugars, starch, salts, and amino acids/proteins**. The end product is a more potent extract with higher concentrations of active constituents.

## Clinical Applications in Cancers

The use of specific medicinal mushrooms as an adjunct therapy for cancer has quite a track record in Asia due to its direct anti-tumor and immune cell enhancing actions. Certain mushrooms, such as **Reishi, Lion's Mane, Maitake, Shiitake, and Turkey Tail**, have demonstrated **anti-neoplastic effects in various cancer cell lines**, such as breast, prostate, gastrointestinal, and lung.<sup>[10-15]</sup> They can also be useful in **improving the efficacy of chemotherapy, immunotherapy, and/or targeted therapy**.<sup>[16-18]</sup>



### **Reishi (*Ganoderma lucidum*)**

In a clinical trial, 34 patients with advanced cancers of different sites were administered a Reishi polysaccharide supplement at 1,800 mg TID for 12 weeks. 80% of the patients had **significant increases in cytokines, such as IL-2, IL-6, IFN-gamma, as well as NK cell activity.**<sup>[19]</sup>

A second clinical trial by the same researchers used the same protocol with 68 lung cancer patients. The treatment group also had **enhanced cellular immunity and improved quality of life** rated by Karnofsky score (rated higher in 65% of treated patients).<sup>[20]</sup>

In a randomized controlled trial (RCT) in Japan, 96 patients with colorectal adenomas were randomized to receive either Reishi mycelia (1.5 g/day) or placebo for 12 months. The researchers found that the Reishi group showed **suppressed development of premalignant colorectal adenomas.**<sup>[21]</sup>

### **Turkey Tail (*Trametes versicolor*)**

Turkey Tail is among the most expensive medicinal mushrooms due to its proven benefits in clinical integrative oncology.

A meta-analysis of 8 RCTs showed **improved survival for patients using Polysaccharide K (PSK)** from Turkey Tail as adjunctive care after curative resection of gastric cancers.<sup>[22]</sup>

Another meta-analysis of RCTs studying colorectal cancer adjunct therapy with Turkey Tail PSK found **increased 5-year disease-free survival and 5-year overall survival.**<sup>[23]</sup> Moreover, patients using PSK in lung cancer treatment showed **benefits in survival, body weight, performance, tumor-related symptoms, and immune function measures** across 6 separate RCTs in a systematic review.<sup>[24]</sup>

### **Lion's Mane (*Hericium erinaceus*)**

Lion's Mane extract has been shown to exhibit **superior cytotoxicity against various liver, colon, and gastric cancer cell lines, to 5-fluorouracil** while accompanied by less toxicity to healthy cells.<sup>[25]</sup>

### **Shiitake (*Lentinula edodes*)**

In a review of over **9,000 clinical cancer cases** in China, the polysaccharide extracted from Shiitake, has been shown to **improve the quality of life and the efficacy of chemo- and radiation therapy** in some of the most prevalent cancers including lung, gastric, colorectal, ovarian, cervical, non-Hodgkin lymphoma, and pancreatic.<sup>[26]</sup>

### **Maitake (*Grifola frondosa*)**

The D-fraction of Maitake has been shown to exert anti-tumor and anti-metastatic activity in triple-negative breast cancer by **inducing apoptosis, increasing cell-cell adhesion, and affecting actin rearrangement** (i.e. decreases cell motility).<sup>[27]</sup>

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