

Mushroom Complex SAP

Science-based hot-water mushroom extract for optimal health and immune support

Mushroom Complex SAP is a synergistic blend of four hot water-extracted mushrooms: reishi, maitake, *Coriolus versicolor*, and shiitake. Each mushroom is a source of polysaccharides, which have immune modulating properties and help support healthy immune function. **Mushroom Complex SAP** has adaptogenic properties and can help improve energy and resistance to stress. In traditional Chinese medicine (TCM), mushrooms can be used to dispel phlegm, stop cough, and arrest wheezing. **Mushroom Complex SAP** may help stimulate both the innate and humoral immune systems.^[9]

ACTIVE INGREDIENTS

Each vegetable capsule contains:

- Reishi (*Ganoderma lucidum*) extract,
40% polysaccharides, providing 30% β -glucans . . 100 mg
- Maitake (*Grifola frondosa*) extract,
40% polysaccharides, providing 40% β -glucans . . 100 mg
- Shiitake (*Lentinula edodes*) extract,
40% polysaccharides, providing 25% β -glucans . . 100 mg
- Coriolus versicolor* (*Trametes versicolor*) extract,
55% polysaccharides, providing 50% β -glucans . . 100 mg

Note: Polysaccharide and β -glucan content may vary from lot to lot.

This product is non-GMO.

Contains no: Gluten, soy, wheat, corn, eggs, dairy, yeast, citrus, preservatives, artificial flavour or colour, starch, or sugar.

DIRECTIONS FOR USE

Adults: Take 3 capsules daily with food or as directed by your healthcare practitioner.

INDICATIONS

Mushroom Complex SAP:

- Is a source of fungal polysaccharides with immunomodulating properties to support both innate and humoral immune function.
- Is a source of antioxidants.
- Works as an adaptogen to help promote energy production and resistance to stress.

CAUTIONS AND WARNINGS

Consult a healthcare practitioner prior to use if you have diabetes, if you are pregnant or breast-feeding, or if you are taking blood thinners (anticoagulants).

Known adverse reactions: Hypersensitivity/allergy can occur; in which case, discontinue use.

PURITY, CLEANLINESS, AND STABILITY

All ingredients listed for all **Mushroom Complex SAP** lot numbers have been tested by a third-party laboratory for identity, potency, and purity.

Scientific Advisory Panel (SAP):
adding nutraceutical research
to achieve optimum health



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Over 100 medicinal functions have been associated with a variety of mushrooms, some of the key medicinal uses being antioxidant, anticancer, cardiovascular protector, immune-modulating, antidiabetic, antiviral, antibacterial, antiparasitic, antifungal, and hepatoprotective. Medicinal mushrooms are also protective against tumour development and inflammatory processes.^[1] There are several bioactive compounds found in the fruiting bodies and the mycelium, with the polysaccharides and β -glucans having the widest spectrum of biological activity.^[1, 2]

β -Glucans are not synthesized by humans, and have the ability to induce both innate and adaptive immune responses.^[1, 3] Fungal β -glucans exert their beneficial effects in humans through a marked stimulation of the immune system, protecting it from pathogenic microbes as well as harmful effects of environmental toxins and carcinogens that can impair the immune system.^[1] The ability to activate and reinforce the host immune system is a reasonable strategy for inhibiting the growth of cancer cells.^[1]

SHIITAKE

Lentinula edodes, or shiitake mushroom, has been researched for many years to isolate compounds for pharmaceutical use because of its positive effects on human health.^[1] Scientific evidence exists to support the use of shiitake in alleviation of the common cold.^[1] Shiitake is a potential source of antioxidants and anticancer compounds, with extracts demonstrating decreased cell proliferation of tumours. Lentinan produced by shiitake has been shown to enhance host resistance to infections by virus, parasites, bacteria, and fungi.^[1] It also promotes nonspecific inflammatory responses and generation of helper and cytotoxic T cells.^[1]

REISHI

Ganoderma lucidum, or reishi mushroom, has been used for thousands of years in traditional Chinese medicine to improve health and longevity.^[1] Water-soluble polysaccharides from reishi act on more than 20 types of cancer and strongly inhibit tumour growth.^[1, 4] It exhibits anticancer effects alone or when combined with radiotherapy or chemotherapy.^[1] In human cancer cells, reishi induces cell apoptosis, inhibits cell proliferation, suppresses motility of invasive breast and prostate cancer cells, and may prevent the onset of various other types of cancer.^[1] Clinical trials have shown that reishi has several areas of action, including immunomodulation; induction of cytokine production; as well as antiallergic, antitumour, antiparasitic, anti-inflammatory, and antioxidant effects. These actions provide benefit to the cardiovascular, respiratory, endocrine, metabolic, and hepatic systems.^[1]

MAITAKE

Maitake D-fraction is one of the active components of maitake mushroom that has been extensively studied for its variety of potential medicinal uses. Physiological benefits include immunomodulatory and antitumour activities—which may help treat hypertension, diabetes, and viral infections like hepatitis B and HIV—, as well as antitumour activities.^[5] Numerous in vitro, in vivo, and clinical trials have shown that maitake D-fraction has immune-modulating and hematologic parameters, promotes inhibition and regression of cancer cell growth, and improves quality of life in cancer patients.^[5]

Polysaccharides are thought to play a significant role in immune stimulation via their ability to promote the proliferation of T cells, B cells, macrophages, and natural killer (NK) cells.^[6] A study looked at the effect of five polysaccharides, including maitake polysaccharide, on primary human NK cells under normal or simulated microgravity (SMG) conditions.^[6] Results found that polysaccharides significantly

promoted the cytotoxicity of NK cells by enhancing IFN- γ and perforin secretion, while increasing the expression of the activating receptor NKP30 under normal conditions.^[6] They also found that polysaccharides can enhance NK-cell function under SMG conditions by restoring the expression of the activating receptor NKG2D and reducing the early apoptosis and late apoptosis/necrosis.^[6] Moreover, the antibody neutralization test showed that CR3 may be the critical receptor involved in polysaccharide-induced NK-cell activation.^[6] This demonstrates that polysaccharides may be used as immune regulators to promote health.^[6]

CORIOLUS VERSICOLOR

Coriolus versicolor is one of the most extensively researched of all the medicinal mushrooms.^[7] Two of the extracts found within *Coriolus versicolor* are PSK and PSP; both have clinical trials on a variety of cancers, including gastric/colorectal, lung, and breast cancers with favourable results.^[7] *Coriolus* has also demonstrated immune activation on patients with chronic fatigue syndrome, with improvements in NK cell activity.^[7]

BLENDS

Researchers explored the effect of a combination of reishi mushroom and *Coriolus versicolor* to determine if the combination would show higher efficacy than each mushroom on its own.^[8] Both mushrooms exert their medicinal effects through their polysaccharo-peptides.^[8] Researchers used either a combination of the two mushrooms or *Coriolus* on its own, and assessed their antiproliferative and antiapoptotic effects on human promyelocytic HL-60 cells.^[8] They found that the combination was more active in inducing cell death and had a more pronounced downregulating effect of phosphorylation of RB compared to the single extract.^[8] Results suggested that the chemopreventive potential of *Coriolus versicolor* was enhanced with the addition of reishi, suggesting there is a mechanism of synergism between the species.^[8]

Researchers in another study explored the impact of a combination of polysaccharide glucans from maitake and shiitake on immune function.^[9] Lab measures included phagocytosis; NK-cell activity; as well as secretion of IL-6, IL-12, IFN- γ , and C-reactive protein (CRP).^[9] All groups had significant stimulation of defense reaction, with the combination of the maitake-shiitake being the strongest, followed by the shiitake on its own.^[9] Researchers concluded that short-term oral ingestion of maitake and shiitake mushrooms strongly stimulated both the cellular and humoral branch of immune reactions.^[9]

REFERENCES

- Valverde, M.E., T. Hernandez-Perez, and O. Paredes-Lopez. "Edible mushrooms: Improving human health and promoting quality life." *International Journal of Microbiology* Vol. 2015 (2015): 37687. Epub 2015 Jan 20.
- Patel, S. and A. Goyal. "Recent developments in mushrooms as anticancer therapeutics: A review." *3 Biotech* Vol. 2, No. 1 (2012): 1–15.
- Vetvicka, V. and J.C. Yvin. "Effects of marine β -1,3 glucan on immune reactions." *International Immunopharmacology* Vol. 4, No. 6 (2004): 721–730.
- Zhou, X.W., et al. "Study progress on bioactive proteins from *Ganoderma* spp." *Natural Products Research Development* Vol. 19, No. 5 (2007): 916–924.
- Konno, S. "Synergistic potentiation of D-fraction with vitamin C as possible alternative approach for cancer therapy." *International Journal of General Medicine* Vol. 2 (2009): 91–108.
- Huyan, T., et al. "Protective effect of polysaccharides on simulated microgravity-induced functional inhibition of human NK cells." *Carbohydrate Polymers* Vol. 101 (2014): 819–827.
- Powell, M. *Medicinal mushrooms: A clinical guide*. East Sussex: Mycology Press, 2010.
- Hsieh, T.C. and J.M. Wu. "Regulation of cell cycle transition and induction of apoptosis in HL-60 leukemia cells by the combination of *Coriolus versicolor* and *Ganoderma lucidum*." *International Journal of Molecular Medicine* Vol. 32, No. 1 (2013): 251–257.
- Vetvicka, V. and J. Vetvickova. "Immune-enhancing effects of Maitake (*Grifola frondosa*) and Shiitake (*Lentinula edodes*) extracts." *Annals of Translational Medicine* Vol. 2, No. 2 (2014): 14.