Dynamic Chiropractic

HERBS/ TEAS & HOMEOPATHY

Reishi Mushroom Extract and Immune Support

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Reishi mushroom *(ganoderma lucidum)* is called the "mushroom of immortality" in China, where it grows wild on decaying logs and tree stumps in the coastal provinces. It has been used in Oriental medicine for over 2,000 years.[1,2] In recent years, its active ingredients have been the subject of intensive research regarding their apparent ability to help prevent or treat certain types of cancer; liver disease; HIV infection; acute or recurrent herpetic infections; high blood pressure; chronic bronchitis; allergies and asthma; and to favorably modulate immune function.[3] The fruiting body of the mushroom is used in medicines.[4]

Active Constituents

Reishi mushrooms contain a number of active agents known to modulate function of the immune system in humans. The primary agents include:

1. Specific polysaccharides - which occur in the form of beta-D-glucans bound to amino acids. These agents possess immune-modulating and anti-cancer properties;[3]
2. Triterpene compounds - known as ganoderic acids, have been shown to lower blood pressure, reduce platelet stickiness and may decrease LDL-cholesterol;[5]
3. Sterols, coumarin and mannitol.5

Clinical Application and Mechanism of Action

Anti-Cancer Agent - Cancer studies in animals have shown a 50 percent tumor regression rate with reishi mushroom extract treatment (e.g., connective tissue cancer model in mice).[6] It is used by some cancer surgeons in Japan to treat patients; significant anti-tumor and immunostimulation effects have been noted in many of these cases.[7] Polysaccharides from reishi mushrooms and other types of folk-medicinal fungi are patented in Japan for use as immunomodulators in the treatment of cancer. They are combined with chemo and radiotherapy, and have demonstrated an ability to reduce side effects, increase the efficacy of treatments, and accelerate recovery.[8,9]

Studies from China have shown that reishi mushroom extract potentiates the tumoricidal capacity of macrophages and T-cells.[10,11] Reishi mushroom extract is also known to have other immune-modulating effects and antioxidant properties.[12-16]

Animal studies show that the polysaccharide fraction of reishi mushrooms can induce apoptosis (programmed cell death of cancer cells) in leukemic cells and induce cellular differentiation in 40-45 percent of those treated with reishi polysaccharides, demonstrating significant cancer treatment potential. These effects were primarily due to the increased secretion of anti-tumor cytokines (signaling agents) induced by reishi mushroom polysaccharides (namely TNF-alpha and IFN-gamma), and these two cytokines acted synergistically on the inhibition of leukemic cell growth.[17] In a related experiment, the D-glucan polysaccharide fraction of reishi mushroom was

shown to produce dramatic tumor regression in a mice sarcoma study. In many animals, complete tumor regression occurred in the group injected with beta-D glucan fractions within a five-week period. The study by Y. Sone, et al. reported tumor inhibition rates of 90 percent, and tumor regression in 75 percent of afflicted animals.[18]

Immune System Enhancement (bronchitis, asthma, allergies, herpetic conditions and HIV infection) - As noted above, reishi mushroom extract modulates many components of the immune system, which in part accounts for its apparent anti-tumor properties. Chronic bronchitis in the elderly has been shown to respond favorably to treatment, using a concentrated reishi mushroom product in a trial involving 2,000 cases in China. This study demonstrated a success rate of over 60 percent. After several months of treatment, there was a noted rise in levels of immunoglobulin A in the sputum.[10] Immunoglobulin A is the main immunoglobulin found in the respiratory tract. A deficiency is common in allergies,[19] systemic lupus and rheumatoid arthritis.[20] Reishi mushroom extract supplementation has been shown to help improve cases of asthma and allergies. Two constituents of reishi mushroom extract, oleic acid and cyclooctasulfur, were shown to inhibit the release of histamine, which is likely how it benefits asthmatic and allergic patients.[10,21,22]

GLhw-02, a specific protein-bound polysaccharide component of reishi mushroom extract, has been shown to possess potent antiviral properties against the herpes simplex virus (types 1 and 2) under experimental conditions.[23] A small human trial demonstrated that reishi mushroom extract reduced pain "dramatically" in two patients with postherpetic neuralgia, and in two other patients with severe pain due to herpes zoster infection (shingles, caused by the herpes virus).[24]

Under experimental conditions, various ganoderic acids in reishi mushroom extract have been shown to be active anti-HIV agents, showing an ability to reduce viral replication by 50 percent at conservative doses.[25] Combined with other Oriental herbs, reishi is being used the treatment of AIDS-related complex, AIDS, and in formulas to treat chronic fatigue syndrome.[26,27,28]

Finally, studies on male mice reveal that reishi mushroom extract was effective in enhancing the recovery of cellular immunocompetence after gamma-ray irradiation. Reishi mushroom supplementation significantly increased white blood cell count (leukocytes) and other parameters of immune function in these animals,[29] similar to astragalus supplementation in patients treated with chemo or radiation therapy. The combination of astragalus and reishi mushroom extract thus represents an effective means of daily immune support and a therapeutic intervention for a large number of immune compromised states (e.g., chronic fatigue; chronic bronchitis; herpes I and II recurrent infections; postherpetic neuralgia; recurrent apthous ulcers or canker sores; the common cold; HIV infection; etc.), and for patients undergoing chemo or radiation therapy.

Cardiovascular Health (high blood pressure and reduced platelet aggregation) - Two human controlled studies revealed that reishi mushroom extract can reduce high blood pressure to a significant degree (systolic and diastolic), even in patients who had previously failed to respond to established anti-hypertensive medications.[30,31] Animal studies reveal that reishi mushroom extract reduces blood pressure through a central inhibition of sympathetic nerve activity, although it does not slow heart rate or induce a sedative effect, in general.[32] Under experimental conditions, reishi mushroom extract had a mild-to-moderate effect on reducing platelet aggregation, which may further help to decrease risk of cardiovascular disease.[33] It also increased endurance, blood flow to the brain, and improved oxygenation of cells. As such, it aids energy production on a cellular level,

which may improve cardiovascular health, and is used to boost memory and intellectual capacity in some cultures,[34] including success in a study of Alzheimer's patients.[35]

Liver - Protective Effects (hepatoprotective properties) - Reishi is prescribed in China for the treatment of chronic and acute hepatitis.[36] Various ganoderic acids in reishi mushrooms have strong antihepatotoxic properties,[37] which under experimental conditions have been shown to protect liver cells from chemically-induced injury, including protection from the highly toxic and lethal carbon tetrachloride.[38,39]

Dosage and Standardized Grade

1. Therapeutic Applications: Typically 250 mg, one to four times per day is used, if taken as a single agent (standardized to 10-12.5 percent polysaccharide content).[40]

2. General Wellness (immune, cardiovascular, liver support, etc.): Consider 30-120 mg per day (standardized to 10-12.5 percent polysaccharide content).

Reishi mushroom extract should be taken with food or it may cause stomach upset and loose stools.[41]

Adverse Side-Effects and Toxicity

Side-effects are infrequent and include dizziness; dryness of the mouth, throat and nasal areas; stomach upset; and loose stools.[41] Reishi mushrooms contain agents that may be allergens to some patients, although allergic reactions are rare.[42] Note that there is no cross-sensitivity to the reishi mushroom if a person is allergic to the button, or commonly eaten white mushroom found in most grocery stores.[35] In general, reishi mushroom has been shown to be nontoxic in animal toxicity studies and in humans, even when used at high therapeutic doses.[3]

Drug-Nutrient Interactions

When used in high therapeutic doses, reishi mushroom extract has the potential to enhance the effects of the following types of medications, and thus requires proper patient monitoring:

1. antihypertensives;[43,44]

2. hypoglycemics;[45] and

3. anticoagulants (e.g. warfarin, coumadin).[46]

Summary

In Asia, herbal agents such as reishi mushroom extract and astragalus have been used to improve various parameters of immune function; treat a variety of immune-compromised states; increase the white blood cell count in patients recovering from drug toxicity, chemotherapy and radiation therapy; and provide effective complementary support for HIV and cancer patients.

Recent experimental studies and intervention trials have helped substantiate the longstanding traditional use of these natural agents and confirm their safety profile and lack of toxicity. As it is known that the human immune system becomes weaker and less efficient as we age, it seems

reasonable that natural health practitioners would introduce measures to help their patients reduce or halt the age-related decline in immune system function; this appears to partially explain the rising cancer incidence that occurs as we age and our increased susceptibility to more virulent and life-threatening infections (e.g., pneumonia).

In this regard, antioxidant supplementation has shown a remarkable ability to forestall age-related changes to the immune system and to reverse many aspects of immune function in subjects showing some decreased immune capabilities. In concert with this intervention, the use of herbal compounds containing immune-modulating polysaccharides and other active constituents, such as reishi mushroom extract and astragalus, represent a potent means through which to further augment immune function. This can help patients prevent and treat a significant number of chronic degenerative diseases, and reverse certain aspects of the aging process, especially in regards to immune, cardiovascular and liver function.

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