Scientific and Clinical Studies on Reishi Ganoderma Lucidum

Ganoderma Lucidum a.k.a Reishi contains steroids, lactones, alkaloids, polysaccharide and triterpenes. Pharmacologically, a number of the water-soluble polysaccharides have demonstrated antitumour and immunostimulating activities. At least 100 different alcohol-soluble triterpenes have been identified including highly oxidized lanostane-type triterpenoids such as ganoderic, ganoderenic, lucidenic, and ganolucidic acids. These triterpenoids have been shown to possess adaptogenic and antihypertensive as well as anti-allergic properties.

This mushroom possesses many different medicinal properties dependent on the stage and environment of its growth (Jong and Birmingham, 1992, Liu, 1999). Traditionally, it has been widely used in the treatment of hepatopathy, chronic hepatitis, nephritis, hypertension, arthritis, neurasthenia, insomnia, bronchitis, asthma and gastric ulcers. Scientific studies have confirmed that substances extracted from the mushroom can reduce blood pressure, blood cholesterol and blood sugar levels as well as inhibit platelet aggregations. Reishi extracts have been highly effective in alleviating altitude sickness and also in treating myotonia dystrophica. Several major biochemicals such as polysaccharides, proteins and triterpenoids with potent immuno-modulating action have been isolated from Ganoderma spp. The major immuno-modulating effects of these active substances include mitogenicity and activation of immune effector cells such as T cells, macrophages and natural killer cells resulting in the production of cytokines, including interleukins, tumor necrosis factor-α and interferons. The therapeutic action of G. lucidum as an anti-cancer and anti-inflammatory agent has been associated with its immuno-modulating properties (Wang et al., 1977). While the extensive range of traditional medical treatments with this mushroom have not yet been fully substantiated by modern scientific standards they are being extensively scrutinized in the Far East and the USA (Chang, 1995, 1999, Chen and Miles, 1996). In view of its bitter taste and indigestible structure (often similar to varnished wood in appearance) this is not an edible mushroom but, in hot water extracted form, it is available worldwide in tablet and liquid products (Stamets, 1999).

Pharmacological effects of whole Reishi extracts in vivo and in vitro (for references see Hobbs, 1995)

- Analgesic
- Anti-allergic activity
- Bronchitis-preventative effect, inducing regeneration of bronchial epithelium
- Anti-inflammatory
- Antibacterial, against Staphylococci, Streptococci, and Bacillus pneumoniae (perhaps due to increased immune system activity)
- Antioxidant, by eliminating hydroxyl free radicals
- Antitumor activity
- Antiviral effect, by inducing interferon production
- Lowers blood pressure
- Enhances bone marrow nucleated cell proliferation
- Cardiotonic action, lowering serum cholesterol levels with no effect on triglycerides, enhancing myocardial metabolism of hypoxic animals, and improving coronary artery hemodynamics
- Central depressant and peripheral anti-cholinergic actions on the autonomic nervous system reduce the effects of caffeine and relax muscles
- Enhanced natural killer cell (NK) activity in vitro in mice
- Expectorant and antitussive properties demonstrated in mice studies
- General immunopotentiation
- Anti-HIV activity in vitro and in vivo
- Improved adrenocortical function
- Increased production of Interleukin-1 by murine peritoneal macrophages in vitro
- Increased production of Interleukin-2 by murine splenocytes in vitro

Key active constituents:

- Beta and hetero-Beta-glucans (antitumour, immunostimulating )
- Ling Zhi-8 protein (anti-allergic, immuno-modulating)
- Ganodermic acids triterpenes (anti-allergic agents, cholesterol and blood pressure reducing)
General Reishi Research Publications:

- Effect of Reishi polysaccharides on human stem/progenitor cells
- Immune System activation from Reishi
- Reishi NanoParticle extract shown to be effective
- Cellular and physiological effects of Ganoderma lucidum (Reishi)
- Comparative studies on the immunomodulatory and antitumor activities of the different parts of fruiting body of Ganoderma lucidum and Ganoderma spores
- Clinical Overview by Drugs.com
- Reishi Applications Studies

Recent Cancer Related Studies:

The following are just a few examples of its promising therapeutic value on cancer. The January 2006 latest reishi clinical results from the prestigious Cedars-Sinai medical center reveals that Reishi causes apoptosis (cell death) of HUMAN cancer cells. Furthermore, The Methodist Research Institute in Indianapolis recently published a reishi research paper (May, 2008) demonstrating Reishi (G. Lucidum) as a promising natural agents for the therapy of invasive breast cancers indicating that the Ganoderic acids suppress growth and spread of cancer cells.

In vitro results published in May 2004 in the International Journal of Oncology showed that Reishi can arrest cell proliferation, cell cycle, and induce apoptosis in human prostate and breast cancer cells. The renowned Memorial Sloan-Kettering Cancer Center in New York has extensive references showing that Reishi enhances the immune response in advance-stage cancer patients. Based on these findings, Ganoderma Lucidum Reishi could be a potent supplement in the prevention of cancer. The following are some more recent publications:

- Ganoderma and Colon cancer cells
- Ganoderma Lucidum and Colon cancer
- Ganoderic acid DM: Anti-androgenic osteoclastogenesis inhibitor in prostate cancer
- Androgen receptor-dependent and -independent mechanisms mediate Ganoderma lucidum activities in LNCaP prostate cancer cells
- Ganoderic acid Me inhibits tumor invasion through down-regulating matrix metalloproteinases 2/9 gene expression
- Ganoderic acids suppress growth and invasive behavior of breast cancer cells by modulating AP-1 and NF-kappaB signaling
- Effects of ganopoly (a Ganoderma lucidum polysaccharide extract) on the immune functions in advanced-stage cancer patients
- Natural Medicine for Cancer Prevention and Treatment

Recent High Cholesterol clinical Publications:

- Effects of ganoderma lucidum polysaccharides on serum lipids and lipoperoxidation
- Cholesterol-lowering properties of Ganoderma lucidum in vitro, ex vivo
- Effect of 26-oxygenosterols from Ganoderma lucidum and their activity as cholesterol synthesis inhibitors

Recent Diabetes clinical Publications:

- Novel hypoglycemic effects of Ganoderma lucidum water-extract in obese/diabetic (+db/+db)

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