Medicinal Mushrooms

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For over 2,000 years, mushrooms have been used as medicines. In fact, in September of 1991, a 5,300-year-old mummy in the Tyrolean Alps, was found along with his medicine kit that contained *Piptoporus betulinus*, a mushroom he probably used as a natural worm-killer and laxative.[1] Edible mushroom extracts, especially those used in Chinese and Japanese natural medicines (*Cordyceps sinensis*, *Agaricus blazei*, *Grifola frondosa*, *Trametes versicolor* and *Ganoderma lucidum*), are a rich source of naturally occurring polysaccharides; especially beta glucans. These polysaccharides can directly stimulate immune reactions.

The following is a discussion about the various health properties of *Cordyceps sinensis* and *Agaricus blazei*, as well as their safety profile:

Cordyceps sinensis

Cordyceps beneficial effects on the immune system seem to be a function of its ability to increase the number of T helper cells[2], increase natural killer cell activity[3-4], stimulate blood mononuclear cells[5], increase levels of interferon-gamma, tumor necrosis factor-alpha, and interleukin-1[6], and prolong the survival of lymphocytes.[7]

History

Cordyceps is a mushroom found on the high plateaus of western China. Cordyceps' Mandarin name, dong chong zia cao, literally means "winter bug, summer herb. This accurately describes the fact that the worm dies in the summer, and a mushroom grows on it. It was discovered 1,500 years ago when Tibetan herdsman found that their yaks were much livelier after eating this worm-mushroom from mountain pastures.[8] Eventually, Cordyceps found its way into the hands of the Emperor's physicians who considered it to have ginseng-like properties.[9]

In-vitro and Animal Research

There are some clinical trials supporting the efficacy of Cordyceps, particularly for liver, kidney, and immune problems. A number of studies indicate that Cordyceps may have anti-cancer, anti-metastatic, immune-enhancing, and antioxidant effects.[10-14]

Human Research

Supplementation with Cordyceps on

36 patients with advanced cancer showed that it could restore cellular immunological function and improve quality of life, suggesting it could be used as adjuvant therapy in advanced cancer.[15] In addition, supplementation with Cordyceps on 33 patients with chronic hepatitis B was able to improve liver function and adjust body immunocompetence.[16] Other research[17] found that Cordyceps could improve liver function, reduce liver inflammation, and fight against liver fibrosis in patients with chronic hepatitis B liver fibrosis.

In 1993, Chinese women runners broke records in marathons on three separate occasions.[18] Aside from training and dedication, credit for these impressive athletic feats was given to the fact that the trained on a diet that included Cordyceps.[19] Nevertheless, three clinical trials[20-22] using Cordyceps in other athletes were unable to reproduce any of the endurance benefits seen by the Chinese women runners.

Safety

No contraindications or serious adverse effects have been reported for Cordyceps.[23] Possible drug interactions: concomitant administration with cyclosporine can reduce nephrotoxicity in kidney-transplant recipients; concomitant administration with aminoglycosides can reduce amikacin-induced nephrotoxicity in older people.[24] The American Herbal Product Association's Botanical Safety Handbook does not suggest any restrictions on the use of Cordyceps during pregnancy.[25]

Agaricus blazei

Research shows that agaricus mushroom seems to have immunostimulant effects.[26] *In-vitro* and animal research suggest that it enhances the production of cytokines such as interferon and interleukin.[27-28] Additionally, fractions of *Agaricus* stimulate monocyte production of interleukin-12.[29]

Background

First discovered in the U.S. in Florida in 1944, *Agaricus blazei*, its main natural habitat is the mountainous district of Piedade in Sao Paulo, Brazil. It was suggested that the extremely low rate of adult disease occurrence in the Piedade region is a result of the people using *A. blazei* as a part of their regular diet. The mushroom was brought to Japan in 1965. An artificial cultivation process was established in 1978, and since then this mushroom has been well evaluated in terms of biochemical and medicinal properties.[30]

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In-vitro and Animal Research

Extracts of *Agaricus* mushroom, especially beta-glucan extracts, have had anti-tumor and immunostimulant effects in animal research.[31-35] Other constituents of *Agaricus* have been shown to have antiangiogenic effects on tumors.[36-37]

Human Research

Use of Agaricus by 72 type-2 diabetic subjects in a randomized, double-blind, placebo-controlled trial found that it decreased insulin resistance more than metformin and diamicron (Canadian drug not available in the U.S.) alone, resulting in lower fasting insulin levels.[38] Other research showed that an *Agaricus* mushroom extract improved some of the adverse effects of chemotherapy including generalized weakness, decreased appetite, and emotional instability.[39] In addition, a clinical study[40] found that *Agaricus* extract was able to normalize liver function in patients with chronic hepatitis B.

Safety

A comprehensive literature search of Medline, Embase and Biosys did not indicate that any serious adverse effects have been reported for *Agaricus*. Likewise, there were no well-known drug interactions reported with *Agaricus* (searches were conducted for both synonyms, ie. *A. blazeii* and *A. brasiliensis*). In addition, no contraindications have been reported. Despite the lack of any reports of adverse effects associated with the use of Agaricus species during pregnancy, since there are no data that affirmatively support such use, pregnant women are cautioned to consult a qualified healthcare practitioner before ingesting *Agaricus*. **VR**

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For information on *Grifola frondosa*, *Trametes versicolor* and *Ganoderma lucidum* mushrooms, visit www.vitaminretailer.com.

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