Medicinal Mushrooms

Mushrooms, used in Eastern medicine for about 3,000 years, are currently marketed in the West as "functional" or "medicinal" mushrooms with growth driven by consumer interest in health and disease prevention. Originally used to fight infections, medicinal mushrooms now are used to treat pulmonary disease and cancer. In Japan and China, they have been approved as adjuncts to standard cancer treatment for over 30 years.

Bioactive Compounds: Mushrooms contain vitamins, minerals, and antioxidants, including an amino acid derived from histidine, as well as selenium, germanium, vitamin C, choline, and a small amount of vitamin D. Most health claims associated with mushroom extracts focus on other bioactive compounds, which in some cases are extracted and used in their "pure" form including:

Beta-glucans, a soluble fiber (also found in oats and barley) which may support healthy immune function and blood glucose levels, and possess anti-inflammatory, antioxidant, antibiotic, antiviral, and cholesterol-lowering effects. Different mushroom species contribute a variety of β-glucan molecular structures and utilize different pathways to modulate the immune system. By combining several species in one's diet, multiple immune cell, receptor sites and different pathways may be activated.

Triterpenoids, a group of phytochemicals with antioxidant and anti-inflammatory properties that may protect the liver, lower cholesterol, inhibit histamine release, and may help to prevent and treat cancer.

Health Claims: Snapshot of some of the major health claims for specific medicinal mushrooms:

Cordyceps, a genus of about 750 identified species—about 35 of which contain medicinal properties—utilizes caterpillars and other larvae as hosts. Research suggests cordyceps has anti-inflammatory, antioxidant, and antitumor effects and benefits lung, liver, kidney, and immune health as well as helping to lower cholesterol. The pharmacological actions of cordyceps are primarily due to bioactive polysaccharide and modified nucleosides, called adenosine and cordycepin. A study also found that cordyceps extract can decrease vascular endothelial growth factor, which decreases the blood supply to the cancer cell while simultaneously increasing the ability of chemo drugs to exert cytotoxic effects.

Maitake or hen-of-the-woods (Grifola frondosa) is a large mushroom native to Japan, North America and Europe. Scientific studies show that Maitake extract may have potential benefits for cholesterol and blood sugar levels, immune function, cancer treatment and prevention, while also relieving certain cancer treatment side effects.

Maitake exerts its immune benefits by binding to the cell membrane of white blood cells such as macrophages and modulating cytokine release to activate the immune response.

Reishi (Ganoderma lucidum) is touted as the "mushroom of immortality" and may have antitumor, antimicrobial, anti-inflammatory, antioxidant, and cholesterol lowering properties, largely due to triterpenoids and polysaccharides. One of its major active ingredients, ganoderic acid [C30H44O7], is used to treat lung cancer, leukemia, sarcoma, and other cancers. Research found reishi extract can inhibit cancer cell proliferation, adhesion and increase cell suicide (apoptosis) by increasing Natural Killer (NK) cell activity.

Shiitake (Lentinula edodes), a widely consumed culinary mushroom, contains a number of compounds with the natural ability to reduce inflammation, tumors, harmful bacteria, viruses and fungi. The most important compound from shiitake is Lentinan, a polysaccharide possessing immune-modulating properties. Several studies have shown the benefit of shiitake, including a reduction in the rate of tumor development after oral treatment with lentinan; a reduction in the negative effects in the progression of HIV; and an ability to inhibit leukemia cell proliferation.

Turkey tail (Coriolus versicolor) known as the "cloud mushroom", has been used in traditional Chinese medicine for millennia to treat pulmonary diseases and in Western medicine since the 1970s as an adjuvant cancer treatment.

It contains two protein-bound polysaccharide complexes, PSK and PSP, which are currently undergoing extensive research in large scale clinical trials. A NIH-funded clinical study found that Turkey Tail improves immune function in a dosedependent manner for women with stage I–III breast cancer with no adverse effects. In addition to breast cancer, Turkey Tail has been found to hold promise for other cancers, including stomach, colorectal, lung, esophageal, nasopharyngeal, cervical, and uterine.