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FILE: · Shiitake Mushroom (*Lentinula edodes*)

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RE: **Benefits and Research on Shiitake Mushroom**

Jones, Kenneth. Shiitake: A Major Medicinal Mushroom. *Alternative and Complementary Therapies*, Vol. 4, No. 1, February 1998. pp. 53-59.

Shiitake (*Lentinula edodes*) has long been valued in Asian cultures for its therapeutic as well as culinary qualities. This author credits increased Western awareness of shiitake's potential benefits to the 1974 English publication of *Mushrooms as Health Foods* by Kisaku Mori, a leading Japanese mycologist. Traditionally, shiitake has been used in Japan to improve circulation and vigor and treat chronic rheumatism, cerebral hemorrhage, poor circulation, heart disease, intestinal worms, and lack of stamina. Two modern shiitake extracts, lentinan and LEM (for *Lentinula edodes* mycelial extract) show great promise as immunopotentiating agents.

Studies show that when shiitake compounds are broken down into various fractions such as a lipid fraction or a soluble polysaccharide fraction, the removal of any one fraction "resulted in less activity than the whole mushroom." The mushroom's polysaccharide fraction appears to be the most individually active.

Lentinan is a purified polysaccharide extract of the shiitake mycelium (the mushroom's fibrous underground mat) or the fruit body (the portion commonly known as the "mushroom"). One study indicates the presence of 0.14 mg/g in fresh mushrooms. Lentinan appears to prolong the survival of cancer patients; researchers working with terminal pancreatic cancer patients who responded positively noted an increase in killer T-lymphocytes and a decrease in levels of interleukin 6, granulocyte colony stimulating factor, and prostaglandin E₂, all agents of the immune system. The author doesn't elaborate on this apparent contradiction.

A disorder known in Japan as low natural killer-cell syndrome (LNKS), characterized by symptoms very similar to chronic fatigue syndrome, appears to respond to a treatment of 2 mg lentinan injected weekly, or 5 mg taken orally. Injected doses of 10 mg caused "a pronounced depression of immune responses." Animal studies suggest lentinan loses its effectiveness over a dosing period of two months, suggested cyclical dosing offer optimum benefits.

LEM, a xylose-rich extract of shiitake mycelium, shows significant inhibition of cancer cell growth and metastases in mouse and rat post-surgical liver cancer, and in human breast cancer. A four-month study of LEM and hepatitis B showed a significant decrease in the disease's acute effects; measurements of liver function in some patients returned to normal. In another study, 22 hemophiliacs infected with HIV received 6 to 9 g LEM daily for 3 to 25 months; symptoms improved in every patient. In vitro studies of LEM activity against HIV "led to the isolation of the most potent HIV -inhibitor," according to this author. "EP#, a substance of high molecular weight...completely prevented HIV destruction of T-helper lymphocytes and showed activity in vitro against *Herpes simplex*."

A third polysaccharide compound extracted from shiitake mycelium, KS-2, shows immunomodulating activity that appears to protect from bacterial and viral infection. Human and animal studies involving the whole mushroom indicate shiitake exerts significant cholesterol-lowering effects in young and old, even when the standard diet is augmented with cholesterol. Several detailed tables in the article present researched therapeutic actions of shiitake compounds. —*Betsy Levy*

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