

## Shiitake Mushroom

Scritto da Administrator

Venerdì 09 Dicembre 2011 15:36 - Ultimo aggiornamento Martedì 10 Gennaio 2012 15:05

---

## Shiitake Mushroom

- [Healthcare Professional](#)
- [Consumer](#)
- [Scientific Name](#)
- [Common Name](#)
- [Clinical Summary](#)
- [Food Sources](#)
- [Purported Uses](#)
- [Constituents](#)
- [Mechanism of Action](#)
- [Adverse Reactions](#)
- [Herb-Drug Interactions](#)
- [Herb Lab Interactions](#)
- [Literature Summary and Critique](#)
- [References](#)

Scientific Name

Lentinula edodes

[Top](#)

Common Name

Forest mushroom, lentinula, pasania fungus, lentinula, hua gu

[Top](#)

Clinical Summary

## Shiitake Mushroom

Scritto da Administrator

Venerdì 09 Dicembre 2011 15:36 - Ultimo aggiornamento Martedì 10 Gennaio 2012 15:05

---

Shiitake mushroom, native to East Asia, is cultivated worldwide for its purported health benefits. The fresh and dried forms of the mushroom are commonly used in East Asian cooking. It is also valued as an anticancer agent.

Lentinan (1,3 Beta-D-glucan), a polysaccharide isolated from Shiitake, has been well studied and is thought responsible for Shiitake's beneficial effects. It was shown to have anticancer effects in colon cancer cells [\(1\)](#), which may be due to its ability to suppress cytochrome P450 1A enzymes that are known to metabolize pro-carcinogens to active forms [\(2\)](#)

Lentin, the protein component, has strong antifungal properties, inhibits proliferation of leukemic cells, and suppresses the activity of human immunodeficiency virus-1 reverse transcriptase [\(3\)](#). Studies conducted with Shiitake extracts in vitro and in mice revealed the mushroom's antiproliferative [\(4\)](#), immunostimulatory [\(4\)](#), hepatoprotective [\(5\)](#), antimutagenic [\(6\)](#)

, and anticaries [\(7\)](#)

properties, but a clinical trial failed to show effectiveness in the treatment of prostate cancer [\(8\)](#)

Results from two small studies of HIV-positive patients who were administered intravenous lentinan showed a statistically insignificant increase in CD4 cells and neutrophil activity in some patients; researchers also reported severe adverse effects in some patients [\(9\)](#).

But improvements in quality of life and survival were seen with an oral formulation of superfine dispersed lentinan in patients with hepatocellular carcinoma [\(15\)](#), gastric [\(16\)](#), colorectal [\(17\)](#), and pancreatic [\(18\)](#)

cancers.

Large scale studies are needed to establish Shiitake as a useful adjunct to cancer treatment.

[Top](#)

### Food Sources

Available as fresh or dried whole mushroom.

## Shiitake Mushroom

Scritto da Administrator

Venerdì 09 Dicembre 2011 15:36 - Ultimo aggiornamento Martedì 10 Gennaio 2012 15:05

---

[Top](#)

### Purported Uses

- Cancer prevention
- Cancer treatment
- High cholesterol
- Immunostimulation
- Infections

[Top](#)

### Constituents

- Polysaccharides: Lentinan, 1-3-beta-D-glucan
- Protein: Lentin
- Lipids: Linoleic Acid
- Ergosterol
- Amino Acids: Lysine, arginine, methionine and phenylalanine
- Minerals and electrolytes: Potassium, calcium, magnesium, manganese, iron, copper, and zinc
- Lignins  
[\(3\)](#) [\(13\)](#)

[Top](#)

### Mechanism of Action

Lentinan possesses immune-regulatory, antimicrobial, anti viral, and cholesterol-lowering effects [\(13\)](#) . The water extract of shiitake decreased IL-1 production and apoptosis in human

## Shiitake Mushroom

Scritto da Administrator

Venerdì 09 Dicembre 2011 15:36 - Ultimo aggiornamento Martedì 10 Gennaio 2012 15:05

---

neutrophils. However, it increased apoptosis in U937 monocytic cell line [\(14\)](#). Lentin, the protein component of shiitake, has strong antifungal effects. An in vitro study has shown lentin can inhibit the proliferation of leukemia cells and suppress the activity of human immunodeficiency virus-1 reverse transcriptase [\(3\)](#)

.

[Top](#)

### Adverse Reactions

#### Case Reports:

Chronic hypersensitivity pneumonitis was observed in a lung cancer patient following exposure to Shiitake spores [\(10\)](#).

Prolonged consumption of Shiitake powder resulted in dermatitis, photosensitivity [\(11\)](#), eosinophilia, and gastrointestinal upset [\(12\)](#)

.

Intermittent skin eruptions (dermatitis), over a period of 16 years, were linked to consumption of shiitake mushrooms in a 45-year-old male [\(19\)](#).

Food allergy manifested as oesophageal symptoms was reported in a 37-year-old man following consumption of shiitake mushroom [\(20\)](#).

[Top](#)

### Herb-Drug Interactions

None known.

[Top](#)

## Shiitake Mushroom

Scritto da Administrator

Venerdì 09 Dicembre 2011 15:36 - Ultimo aggiornamento Martedì 10 Gennaio 2012 15:05

---

### Herb Lab Interactions

Chronic consumption of Shiitake may increase eosinophil count. [\(12\)](#)

[Top](#)

### Literature Summary and Critique

Few significant clinical studies have been performed with the shiitake mushroom. However, lentinan, which is a polysaccharide component of the mushroom, has been studied extensively.

[deVere RW. Effects of a Mushroom Mycelium Extract on the Treatment of Prostate Cancer. \*Urology\* 2002 ; 60\(4\):640-4.](#)

Sixty-two eligible prostate cancer patients were administered shiitake mushroom extract (SME) in capsule form three times daily for six months in an open-label study. At completion, none of the patients had met the response criteria of a PSA level decrease greater than 50%. Twenty-three patients had disease progression and thirty-eight had stable PSA levels. Because of the lack of responders, this study shows SME alone to be ineffective in the treatment of prostate cancer.

[Top](#)

### References

1. Ng ML, Yap AT. [Inhibition of human colon carcinoma development by lentinan from shiitake mushrooms \(\*Lentinus edodes\*\).](#) *J Altern Complement Med* 2002;8(5):581-589.
2. Okamoto T, Kodoi R, Nonaka Y, et al. [Lentinan from shiitake mushroom \(\*Lentinus edodes\*\) suppresses expression of cytochrome P450 1A subfamily in the mouse liver.](#) *Biofactors*. 2004;21(1-4):407-409.

## Shiitake Mushroom

Scritto da Administrator

Venerdì 09 Dicembre 2011 15:36 - Ultimo aggiornamento Martedì 10 Gennaio 2012 15:05

---

3. Ngai PH, Ng TB. [Lentin, a novel and potent antifungal protein from shitake mushroom with inhibitory effects on activity of human immunodeficiency virus-1 reverse transcriptase and proliferation of leukemia cells.](#) *Life Sci.* Nov 14 2003;73(26):3363-3374.
4. Israilides C, Kletsas D, Arapoglou D, et al. [In vitro cytostatic and immunomodulatory properties of the medicinal mushroom Lentinula edodes.](#)  
*Phytomedicine*  
2008.
5. Akamatsu S, Watanabe A, Tamesada M, et al. [Hepatoprotective effect of extracts from Lentinus edodes mycelia on dimethylnitrosamine-induced liver injury.](#)  
*Biol Pharm Bull.*  
2004;27(12):1957-1960.
6. de Lima PL, Delmanto RD, Sugui MM, et al. [Lentinula edodes \(Berk.\) Pegler \(Shiitake\) modulates genotoxic and mutagenic effects induced by alkylating agents in vivo.](#)  
*Mutat Res.*  
2001;496(1-2):23-32.
7. Shouji N, Takada K, Fukushima K, Hirasawa M. [Anticaries effect of a component from shiitake \(an edible mushroom\).](#) *Caries Res*  
2000;34(1):94-98.
8. deVere White RW, Hackman RM, Soares SE, Beckett LA, Sun B. [Effects of a mushroom mycelium extract on the treatment of prostate cancer.](#)  
*Urology*  
2002;60(4):640-644.
9. Gordon M, Bihari B, Goosby E, et al. [A placebo-controlled trial of the immune modulator, lentinan, in HIV-positive patients: a phase I/II trial](#) . *J Med*  
1998;29(5-6):305-330.
10. Suzuki K, Tanaka H, Sugawara H, et al. [Chronic hypersensitivity pneumonitis induced by Shiitake mushroom spores associated with lung cancer.](#)  
*Intern Med*  
2001;40(11):1132-1135.
11. Hanada K, Hashimoto I. Flagellate mushroom (Shiitake) dermatitis and photosensitivity. *Dermatology.* 1998;197(3):255-257.
12. Levy AM, Kita H, Phillips SF, et al. [Eosinophilia and gastrointestinal symptoms after ingestion of shiitake mushrooms.](#) *J Allergy Clin Immunol*  
1998;101(5):613-620.
13. Hobbs C. Medicinal Mushrooms, 3<sup>rd</sup> ed. Loveland (CO): Interweave Press; 1996.
14. Sia GM, Candish JK. [Effects of shiitake \(Lentinus edodes\) extract on human neutrophils and the U937 monocytic cell line.](#) *Phytother Res* 1999;13(2):133-7.
15. Isoda N, Eguchi Y, Nukaya H, et al. [Clinical efficacy of superfine dispersed lentinan \(beta-1,3-glucan\) in patients with hepatocellular carcinoma.](#)  
*Hepatogastroenterology.*  
2009 Mar-Apr;56(90):437-41.
16. Oba K, Kobayashi M, Matsui T, Kodera Y, Sakamoto J. [Individual patient based meta-analysis of lentinan for unresectable/recurrent gastric cancer.](#)  
*Anticancer Res.*

## Shiitake Mushroom

Scritto da Administrator

Venerdì 09 Dicembre 2011 15:36 - Ultimo aggiornamento Martedì 10 Gennaio 2012 15:05

---

2009 Jul;29(7):2739-45.

17. Hazama S, Watanabe S, Ohashi M, et al. [Efficacy of orally administered superfine dispersed lentinan \(beta-1,3-glucan\) for the treatment of advanced colorectal cancer.](#)

*Anticancer Res.*

2009 Jul;29(7):2611-7.

18. Shimizu K, Watanabe S, Watanabe S, et al. [Efficacy of oral administered superfine dispersed lentinan for advanced pancreatic cancer.](#)

*Hepatogastroenterology.*

2009 Jan-Feb;56(89):240-4.

19. Garg S, Cockayne SE. [Shiitake dermatitis diagnosed after 16 years!](#) *Arch Dermatol.* 2008 Sep;144(9):1241-2.

20. Goikoetxea MJ, Fernández-Benítez M, Sanz ML. [Food allergy to Shiitake \(\*Lentinus edodes\*\) manifested as oesophageal symptoms in a patient with probable eosinophilic oesophagitis.](#)

*Allergol Immunopathol*  
2009

(*Madr*).

Nov-Dec;37(6):333-4.