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SHIITAKE MUSHROOMS

Facts and Nutritional health benefits

The Shiitake mushroom

Shiitakes have four to ten times the flavor of common white button mushrooms. In addition to their robust/pungent, woodsy flavor and meaty texture, shiitakes provide high levels of protein (18%), potassium, niacin and B vitamins, calcium, magnesium and phosphorus. They have natural antiviral and immunity-boosting properties and are used nutritionally to fight viruses, lower cholesterol and regulate blood pressure. Lentinan, an immunostimulant derived from shiitakes, has been used to treat cancer, AIDS, diabetes, chronic fatigue syndrome, fibrocystic breast disease, and other conditions with impressive results. Researchers S. Suzuki and Oshima found that a raw shiitake eaten daily for one week lowered serum cholesterol by 12%.

Dried shiitake

The shiitake flavor is intensified by drying. Dried mushrooms can be stored indefinitely and reconstituted by soaking. The texture is different from fresh log-grown shiitake, and they don't sauté well, but dried shiitakes are perfect for soups, stews, gravies and baked dishes.

Natural log and sawdust methods

Shiitakes are grown by two methods, on all-natural hardwood logs and on sawdust blocks. The highest quality shiitakes are grown on logs of natural oak or a similar hardwood. The grower drills holes, inoculates logs with spawn, and seals the holes with hot wax or plastic plugs. Shiitakes need sunlight, day and night cycles, and ventilation, so logs are kept under shade trees or in greenhouses with shade cloth. Some are grown inside under controlled conditions. After 6-18 months, when the whole log is colonized, it is soaked or sprinkled to produce mushrooms. Prolonged moisture combined with cold temperatures trigger the reproductive cycle. Depending on the production schedule, a log can produce for up to four years with increasingly larger crops as the log matures. Yields taper off in the last year as all the wood cells are consumed. When they have finished producing, logs may be burned for heat, composted, or inoculated with other types of mushroom spawn.

Natural logs have strong immune systems and are disease resistant. Competing fungi are controlled by scrubbing the log with alcohol and diseased logs are destroyed. Insects are not usually a problem and can be controlled by biological methods.

Sawdust blocks, also called substrata or "artificial logs", are made of sawdust and cooked grains that are sterilized with pressurized steam. They are inoculated with spawn, incubated for 1-4 months and then soaked in water to stimulate the fruiting process. Urea, minerals, and other substances may be added to increase protein and boost nutritional content. The mushrooms are grown indoors with controlled humidity, temperature, electric light, and air flow. The sawdust block is highly susceptible to disease and competing fungi. Some producers use pesticides to control mites or add species-specific fungicides or other chemicals to control disease. The better American producers reduce contamination using good sanitation and quality controls instead of chemical controls.

Polysaccharides stimulate the immune system

The basis of the mushroom's impressive health properties are complex carbohydrates called polysaccharides that build the immune system. According to mushroom researcher and cultivator Jeff Chilton:

"*These compounds have been the primary focus of research due to their ability to inhibit tumors in laboratory test animals. Mushroom polysaccharides act by enhancing host defenses rather than directly killing tumor cells. For this reason*

they are called host defense potentiators (HDP)."

The specific effect of these polysaccharides is the activation of macrophages and T-lymphocytes, stimulation of interferon (a cellular protein produced in response to infection which acts to inhibit viral growth), and the overall enhancement of cell-mediated immune response. They have no toxic effects on humans, and are clinically safe.

How to tell the difference

The polysaccharides in log-grown shiitakes are readily available to the body, but sawdust-grown mushrooms may not have sufficient density to be absorbed and used as effectively.

The hardwood logs organically and naturally provide all the nutrients that make the shiitake prized as a gourmet mushroom and a health food. Japanese consumers pay less than $4.00 a pound for sawdust-grown shiitakes, but will give $40 a pound and more for log-grown.

Most shiitakes available in the supermarket are grown on sawdust. The log-grown shiitakes go primarily to chefs and pharmaceutical companies. Consumers, who are not aware of the difference, are currently paying the same amount for both types, even though the wholesale price of sawdust-grown shiitakes is about half that of log-grown shiitakes.

Some sawdust-grown shiitakes are very good and many people can't recognize the difference until they have seen both types and cooked with them. Log-grown shiitakes have a meatier texture and will vibrate when shaken. The gills on log-grown shiitakes and on high-quality sawdust-grown mushrooms will be pure white and unbroken. A package of natural shiitakes will usually contain mushrooms of different colors, shapes, and sizes, and the mushrooms will have short stems. The mushrooms from artificial logs may all have the same conical shape, pale color and markings (or no markings). Low-quality sawdust-grown mushrooms with bulbous stems, yellow, broken gills and an ammonia-like smell should be avoided.

Shiitake skin creams for firmer, brighter Skin

Redbook Magazine, January 2003, reported that cosmetic companies are making skin creams using shiitake mushrooms because shiitakes contain kojic acid. Kojic acid, according to Natural-skin-care specialist Nora Traviss, "prevents the formation of melanin, or pigment, in skin, resulting in a brighter, more even complexion." In addition, kojic acid has an astringent quality that temporarily tightens the skin and makes it taut. Manufacturers of shiitake skin creams include BeComing, SCO, and Chanel. Redbook, January 2003, page 50.

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Nutritional Composition of Shiitakes Grown on Oak Logs

Units are per 100g of mushrooms

Component	Fresh Mushrooms	Dried Mushrooms
Moisture	92.8g	15.8g
Protein	1.5g	12.5g
Fat	0.4g	1.6g
Carbohydrate: Sugar	5.4g	60.0g
Carbohydrate: Fiber	0.6g	5.5g
Ash	0.3g	4.6g
Calcium	8mg	16mg
Phosphorus	39mg	240mg
Iron	0.7mg	3.9mg
Potassium	na	1534mg
Sodium	low	13/1079mg[2]
Magnesium	na	132/247
Vitamin B_1	0.4mg	1.00mg
Vitamin B_2	0.4mg	1.00mg
Niacin	4.5mg	10.0mg
Ascorbic acid	.3mg cooked	9.4mg/60mg
Provitamin D-2	na	.06-.27%
Refuse rate	10%	10%

[1] Shiitake has all essential amino acids but is limited in methionine, cystine, & valine.
[2] Reported values may vary due to shiitake strains and methods of analysis.

Note: Vitamin content is affected by the methods used for growing and processing, i.e. shiitakes cultured outdoors have a higher vitamin D content than those cultured in a mushroom house.

Sources

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