How to Grow Mushrooms at Home

Source: Dr. Mercola

STORY AT-A-GLANCE

- Mushrooms contain some of the most potent natural medicines on the planet. Of the 140,000 species of mushroom-forming fungi, about 100 of them have been studied for their health-promoting benefits
- Mushrooms are excellent sources of antioxidants, copper, vitamin D and other nutrients many don't get enough of in their diet
- It's important to make sure your mushrooms have been organically grown, as they absorb and concentrate whatever they grow in. Most conventional mushroom producers use pesticides
- The ability to control your growing conditions is just one reason to consider cultivating your own mushrooms. While a bit different from growing other fruits and vegetables, just about anyone can do it
- Basic instructions for growing mushrooms in logs, fruiting, harvesting and storage are included

By Dr. Mercola

Mushrooms contain some of the most potent natural medicines on the planet. Of the 140,000 species of mushroom-forming fungi, about 100 of them have been studied for their health-promoting benefits. Of those, about a half dozen really stand out for their ability to deliver a tremendous boost to your immune system.

Mushrooms are excellent sources of antioxidants in general as they contain polyphenols and selenium, but they also contain

antioxidants that are unique to mushrooms. One such antioxidant is, which scientists are now beginning to recognize as a master antioxidant.

A study in the journal Nature[1] discusses the importance of ergothioneine, describing it as "an unusual sulfur-containing derivative of the amino acid histidine," which appears to have a very specific role in protecting your DNA from oxidative damage.

Mushrooms also contain a number of unique nutrients that many do not get enough of in their diet. One is copper, which is one of the few metallic elements accompanied by amino and fatty acids that are essential to human health. Since your body can't synthesize copper, your diet must supply it regularly. Copper deficiency can be a factor in the development of coronary heart disease.

Buy Organic or Grow Your Own

It's important to make sure your mushrooms have been organically grown, as they absorb and concentrate whatever they grow in, for better or worse. This is what gives mushrooms their potency. Mushrooms are known to concentrate heavy metals, as well as air and water pollutants, so healthy growing conditions is a critical factor.

Most conventional mushroom producers use pesticides. The ability to control your growing conditions is just one reason to consider cultivating your own mushrooms.[2,3,4] While the growing of mushrooms is a bit different from growing other fruits and vegetables, just about anyone can do it.

What You Need to Grow Mushrooms

To grow mushrooms, you'll need a few tools and supplies you may not already have, even if you're a seasoned gardener. These include:

•Mushroom spores, available as plug spawn and sawdust spawn. The latter is a ball mycelium grown in moist sawdust. Plug spawn is mycelium that has grown into small pieces (plugs) of hardwood. Mycelium is the fungal equivalent of the root system of a plant, which you need to get the mushrooms started.

While plug spawn is easier to use, requires no special tools and is less prone to drying out, sawdust spawn is less expensive and grows faster. Popular mushroom varieties include shiitake,[5] oyster, lion's mane, phoenix oyster, wine caps, pioppini (black poplar), reishi, chicken of the woods, maitake and nameko

•Fresh hardwood logs. Oak and maple are preferable, and the thicker the bark the better. For shiitake, red oak and white oak are preferable. Each log should be 3 to 4 feet long and about 3 to 8 inches in diameter.

•A spawn inoculation tool, if using sawdust spawn

•Cheese wax or beeswax, wax dauber, thermometer and a small melting pot

Most mushroom supply companies[6] will sell everything you need, including logs. If you use your own logs, make sure they're fresh and moist. You don't want to use logs that have started to dry out. Make sure the bark is intact all the way around, to prevent unwanted fungi to contaminate your spawn.

Also check them to make sure there aren't any other organisms growing on them. Mother Earth News recommends cutting your logs about two weeks before you intend to inoculate them, to allow them to age but not dry out. Ideally, start inoculating your logs in early spring.

Basic Mushroom Growing Instructions

The logs will serve as host for your little mushroom farm. Once you have your supplies, drill 5/16-sized holes in the

logs. Each hole should be about 1 inch deep, spaced 6 inches apart. Stagger the rows to create a diamond pattern around the entire perimeter of the log.

Next, fill each hole with your chosen mushroom spawn. For inoculation instructions based on your mushroom species, see Ashevillefungi.com.[7]

Be sure to fill the holes as quickly as possible once you've drilled them, to avoid contaminants. Melt the cheese wax or beeswax in an old pot to about 450 degrees F, and using a wax dauber, seal each hole to prevent bacteria from entering.

This wax plug will also seal in moisture, allowing the mushroom to thrive. If the wax is too cool, you won't get a good seal, so get it as hot as possible without actually burning.

Once that's done, soak the logs with a garden hose and stack them in neat rows in a shaded area. Make sure the inoculated logs are lifted off the ground and protected from both wind and sun. Contrary to other plants, mushrooms thrive in shaded, damp areas.

In order for your mushrooms to survive, you'll need to make sure the logs are kept damp at all times. If they dry out, your mushrooms will die. If you want, you can cover the logs with a fruiting blanket, which will help keep the moisture level high and protect them from the elements.

Fruiting, Harvesting and Storage

Growing mushrooms will require some patience. Once inoculated, your logs will need to be kept in this moist, dark state for anywhere from six to 18 months, depending on the variety of mushroom you're growing and general environmental conditions.

As a general rule, a 3-foot log will produce up to 4 pounds of mushrooms, spread out over 12 crops or "flushes" per year. On

average, each flush will produce between one-quarter to one-third of a pound of mushrooms, and a well-cared for mushroom log can continue fruiting for two to eight years.

Shiitake, which will typically fruit in about six months, can be forced to fruit earlier by submerging the logs in cool water for 24 hours, and then placing them in upright stacks to increase air circulation. As for pests, frequently check the logs for slugs and snails, and remove any you find.

Once the mushrooms have fruited, you can start harvesting them. You'll need to check their progress every day, as the mushrooms will mature to full size over the course of several days. If you're growing shiitake, you can start harvesting once the caps are 70 to 90 percent opened.

To harvest, either cut the stem or grab the mushroom by its stem and twist it off. Store your mushrooms in a well-ventilated container, such as a brown paper bag (leave the top open), or a damp cloth bag, in your refrigerator. Avoid storing them in plastic bags or close-lidded containers, as the lack of air circulation will speed deterioration.

The Many Health Benefits of Mushrooms

In 2013, FASEB Journal published nine studies on mushrooms, detailing a wide variety of health benefits,[8] including:

•**Improved weight management** – One study[9,10] found substituting red meat with white button mushrooms enhanced weight loss. Obese participants ate approximately 1 cup of mushrooms per day in place of meat. The control group ate a standard diet without mushrooms.

At the end of the 12-month trial, the intervention group had lost an average of 3.6 percent of their starting weight, or about 7 pounds. They also showed improvements in body composition, such as reduced waist circumference, and ability

to maintain their weight loss, compared to the control group.

•**Improved nutrition** – One dietary analysis[11] found that mushroom consumption was associated with better diet quality and improved nutrition.

•**Increased vitamin D levels through diet** – Consuming dried white button mushroom extract was found to be as effective as taking supplemental vitamin D2 or D3 for increasing vitamin D levels.[12]

•**Improved immune function** – Long chain polysaccharides, particularly alpha- and beta glucan molecules, are primarily responsible for the mushrooms' beneficial effect on your immune system.

In one study, adding one or two servings of dried shiitake mushrooms was found to have a beneficial, modulating effect on immune system function.[13] Another study done on mice found white button mushrooms enhanced the adaptive immunity response to salmonella.[14]

Examples of Mushrooms to Add to Your Diet

Individual mushroom species may also offer more specific health benefits. Two of my favorites – both of which you can cultivate using the log method described above – are:

•**Shiitake** – It contains a number of health-stimulating agents, including lentinan, the polysaccharide for which it was named. Lentinan has been isolated and used to treat stomach and other cancers due to its antitumor properties, but has also been found to protect your liver,[15]relieve stomach ailments such as hyperacidity, gallstones and ulcers, and has been used to treat anemia and pleural effusion.

One of the more remarkable scientific studies demonstrating

shiitake's antitumor effect was a Japanese animal study[16] where mice suffering from sarcoma were given shiitake extract. At the highest concentration, all 10 mice showed complete tumor regression.

Shiitake mushrooms also demonstrate antiviral, antibacterial and antifungal effects; blood sugar stabilization; reduced platelet aggregation and reduced atherosclerosis.[17] Shiitake also contains eritadenine, which has strong cholesterol-lowering properties.[18]

•**Reishi** – Known as Lingzhi in China, or "spirit plant," reishi has also been called "Mushroom of Immortality" – nickname that speaks for itself. It's been used medicinally in Asia for thousands of years. One of its more useful compounds is ganoderic acid, which is being used to treat lung cancer,[19] leukemia and other cancers. Other health benefits[20] include:

◦Antibacterial, antiviral, antifungal properties

◦Anti-inflammatory, useful for reducing symptoms of rheumatoid arthritis

◦Immune system upregulation

◦Normalization of blood pressure

◦Reduction of prostate-related urinary symptoms in men