

Growing MushroomBox™ Reishi Mushrooms.

www.mushroombox.co.uk - *Purchase Mushroom Spawn online, plus a source of growing instructions, downloads and mushroom-growing links*

MushroomBox™ Reishi mushroom spawn has been developed for commercial production of red reishi. Reishi may be grown in restricted airflow, in which case the 'antler' form of the mushroom will be encouraged, or with greater air exchange, the conk form of the mushroom will result. Reishi yields are much lower than for most edible mushrooms, but they are nevertheless very easy to grow.

Reishi is a relatively fast coloniser, and as such is pretty easy to grow without the need for sterilisation or fancy growing techniques. It will grow on a variety of cellulose-rich substrates, the most suitable of which is hardwood sawdust.

Stages of Growing Reishi Mushrooms

- 1) Pasteurisation of the Substrate
- 2) Spawning the Substrate
- 3) Spawn 'run' (where the mushroom mycelium grows through the compost)
- 4) Fruiting (The mushrooms fruit in flushes, and up to 6 flushes are possible).

Pasteurisation

The substrate should ideally be a mixture of coarse and fine hardwood sawdust particles evenly mixed together. Oak sawdust is ideal. Some softwood sawdust is acceptable, although high percentage of softwood is likely to be unsuccessful. Some growers add a small amount (2%) of gypsum (ie plaster) and calcium carbonate (gardeners' lime) to the substrate to produce higher yields.

Place the dry, mixed substrate into the growing vessel (bag or tub), and pour on boiling water, until the substrate is completely submerged in the hot water. Leave for 1-2 hours, then drain away any excess water. Make sure all the excess water is drained away. Small quantities of excess water will water-log lower regions and provide a mechanism for competitive contaminants to take hold.

Cooling and Spawning.

After the excess water has been drained away, leave the substrate (fully covered to isolate against infection from airborne contaminants) for 5-8 hours until it is fully cooled to room temperature. Ensure you do not rush this stage – premature inoculation, whilst the substrate is still warm (over 35C) is the easiest way to kill your mushroom spawn, which will obviously produce an unsuccessful outcome. Remember that even if the outside of the compost feels cool, the inside may well be 40-50C. If the spawn is added to the compost when the temperature is above 30C, it will be killed, so make absolutely sure (leave overnight) that it is cooled to ambient temperature.

A variety of growing containers may be used. The best is a proper breathable-filter mycology bag, but with ingenuity, all sorts of containers may be used. Ensure that there is adequate ventilation for the exchange of CO₂ and O₂. The container needs to be cleaned thoroughly with soap and water, and the soap thoroughly rinsed off before use.

Ideally, the substrate should be 150mm to 300mm deep. Add the spawn to the compost (approximately 1.5-3% by DRY WEIGHT) – so 60g of MushroomBox™ Spawn will seed up to 3kg of DRY Substrate (around 6-7kg of wet substrate). Once the substrate is under 30C (failure to ensure compost is adequately cooled is a common cause of failure), and mix the spawn thoroughly. Higher spawn rates (3%) guarantee faster growth and less opportunity for infection by competing microorganisms.

Growing Tip

If you grow Reishi inside a MushroomBag (obtainable from www.mushroombox.co.uk), you can fruit the mushrooms in the bag – save yourself the hassle of misting the mushrooms twice a day as virtually no care is required between inoculation and harvesting. Note that in-bag mushrooms will be 'antler' form of reishi due to the higher CO2 concentration. If you wish to grow conks ('elephant form'), then you can either cut the top off the bag as soon as you are ready for fruiting, or at any time to convert 'antlers' into conks.

Next, you need to create a high-CO2 environment for the mushrooms to grow. This is done by covering or enclosing the compost in polythene – either loosely tied or with holes to allow passage of CO2 and O2. This encourages the spawn to run through the compost. Place this somewhere dark and at warm room temperature (20-26C) BUT NOT ABOVE 30C!! After a few days, you will see thread-like growths coming from the spawn, and after a few more, the compost should look like it is covered in cobwebs, or mouldy. This is the mushroom spawn growing. Depending on temperature, substrate and general conditions, this will normally take around 15-20 days.

Fruiting

Once the substrate is fully colonised, you need to move it to a location that is airy, well-lit (eg near a window) and slightly cooler (18-22C). If you decide to grow conks, leave it for 10-14 days and then open the top of the growing container or bag to increase aeration, and start misting it two or three times a day to maintain humidity. If you are growing in a MushroomBag™ then leave the bag intact, and primordia will develop, turning into the antler form of reishi. Reishi are slow to grow, so expect to wait several weeks for the mushrooms to mature.

Once the mushrooms are large enough for picking, you can harvest them for immediate use, or dry them, either whole or sliced for future use. Mushrooms can be dried in any low-humidity airy location – eg on or near a central heating radiator, on a sunny windowsill or outside in the sun during hot weather. Some people dry on a low heat in the oven, although this option is not recommended. Drying reishi outdoors in bright sunshine has been demonstrated to be highly beneficial, as the sunlight-dried reishi have higher concentrations of vitamin D, due to sunlight conversion processes.

Utilising Reishi Mushrooms

Reishi are too tough and bitter to be eaten like conventional gourmet mushrooms. For this reason, Reishi are usually either sliced or ground into powder and added to stews and soups, or boiled in water to make Reishi tea. Although the taste is bitter, reishi contains a concoction of highly beneficial chemicals from polysaccharides, vitamins and anti-tumour agents as well as anti-inflammatories which have a wide range of medicinal benefits – some of which are listed below. Reishi have been used for thousands of years in Chinese medicine, but only relatively recently has it been introduced to the Western World.

Reishi have an amazing range of medicinal benefits. Far from being old-wives tales, many of the effects have been studied under controlled conditions, and scientifically-proven to be beneficial. One of the main mechanisms by which reishi achieves this is by producing polysaccharides which stimulate the body's natural immune system. A brief summary of Reishi's benefits is listed below (by no means exhaustive):

Immune system Recovery

Reishi stimulates the immune system, thus assisting patients with low immunity. It also provides a higher level of immunity for normal people, hence most regular users report that they are better able to fight off coughs and colds. Scientific research has demonstrated that reishi will accelerate the recovery of immune systems after exposure to chemotherapy (*J Ethnopharmacol. 2007 May 4;111(2):219-26. Epub 2006 Nov 21*) making an important contribution to the recovery and well-being of chemotherapy patients.

Reduction of inflammation

Reishi helps to reduce inflammation, and this produces a variety of benefits. For example, asthmatics will find relief in Reishi, which reduces the restriction of inflamed airways. Likewise, arthritis-sufferers will benefit from the reduced inflammation around joints, thus reducing the pain of arthritis.

Chronic inflammation of the colon (colitis) can eventually lead to colon cancer. Reishi reduces this inflammation, and subsequently reduces the incidence of colon cancer.

Reduction of Severity of Cancer

Reishi is particularly beneficial to breast-cancer sufferers, as certain extracts are effective in reducing the reproduction of cancer cells, and reducing their tendency to migrate around the body.

Reishi is also beneficial in cases of prostate cancer in three ways:

- 1)Blocking chemical pathways necessary for tumor growth
- 2)Inhibiting the signalling chemicals released by prostate tumours intended to stimulate the growth of blood supplies. Once the tumour has its own dedicated blood supply, it can grow much faster and more aggressively. By blocking these signals, reishi helps to slow or prevent this from happening.
- 3)Inducing apoptosis (pre-programmed cell death) in prostate cancer cells.

Lung Cancer

Reishi has been shown to reduce the rate of cell division in lung cancer, and it is also able to stimulate cell apoptosis in the lung cancer cells, helping to kill the cancer.

The mechanisms by which Reishi attacks cancer may be effective against a wide range of cancers, and scientific investigation will eventually reveal the true extent of Reishi's anti-cancer properties. However, it is safe to assume that Reishi has a good chance of extending the life-expectancy of the cancer patient, or even, in some cases, cause the cancer to die. The stimulation of the body's own immune system often causes the body to react to and fight the tumour.

Healthy Circulation

Reishi inhibit the production of cholesterol by the liver

Reishi has been demonstrated to reduce circulatory cholesterol, and it is generally recognised that a reduction in circulatory cholesterol reduces high blood pressure, and reduces the rate of build-up of plaques inside arteries. This effect is extremely effective for people with high blood pressure, and/or high levels of circulatory cholesterol, and without the side-effects of cholesterol-lowering drugs.

Healthy Kidneys

Reishi improves the performance of kidneys by lowering inflammation and improving vasodilation. Stressed kidneys can leak important blood components into urine, and reishi has been scientifically-proven to reduce or prevent this from occurring.

Diabetes

Reishi helps to reduce blood sugar levels in diabetic patients, and has also been shown to increase the insulin output of lazy pancreatic cells by up to a factor of 4.

Reishi helps to protect the pancreatic beta cells from alloxan poisoning (Alloxan is produced by bleaching of flours to make white bread. Long-term exposure to Alloxan increases the likelihood of Type I diabetes).

Reishi also helps to prevent the secondary effects of diabetes – such as kidney damage, eye and nerve damage

For further information, see websites such as <http://www.reishiscience.com>

All text and pictures copyright MushroomBox™. Not for reproduction or distribution without prior permission