Guide To Medicinal Mushrooms
Identification, Medicinal Benefits, Medicine Making, & More

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Chaga (*Inonotus obliquus*)

**Comments:** Chaga is a fungus that grows on birch trees in the cooler areas of the Northern Hemisphere. Traditionally it has been used as an herbal adaptogen in Siberian and Asian medicine. Sources refer to chaga as “King Of The Medicinal Mushrooms.”

**Identification:** Chaga usually grows in the circumpolar boreal deciduous forests, almost exclusively on living birch trees. It has been found rarely on elm, beech, and hornbeam trees. The outer surface of chaga is cracked, brittle, and relatively black (if not rather dark), while the interior is an unmistakable golden-orange color. Chaga usually grows as a phallic, cone-like extension from its substrate. Unlike a tree burl, chaga is clearly a distinct species from its host tree.

**Medicinal benefits:** Chaga is notoriously hailed for two of its medicinal compounds: betulin and its derivative, betulinic acid. Betulin is a triterpene, while betulinic acid is a derivative of a triterpene, known as a triterpenoid. Betulinic acid has demonstrated anti-bacterial, anti-viral, anti-inflammatory, anti-HIV, anti-malaria, and antioxidant effects in numerous studies. Its precursor, betulin, has been shown to possess anti-tumor and anti-cancer properties. These molecules are concentrated in the outer black portion of the fungus and can be extracted most effectively for human consumption with non-polar solvents (i.e. alcohol).

Additionally, chaga contains a diverse group of molecules known as polysaccharides. These molecules act, among other things, as antioxidants and immune system regulators. Polysaccharides are typically most effectively extracted in hot water.
Reishi (Ganoderma tsugae)

Comments: Ganoderma tsugae is a North American species of reishi mushroom that grows primarily on fallen eastern hemlock trees throughout the summer months. Reishi mushroom has a long and rich history of medicinal use, backed currently by a large amount of scientific research.

Identification: Ganoderma tsugae can be found on dead hemlock trees in the summer months. Occasionally, autumn fruitings can be found in October and November. When young, this fungus displays beautiful lacquered hues of yellow, orange, and red with a white dough-like margin. A prominent red stalk, sometimes quite long, attaches this mushroom to its substrate. As it matures, reishi turns dark red. The pore surface is white.

Medicinal benefits: Ganoderma tsugae has been shown to contain a significant number of immune system-regulating polysaccharide fractions, even more so than chaga. Research shows that extracts from this fungus demonstrate anti-cancer properties against neuroblastoma, liver, breast, and colorectal cancers. A new study from 2015 found that a triterpenoid extract (i.e. alcohol extract) effectively suppressed the allergenic response by inhibiting histamine release. Interleukin-4, another compound associated with allergies, was also effectively inhibited by the triterpenoid extract.
Turkey tail (*Trametes versicolor*)

**Comments:** Turkey tail is not difficult to locate, as it’s one of the most ubiquitous fungi found in our woodlands. Look around at the logs, stumps, and fallen branches in your neck of the woods – and you may eventually discover turkey tail.

**Identification:** Turkey tail contains multicolored concentric zones and whitish pores on the underside. It can usually be found on the deadwood of hardwoods, or rarely on the wood of conifers. Look-alike fungi usually lack the brilliant colors of turkey tail, or they may be hairier (*Trametes hirsuta*). Additionally, look-alikes may lack pore surfaces (genus *Stereum*), or their pores may be colored.

**Medicinal benefits:** One particular study found that turkey tail can improve immune system status in immuno-compromised breast cancer patients following conventional cancer treatment. A more recent human trial found that a polysaccharide extracted from turkey tail mycelia displayed prebiotic effects in the human microbiome (stimulating the growth and maintenance of beneficial intestinal bacteria). In the same study, participants who were instead fed Amoxicillin (an antibiotic) demonstrated detrimental shifts towards more pathogenic bacteria in their microbiome, with effects lasting up to 42 days after their final antibiotic dose.

Turkey tail also contains the compound PSK, a protein-bound polysaccharide with potent anti-cancer effects. In Japan, PSK is prescribed to cancer patients routinely, both during and after radiation and chemotherapy.
Maitake (*Grifola frondosa*)

**Comments:** The maitake mushroom (sheep’s head, hen-of-the-woods) is a choice edible and medicinal that always demands a good hunt. It compliments a variety of dishes, lending a hearty flavor and tender texture. With few look-alikes, maitake is certainly one of the safest mushrooms to harvest.

**Identification:** Maitake contains overlapping gray to brown caps attached to a single base. Individual specimens can be rather large and weigh several pounds. Like other polypores (mushroom fruiting bodies with pores or tubes on the underside), maitake has no gills.

While not difficult to identify, maitake may resemble other non-toxic polypores. The non-toxic black staining polypore (*Meripilus sumstinei*) bruises black and can be found growing on buried wood. The umbrella polypore (*Polyporus umbellatus*) is another edible look-alike which contains white to grayish caps, though this mushroom is multi-branched and not as common. Look for maitake under oak trees (and make sure you circle the tree … you may be pleasantly surprised to find a second or third), late summer through autumn.

**Medicinal benefits:** There is ample research suggesting that the maitake mushroom may play a role in the protection against various cancers, with one key compound gaining most of the attention. Known as D-Fraction, this polysaccharide has the ability to enhance certain immune system cells, such as macrophages, helper T cells, and cytotoxic T cells, which all work together to attack tumor cells. Maitake mushroom extracts have been shown to demonstrate protection against diabetes. Certain extracts can inhibit an enzyme that breaks down starch and simple sugars to glucose. By inhibiting this enzyme, glucose absorption slows down in the body.
Birch polypore (*Piptoporus betulinus*)

**Comments:** This is one of the most common fungi found in birch forests. A multipurpose fungus, its utility extends far beyond food and medicine into the survival realms of fire making and blood coagulation. To receive the concentrated power within the birch polypore, you can use freshly picked young specimens, thinly sliced and boiled, as food.

**Identification:** The birch polypore is fairly easy to recognize. It typically has a tan cap with inrolled margins, a whitish pore surface, and a somewhat tough (though not rock-hard) texture. Growth is almost exclusive on living or dead paper and yellow birch trees. Young fruiting bodies can be found from summer through early winter.

**Medicinal benefits:** Medicinally, birch polypore has been shown to be an important species with anticancer, antimicrobial, antiviral, and antibacterial properties. This fungus contains betulinic acid – the same compound in chaga, derived from the birch tree, that confers several health benefits (anti-tumor, anti-cancer). Birch polypore has also been traditionally used as a styptic - a substance capable of stopping bleeding when applied to a wound.
How to make a decoction

Decoctions are extractions made from plant or fungal substances using hot water. While herbal teas or tisanes utilize shorter extraction times (5-15 minutes) with hot water, decoctions employ simmering temperatures for longer periods of time (hours). Hot water decoctions effectively extract immunomodulating polysaccharides, notably the beta-glucans.

To make your decoction:

1. Add 2 to 4 tablespoons of your dried mushroom, reduced to a coarse consistency, to 2 liters (1/2 gallon) of simmering water.
2. Allow mushroom to simmer for at least an hour. Two hours is my preferred length of time, though longer is fine as well. Some water may evaporate. Continue to add in water to produce a final product of 2 liters.
3. Remove vessel from stove, and strain the mixture.
4. Save the fungal mass. This can be dried for later use as a future decoction, or stored in the fridge for use within a couple of days.
5. Store the decoction (“tea”) in the refrigerator for up to a week. This can be consumed by itself, or added to other teas, coffee, smoothies, soups, etc.
How to make a dual extracted tincture

Tinctures are typically alcohol extractions of an herbal substance. The plant or fungal material remains in alcohol for weeks at a time, allowing the non-polar chemical compounds to be extracted. For mushrooms, this generally includes the triterpenes and triterpenoids. A dual extracted tincture combines both the alcohol and hot water extracts. The best way to consume tinctures is under the tongue, allowing the extraction to become absorbed through sublingual mucus membranes.

To make your dual extracted tincture:

Part 1:
1. Fill a glass jar halfway with your coarsely-ground, dried mushroom. I use a 32 oz. mason jar.
2. Fill the glass jar completely with alcohol. I use 80 proof organic vodka.
3. Seal the jar and label it with the date and name of mushroom.
4. Store the jar in a cool, dark place. Shake daily for the first 2 weeks.
5. Allow the jar to sit for at least 2 weeks, up to 6 weeks or more. I typically begin my extractions on the new moon, and end it on the full moon (a 6 week cycle).
6. When the allotted time is up, strain the fungal material from the jar. Put the alcohol extraction aside. (You now have an effective alcohol extraction. To create a dual extraction, continue to part 2.)

Part 2:
7. Add the strained fungal material to simmering water. Essentially, you are making a hot-water decoction.
8. Allow the material to simmer for at least an hour. I like to simmer mine for 2 hours.
9. During this process, allow the water to evaporate (keep the vessel uncovered). Monitor the process so that enough water evaporates over the course of an hour or 2 to be reduced down to 2 tablespoons of water. This ratio works if you started with a 32 ounce mason jar. If you used a bigger jar with more alcohol, you can reduce the water in this step to more than 2 tablespoons. If you used a smaller jar with less alcohol, reduce it even further to about a tablespoon or less.
10. When 2 tablespoons of the hot water extraction remain (more or less depending on your original starting size), strain the fungal material.
Compost this. It has been sufficiently extracted of all its medicinal goodness.
11. Remember the alcohol extraction that you placed aside in step 6? Add the 2 tablespoons of your new hot water extraction to this jar.
12. Add a few teaspoons of your starting alcohol to the final product to ensure that the final product isn’t too diluted with water.
13. Bottle the final product in a mason jar or tincture bottle, and store away from heat and light.
14. Congrats - you successfully made your own wild medicine from the forest! Enjoy!
Sources

Chaga

Reishi

Turkey Tail

Maitake

Birch Polypore