

A handout about chaga



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Cover photo: a chaga fungus sterile conk (observation record: <http://www.inaturalist.org/observations/5109891>).

I Why chaga?

Why chaga? Personally, I had to start learning about it simply because people asked me so many questions (see [Bowser, 2015](#)). In this handout I will cover uses of this fungus, briefly describe its place in nature, and provide some tips for identification, harvest, and consumption.

I.I Medicinal uses

Chaga mushroom, also known as the clinker polypore, cinder conk, or *Inonotus obliquus*, has been used in Russian folk medicine since the 16th century, where it was viewed as a panacea for cancers and digestive ailments ([Spinosa, 2006](#)). A search on PubMed (a search engine accessing biomedical research, <https://www.ncbi.nlm.nih.gov/pubmed>) for “*Inonotus obliquus*” on February 11, 2017 yielded 165 articles, the first several results on topics including anti-diabetic, anti-cancer, and antiviral properties of chaga extracts. These extracts have also been shown to have antioxidant, immunostimulant, anti-inflammatory, and analgesic effects.

However, clinical studies on the effectiveness and potential risks of chaga use by humans are lacking. Be aware that extracts of chaga may interact with antiplatelet and anticoagulant drugs as well as treatments for diabetes ([Memorial Sloan Kettering Cancer Center, 2017](#)). I make no claims to have any medical expertise or even folk medicinal knowledge. I leave it to the reader to do his or her own investigating on the potential merits and risks of using this fungus. Please read [Memorial Sloan Kettering Cancer Center \(2017\)](#) for an overview of chaga’s medicinal properties and potential risks.

I must caution you. Just because chaga is widely advertised as beneficial does not mean that everyone can consume it safely. For example, in my extended family are individuals who react badly to either mangoes, watermelons, wheat, or chard. All of these foods are available in the grocery store without caution labels because they are safe for most people. When you first try a species, be aware that you might react badly to it even if it is widely used. For this reason you should always take only a sample at first when trying anything that is new to you.

The chemical composition of extracts of chaga is complex. Some of the medicinally active compounds include triterpenoids, notably inotodiol; polysaccharaides; melanins; and lignins ([Zhong et al., 2009](#); [Liu et al., 2014](#)). At least some of these chemicals are derived from precursors produced by the birch host.

1.2 Flavor

Food and drink made with chaga can be just plain tasty. See page 7 for more on culinary uses.

1.3 The “true tinder fungus”

Also commonly known as the “true tinder fungus,” dried chaga is a remarkably effective tinder ([Spinosa, 2006](#)). A friend of mine demonstrated this on Kenai Beach using only a hatchet, a stone, a chunk of dried chaga, lichen, birch bark, and a nicely stacked arrangement of kindling wood. Striking the rock with the hatchet produced a spark that got the chaga going. By blowing on this while holding it next to the lichen and birch bark, he grew the initial ember until nearly the whole chaga chunk glowed and smoked. This served to start the fire with surprisingly little fuss.



Figure 1.1: Chaga being used to start a fire on Kenai beach, July 1, 2014.

2 A birch-killing fungus

In nature, the chaga fungus is a primary pathogen of birch, eventually killing its host. Chaga usually penetrates the tree through injuries to the bark. The fungus then gradually ramifies vertically and laterally through the trunk, causing a white heart rot (Holsten et al., 2008).

Mature chaga ruptures the bark of the tree in places, exposing a black, crumbly, charcoal-like mass of fungal tissue, a sterile conk. Bits of fungal tissue from the conk are dispersed by wind and water to infect new host trees.

Soon after the host tree dies, the chaga fungus produces its seldom-seen “mushroom” phase, a porous mass that ruptures the birch bark, usually above the sterile conk (Millman, 2012). These spore-producing fruiting bodies are highly attractive to insects, which may act as the dispersal agents of the fungus’ spores (Millman, 2012; Bunyard, 2015).



Figure 2.1: Sterile conk (lower left) and a chaga fruiting body (upper right).
Observation record: <http://www.inaturalist.org/observations/5109782>



Figure 2.2: Detail of a chaga fruiting body (<http://www.inaturalist.org/observations/5109782>).

3 Identification & harvesting

3.1 Identification

Sterile conks of chaga (see cover photo) are easy to recognize, characterized by a black, crumbly, cinder-like exterior and a brown to yellow mottled, corky interior. They lack the gills, pores, or teeth that are present on fruiting bodies of many other fungi.

Chaga grows almost exclusively on birch, so it is important to be able to distinguish birch from other local trees. Quaking aspen, the only other tree that may be easily mistaken for birch locally, has greenish, smooth bark maturing to greyish, deeply furrowed bark at the base of the tree; in contrast, paper birch has brown to (usually) white, peely bark. I have seen growths of corky bark disease (*Diplodia tumefaciens* Figure 3.1) removed from aspen, apparently mistaken for chaga.

False tinder conk (*Phellinus igniarius*, Figure 3.2), another fungus causing

white trunk rot on birch, has a dark, cracked upper surface that could be mistaken for chaga. Unlike sterile conks of chaga, the underside of this conk has a porous, spore-producing surface.

See [Spinosa and Bunyard \(2012\)](#) for a good overview of fungi that can potentially be misidentified as chaga.



Figure 3.1: Corky bark disease (Diplodia tumefaciens) on aspen (observation record: <http://www.inaturalist.org/observations/2707864>).



Figure 3.2: False tinder conk (Phellinus igniarius) on birch (observation record: <https://www.inaturalist.org/observations/10454240>).

3.2 Harvesting

Chaga mushroom within reach is often harvested using a hatchet ([Spinosa, 2006](#)). I generally also pack a hammer to tap on the butt of the hatchet head, enabling me to work more carefully.

The conks should only be harvested from live birch trees. Conks on dead trees may be quite old and could themselves be infested by other fungi.

It is your responsibility to be aware of the land ownership where you harvest chaga and other mushrooms. See [Table 1](#) for a summary of where harvest is allowed on Kenai Peninsula lands.

Table 1: Summary of where edible and medicinal mushroom harvesting is allowed on Kenai Peninsula lands.

Land Owner	Personal Use	Commercial Harvest
Kenai Fjords National Park	not permitted	not permitted
Kenai National Wildlife Refuge	allowed	not permitted
Chugach National Forest	allowed	allowed with permit
Alaska State Parks	allowed	not permitted
Alaska Department of Natural Resources	allowed	not permitted
Kenai Peninsula Borough lands	allowed	not permitted
Native Corporation lands	varies	?
private land	varies	varies

On public lands, check the applicable rules and regulations or simply call the land managers to ask about your planned activities. On private lands, always obtain permission for your intended uses. As with other mushrooms, it is permissible to harvest chaga conks on the Kenai National Wildlife Refuge for personal use, but harvest for commercial purposes is NOT permitted. Off of the Refuge, be sure to check rules for harvest on other public lands and obtain permission before cutting chaga from private lands.

Where you do gather chaga, be aware that the conks take several years to grow back after being harvested, so take no more than you will use. Finally, when chopping chaga, do not damage the host tree's tissues. Take only the fungus. Even though the infection is terminal, the tree may yet fight for its life for decades. Over that time, conks may be harvested multiple times ([Spahr, 2012](#)). See [McFarland \(2012\)](#) regarding ethical harvest of chaga.

Soon after harvest, it is important to freeze or dry chaga to prevent spoilage by mold.



Figure 3.1: Remains of a freshly harvested sterile conk, the same conk in the cover photo.

4 Use

Extracts of chaga are usually made by ethanol extraction or by hot water, each method isolating a different set of compounds. I have only used the simple method of simmering chopped chaga chunks in a covered pot on my wood stove, then straining out the solids to make a dark tea. This process can be repeated several times reusing the same pieces of chaga. The tea can be stored for a few days in a refrigerator, but it will spoil if kept longer.

The flavor of the tea is slightly bitter and earthy with a birchy tang, tasting more of a plant-derived tea than anything like most other fungi. When sweetened and added to creamy desserts it is reminiscent of caramel or butterscotch. Chaga is generally complemented well with creaminess or lemony tartness.

The tea can be taken directly as a hot drink (Figure 4.1), diluted for iced tea or soda pop, or concentrated for use as a flavoring in confections like ice cream. Much like coffee, the hot tea is best with something sweet and creamy. When diluted, chilled, sweetened, and mixed with lemonade it makes an excellent

“Arnold Palmer” drink. Chaga has also been used in hops for beer that was reported to be “exceptionally successful” (Spahr, 2012).

Finely ground dried chaga can also be used as an earthy, birchy seasoning that can be sprinkled on meats and other foods.



Figure 4.1: A freshly brewed cup of chaga tea.

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