



MUSHROOMS OF THE NORTHEAST:

ID, COLLECTION, HEALTH BENEFITS, & SUSTAINABLE CULTIVATION

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SUSTAINABLE HARVEST PRACTICES

- ◎ Fleshy vs. annual vs. perennial
- ◎ When the spores are released
- ◎ Interactions with surrounding ecosystem such as relation to food web
- ◎ NEVER take more than 1/2 to 2/3, and remember:
 - ◎ **For every one you leave you'll see two more...**

IDENTIFICATION

- ⊙ Physical characteristics of fruitbody
 - ⊙ Size
 - ⊙ Texture
 - ⊙ Smell
 - ⊙ Shape of cap
 - ⊙ Flesh
 - ⊙ Stem
 - ⊙ Gills / pores
 - ⊙ Fleshy / fragile / wood-like
 - ⊙ Veil (if present)
 - ⊙ Color and color changes
 - ⊙ Spore color, size, and shape
 - ⊙ Chemical constituent patterns

HABITAT AND SEASON

- ③ Knowledge of substrate and the seasons:
 - ③ Provide another indication to possible species, but is not definitive
 - ③ Allow you to look in the right places and at the right times for what you want



START GRADUALLY AND NEVER STOP LEARNING

- ◎ Start with mushrooms that are:
 - ◎ Distinctive
 - ◎ Locally abundant
 - ◎ Definitely edible, medicinal, or dangerously poisonous
- ◎ Key out a mushroom or two that you don't know on each foray, and then get to better know that mushroom and other similar looking mushrooms



THE ARTIST'S CONK

(*GANODERMA APPLANATUM*)

- ◎ Tends to grow as a perennial on maple and other hardwoods
- ◎ Makes an exceptional tea or medicinal extract
 - ◎ Used extensively in TCM
 - ◎ Exceptional anti-cancer properties

ARTIST'S CONK (CONT.)

- ⊙ Many other properties including:
 - antitumor and immunomodulating (Jeong et. al. 2008 and others)
 - natural antibiotic properties (Kim et al, 1990 as cited in Hobbs, 1995)
- ⊙ Preparation
 - Triterpenoids are best extracted in an alcohol extract, but the polysaccharides are best extracted with a water extraction
 - Tubes have the highest level of triterpenoids, followed by the youngest parts of the cap, older parts have ~ 10% of the tube layer (Bojana, 2000)

REISHI

(LING ZHI, LING CHI, LING CHIH,
GANODERMA LUCIDUM, *G. TSUGAE*, *G. SPP.*)

- ◎ Multiple species of Reishi, but ID to species complex is straightforward
- ◎ Glycosides and Triterpenoids patterns can differentiate among species (Chen et. al. 2010, & Su et. al. 2001)





REISHI RESEARCH

- ⊙ Immunomodulatory
- ⊙ Anti-cancer properties (in vitro)
- ⊙ Antihistamine
- ⊙ Protects and improves liver function
- ⊙ Helps combat high-altitude sickness
(by improving oxygen uptake in the blood)



REISHI RESEARCH (CONT.)

- ⊙ Antihypertensive effects
(especially arterial blood pressure)
- ⊙ Helps Regulation of blood sugar levels
- ⊙ Inhibits cholesterol synthesis
- ⊙ Anti-HIV
- ⊙ Platelet aggregation inhibitor



TURKEY TAIL

(*TRAMETES VERSICOLOR*)

- ◎ Very common on maples and other hardwoods, but also on some conifers
- ◎ Grows starting in mid-summer, mature in fall
- ◎ Anti-cancer & immune system modulating compounds including PSK (polysaccharide Kureha)



TURKEY TAIL LOOK-ALIKES

- ◎ Parchment fungi: no pores
- ◎ Trichaptum biforme: toothy pores, wedge-shaped, pink/purple cast
- ◎ Lenzites betulina: larger gill-like pores
- ◎ Minimal research, however:
 - Used in TCM to: enhance blood circulation, and support tendons and veins (Hobbs, 1995)



CHAGA

(INONOTUS OBLIQUUS)

- ③ Grows on birch
- ③ Sterile carpophore conk that looks like it is burnt, transitory fruitbodies hard to find
- ③ Makes a great tasting medicinal tea without additional ingredients



BIRCH POLYPORE

(*PIPTOPORUS BETULINUS*)

- ◎ Grows on birch trees starting in July, mature in September
- ◎ Treatment for bacterial and/or intestinal parasites during stone age, novel antibiotic compounds such as polyporenic acid A have since been isolated (Efimenko, 1961)
- ◎ Lanostanoids with anti-inflammatory & anti-hyaluronate lyase activity (Wandun, 2004)



TINDER POLYPORE

(*FOMES FOMENTARIUS*)

- ◎ Grows primarily on birch, maple and poplar (living or dead)
- ◎ Appearance white/grey or black
- ◎ A specific lignan completely inhibited the growth of *herpes simplex* virus (Kapich et al. 1992 as cited in Hobbs, 1995)
- ◎ Makes a “healthy tasting” tea

PHEASANTS BACK (POLYPORUS SQUAMOSIS)



- ◎ One of the first mushrooms in spring
- ◎ Fruitbodies can get very large
- ◎ Delicious if young, well cooked
and prepared with flavorful foods



MAITAKE

(AKA. HEN OF THE WOODS, HUI SHUHUA;
GRIFOLA FRONDOSA, PREVIOUSLY *POLYPRUS FRONDOSUS*)

- ◎ Grows at the base of Oak trees
- ◎ Some fruitbodies also get very large
- ◎ Delicious culinary mushroom with numerous medicinal properties

``THE BEST FOOD IS MEDICINE,
THE BEST MEDICINE IS FOOD...``



MAITAKE RESEARCH

- ⊙ Anticancer properties, both direct anti-tumor properties and prevention including Maitake D-fraction
- ⊙ Immune-potentialiation including Grifolan (3-branched beta 1,6 Glucan)
- ⊙ Blood pressure reducing properties in the water-insoluble fraction (Adachi and coworkers, 1988, cited in Hobbs, 1995)
- ⊙ Anti-HIV properties, in vitro, confirmed by Japanese and U.S. scientists (Stamets, 2000)
- ⊙ Liver protective properties (in vitro) (Lee et al, 1992)



SULFUR SHELF OR CHICKEN OF THE WOODS (LAETIPORUS SULPHUREUS)

- ⊙ Excellent edible when fresh
- ⊙ Grows on both hardwoods and conifers
- ⊙ Antimicrobial activity (Ershova Eiu et al 2003)
- ⊙ Methanol extract showed inhibition of HIV-1 reverse transcriptase activity in vitro (Mlinaric A et al 2005)



LION'S MANE OR BOARS HEAD MUSHROOM (HERICIUM ERINACEUS)

- ◎ Lions Mane Good for 5 internal organs according in TCM, promoting good digestion, and provides general nutrition (Hobbs, 1995)
- ◎ Grows on both hardwoods and conifers
- ◎ Hericenone B inhibits collagen induced platelet aggregation (Mori et. al. 2010)
- ◎ Liquid culture broth improves nerve cell growth and neurite extension (Park, 2002)
- ◎ Clinical trial demonstrated improvement in mild cognitive impairment (Mori et. al. 2009)



OYSTER MUSHROOM

(*PLEUROTUS OSTREATUS*)

- ⊙ Can fruit anytime but winter, usually in Fall
- ⊙ Lovastatin & Lysine
- ⊙ Delicious when stir-fried in a little olive oil and garlic with snow peas and Chanterelles
- ⊙ Perishability adds challenge to quality wild harvest and provides incentive for cultivation

OYSTER MUSHROOM LOOK-ALIKES

- ◎ Angel Wings (*Pleurocybella porrigens*)
 - ◎ Occurs in late fall, much thinner and wavy, fragile
 - ◎ Edible
- ◎ Late Fall Oyster Mushrooms (*Panellus serotinus*)
 - ◎ More tough and durable, greenish to brownish
 - ◎ Edible, but relatively bitter
- ◎ Flat Crep (*Crepidotus spp.*)
 - ◎ Look like small thin oysters but have brown spores
 - ◎ Not known to be poisonous



SHIITAKE

(*LENTINULA EDODES*)

- ◎ Generally not known to be growing wild although it is possible in proximity to outdoor mushroom farms, just very unlikely...
- ◎ Good shelf life fresh compared to other gourmet and medicinal mushrooms
- ◎ Antimicrobial activity, including activity against certain yeasts and molds (Hearst et. al. 2009)
- ◎ Immune stimulating polysaccharides (Lee et. al. 2009, Zhou et. al. 2009, among others)



METHODS OF PREPARATION

- ① Cooking or preparing as a tea
- ① Sample extraction (courtesy of Guido Mase):
 - 24 oz organic grain alcohol, 12 oz veg. Glycerin, 12 oz distilled water, 12 oz Reishi soaking for 6 weeks
 - &
 - 96 oz distilled water with 12 oz Reishi lightly boiled
 - until $\frac{1}{2}$ original volume, then blend with 1st part



MANY MORE GREAT OPTIONS FOR FOOD OR
MEDICINE INCLUDE:

CHANTRELLES
BOLLETES (ESP. KING BOLLETES)
MORELS
GIANT PUFFBALLS
TREMELLA
AND MANY MORE.

LET THIS BE THE START,
AND YOU CAN LEARN (AND EAT WELL)
FOR THE REST OF YOUR LONG HEALTHY LIFE...

Resources of Potential Interest

Appropriate Technology Transfer for Rural Areas

www.attra.ncat.org/attra-pub/mushroom.html

Green Mountain Mycosystems' Website

www.vermontmushrooms.com

Additional Mycology Information:

www.namyco.org/education/index.html

Spawn suppliers include:

www.alohamedicinals.com

www.fieldforest.net

www.fungi.com

www.wildbranchmushrooms.com

Market Stats: www.americanmushroom.org/nass.htm

