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Short Communication

Mushroom Picking for Beginners

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Abstract

One of the fastest growing pastimes these days is mushroom hunting. And no wonder, what with the latest scientific findings that many mushrooms contain compounds that cure everything from cancer to the common cold. This, on top of the fact that mushrooms provide a delicious adjunct to any diet, explains why mushroom hunters are hitting the woods in record numbers [1,2]. Mycology (pronounced mycolology) is the technical term for the study of fungi. And study we must, for there is always the danger of mistaking the safe and delicious species from the poisonous and delicious species. You wouldn't want to eat a toadstool, would you?

Among the thousand genera of available fungi, only a handful of them can be cultivated as edible mushrooms. But before that, let us first learn what mushrooms actually are? In simplistic terms, mushrooms are multi-cellular fungi. For a biologist, they actually are soft, fleshy extension of hyphae or mycelia appearing above the ground. Among the living organisms, they are classified into separate kingdom of fungi, distinct from plants and animals. Mushrooms lack in chlorophyll, and therefore, cannot synthesize their own food, which forces them to survive on readymade organic matter for growth [3]. Mushrooms come in many different shapes and appearances. In general, they feature a cap and a stalk; and frequently discovered on organic manure, wood, humus, or any rotting matter. Lack of chlorophyll pigment makes them appear in colors other than green, usually in white, brown, brown, and dark (truffles)

Edible Mushrooms

Among thousands of mushroom varieties, only a few hundred can be worth exploring for consumption safely. In general, an edible mushroom can be domestic or wild. Domestic mushrooms are the ones grown under supervised farming, and marketed through authentic retailers. Wild mushrooms generally found in the forests and fields. They, in general, are foraged in the wild, and may be limited for self-use or for sharing among friends, and relatives.

Classification of Edible Mushrooms

Edible fungi occur in two major taxonomic groups [4].

- The **basidiomycetes** include the mushrooms, shelf (bracket) fungi, and bolete;
- The **ascomycetes** include truffles and morels.

Mushroom Nutrition [5,6].

- Mushrooms endowed with natural proteins, ample amount of vitamins, minerals, and antioxidants.

- They contain vitamin B-12 in sufficient quantities which otherwise lacking in any plant produces.
- Despite of their high quality nutritional composition, they relatively low in calories, and fats and contain zero cholesterol.
- Additionally, mushrooms carry natural anti-oxidants such as ergothioneine, phenolic pigments etc.
- They indeed are excellent sources of essential minerals like manganese, selenium, zinc, copper, iodine, and Molybdenum.
- Furthermore, mushrooms are modest sources of vitamin-D (ergo-calciferol). Vitamin D plays a vital role in the calcium and phosphate metabolism.

Most mushrooms have the following features in common: a disk-shaped cap sits on a tubular stalk; on the underside of the cap is a radial arrangement of gills; the gills produce the spores by which the mushroom reproduces. Some mycologists take the

presence of these gills as proof that the mushroom evolved from the sea. But I digress. Mushrooms may be hunted from January to December, but if you really want to find some you will want to hunt them during their growing season, which runs from the second through the fifth day following the first rain after the third Thursday in March. The importance of correct identification cannot be overemphasized. It can mean the difference between basking in the afterglow of a fine meal of some of the finest delicacies that nature can provide or lying on a slab in the morgue. And that's no truffle... er, trifle. But if you carefully compare each specimen you find with the illustrations in a mushroom hunter's field guide, or to the descriptions in this article, you can narrow the possibilities down to a few 'look-alikes.' From there it is a simple matter to make a positive identification by examining the spores under a scanning electron microscope. With the advent of the new portable models, no mushroom hunter should be without one in his field kit. Mushroom names are stated according to the taxonomy given in Northern Europe's Encyclopedia of Common Mushrooms (NEECM) and may vary in different parts of the world depending on the context but in the culture and literature they are well known and therefore we choose this taxonomy but could be identified elsewhere by description.

The Mushrooms

Common Name: Mushroom Figure 1(A)

Genus, species: *Agaricus bisporus* (J.E. Lange) Imbach

Description: Small white button cap 2-9cm in diameter, short stalk 1-3cm long.

Habitat: Can be found in clumps usually beside broccoli or cauliflower in produce section.

Edibility: Edible but boring. Be careful not to confuse it with poisonous species.

Look-alikes: They all look just about the same. Some are bigger, some are smaller.

Common Name: Disk mushroom Figure 1(B)

Genus, species: *Agaricus frisbus*

Description: Large disk-shaped cap, 24-36cm in diameter, turning under at the margin; brightly colored, usually red or blue. Stem is usually very short or missing altogether.

Habitat: Open areas such as parks and playgrounds. Sometimes may even be found on rooftops.

Edibility: Edible but very tough. Some have described its texture as almost like plastic. Those who eat this species regularly recommend parboiling it for several days. I myself have had little luck making this one palatable.

Look-alikes: *Agaricus hubcapius*

Common Name: True Molar, Dog Mushroom Figure 1(C)

Genus, species: *Morchella swell fella*

Description: Round, disk-shaped crackled cap sitting on a tubular stalk.

Habitat: Deep in the woods.

Edibility: Edible and choice.

Look-alikes: *Gyromitra biteya*

Comments: This species is particularly delicious and as such is much sought-after. It has a robust flavor and a meaty texture, making it an excellent choice for meat-craving vegetarians. It is sometimes called the mushroomer's best friend.

Common Name: False Molar

Genus, species: *Gyromitra biteya* Figure 1(D)

Description: Round disk-shaped crackled cap sitting on a tubular stalk.

Habitat: In the woods.

Edibility: Deadly!

Look-alikes: *Morchella swell fella*

Comments: Onset of symptoms occurs from 12 to 48 hours after ingestion. The first symptom is the loss of the ability to pronounce the letter 'F,' followed by mild to severe death. Sometimes a positive identification between *M. swell fella* and *G. biteya* can be made on the basis of whether it was found in the woods or deep in the woods.

Common Name: Squirrel Catcher, Venus Squirrel Trap Figure 1(E)

Genus, species: *Amgoneta growsnqurl*

Description: Large bowl-shaped cap, 20-30cm in diameter, partially filled with slimy, acrid fluid. Slender stalk protrudes slightly above liquid level. Knob at end of stalk resembles acorn.

Habitat: In the woods.

Edibility: Edible, but who would want to?

Look-alikes: *Amgoneta chipmunk*

Comments: A squirrel sees the acorn, climbs in to fetch it, slides down the slippery sides of the cap into the liquid and dissolves. Yum! Most squirrels give this species a wide berth.

Common Name: Screamer Figure 1(F)

Genus, species: *Agaricus decibellus*

Description: Round disk-shaped cap sitting on a tubular stalk.

Habitat: In the woods.

Edibility: Edible.

Sound-alikes: Fingernails on blackboard, unhappy Rhesus monkeys.

Comments: This species has developed one of the best defense mechanisms short of being poisonous. It screams at the top of its gills when you try to pick it. It is mainly because of this species that no experienced mushroom hunter is without ear plugs in his field kit.

Common Name: Reviled Amanita Figure 1(G)

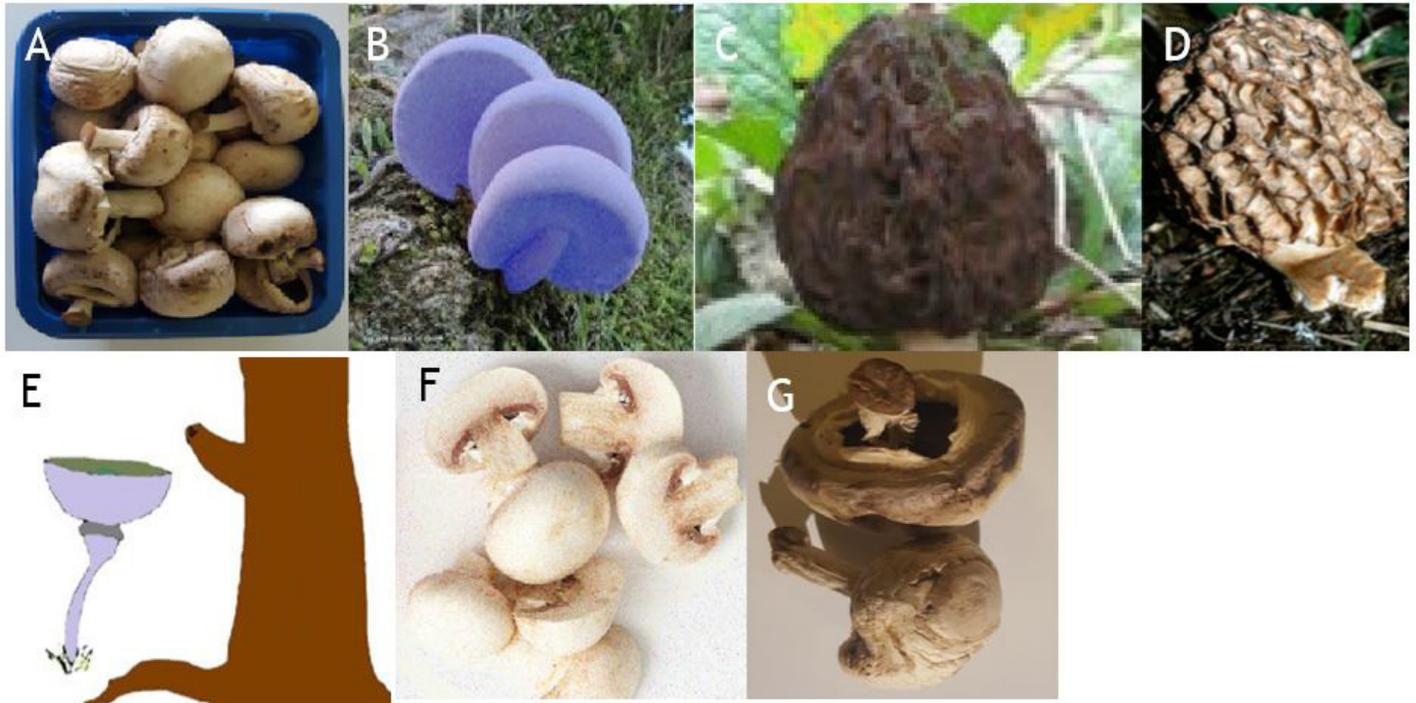
Genus, species: *Amanita yodeadsucca*

Description: Round disk-shaped cap sitting on a tubular stalk.

Habitat: Anywhere it wants to be.

Edibility: NO WAY!

Look-alikes: *Agaricus bisporus*, *Agaricus frisbus*, *Morchella swell fella* (when dried out), *Gyromitra biteya* (also when dried out), *Amgonaeta grownsqurl* (in certain locations), *Agaricus decibellus* and others.



Figures 1 (A-G): Mushrooms mentioned in text. **Note:** Figure 1E is a drawing to likeness of real mushroom no photo available this time of year.

Comments to Figure 1 (E): My mother taught me that if you can't say something nice, don't say anything at all, but I am going to make an exception in this case. This is without a doubt the worst, the most despicable, malevolent, conniving, malicious, malignant, abominable, mean, and generally most thoroughly disgusting mushroom known to man. Not only does it contain several toxins for which there is no known antidote but it has also been known to trip up and bite hapless hikers. There are several cases on record of hunters contracting cancer from just looking at one too closely. Just before he died, Dr. Rollo Moss commented, "It seems to be sneering at me." Apparently, some people can eat this species with no ill effects, but I cannot recommend it.

Results and Discussion

There are many mushrooms out there and it can be difficult to distinguish them from one and other especially if they are in different states of decomposition as describes above. Generally, if you pick an edible mushroom it's ok but as brought to our attention in several elegant studies by Sevindik and colleagues it's also important not to pick them close to chemical factories as even the edible mushrooms can contain dangerous substances like Oxidative Stress Indices (OSI) [7,8,14,16] however if its low it's ok to eat them and they are good for you [9,15]. As a final caution we want to raise "a finger or warning" as perfectly edible mushrooms growing in clean places can contain toxic bacteria, viruses and bacteria-like proteins as shown in recent articles [10-12] but maybe it is good to wash them however, as study in washing salad shows that it does not help so much [13]. To our knowledge this avenue of research has not been performed in mushrooms and is an area in need of further research. As a conclusion we encourage everyone to go out

there and pick mushrooms but, make sure they are fresh otherwise correct identification is difficult as mentioned above, and growing in clean places and just to be safe clean them properly before eating.

References

1. Ollsson J (2011) Rekord mycket svampiVärmland. NWT. In Swedish.
2. Oollsson L (2015) Ibrahims svamp fynd kanvar aettriktigtungtrekord. ÖP. In Swedish.
3. Hay WD (1887) An Elementary Text-Book of British Fungi. London, S. Sonnenschein, Lowrey.
4. C.F.A.N. B (2013) Classification, names & identification.
5. Mattila P, Suonpää K, Piironen V (2000) Functional properties of edible mushrooms. Nutrition 16: 694-696.
6. Nicholas LG, Ogame K (2006) Quick American Archives.
7. Sevindik M, Akgul H, Akata I, Alli H, Selamoglu Z, et al. (2017) *Fomitopsis pinicola* in healthful dietary approach and their therapeutic potentials. Acta Alimentaria 46: 464-469.
8. Sevindik M (2018) Antioxidant Potentials of *Helvella leucomelaena* and *Sarcosphaera coronaria*. J Bacteriol Mycol Open Access 6.
9. Pehlivan, Mustafa Sevindik (2018) Antioxidant and Antimicrobial Activities of *Salvia multicaulis*. Turkish Journal of Agriculture - Food Science and Technology 6: 628-631.

10. Komárek, JvanovKavková E, Houser J, Horáčková A, Ždánská J, et al. (2018) Structure and properties of AB21a novel *A. bisporus* protein with structural. Proteins.
11. Sahin E, Akata I (2018) Viruses infecting macrofungi. *VirusDisease*29: 1-18.
12. Pennone V, Lehardy A, Coffey A, Mcauliffe O, Jordan K, et al. (2018) Diversity of *Listeria monocytogenes* strains isolated from *Agaricus bisporus* mushroom production. *Journal of Applied Microbiology*.
13. Uhlig E, Olsson C, He J, Stark T, Sadowska Z, et al. (2017) Effects of household washing on bacterial load and removal of *Escherichia coli* from lettuce and ready to eat salads. *Food Science& Nutrition* 5: 1215-1220.
14. Akgul H, Sevindik M, Coban C, Alli H, Selamoglu Z, et al. (2017) New Approaches in Traditional and Complementary Alternative Medicine Practices: *Auricularia auricula* and *Trametes versicolor*. *J Tradit Med Clin Natur* 6: 239.
15. Sevindik M (2018) Antioxidant Potentials of *Helvella leucomelaena* and *Sarcosphaera coronaria*. *J Bacteriol Mycol Open Access* 6.
16. Sevindik M (2018) Determination of Antioxidant, Antimicrobial DNA Protective Activity and Heavy Metals Content of *Laetiporus sulphureus*. *Fresenius Environmental Bulletin*: 1946-1952.