



# TIPS FOR COOKING MUSHROOMS

We all have in mind an idea of the typical mushroom: a spongy intruder which appears and disappears all of a sudden, perched on its pedestal, wearing a beige hat with gills underneath. This portrays the button mushroom whose taste we tend to attribute to anything called a mushroom. This generalization is not surprising since the species represents nine tenths of all cultivated mushrooms in the world.

The truth is, though, that taking into account the wild species, there is as much, if not more diversity among mushrooms as there are among plants. Thus, there is no unique method for their culinary preparation. Many factors must be taken into account when cooking a particular mushroom: its particular taste, aroma, texture, size, volume, consistency, and moisture content.

## THE CHOICES

One rule is of the utmost importance when it comes to food security: eat only food whose edibility is in no doubt.

What's more, some elementary precautions are recommended when food is harvested in a forest, particularly when eating wild mushrooms.

- Cautiously disregard toxic, old, deteriorated, parasitized species
- Avoid mushroom blends whose components are uncertain
- Use restraint the first time you eat a species and avoid hearty servings

About 10% of the population is chitin intolerant. Chitin is a derivative of glucose found in all mushrooms: the proportion of those who are chitin intolerant is modest compared to those who are lactose intolerant but it explains why many hold back.

Mushroom aroma is most often accentuated when ripening. Mushrooms have a stronger taste at the time of spreading their spores (sporulation) because odours attract animals that will disperse the spores in the environment. It is generally the best time to consume them, although this fact is not always reflected in relative prices. For cultural reasons, there are some oddities: the very young matsutake (*Tricholoma matsutake*) for instance commands astronomical prices on the Japanese market despite the fact that they are less perfumed than their elders.

## PREPARATION

**Cleaning** wild mushrooms is imperative. Preferably, they are brushed when picked to avoid spreading dirt in the basket content. It is advisable to rinse mushrooms lightly just before cooking, removing leftover dirt. Furthermore, numerous animals appreciate eating mushrooms, they trample them and leave dirt on the mushrooms. Insects will leave their eggs in the flesh and some of the most delicious species may host maggots.

By the way, it is not a guarantee of innocuousness if animals eat a mushroom: rabbits devour white amanitas, the deadliest species for humans, without any apparent harm.

After having scrubbed the soil off, removed the sand and discard the unappetizing parts, we recommend brushing the mushrooms under a light stream of water minutes before cooking.

Because of their morphology or their environment, certain species are prone to dirtiness, concealing undesirable particles in their wrinkles. Polypores that spread out a bit in the same way



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as cabbage, such as lion's mane (*Hericium americanum*), comb tooth (*Hericium coralloides*) or cauliflower mushrooms (*Sparassis crispa*) hide insects or sand in their «foliage». Before cooking, they may be completely submerged in a lightly vinegared water without damaging their texture or preservation.

Mushrooms that develop in temperatures near to freezing are typically covered by a viscous cuticle that protects them from the cold. For instance, the skin on the caps of autumn boletes of the *Suillus* genera is laxative: unless dried, peeling it (easy task) is recommended.

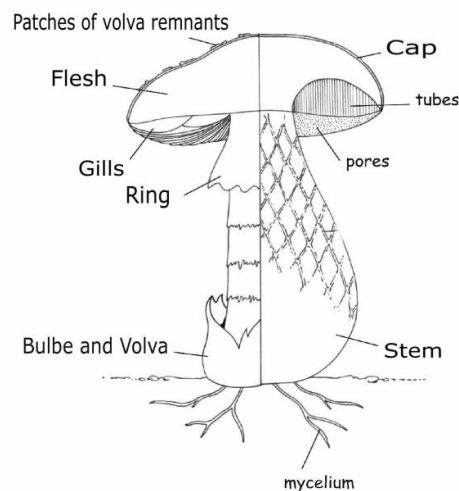
Species of the *Hydnum* genera can be distinguished by the spines under the caps, comparable to the gills under the cap of the agarics. The most sought-after mushrooms in that group are the hedgehogs (*Hydnum repandum/umbilicatum*): some cooks prefer removing the spines to avoid burning them before the mushroom is fully cooked. The spines can then eventually be put aside for another use.

Many species are naturally spongy under the cap. Such is the case of some «boletes»: instead of gills, they have pores or tubes. Some cooks opt for removing the tubes altogether.

Also showing pores, the 'polypores' are, for the most, indigestible: their tubes are tightly attached to the cap. Few can be eaten, but some are used in decoctions: many medicinal species are polypores.

Many species have fibrous stems that we should avoid mixing with caps in the pan. In some instances, the stems are simply thrown away: fairy ring mushrooms (*Marasmius oreades*), Haitian djon-djon (*Psathyrella copriniceps*) are examples. With boletes of the *Leccinum* genera, the rough bristled stems are cut: due to their relative rigidity, they may be dried and ground.

Of all mushroom parts, the caps are usually of the most gastronomic interest: that is where the aromas are concentrated for the reasons explained above.



Fresh mushrooms are sliced to reduce their volume and to obtain pieces of the same size for uniform cooking. They may be quartered, sliced or diced. The small or fragile ones will be kept whole.

The absorbing capacity of mushrooms is legendary even though not generalized. For this reason, it is preferable to go lightly at first so as not to hide the flavour. Too much salt accelerates the evaporation and dries the food. Better to adjust the amount of seasoning as a finishing touch.

## PRESERVATION



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Fresh mushrooms are known to deteriorate quite fast. As soon as possible after picking and to prolong the preservation cycle, **refrigeration** is necessary and temperatures should be maintained between 0 and 2°C all the way until preparation for cooking. Exposure to air circulation and drafts will dry the produce. Freshness and appearance will be preserved for a much longer time, when vacuum packed before refrigeration.

Mushrooms should never be kept in plastic bags which would accelerate deterioration: paper bags are well suited for storage, unless vacuum packed.

Of course, preservation time varies according to species and the water content: shaggy manes (*Coprinus comatus*), with 95% humidity, are less long-lasting. Porcinis (European *Boletus edulis* and similar North American species) are vulnerable since they sometimes shelter maggots. Firm specimens such as common chanterelles (European *Cantharellus cibarius* and similar North American species), swollen-stalked cats (*Catathelasma ventricosa*), matsutakes (*Tricholoma matsutake/magnivelare*), retain their shape for over a week when refrigerated.

There are numerous preservation techniques to keep one's mushrooms longer.

Numerous species are well adapted to **drying**. No nutritive value or taste is lost if you avoid excessive drying temperatures that will cook the mushroom. What's more, many thermolabile toxins dissipate in the heat.

To dehydrate, heat at approximately 42°C and ventilate so as to eliminate humidity. An oven without ventilation is not recommended. Air drying is possible and inevitable in remote areas: the duration will vary according to ambient conditions and insects will be attracted to the mushrooms.

Water content should be brought to less than 10% for long term preservation. The average water content of mushrooms is around 90%, one kg of fresh mushrooms will be reduced to about 120g when properly dehydrated (but one kg of shaggy manes will be reduced to as little as 60g after drying).

In passing, rainfall is beneficial to growth. Harvests are then abundant and the specimens are bigger. However, water content is increased, aromas are diluted and shelf-life time decreases.

Certain favoured species do not respond well to drying, especially those that are hard. These include chanterelles (*Cantharellus sp.*) and truffles (*Tuber sp.*). They remain firm despite rehydration or their flavour profile is altered. Sometimes, milling will make it possible to recuperate them for other uses: condiments, flour, broth and more but the aroma might be disappointing.

Evidently, drying time depends on the size. Better to cut the fleshy mushrooms into uniform thin slices. At the end of the treatment, temperature may be raised to 60°C to eliminate any residual microorganisms. Kept in good conditions away from humidity, mushrooms can be preserved for years: taking note of the nutritive value and flavour, who knows, it may become a food of choice for interplanetary trips.

Mushroom flavour is very present in the water of the rehydrated mushrooms thus providing a usable broth. It is also found in the powder of the dried, milled mushrooms and it lends itself to



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quite a few applications: sauces, vinaigrette dressings, baking and pastries, ice cream, seasonings, etc. ...

**Freezing** is efficient but requires more care and resources. Excluding the industrial methods such as nitrogen deep-freezing, it is common practice to blanch the mushrooms 30 seconds in boiling water before freezing them separately so as to avoid their sticking to one another. Once frozen, they can be stored in an airtight plastic bag in the freezer. The process of removing the air from the bag and at the same time removing the humidity, minimizes the risk of frost. In turn, this ameliorates and lengthens storage time (up to 6 months).

A simple preservation method that applies to most mushroom species is to let them sweat a few minutes in a pan on moderate heat to avoid excessive evaporation. The whole content, including the water, is poured into sealed bags, preferably airtight and then stored in the freezer. Even the especially fragile shaggy manes, will conserve surprisingly well with this method. To cook the mushrooms later, simply put frozen mushrooms in the pan and cook them in the melting liquid.

A **marinade** is another alternative. First blanch the mushrooms and pasteurize the jars in boiling water. Blanching will confer a notable firmness to the specimens. In view of attaining a secure and long-lasting conservation, the immersion liquid must be acidic with a pH lower than 4.6.

To obtain a sweet and sour marinade, a suggestion: mix in equal proportions: wine, vinegar and water to which you add 60g of sugar and 5g of salt per litre along with seasonings.

**Salting** is a common practice in northeastern Europe, where, historically, food could be lacking during winters. One species of lactarius (*L.deliciosus*) is particularly popular because they lend themselves well to this treatment.

## PREPARATIONS

It is strongly recommended to cook all species of mushrooms before eating. In fact, mushrooms picked in the forest are not exempt from microorganisms, insects and dirt that don't necessarily disappear despite cleaning. Also, certain prized species such as the morels (*Morchella esculenta/elata*), contain toxins that dissipate during heating. Lastly, chitin, a polysaccharide present in the cell wall, is better digested when cooked.

Despite this warning, many wild soft flesh species, once well cleaned, can be eaten raw or marinated in a lightly acidified vegetable oil with a bit of lemon: oyster mushrooms, some boletes, edible amanitas (*Amanita ceasarea/jacksonii*), fairy ring mushrooms (without the stem).

**Blanching** consist of boiling the mushrooms in a lightly salted water for 30 seconds. Its aim is to first eliminate the toxicity of certain species, eliminate the bitterness and to prepare them for preservation. In fact, this treatment, which is not foolproof, retains certain toxins and is no more recommended for this end.

The gyromitra (*Gyromitra esculenta*) was until recently consumed after blanching until its persistent toxicity was recognized and its sale forbidden almost everywhere. However, it is still prized in Sweden where they will successively blanch it over and over before cooking. Blanching also softens the bitterness acquired by aging specimens of some species like hedgehogs. It also precedes freezing and marinating.



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**Soups, and broths** are a fabulous way to prolong the pleasure of tasting mushrooms. Brown them in the pan before immersing them in the broth. Dried powdered or milled mushrooms are choice ingredients for these dishes.

**Decoction** is the practice of dissolving the thermolabile substance of medicinal mushrooms, generally polypores which are otherwise indigestible. After having boiled for a long time the polypores are then discarded. Boiling for many minutes, even for many hours, softens the mushroom flesh. Certain species, like shiitakes (*Lentinula edodes*), have chewy caps and hard stems: the caps are usually eaten in soups while the stems are sometimes discarded.

Rare are the species that do not lend themselves to being cooked in a simple **frying pan**. The mushrooms are browned, preferably in a non-stick pan with a bit of vegetable oil which will give them their colour. Some will prefer butter but beware of the high heat blackening the butter. Thus, we suggest you add the fat toward the end of cooking. Cooking time depends on the size and form of the pieces. Fleishy and hard species or thick slices will require up to 15 minutes: think of the swollen-stalked cats, the matsutakes, the giant puff balls slices (*Langermannia gigantea*), among others.

**Casserole** cooking tenderises tougher specimens. Before putting in your mushrooms with pieces of lard, it is suggested to slightly cook them in a pan until golden then cook them in a preheated oven at 170°C for 25 minutes.

Mushrooms can be cooked in the **oven**. First brown the mushrooms whole in the bottom of a cooking pot, starting with the fleshy ones. When golden, add spices, wine and broth, a suggestion: 500g of firm mushrooms for 200 ml of broth and 50 ml of wine for 1 ½ hours.

**Stews** and **pot-au-feu** that incorporate meat, vegetables and seasoning give an interesting mix of flavours and make dishes that will keep for many days.

Fleishy mushrooms such as matsutakes, swollen-stalked cats, some boletes and lactarius, giant puff balls (sliced), some agaricus (*A. campestris/arvensis*) or edible lepiotas (many species are toxic) are well suited for grilling. They can be coated teriyaki style, marinated with thyme or basted with oil and then peppered and grilled. The less fleshy species, such as yellow-footed chanterelles (*Craterellus tubaeformis*), black trumpet (*Craterellus cornucopioides*) are not suited for this treatment since they will quickly burn over a fire.

## **Pleasure and food safety**

As much for their flavour as for their exceptional nutritive value, mushrooms represent an outstanding eating choice. In the forest, they are an occasion for a wonderful and frantic treasure hunt. In cooking, they stimulate creativity. But we must always keep in mind: eat only those whose innocuousness presents no doubt.