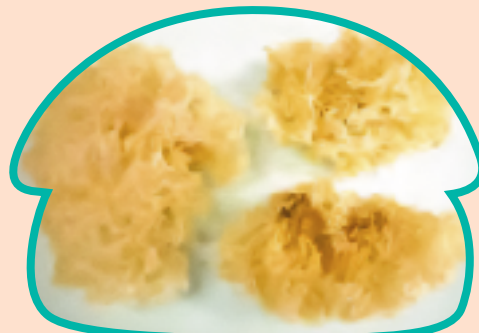


Annex

Common edible mushrooms in Hong Kong



Fresh *Lentinula edodes*
(syn. *Lentinus edodes*; shiangu, shiitake,
black oak mushroom, winter mushroom,
flower mushroom)



Dried *Tremmella fuciformis*
(jelly fungus, silver ear)



Fresh *Lyophyllum shimeji*
(shimeji, lingzhi-gu)



Fresh *Flammulina velutipes*
(gold mushroom, gold needle mushroom,
winter mushroom, velvet shank)



Fresh *Volvariella volvacea*
(The Chinese mushroom, straw
mushroom, 'egg' mushroom)



Dried *Auricularia auricula*
(Jew's ear, wood's ear)

Fresh *Pleurotus citrinopileatus*
(golden cap mushroom,
golden cap oyster
mushroom)



Fresh *Agaricus brunnescens*
(syn. *A. bisporus*; the cultivated
mushroom, button mushroom,
white mushroom)



Fresh *Pleurotus pulmonarius*
(phoenix mushroom,
hsiu tseng mushroom)

Food Poisoning Related to Mushrooms





Nowadays, mushrooms made up an important part of Hong Kong people's menus. There are about 20 mushroom species commonly sold in Hong Kong (see Annex). They include winter mushroom (*Lentinula edodes*) and straw mushroom (*Volvariella volvacea*). Mushroom consumption is not without risk and sporadic cases of mushroom food poisoning do occur.

Symptoms of Mushroom Poisoning

Mushroom poisonings are generally acute and manifested by a variety of symptoms, depending on the species and amount consumed. The incubation period is usually short. Gastrointestinal symptoms such as nausea, vomiting and abdominal pain are the commonest symptoms for mushroom poisoning. Sometimes distinguishing features such as extreme thirst, profuse sweating, hallucination, coma and other neurological symptoms may be manifested. Allergic reactions including self-limiting gastrointestinal upset have occasionally been reported in some people who are particularly sensitive following the consumption of some common mushroom species. Minor gastrointestinal and cardiovascular upset will also occur if alcoholic beverages are consumed within 72 hours after eating some mushrooms such as fat-foot funnel cap (*Clitocybe clavipes*) and inky cap (*Coprinus atramentarius*). Severe cases may result in liver failure and even death.

Mushroom toxins are produced naturally by the fungi themselves. Most mushrooms that cause human poisoning cannot be made non-toxic by cooking, canning, freezing or other means of processing.

Causes of Mushroom Poisoning

- Consumption of poisonous mushrooms or their toxic metabolites
- Consumption of raw or undercooked mushrooms which produce heat labile gastrointestinal irritants, e.g. *ZhuDu* mushroom (*Clitocybe geotropa*), button mushroom (*Agaricus brunnescens*) and straw mushroom
- Consumption of wild poisonous mushrooms
- Consumption of poisonous mushrooms mixed with non-poisonous mushrooms sold in markets
- Consumption of mushrooms contaminated with foodborne pathogens



Don't pick wild mushrooms for eating

Some edible wild mushrooms are very similar in appearance to poisonous varieties and may grow in the same habitat. Therefore, wild mushrooms are usually inspected by mushroom identification experts before they are sold. Wild mushrooms may contain different kinds of toxic substances like amatoxins, muscarine or gastrointestinal toxin which can cause abdominal pain, vomiting, convulsions or even death. The public should be aware of the risk in consuming wild mushrooms, and should not pick wild mushrooms for consumption.



Soaking dried mushrooms

It is common to soak dried mushrooms (such as black fungus) in water before using them in a dish. While dried edible mushrooms do not contain toxins, soaking them promotes bacterial growth if not handled properly. To avoid food poisoning, it is best to wash dried mushrooms under running water before placing them in clean containers for soaking. Avoid soaking too many mushrooms all at once. Mushrooms that have been soaked should be prepared and consumed as soon as possible. While there is no recommended maximum time for soaking mushrooms at room temperature, it is generally recommended that perishable foods not be left at room temperature for more than 2 hours. If overnight soaking is required, keep mushrooms in the refrigerator. Dispose dried mushrooms if slime or abnormal smells are found after soaking.



Listeria in mushrooms

In the past, there were overseas food poisoning incidents related to eating enoki mushrooms contaminated by *Listeria monocytogenes* (LM), predominately found in susceptible populations including infants and young children, the elderly and people with weakened immunity. Of note, contracting LM can also cause miscarriages or stillbirths among pregnant women. While LM can survive and multiply at temperatures as low as 0°C, the bacteria can be easily destroyed under normal cooking temperatures. The public is advised to store uncooked mushrooms and cooked food separately to avoid cross-contamination. Mushrooms should be thoroughly washed and cooked before consumption.



Take home messages

- Do not pick wild mushrooms for consumption as distinguishing edible mushrooms and inedible species or their toxic metabolites is difficult (Figure 1).
- Buy food from reputable and reliable suppliers.
- Check the 'use by date' when buying prepackaged mushrooms.
- Do not buy mushroom products which are doubted to be mixed with unknown species (Figure 2).
- Do not buy mushrooms which look unhygienic (with growing substrates left with the product) (Figure 3 and 4) or show signs of spoilage (with coloured spots / abnormal smell / slims, etc.) (Figure 5).
- Wash and cook mushrooms thoroughly before consumption.
- Mushrooms should be kept in the refrigerator if overnight soaking is needed.
- Seek medical treatment immediately if mushroom poisoning is suspected.

Spoiled / contaminated / improperly harvested / poisonous mushrooms



Fig. 1 Poisonous *Lepiota species* previously involved in mushroom poisoning due to misidentification by the public



Fig. 3 Fresh shiitake with "dirty feet" (red-circled) caused by traces of growing substrates left with the harvested product

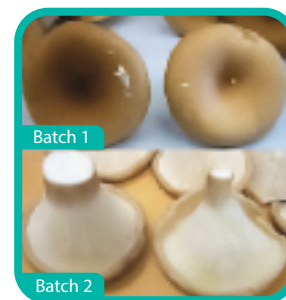


Fig. 2 Two different batches of *ZhuDu* mushrooms. Both are of mixed *Clitocybe species* (common name: funnel-capped mushrooms)



Fig. 4 Improperly harvested *Flammulina velutipes* (winter mushroom) with abundant amount of residual substrates



Fig. 5 Fungal contaminated fresh shiitake (red-circled)

Acknowledgement

The Food and Environmental Hygiene Department would like to thank Professor Siu-Wai Chiu of the Chinese University of Hong Kong for her expert advice and permission for use of the photographs printed in this leaflet.