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Oyster cap mushrooms

How to grow oyster mushrooms at home

Aim

Oyster cap mushrooms are among the easiest mushrooms to cultivate. They can easily be grown on clean, moistened toilet paper. This method is a good introduction to mycology, particularly for younger school pupils, because after the initial incubation the mushrooms appear within days. Investigations into the effect of light and ventilation on the shape of fruiting bodies can also be carried out.

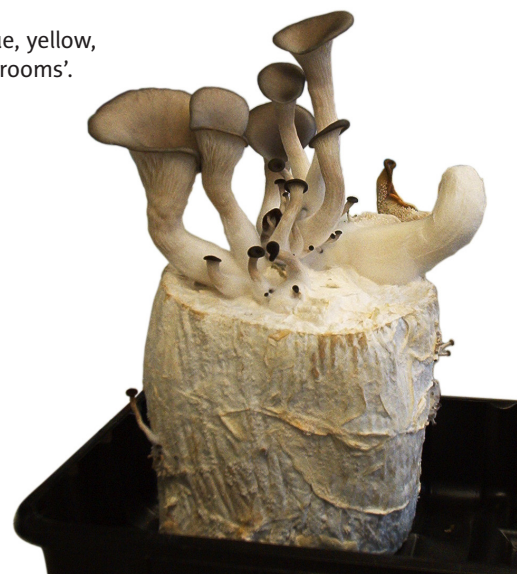
Introduction

The oyster cap mushroom, *Pleurotus ostreatus*, grows in temperate forests throughout the world, usually on fallen trees. It has been cultivated in Asia for food for many years and is now grown commercially in many countries. A cultivation technique which imitates the natural situation is to drill holes into hardwood tree stumps which are then inoculated with plugs that contain the fungal mycelium.

Alternatively, the fungi may be grown in large bottles, plastic baskets or perforated plastic tubes or bags of pasteurised or steam-sterilised cellulosic materials (such as straw, cotton or paper waste).

The oyster mushroom is one of the few known carnivorous mushrooms; its mycelia can trap, kill and digest nematodes. The fungi are believed to obtain nitrogen by this means.

Related species with different coloured caps (grey, blue, yellow, pink and white) are also sometimes sold as 'oyster mushrooms'.



Equipment and materials

Needed by each person or group

Equipment

- Kettle for boiling water
- Large saucer or paper plate

Materials

- Soft paper toilet roll (it is important to use unbleached paper)
- *Pleurotus ostreatus* starter culture, 50 g
- Plastic wrap or a large plastic bag

Procedure

- 1 Place a new, clean toilet roll on a saucer or plate.
- 2 Carefully pour boiling water from the kettle into the centre of the toilet roll, until the paper is thoroughly moistened. Leave the toilet roll to cool down for 10–15 minutes. *The boiling water will help to partially sterilise the paper.*
- 3 Remove the cardboard tube from the centre of the toilet roll. Pour the *Pleurotus* starter culture into the middle of the paper.

Fig. 1

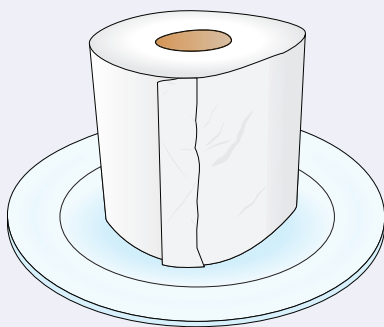


Fig. 2

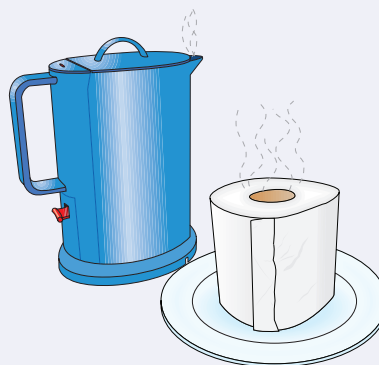
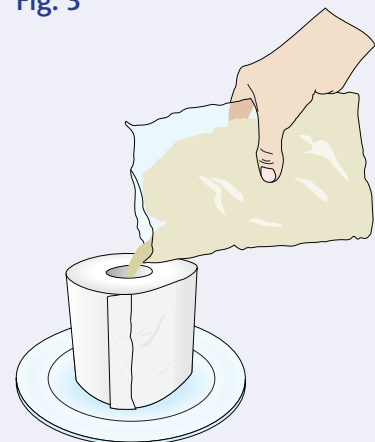


Fig. 3



- 4 Cover the inoculated toilet roll loosely with plastic wrap or a plastic bag to stop it drying out, and leave it in a warm (25–30 °C) dark place for about two weeks, until a dense white mycelium completely covers the paper. *The *Pleurotus* fungus will grow through the paper, breaking down the cellulose and using it as an energy source. After two weeks the toilet roll will look like a white Stilton cheese and smell strongly of mushrooms.*
- 5 Put the still-covered toilet roll into a refrigerator at about 4 °C for 48–96 hours. *This brief cold shock will trigger the production of fruiting bodies (mushrooms).*
- 6 Remove the toilet roll from the refrigerator and unwrap it. Leave the toilet roll in a cool (8–14 °C), light and airy place (a window sill from which inquisitive neighbours can see it is ideal).

It is important that the toilet roll does not dry out. A hand sprayer may be used to moisten the paper from time to time. After 12–17 days oyster mushrooms start to be produced; the exact time depends upon the temperature, humidity and the wavelength and intensity of the ambient light.

Fig. 4

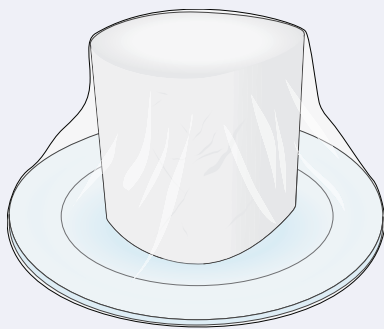


Fig. 5

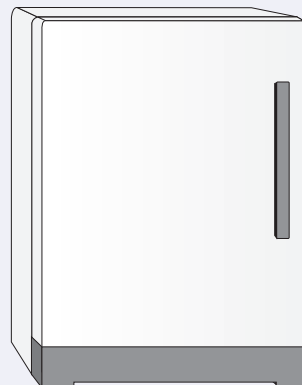
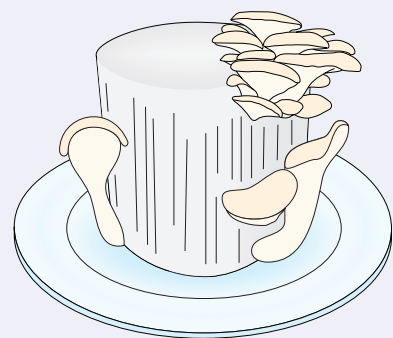


Fig. 6



Safety guidelines



The very large inoculum suggested here should ensure rapid growth of oyster mushroom mycelium which will out-compete any chance contaminants.

Some people are allergic to mushrooms or mushroom spores and others may become sensitised by high concentrations of spores. The mushrooms should therefore be picked before the spores are released. This is best done when the margin of the developing mushroom has unrolled, becoming flattened and slightly undulating.

Preparation and timing

It takes about one month before mushrooms are produced.

Troubleshooting

Regulate the humidity appropriately. Do not allow the toilet paper to dry out. Excessive humidity may encourage the growth of other moulds, however.

Additional investigations

This basic activity may be extended in several ways to investigate, for example, the effect of light (both intensity and wavelength) and ventilation on the shape of the mushrooms. The effect of the duration of the cold shock on the induction of fruiting may also be studied.

On his web site 'Oyster mushrooms are good!', Ralph Kurtzman relates the morphology of the mushrooms to their natural history:

"Two factors control the stem length: light and ventilation. The natural habitat for oyster mushrooms is on recently dead trees or branches in the forest. Sometimes the branches that the mushrooms grow on fall to the ground and are covered by leaves or other debris. If mushrooms are to distribute their spores, they must grow above the debris. Both light and low carbon dioxide are signals that the mushroom is in the open where it can distribute its spores. Some of the debris will be rotting and releasing carbon dioxide, so carbon dioxide is usually found in high concentrations on the forest floor. Winds ... remove carbon dioxide, but can have little effect on that in the debris. In seeking the low carbon dioxide levels, the mushrooms escape the debris. In nature, winds serve a second purpose, they help distribute the spores; that is one purpose the grower wants to avoid. He must avoid it by timing the picking."

Leek and oyster mushroom terrine with hazelnut vinaigrette

Ingredients

- 1.2 kg trimmed leeks, cut into 13 cm lengths
- 100 g oyster mushrooms, blanched and drained
- bunch of chervil
- vinaigrette made with hazelnut oil
- salt and freshly ground pepper

Method

- 1 Slit the leeks lengthways and wash them well.
- 2 Tie them into equal bundles and cook until tender but still 'al dente' — about 3–4 minutes in boiling water.
- 3 Put the leeks into a large bowl of iced water, then drain them well, squeezing out excess water.
- 4 Line a 10 x 15 x 8 cm terrine or loaf tin with foil and pack the leeks in firmly.
- 5 Season well with salt and pepper as you make alternating layers of green and white leeks and drained mushrooms, ending with a layer of leeks which should be above the level of the terrine.
- 6 Place a piece of board or stiff card, cut to fit the inside of the terrine and covered with foil, over the top layer of leeks and invert the whole terrine on to a flat dish.
- 7 Weigh down the terrine with a kilogram mass and refrigerate for 6 hours or more to compress the leeks.
- 8 To serve, unmould the terrine on to a serving dish and remove the foil carefully. Decorate with chervil sprigs. Serve with hazelnut vinaigrette.

Other sources of information

Publications

Dickinson, C.H. (1988) Homegrown oyster caps. *Mycologist*, 2 (4) 172–173.

Web sites

Oyster mushrooms are good!

<http://www.oystermushrooms.net>

This web site has the text of a complete book by Ralph Kurtzman on the cultivation of oyster mushrooms, with many useful practical hints.

MushWorld

<http://www.mushworld.com>

Free registration is required for this excellent site which has extensive details of mushroom cultivation, photographs, etc.

British Mycological Society

<http://www.britmycolsoc.org.uk>

Fungi for Schools (a web site of the British Mycological Society)

<http://www.fungi4schools.org>

Both of these web sites are general mycology sites with useful background information, details of taxonomy, etc.

Suppliers

The NCBE supplies oyster mushroom starter culture (mycelium on sterilised cereal grain) to schools and colleges. Alternatively, it is often possible to buy oyster mushroom culture from garden centres or horticultural suppliers.

Storage of materials

The starter culture may be stored for 4–6 weeks in a refrigerator at 3–5 °C.

Acknowledgement

The recipe was kindly supplied by John Watson, who in 1992 was Head Chef at the Albany Hotel, Edinburgh.

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