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Useful fungi of the world: the monkey head fungus

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The spine fungi, which grow on the trunks, branches and stumps of trees, produce strange but beautiful mushrooms. They belong to a genus called *Hericium*, and there are a number of species throughout the northern hemisphere. Amongst the best known are the 'spine face' (*H. cirrhatum* (Pers.: Fr.) Nikol.) which is branched with several, shell-shaped caps, and the 'coral spine fungus' (*H. coralloides* (Scop.: Fr.) Pers.) which lacks a cap but is highly branched and covered with small spines, up to 10 mm long. Although all the spine fungi are edible and generally delicious, most attention has been given to that known in China as the 'monkey head' (*H. erinaceum* Bull.: Pers.).

The monkey head is a beautiful fungus when encountered in the wild, and it may be found throughout the North temperate regions of the World, ranging from rare in central Europe to fairly common in southern England. The fruitbody appears as a somewhat rounded structure, up to 25 cm in diameter, and pure white when fresh but easily becoming bruised and staining yellowish brown. There is no recognisable cap but only a short stalk from which grow a cascade of long, downwardly projecting spines, up to 4 cm long,

somewhat resembling a cluster of icicles. Several English names have been given to this remarkable growth, including the 'tree hedgehog', 'lion's mane', and 'bearded tooth'. The fruitbody invariably grows out of the knotholes or wounds of the tree, which may be walnut, oak, elm, or beech. From the wild, only the fresh, young fruitbody is edible and regarded as delicious, especially desirable as the fruitbody may be large. When old and discoloured, however, the taste can become bitter and unpleasant. In North America, the 'Bear's head tooth' (*H. americanum*) is similar but somewhat branched.

The mushroom is not only extremely good to eat but a number of medicinal properties have also been ascribed to it. It is therefore not surprising that the Monkey head fungus is cultivated in China. This was first attempted at the Shanghai Agricultural Academy of Science in 1960, and because it was found to grow with relative ease and produce large crops, commercial production is now a widespread activity. The inoculum may be grown on a wide range of substrates, depending on what is available locally. Sugar cane culms, sawdust, cotton waste, corn cobs and old paddy straw are all



Fig 1 Monkey head fungus (*Hericium erinaceum*), New Forest, Hampshire, UK. Photo: N. W. Legon.

used. In each case the material is supplemented with rice or wheat bran, sucrose and gypsum, and water is added to give a 65 per cent moisture content. The earlier methods used bottles in which the mycelium was grown at around 25°C; then a reduced temperature is introduced later to initiate the fruitbody primordia. Once primordia appeared at the mouth of the bottle, the fruitbodies could be harvested about ten days later, at the time of spore discharge. Each bottle will only produce a single fruitbody at a time, but there can be three or four harvests. Nowadays, polypropylene bags have replaced the bottles, giving better and larger harvests by punching holes into the sides of the bags. Either several holes are made to produce moderate fruitbodies or a single hole can produce a large fruitbody, perhaps weighing 100 grams or more. An alternative method for commercial production is the more natural one of inoculating logs out of doors. Plugs of spawn are used for inoculating the logs, much in the same way as the shii-take mushroom is grown. The mushroom has a high water content and is mostly sold in the dried state or, alternatively, bottled in brine. Fresh specimens, individually packaged, can look very appealing to the buyer, and it is unfortunate that the water content can lead to early bruising and a risk of contamination. The water content problem is now

being overcome as techniques become more refined. In North America, fresh fruitbodies are sold as a gourmet food, under the name of 'Pom poms'. Commercial production, both in the U.S.A. and Britain, is on the increase, and the mushroom is now regularly seen in the supermarkets, although the name of 'lion's mane' has more appeal to western taste than does the Monkey head.

The medicinal properties attributed to the monkey head fungus are growing exponentially, although there has been little research outside of China, where it has been used traditionally for gastric complaints, including indigestion and gastric ulcers. The mycelium is grown and converted into a tablet form to be taken orally for this purpose. There are claims that the constituent polysaccharides and polypeptides help to enhance the immune system, and there is continuing research into application of the mushroom for cancer patients. Recently a canned drink has become available on the market to be drunk as a tonic.

In gastronomic terms, the monkey head is regarded as one of the very best mushrooms, with a succulent texture and mild, sweet flavour which has been compared with lobster. The fruitbody is normally sliced like bread, and cooking is kept simple and gentle to preserve the flavour.