Some Fungi Used Directly as Food

over 200,000 tonnes fungi are eaten each year; 200 species of edible mushrooms; some are cultivated commercially

Common Name	Scientific Name	Notes
supermarket fungus	*Agaricus brunesscens*	grown in large limestone caverns in Peru; has been thoroughly domesticated
woodear mushrooms	(=tree ears, black fungus)	
shiitake mushrooms	(=oak mushroom)	grows on oak logs or cultivated on oak chips; commonly used in soups and stews as well as main dishes
oyster mushrooms	*Pleurotus ostreatus*	grow on dead and decaying hardwoods or can be cultivated on sterilized straw
elephant ear fungus	used in hot and sour soup	
morels & truffles		truffles are some of the most highly priced "produce" in the market France grows specific species of oak trees toact as hosts for truffles
Black Truffle	*Tuber melanosporum*	natural truffles are collected using trained pigs or dogs or following "truffle flies" to source

Fungi used in Food & Beverage Production*

*various bacterial species are also used to produce these products; only the fungal species are mentioned here

Product Type	Species	Raw Material	Process	Commercial Product
Miscellaneous Industrial Products	*Saccharomyces cereveciae*		synthesis of enzyme, invertase	used in preparation of soft-center candies, eg cordial cherries
	Aspergillis niger	starches	aerobic metabolism	citric acid
	Aspergillus niger		produce alpha-d-galactosidase enzyme	enzyme suppresses methane production in humans =Beano©
	Aspergillus sp.	starches	synthesis of amylase enzymes	used for bread making & textile fibers
	Aspergillus sp.		synthesis of pectinase enzymes	clarification of fruit juices
	Penicillium notatum	corn starch solution	aerobic metabolism	penicillin
	Penecillium notatum		synthesis of enzyme, glucose oxidase	used to remove oxygen from canned fruits, dried milk and other products
	Fusarium moniliforme	corn starch solution	aerobic synthesis	plant hormone-gibberellin
Cheeses	*Penicillium roqueforti*	milk curd	production of blue pigment	Roquefort cheese
	Penicillium candidum & P. camemberti	milk curd	aerobic metabolism	Bri, Camembert and Limburger cheeses
Alcoholic Beverages	*Saccharomyces* sp.	germinated grain(malt)	natural fermentation	beer
		fruit juice	natural fermentation	wine
		rice	natural fermentation	sake
		fruit juice	fermentation & distillation	brandy
		grain mash	fermentation & distillation	whiskey
		molasses	fermentation & distillation	rum
		potatoes	fermentation & distillation	vodka
		agave	fermentation	tequila

Asian Foods	*Aspergillus oryzae, A. soyae, Saccharomyces rouxii, Candida etchellsii*	soybeans	fermentation	Miso
	Aspergillus soyae, A. oryzae, Saccharomyces rouxii, Candida versatilis	soybeans	fermentation	soy sauce
Coffee	*Saccharomyces* sp.	coffee beans	fermentation	used to help remove berry skin and flavor the bean
Bakery Products	*Saccharomyces* sp.	dough	fermentation	CO_2 production to cause dough to rise

Pharmaceuticals

penicillin (antibiotic)	*Penicillium* genus is source of first antibiotic
cephalosporin (antibiotic)	produced by *Acremonium (=Cephalosporium*);
griseofulvin (antibiotic)	by *Penicillium griseofulvin*
ergot	some drugs are produced from ergot to: induce labor, stop uterine bleeding, treat high blood pressure, relieve migraines, cancer treatments, treat hepatitis B infections
cyclosporin	From *Tolypocladium inflatum;* Used to prevent rejection of transplanted organs; one of least toxic, most effective immunosuppressive drugs known
statins	from *Aspergillus terreus* and *Penicillium citrinum;* statins are the most effective cholesterol lowering drugs in use today

Industrial Chemicals & Products From Fungi

Product	Species	Notes
ethanol	*Saccharomyces cerevisiae*	used extensively for ethanol production for beverages and biofuels
amylase	*Aspergillus oryzae*	used in some toothpastes; and as digestive aid
Citric Acid	*Aspergillus niger*	all the citric acid used in soft drinks, candies, artificial lemon juice, baked goods etc. is produced industrially by fungus fermentation
Fumaric Acid	*Rhizopus arhizus*	used in food production for flavoring and as a preservative
Beano©	*Aspergillus niger*	produces an enzyme: alpha-d-galactosidase that suppresses methane production in human digestive tract
Fertilizer Supplement	*Penicillium bilagi*	makes phosphates soluble and more easily absorbed by crop plants
takadiastase	*Aspergillus oryzae*	starch and protein splitting enzyme used as a digestive aid
specialty paper	some shelf fungi	
dyes	many fungi	many countries use fungal dyes to color yarn; over 70 different colors derived from fungi