

PROSPECTS OF MUSHROOM INDUSTRY, ITS PROCESSING AND VALUE ADDITION

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WHY MUSHROOMS?

- Very good quality protein especially rich in LYSINE.
- Supplement well with the cereal based Indian diet (Prevent Malnutrition).
- Very low-calorie food (Good for Obese Persons).
- Low in fat (Good for Heart Patients).
- Low-calorie: high protein diet, with no starch and sugars, and are called the Diabetics delight.

MUSHROOM

MUSHROOMS CONTAIN PROTEIN, VITAMINS, MINERALS, AND ANTIOXIDANTS.

21 CALORIES 0.3 g FAT
3.3 g CARBS
1.1 g FIBER 3.1 g PROTEIN
(100 gram)



WHERE IT IS BEING RESEARCHED ?

Mushroom is being researched at ICAR (Indian Council of Agricultural Research) - Directorate of Mushroom Research, Solan. Similarly in Maharana Pratap Horticultural University, Regional Research Centre, Murthal.



WHY THERE IS NEED OF PROCESSING AND VALUE ADDITION?

In India, mushroom industry is mostly using fresh mushroom, rather than its value added products. Fresh mushroom industry is used in domestic trade and canned mushroom is used in most of the exports. Due to excess moisture in it, it deteriorates very quickly. Therefore, they cannot be kept for more than 24 hours in the tropics. It's main problems include weight loss, veil opening, browning, liquefaction, and microbial, and because of this they begin to deteriorate quickly and also their sales gets affected. Therefore, by adopting effective processing techniques and value addition in future,

they can not only prevent loss after mushroom harvesting but can also be sold to growers at higher prices, which benefits both producers and processors.

Value addition can be done at various levels in mushrooms, from grading to ready-made snacks or main-course items. The attractive packaging of mushrooms is an important area but it is completely ignored. Common polythene is used in India while attractive packaging and labeling are prevalent in developed countries. Technology for creating value-added products such as mushroom-biscuits, nuggets, noodles, papads, candies and ready-made retro pouches includes packaged mushroom curry, but has not yet become popular. All the research work, mainly of mushroom, is done in Indian Council of Agricultural Research (ICAR) - Directorate of Mushroom Research, Solan.

Types of Mushrooms



Fig. 1. Button mushroom (*Agaricus bisporus*)



Fig. 2. Shiitake mushroom (*Lentinula edodes*)



Fig. 3. Oyster mushroom (*Pleurotus florida*)



Fig. 4. Paddy straw mushroom (*Volvariella volvacea*)

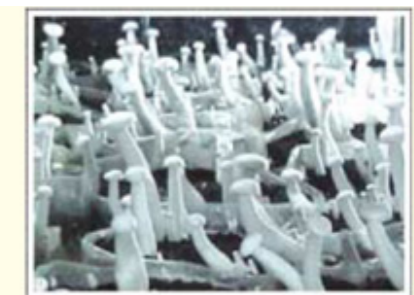


Fig. 5. Milky mushroom (*Calocybe indica*)

THREE MOST COMMON POST HARVEST PRACTICES AND ASPECTS OF MUSHROOMS

- Proper packaging and storage of fresh mushrooms.
- Processing techniques such as solar drying and keeping the mushrooms in brine through canning process for long term storage and value addition.
- Keeping mushrooms at optimum storage temperature that lies between 5 and 8 ° C.

HOW IT'S BEING PROCESSED AND VALUE ADDITION BEING DONE?

The processing techniques used for the mushroom processing are

- Canning
- Drying
- Steeping
- Pickling

Currently resorted for the long-term storage and trade, it is the production and consumption of the readymade or ready-to-make value-added mushroom products which have, of late, been receiving the attention of the mushroom research and industry. Mushroom-based soup powder, noodles and biscuits are already on the shelves. Technologies for ready-to-make mushroom pizza, mushroom curry in retortable pouches, nuggets, ketchup, and preserve in sugar syrup (murabba) have also been developed.



Value added products



Mushroom powder



Dried Whole Mushroom



Mushroom Pizza



Mushroom Soup



Mushroom Curry/Sabzi



Mushroom Pakora



Mushroom Pickle

Mushroom Packaging



TRAY PACKED BUTTON MUSHROOM



TRAY PACKED MILKY AND OYSTER MUSHROOM



QUALITY FACTORS IN MUSHROOM

S.No.	Quality Factor	Consumer Emphasis*
1.	Whiteness	3
2.	Degree of maturity	3
3.	Free from viral disease	3
4.	Flavour	2
5.	Aroma	2
6.	Toughness	2
7.	Cleanliness	2
8.	Size and Shape	2
9.	Nutritional Value	1

*3= very important, 2= less important, 1= not very important

Source: Gormley and MacCanna (1967)

MUSHROOM: A NUTRITIONAL POWERHOUSE AND RICH IN MEDICINAL PROPERTIES

Mushrooms contain zero grams of fat and cholesterol, more than twelve vitamins and minerals. It is a natural source of Vitamin D. In addition, it contains three times more vitamin D than fortified milk. It has more selenium and tomato as much potassium as compared to fruit and vegetable. Mushrooms are a low calorie and rich in good quality protein (especially lysine) (26.9 g per100g) as shown in table below. This low-calorie, high protein diet which contains no starch and sugar, makes it the best diet for diabetics. Mushrooms have important medicinal properties such as hypocholesterolemic, hypoglycemic and hypotensive properties. The mushroom also exhibits strong anti-oxidant and hepatoprotective properties.

Table Comparison of mushroom with common vegetables per 100 g of article

Name	Calories	Moisture	Fat	Carbohydrate (%)	Protein(dry weight basis)
Mushroom	16	91.1	0.3	4.4	26.9
Beet root	42	87.6	0.1	9.6	12.9
Brinjal	24	92.7	0.2	5.5	15.1
Cabbage	24	92.4	0.2	5.3	18.4
Cauliflower	25	91.7	0.2	4.9	28.8
Celery	18	93.7	0.2	3.7	20.6
Green beans	35	88.9	0.2	7.7	21.6
Green peas	98	74.3	0.4	17.7	26.1
Lima beans	128	66.5	0.8	23.5	22.2
Potato	83	73.8	0.1	19.1	7.6

Source: Rai (1995)

FARMERS BENEFIT FROM MUSHROOM PRODUCTION

Keeping the above mentioned things in mind, proper yield and production of mushrooms can be created. Small producers can add value to mushrooms by grading and packaging. Apart from this, by making mushroom processed products, they can get better returns, which will improve demand and will also have a positive impact on production in a long run.

