

PROCESSING AND VALUE ADDITION OF UNDERUTILISED MUSHROOM OF CHANDEL DISTRICT, MANIPUR

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Abstract

Chandel, a hilly terrain is blessed with many underutilized mushroom. A large portion of district's hill areas has been under jhum cultivation. There are many underutilized mushrooms which are yet to be exploited and some are already explored by the scientists. Mushroom is a nutritious natural vegetable which contains high quality protein, vitamins and fibres. The underutilized mushroom is available in plenty in the month of May to August every year depending upon the rainfall in the hillock of Chandel district. It is highly perishable. Due to lack of storage and lack of knowledge for processing, preservation and value addition, a large amount of mushroom goes wasted every year. To tackle such problem KVK, Chandel took initiative for the promotion of processing and value addition of such underutilized mushroom. In connection with it, a series of experiments are conducted. As a process, good quality mushroom are selected for the preparation of different value added products like pickle, dry preserves, pakaura for instant use and curry with different items. In the process of making mushroom pickle, fresh healthy mushroom are selected and washed with clean water. For it, proportion wise, 30 kg mushroom, mustard oil 35 %, spices 0.4 %, salt 10 %, chilli powder 0.3 - 0.4%, turmeric powder 0.1 %, acetic acid 0.5 % are needed and it can make 300 bottles of pickle and labeling is done before marketing. In the process of making mushroom dry preserves, fresh healthy mushroom are selected and dried in the sunshine/sunlight without any treatment. For dry preserves 50 kg are sundried and packed in polyethylene polythene packet and levels are added before marketing. The processed product of mushroom could reduce post harvest losses to 25% from 75%. The shelf life of the mushroom pickle has been extended up to 12 months by preventing the growth of micro-organism and fungus which creates serious problems in pickle. The benefit cost ratio of mushroom pickle is estimated at 2.34 and for the dry preserve it is estimated at 3.0 and for mushroom fritter is 2.5. The entrepreneurship on processing and value addition of underutilized mushroom could sustain livelihood by generating employment for self and for other women. It also helps to improve the nutritional security of many farmwomen of Chandel district and also help in their income generation.

Key words: underutilized mushroom, value addition, shelf life, preservation, income generation.

INTRODUCTON:

Entrepreneurship development is the urge of an individual to take risk to achieve a business or industrial objective based on the locally available resources. It is the ability to take extra risk of the individual than a conventional business. It is the handling of an economic activity, undertaking risk, creating something new and organizing and coordinating resources. It involves the fusion of capital, technology and human talent and also a dynamic and risky process. It needs qualities to innovate, start a new enterprise, accept the challenge and bear the risk. Chandel, a hilly terrain is blessed with many underutilized mushroom. A large portion of district's hill

areas has been under jhum cultivation. In Chandel, there are many underutilized mushroom which are yet to be exploited and some are already explored by the scientists. Mushroom is a fleshy spore bearing fruiting body of fungus and very nutritious natural vegetable which contains high quality protein, vitamins and fibres. Mushroom has been providing the natural way to good health since ages. It is an excellent source of vitamins and minerals; hence it is often called as 'white vegetable or vegetarian meat'. Nowadays people are more concerned about health. So, being cholesterol free, mushrooms are now accepted as an ideal food item suitable for all age group, occupying a place between meat and vegetables. The superior quality protein of mushroom supplements the carbohydrate rich, protein deficit in primarily cereal based Indian diet. Many mushroom species are found in nature with the onset of monsoon on almost all types of soil, on decaying matter and pine wood stump. Mushroom picking for food from wild forest and hillock have been customary in Chandel District. The underutilized mushroom is available in plenty in the month of May to August every year depending upon the rainfall in the hillock of Chandel district. It is highly perishable. Due to lack of storage and lack of knowledge for processing, preservation and value addition, a large amount of mushroom goes wasted every year. The shelf life mushroom can be extended by the process of preservation

PRESERVATION:

Preservation is the process of prevention of decay or spoilage of food, thus allowing it to be stored in a fit condition for future use. It is the method of extending shelf life of mushroom and other mushroom product by applying the principles of science in order to improve the quality of the product. It can retain any food over a longer period of time without being contaminated by chemical and without losing optimum qualities of colour, texture, flavor and nutrient value. Mushroom is an important protein rich food. It is indispensable for maintaining good health. Some of the mushroom varieties are highly perishable and seasonal. They begin to deteriorate after a few days depending upon the types of mushroom. Mushrooms are very cheap and available in abundance during rainy season, but can't be stored for a long period of time. So preservation can only add variety in our diet and make it better balance. It can be used at the time of scarcity, natural drought, etc. It also saves time and energy of the housewife. It helps in stabilizing the prices of mushroom by making the availability of mushroom throughout the year and it also helps to improve the nutritional status and quality of life. Different indigenous methods of preservation of mushroom are:

1. Smoking
2. Sun drying
3. Dehydration
4. Value addition

SMOKING:

This is the oldest method of preservation in which mushroom can be dried by posing them to smoke produced by burning of wood. In this method, heat from smoke helps in removing moisture and it imparts a characteristic flavor to the food. Smoking is mainly done when there is no sunlight for a long period of time.

SUN DRYING:

It is the process in which moisture is removed by exposure to natural air current as humidity is regulated by climatic condition. In case of sun drying, fresh mushrooms are sorted, trimmed off, removed hard stalk,

cleaned and sundried by placing on flat bottom trays for 5 to 7 days by turning upside down. To avoid browning of the fruit bodies, a shade may be provided to the mushroom by spreading a black cloth at about 1 foot above the tray. This type of mushroom can be kept in air tight container up to 1 year.

DEHYDRATION:

It is the process of removal of moisture by the application of artificial heat under controlled condition of temperature, humidity and air flow. In this method of preservation of mushroom, the bacteria present in the mushroom are deprived of water for a longer period so that they cannot cause spoilage and moisture content becomes zero. The colour of dehydrated mushroom remains uniform due to uniform drying temperature.

VALUE ADDITION OF MUSHROOM:

Mushroom is highly perishable. The shelf life of mushroom and mushroom products can be extended by the process of value addition. Value addition is the process of converting mushroom into something new through processing, cooling, drying, extracting, packaging or any other type of process that differentiates the products from original raw commodity. It makes more attractive to the buyers and increases the taste, texture and colour of the mushroom product. Promotion of value added product is essential to minimize the post harvest losses and to obtain maximum profit. KVK, Chandel took initiative for the promotion of processing and value addition of different underutilized mushroom. Value added products are available in different forms in the market.

OBJECTIVE:

- To find out different underutilized mushroom of Chandel district.
- To study the importance of mushroom for healthy living.
- To popularize and update knowledge on preparation of value added product from underutilized mushroom.
- To calculate the economical value of the different value added products.

METHOD:

- Documentation and secondary information were collected in order to assess the medicinal and the nutritional importance of mushroom.
- Survey was conducted in order to assess the different types mushroom consumed.
- Interviews with some old people were conducted to assess the indigenous knowledge for identification of edible mushrooms and also for the treatment of any disease.
- Training and demonstrations were conducted to develop and popularize different value added product from mushroom.

IDENTIFICATION OF MUSHROOM:

Characteristics	Edible mushrooms	Poisonous mushrooms
Colour	Usually white and grey coloured	Usually colourful and quite attractive
Peelus skin	-	Comparatively soft and the skin cannot

		be easily peeled off
Smell	Pleasant	Usually unpleasant
Exudates	Not seen	Milk sap exudates and stain when bruised
Taste	Bearable taste	Generally bitter or sour in taste
Insects/animals preference	Slugs, insects or other wildlife eat the mushroom	Ants, insects and other animals do not feed

INDIGENOUS KNOWLEDGE FOR IDENTIFICATION OF POISONOUS MUSHROOM:

- Usually colourful and quite attractive.
- Generally bitter or sour.
- Comparatively soft and skin cannot be easily peeled off.
- Ants, insects, and other animals do not feed on it.
- Poisonous mushrooms if soaked in salt water, gives blackish colour to the water.
- Colour of the mushroom soaked water turns blackish when some brinjal pieces or its flower are dipped into the water indicating that the mushroom is poisonous.
- Silver or copper article turns blackish when immersed in a dish of poisonous mushroom.
- Garlic flakes turn dark colour when added to water along with poisonous mushrooms.
- Unusual changes in colour of onion and brinjal occur while cooking with poisonous mushroom.
- Milk curds immediately in contact with poisonous mushrooms.

NUTRITIONAL IMPORTANCE OF MUSHROOM:

- Nowadays people are more concerned about health and mushroom, being cholesterol free, is now accepted as an ideal food item for all age groups.
- The superior quality protein of mushroom supplements the carbohydrate rich, protein deficit cereal based Indian diet and it occupies a place between meat and vegetables.
- Mushroom, which is an excellent source of vitamins and mineral and rich sources of vitamin B complex and vitamin C, is very important for healthy body.
- Minerals like potassium, sodium, phosphorus, copper, Zinc and magnesium present in mushroom proves a perfect food for young and old by providing nutritional benefit.
- Mushroom is an important and major component of the folk as well as modern medicine.

MEDICINAL VALUES OF MUSHROOM:

- It helps in the development of immune system.
- It helps in liver protection and enhances insulin secretion.
- It helps to decrease blood glucose level.
- It helps in prevention of diabetes and heart diseases.
- It helps to lower cholesterol level.
- It helps to cure lung infection.
- It helps to reduce aging process as well as maintain healthy eye, kidney, bone marrow, liver and skin.
- It helps in the prevention of prostate and breast cancer.
- It helps in an antibiotic and anti-depressant activity.

VALUE ADDITION OF MUSHROOM FOR ENTREPRENEURSHIP DEVELOPMENT:MUSHROOM PICKLE

Ingredients:

Mushroom - 1 kg	Turmeric - 20 gm	Jira powder - 10 gm
Vinegar - 1litre	Red chilli powder - 20 gm	Mustard seed powder - 20 gm
Salt - 100 gm,	Dhania powder - 20 gm	Mustard oil - 350 ml

Method of preparation:

- Clean mushroom
- Cut into small pieces
- Blanch in boiling water for 5 mins.
- Soak it overnight in vinegar
- Drain out vinegar next day
- Heat oil, add mushroom & cook for 5-10 mins.
- Add spices , salt & Cool it down
- Fill and store in pre-sterilized bottle

MUSHROOM DRY PRESERVE

INGREDIENTS: Fresh mushroom - 200 kg

Method of preparation:

- Select fresh unspoiled mushroom.
- Dry it in sunlight for 5 to 7 days by turning upside down 2 to 3 times daily.
- Pack the dried mushroom in polyethylene polythene packet and seal properly.

MUSHROOM FRITTER

Ingredients:

Mushroom - 500gm	Turmeric powder -1tsp	Jira powder - 1tsp
Besan - 250 gm	Oil - 300ml	
Chilli powder - 1tsp	Salt - to taste	

Method of preparation:

- Wash and cut the mushroom in to desired size and shape.
- Make batter by mixing besan with water, salt and spices.
- Dip the mushroom in to the batter and keep for sometime.

- Heat oil in a karahi and fry the mushroom pieces till golden brown.
- Remove from fire when fritter turn crisp golden brown.
- Serve hot with tomato sauce or chilli sauce.

MUSHROOM PAKNAM: (Baked Mushroom)

Ingredients:

Mushroom - 1Kg	Green chilli slice - 100 gm	Gram flour - 500 gm
Fermented dry fish - 100 gm (optional)	Nakupi leaf - 200 gm	Salt - 15 gm

Method:

- Wash and Shred mushroom in to small pieces.
- Wash green chilli and cut into pieces.
- Wash nakupi leaf and cut into pieces (4-5cm length).
- Grind coarsely slice green chilli with properly roasted fermented fish and salt.
- Mix with mushroom and nakupi leaf very well.
- And add gram flour to the mixture by addition of little water till the mixture blended very well.
- Put the mixture in turmeric leaf and wrap over. Again cover / wrap with banana leaf.
- Pressure-cook the mixture for 15 to 20 mins.
- Take out from pressure cooker and roast in pan / tawa by upside down in low flame till it cooks properly (another 15 to 20 mins).
- Remove banana leaf and also turmeric leaf.

OTHER VALUE ADDED PRODUCTS FROM MUSHROOM FOR NUTRITIONAL IMPROVEMENT FOR HEALTHY LIVING:

MUSHROOM WITH RAJMAH CURRY

Ingredients:

Mushroom - 500gm	Green chilli - 50 gm	Garam masala - 2tsp
Rajmah - 250gm	Garlic - 1 pod	Chilli powder - 1 tsp
Tomato - 250gm	Ginger paste - 1Tbsp	Oil - 5 Tbsp
Onion - 100gm	Turmeric powder - 2 Tsp	Salt - to taste

Method of preparation:

- Wash and soak rajmah overnight and cook till tender.
- Wash and cut the mushroom in the desired size.
- Heat oil, fry chopped onion, garlic, ginger paste, tomato and mushroom till the water dries up.
- Add cooked rajmah and simmer for few minutes.

- Add turmeric powder, garam masala powder, chilli powder and salt.
- Cook for few minutes and garnish with coriander leaves.

MUSHROOM WITH FISH AND CAPSICUM FRY

Ingredients:

Mushroom - 500gm	Ginger paste - 1tsp	coriander leaf - 50 gm
Fish - 300gm	Turmeric powder - 2 tsp	Garlic - 1 pod
Tomato - 200gm	Garam masala - 2tsp	Salt - to taste
Onion - 100gm	Chilli powder - 1 tsp	
Capsicum -200 gm	Oil - 200ml	

Method of preparation:

- Wash and fry fish pieces till slightly brown.
- Wash and cut the mushroom in the desired size.
- Heat oil, fry chopped onion, garlic, ginger paste, tomato and mushroom till the water dries up.
- Add fried fish and simmer for few minutes.
- Add turmeric powder, garam masala powder, chilli powder and salt.
- Cook for few minutes and garnish with coriander leaves.

CHILLI MUSHROOM

Ingredients:

Mushroom - 500gm	Garlic - 1 pod	Coriander leaf -100gm
Capsicum - 300gm	Ginger paste - 1tsp	Oil - 200ml
Tomato sauce - 200ml	Garam masala - 2 tsp	Salt - to taste
Onion - 200gm	Chilli powder - 1 tsp	

Method of preparation:

- Wash and cut the capsicum in to small pieces.
- Wash and cut the mushroom in the desired size.
- Heat oil, fry chopped onion, garlic, ginger paste, and mushroom till the water dries up.
- Add capsicum and fry for few minutes and stir properly.
- Add tomato sauce, garam masala powder, chilli powder and salt.
- Cook for few minutes and garnish with coriander leaves.

MUSHROOM WITH POTATO FRY

Ingredients:

Mushroom - 500gm	Chilli powder - 10gm	Salt - to taste
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Potato - 3 large potato	Garam masala - 10gm	Coriander leaf - 50gm
Onion - 2 medium	Oil - 100ml	
Garlic and Ginger paste - 3 tsp	Soya sauce - 100 ml	

Method of preparation:

- Wash and cut onion, potato and mushroom.
- Heat oil and stir fry onions, then garlic and ginger paste.
- Add mushroom and potato and fry till it is properly cook.
- Add chilli powder and garam masala.
- Add soya sauce and continue to fry for 2 minutes, add salt to taste.
- When done, garnish with coriander leave.

CONCLUSION:

Mushroom processing is seen as a golden sector for entrepreneurship development for women. Mushroom is a healthy nutritious vegetable or vegetarian meat. It improves the nutritional status of every age group. It is a very good diet for diabetes and heart patient and it also helps to prevent from heart attack, diabetes and cancer. Value addition of mushroom with other ingredients increases the nutrient value of the food product which helps to reduce the post harvest losses from 80% to 20%. Value addition also helps to extend the shelf life of the mushroom products and made the product available throughout the year and it also adds variety to the diet. Processing and value addition of mushroom could sustain the livelihood of the farm women by earning income from mushroom products. After entrepreneurship development from mushroom products, many women in the said district become financially self reliant, improve the status of the family in their society, increase influence and acceptability among fellow members, increase material possessions and helps to improve their children's educational quality. The entrepreneurship development on processing and value addition could sustain livelihood of other women by generating employment and can also improve economic status of the family, society and nation as a whole.

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