

Nutritional composition, processing and preservation of the edible mushrooms found in Manipur for sustainable economic development

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Nutritional composition viz., moisture, crude protein, fat, total ash and crude fibre were analysed for 14 edible mushrooms found in the Manipur. The moisture content ranges from 40.07–92.92%, crude protein 8.89–27.29%, fat 1.50–8.50%, total ash 4.75–21.00% and crude fibre 3.25–13.00%. The processing of the mushrooms were done by direct sun drying as well as oven drying. Sun drying was found to be superior in retaining the best colour and condition for *Auricularia* spp., *Lentinula* spp., *Pleurotus* spp. and *Schizophyllum commune*. The dried mushrooms can be preserved in room condition for six months without any unwanted fungal and bacterial growth. Artificial cultivation of edible mushroom generates additional income for economically backward communities.

Key words : Mushrooms, nutritional composition, processing, preservation, artificial cultivation for additional income generation

INTRODUCTION

The topography and agro-climate of the Manipur (23°83'N–25°68'N latitudes and 93°03'E–94°78'E–94°78'E longitudes) favour the growth of a variety of flora including mushrooms. Many of these mushrooms are not only edible but also highly delicious and proteinaceous (Singh and Singh, 1993). These edible mushrooms plays a significant role in providing the nutritious food. The people of the state collect it for consumption as wild and or purchase from the local markets just after the pre-monsoon shower. Moreover, wild edible mushrooms flora of the state faces danger of being lost due to indiscriminate deforestation and exploitation without any scientific investigations. In the light of this the present investigation has been conducted to study the nutritional composition, processing and preservation of edible mushrooms found in Manipur and their artificial cultivation for socio-economic development.

MATERIALS AND METHODS

Nutritional composition, processing and preservation

Fourteen wild edible mushrooms found in Manipur

were analysed for their nutritional compositions. viz. moisture, crude protein, fat, total ash and crude fiber and these were determined according to AOAC (1960) methods. The values in percentage were accorded (Table I). All the values are on dry weight basis except for moisture.

The processing of the mushrooms were done by sun drying as well as oven drying till the mushrooms were dried up. Care was taken to retain the colour of the mushrooms. The dried mushrooms could be preserved in sealed polythene bags in room condition for six months.

RESULTS AND DISCUSSION

Fourteen different type of edible mushrooms found in Manipur were analysed for their moisture content, proximate crude protein, crude fat, total ash and crude fibre which varied in percentage from 40.07 to 92.92, 8.89 to 27.29, 1.50 to 8.50, 4.75 to 21.00 and 3.25 to 13.00 respectively (Table 1). During processing sun drying was found to be superior in retaining the best colour and condition for *Auricularia* spp., *Lentinula* spp., *Pleurotus* spp. and *Schizophyllum commune*. The dry mushrooms could be preserved in sealed polythene bags in room temperature for six months without any unwanted fun-

gal and bacterial growth.

Table 1 : Proximate composition (%) of certain edible mushroom of Manipur.

Mushroom	Locat Name	Moisture	crude porotein (Dry wt. basis)	Fat (Dry wt. basis)	Total Ash (Dry wt. basis)	Crude fibre (Dry wt. basis)
<i>Auricularia polytricha</i> (Mont.) Sacc.	Uchina	87.78	8.89	1.50	5.50	09.00
<i>Favolus spatulatus</i> (Jungh) Lev.	Paldang	85.70	19.93	8.50	6.00	07.00
<i>Lentinus cladopus</i> Lev.	Tek Tek pan	86.80	17.17	6.50	10.25	05.00
<i>Lentinus connatus</i> Brek.	Changeng	84.89	27.29	3.00	12.00	03.25
<i>L. tigrinus</i> (Bull. ex Fr.) Fr.	Poupou	83.26	10.11	3.00	4.75	07.75
<i>Lentinula edodes</i> Berk. Pegler.	Thang-jiyen	80.11	15.94	3.00	5.25	07.25
<i>Lactarius princeps</i> Berk.	Chengum Khom-thokpi	92.92	14.10	6.25	7.50	09.25
<i>Laccaria laccata</i> (Scop. ex. Fr.) Cooke	Not known	91.13	19.01	2.00	12.00	05.00
<i>Schizophyllum commune</i> Fr.	Kanglayen	40.07	14.41	2.50	8.50	05.50
<i>Scleroderma verrucosum</i> Veil-Pers.	Leibak Marum	87.76	20.24	2.00	10.25	13.00
<i>Termitomyces eurhizus</i> (Berk.) Heim.	Narin Chengum	85.74	22.08	3.50	7.50	07.00
<i>T. clypeatus</i> Heim	Phoubak Chengum	86.98	23.00	3.50	6.75	09.00
<i>Tricholoma giganteum</i> Masee	Khongnang chengum	86.02	18.09	2.50	9.25	05.25
<i>Gomphus floccosus</i>	Uyen	92.00	15.33	4.00	21.00	04.00

Auricularia and *Schizophyllum* were found throughout the year in dried form in the markets costing R. 150–200 per kg and in the fresh form costing Rs. 40 to 60 per kg during March and September. *Lentinula* spp. were also found in fresh as well as in dried form but for limited period of the year i.e., March–

June costing Rs. 20/- per 300 g (fresh). The price of all the mushroom types sold in fresh in the market ranged between R. 20 to Rs. 70 per kg. (Table 2).

Table 2 : Wild edible fleshy fungi (mushroom) found in the market of Manipur and their price.

Name	Period of availability	Market name/ district	Price (per/kg)
<i>Auricularia</i> spp.	Throughout the year (dried)	All districts	Rs. 160 to 200
	March–September (fresh)	All districts	Rs. 40 to 60
<i>Schizophyllum commune</i>	Throughout the year (dried)	All districts	Rs. 140 to 185
	March–September (fresh)	All districts	Rs. 40 to 60.
<i>Lentinula edodes</i>	March–June (fresh)	All districts	Rs. 40. to 70.
<i>L. lateritia</i>	March–June (fresh)	All districts	Rs. 40 to 70.
<i>Volvariella volvacea</i>	June–August (fresh)	All valley district of Manipur	Rs. 40 to 50.
<i>Termitomyces eurhizus</i>	May–September (fresh)	All districts	R. 20 to 30.
<i>T. clypeatus</i>	May–September (fresh)	All districts	Rs. 20 to 30.
<i>Tricholoma giganteum</i>	June–September (fresh)	Imphal, Thoubal & Bishnupur districts	Rs. 30 to 35.
<i>Lentinula cladopus</i>	June–September (fresh)	Imphal, Thoubal & Bishnupur districts	Rs. 30 to 35.
<i>Lentinus tigrinus</i>	April–September (fresh)	All districts	Rs. 20 to 30.
<i>Favolus spatulatus</i>	April–September (fresh)	All districts	Rs. 20 to 30.
<i>Ramaria</i> spp.	June–August (fresh)	All districts	Rs. 20 to 30.
<i>Pleurotus</i> spp.	May–August (fresh)	All districts	Rs. 40 to 50.

Hence, the present study has yielded a good commercial potential for edible mushrooms gathered from the forest of Manipur as well as their artificial cultivation could fetch considerable additional income for economically backward communities of the state.

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