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## Wild Edible Fungal Resources : An Alternate Source of Food for Mizoram and Arunachal Pradesh

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**Abstract** Fungal forays were undertaken in the forests and markets of Kolasib (Mizoram) and Basar (Arunachal Pradesh). Thirty wild specimens were collected which included *Schizophyllum commune* Fr., *Pleurotus* spp., *Trametes gibbosa*, *Termitomyces* spp., *Termitomyces microcarpus*, *Boletus* spp., *Suillus* spp., *Crinipellis* spp., *Clavulinopsis* spp., *Marasmius* spp., *Macrolepiota* sp., *Polyporus* spp., *Fomitopsis pinicola*, *Fomes* spp., *Favolus* spp., *Schizophora* sp., *Inonotus* sp., *Lepiota* spp., *Lenzites betulina*, *Oudemansiella* spp., *Tricholoma* spp., *Auricularia delicata* (Fr.) Henn., *A. auricula-judae*, *A. polytricha*, and *Ganoderma* spp. The specimens were

collected from different habitats such as forest, decaying wood rotting plant parts and also from local markets.

**Keywords** Fungal resources, Forays, Mizoram, Arunachal Pradesh.

### Introduction

Mushrooms have nearly always been around, with a very long and interesting history. Mushrooms have been found in fossilized wood that is estimated to be 300 million years old, and almost certainly prehistoric man used mushrooms collected in the wild as food. There are at least 12,000 species of fungi that can be considered as mushrooms with at least 2,000 species showing various degrees of edibility [1]. Furthermore, over 200 species of mushroom have been collected from the wild and utilized for various traditional medical purposes mostly in the Far East. To date, about 35 mushroom species have been cultivated commercially and of these, about 20 are cultivated on an industrial scale. Historically, mushrooms were gathered from the wild for consumption and for medicinal use. People have harvested mushrooms from the wild for thousands of years for food and medicines. China has been the source of many early cultivations of mushrooms, e.g. *Auricularia auricula* (600 AD),

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**Table 1.** Wild mushroom flora in the forests of Mizoram and Arunachal Pradesh.

Order	Family	Scientific name	Use	Habitat	Location	
Agaricales	Agaricaceae	<i>Lepiota</i> spp.	Non-Edible	Lignicolous	Kolasib & Basar	
		<i>Macrolepiota</i> sp.	Edible	Lignicolous	Kolasib & Basar	
	Clavariaceae	<i>Clavulinopsis</i> spp.	Non-Edible	Lignicolous	Kolasib & Basar	
	Pleurotaceae	<i>Pleurotus</i> spp.	Edible	Lignicolous	Kolasib & Basar	
	Lyophyllaceae	<i>Termitomyces microcarpus</i>	Edible	Termitarium	ICAR farm, Gori	
		<i>Termitomyces</i> spp.	Edible	Termitarium	Kolasib & Basar	
	Tricholomataceae	<i>Tricholoma</i> spp.	Edible	Lignicolous	Kolasib & Basar	
	Physalacriaceae	<i>Oudemansiella</i> spp.	Non-Edible	Lignicolous	Kolasib & Basar	
	Marasmiaceae	<i>Crinipellis</i> spp.	Non-Edible	Lignicolous	Kolasib	
		<i>Marasmius</i> spp.	Non-Edible	Lignicolous	Kolasib	
	Boletales	Schizophyllaceae	<i>Schizophyllum commune</i> Fr	Edible	Lignicolous	Basar & Kolasib
		Boletaceae	<i>Boletus</i> spp.	Edible	Lignicolous	KVK farm, Bame
		Suillaceae	<i>Suillus</i> spp.	Edible	Lignicolous	KVK farm, Bame
Polyporales	Polyporaceae	<i>Polyporus</i> spp.	Non-Edible	Lignicolous	Kolasib & Basar	
		<i>Fomitopsis pinicola</i>	Non-Edible	Lignicolous	Kolasib & Basar	
		<i>Fomes</i> spp.	Non-Edible	Lignicolous	Kolasib & Basar	
		<i>Trametes gibbosa</i>	Non-Edible	Lignicolous	Kolasib & Basar	
		<i>Favolus</i> spp.	Non-Edible	Lignicolous	Kolasib	
		<i>Lenzites betulina</i>	Non-Edible	Lignicolous	Kolasib & Basar	
		<i>Schizopora</i> sp.	Non-Edible	Lignicolous	Kolasib	
Hymenochaetales	Schizoporaceae	<i>Schizopora</i> sp.	Non-Edible	Lignicolous	Kolasib	
	Hymenochaetaceae	<i>Inonotus</i> sp.	Non-Edible	Lignicolous	Kolasib	
Auriculariales	Auriculariaceae	<i>Auricularia delicata</i> (Fr.) Henn.	Edible	Lignicolous	Basar	
		<i>A. auricula-judae</i>	Edible	Lignicolous	Basar	
		<i>Auricularia polytricha</i>	Edible	Lignicolous	Basar	
Ganodermatales	Ganodermataceae	<i>Ganoderma applanatum</i>	Medicinal	Lignicolous	Kolasib & Basar	
		<i>Ganoderma lucidum</i>	Medicinal	Lignicolous	Kolasib	
		<i>Ganoderma tsugae</i>	Medicinal	Lignicolous	Kolasib	

*Flammulina velutipes* (800 AD), *Lentinus edodes* (1000AD) and *Tremella fuciformis* (1800) [2]. Mushroom is a good source of protein, minerals and vitamins, which are essential for nutritional purposes [3].

In North eastern India including Mizoram and Arunachal Pradesh, wild mushrooms are a priced food for the tribal people and form an important part of their cuisine. The people collect these mushrooms from their natural habitats during the respective grow-

ing seasons. In Basar in Arunachal Pradesh, the “Galo” inhabitants sell various kinds of mushrooms regularly in the local market. These mushrooms are relished by the tribal communities of North East India.

Mushroom, both poisonous and non-poisonous are found growing naturally with the onset of monsoon (April onward) in *jhum* areas and forest surroundings on dead and decaying plants, trees and

**Table 2.** Wild mushroom in the market of Basar, Arunachal Pradesh.

Order	Family	Scientific name	Local name (In Galo)	Period of availability
Auriculariales	Auriculariaceae	<i>Auricularia polytricha</i>	Imbuk	Apr—Jun
		<i>Auricularia delicata</i> (Fr.) Henn.	Takek Marek	
Agaricales	Schizophyllaceae	<i>Schizophyllum commune</i> Fr	Hushi	Jun—Aug (fresh) Throughout the year (dried)
	Tricholomataceae	<i>Tricholoma</i> spp.	Inde	Jun—Jul
	Lyophyllaceae	<i>Termitomyces microcarpus</i>	Inyak	Jun—Jul
	Pleurotaceae	<i>Pleurotus</i> spp.	Aatar	May—Jul

**Table 3.** Wild mushroom in the local market of Kolasib, Mizoram.

Order	Family	Scientific name	Local name (In Mizo)	Period of availability
Agaricales	Schizophyllaceae	<i>Schizophyllum commune</i> Fr	<i>Pa si</i>	May—Aug
	Lyophyllaceae	<i>Termitomyces microcarpus</i>	<i>Pa sawn tlung</i>	Jun—Jul
	Pleurotaceae	<i>Pleurotus</i> spp.	<i>Pa khang bun</i>	Mar—Jul

soil. *TAIN* is the local name of mushroom in *Adi* tribe. People are familiar with mushrooms and their use. As a routine, the tribals collect mushrooms during collection of fuel wood as well as different food items like; leafy vegetables, fruit, rhizomes including medicinal ones from forest areas and fulfil their day to day requirement. Surplus is also brought to daily market for sale [4].

The fungal resources is least documented in Mizoram and Arunachal Pradesh as well as in India. It is still unexplored and needs proper identification, conservation and domestication.

### Materials and Methods

Fungal forays were conducted for collection of wild edible/medicinal mushrooms during rainy season of 2011-12 and 2012-13 (from July to October) in the forest, *Jhum* areas and markets of Kolasib (Mizoram) and Basar (Arunachal Pradesh) respectively. The specimens were collected from different habitats such as forest, decaying wood, dead wooden stump, rotting plant parts, termitarium (i.e. termite nests). The fungi were also collected from markets where they were being sold by the local people. The site of their collection and other related information was ascertained from the seller and from local people. Each of the specimen samples was wrapped in wax paper and brought to the laboratory for identification. The identification of each sample was done with the help of standard manuals. The specimens with all descriptors and photographs were sent to Division of Plant Pathology, IARI, New Delhi for confirmation of their identity. Further, the collected samples were preserved in 5.0% formaldehyde.

### Results and Discussion

Preliminary market survey of Kolasib and Basar revealed that both the states are rich in wild edible mushrooms. During the investigation, a total of 30 species of wild mushrooms under 22 genera, 15 families and 6 orders were identified. Wild mushrooms collected and identified along with their respective families are listed in Table 1. Of the 11 edible species reported in the present study, three mainly *Ganoderma applanatum*, *Ganoderma lucidum* and *Ganoderma tsugae* are medicinal mushrooms. Many of the species have been reported earlier by few workers from the other North-Eastern Hills of India [3, 4]. Many of the edible species like *Schizophyllum commune* Fr., *Pleurotus* spp., *Termitomyces* spp., *Termitomyces microcarpus*, *Macrolepiota* sp., *Tricholoma* sp., *Auricularia delicata*, *A. auricula-judae*, and *A. polytricha* are collected by the local people during the season not only for their own consumption but also for sale. Some of the common wild edible mushrooms available in the Kolasib district of Mizoram and Basar (Arunachal Pradesh) have been documented (Tables 2, 3).

Mushrooms are sold in the market of Basar in Arunachal Pradesh and Kolasib in Mizoram round the year. Mushroom sellers are mainly women. Women represented 99% of the sellers. In Basar market, wild mushrooms under the local names Inyak, Takek Marek, Imbuk, Aatar, Hubsu, Inde were being sold in the month of April-August. These were packed and wrapped in Banana leaves. Each pack of *Schizophyllum commune* Fr. had approximately 40g fresh weight and was sold for Rs 40.00 and Rs 10.00 in the Kolasib and Basar respectively.

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