

## Ethnomycological Knowledge on Uses of Wild Mushrooms in Western and Central Nepal

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### Abstract

This paper highlights the knowledge on the uses of various wild mushrooms by the different ethnic castes and community inhabiting in the vicinities of Lumle (Kaski, western Nepal) and Kathmandu valley (central Nepal). The research carried out revealed that among 24 species 18 mushrooms are used as culinary, 8 for medicinal value and 3 for other purposes.

**Key Words:** Clavariales, Ethnomycology, Kathmandu, Lumle, Mushrooms, Nepal

### Introduction

#### A. Mycological studies

Nepal possesses diverse phytogeographical zones related to altitude and other factors. Thus the vegetation varies greatly from east to west and from north to south. These varied elements have enriched Nepal with economically important mycoflora (Adhikari, 1988). The noteworthy contributions in mycological field are those of Singh (1966), Singh and Nisha (1974), Adhikari (1976, 1981-82, 1988, 1988a, 1990, 1991, 1994-95, 1995, 1996, 1999, 2004), Sacherer (1979), Bhandary (1985, 1991), Bills and Cotter (1989), Tullons and Bhandary (1992), Tullons *et al.* (1992), Adhikari and Manandhar (1993), Adhikari and Adhikari (1996-1997, 1999), Joshi and Joshi (1999), Adhikari *et al.* (2003), Kharel and Rajbhandary (2005) [see Adhiakri (1988) and Adhikari and Manandhar (1996)]. Yet, the major contribution on ethnomycological field can be seen in Adhikari and Durrieu (1996) and Adhikari (2000). Utility values of Nepalese mushrooms tabulated by Adhikari (2000) are 110 as edible, 13 as medicinal, 45

as toxic and 6 others.

The present work was concentrated in the vicinity of Lumle, Kaski and Kathmandu valley (Godavary, Matatirtha, Dakshinkali, Nagarkot and Suryavinayak).

#### B. Nepalese ethnicity

The population of Nepal, one of the Himalayan countries, embraces 36 kinds with diverse traditional cultures. Nepal is said to be a garden composed of four diverse castes (Brahmin, Kshetriya, Baisya and Sudra), which are based entirely on a religious point of view (Adhikari, 2000). Recent studies show that these four castes are composed of 65 ethnic groups. The relationship of ethnic groups with mushrooms is based on one hand on the castes that are aware of the religious sacredness of the Hinduism and on the other hand on traditional knowledge. The origin and distribution of some ethnic castes are found to localize in particular zone or area. The ethnic groups are the traditional collectors. Their knowledge on mushrooms

and fungi are quite different. However, due to urbanization, social factors, the displacement and migration, it is becoming more and more difficult to point out or localize the exact origin of these groups (Adhikari, 2004).

### **C. Area of study**

The Lumle Village Development Committee (Kaski, Gandaki) is situated in the north-western part between the latitude 28°17' to 28°28'N and longitude 83°47' to 83°58'E. The area is dominated by subtropical to temperate forest. It receives the heaviest rainfall and is often known as "Cherapunji of Nepal" (5,000-6,000 mm annually). The communities inhabiting this area include Brahmins, Chettries, Damais, Gurungs, Kamis and Magars. They mainly depend on the natural products of the forests for their livelihood and have retained their traditional cultures and folklores.

The valley of Kathmandu, the capital city of Nepal, is located between latitudes 27°34'N to 27°48'N and longitudes 85°10'E to 85°32'E consists of 3 main districts, i.e. Kathmandu, Lalitpur and Bhaktapur. It is saucer-shaped valley lying at 1,350 m altitude surrounded by the mountains, the highest peak being Phulchowki (2,715 m) which is situated on the south-east corner of the valley. Its area is approximately 650 sq km. The areas (Nagarjun, Shivapuri, Manichaur, Nagarkot, Suryavinayak, Phulchoki, Lele, Dakshinkali and Chandragiri) surrounding the valley consist of sub-tropical to temperate forests. The sub-tropical elements predominate at lower elevations, while temperate forest species dominate towards the top of the mountains surrounding the valley and its adjoining areas. The communities dwelling in these areas are Newars, Tamangs and Chettries.

### **Materials and Methods**

The data were collected during 14 months'

fieldwork between June 2003 and August 2004 by one of us (Devkota). Mushroom forays were done early in the morning because there was competition for gathering of best species among the local people.

Interviews following questionnaires were done. Additional information was gathered by showing the specimens itself. Each collection was studied and photographed (not given here). The gatherings were dried and brought to the laboratory for microscopic studies. The specimens have been deposited in Central Department of Botany, Tribhuvan University and National Herbarium and Plant Laboratory, Godavary, Kathmandu.

## **Results and Discussion**

### **A. Edible species**

The listing of edible species found related to diverse phytogeographic regions and castes can be seen in Adhikari (1976, 1981-82, 1996, 2000, 2004), Adhikari and Durrieu (1996) and Adhikari and Adhikari (1996-1997). A notable difference between the tribes on uses of mushrooms was observed. The Brahmins especially elder ones do not eat mushrooms, but the majority of people like them very much (Adhikari, 2000). The Brahmins are forbidden to eat mushrooms and the fermented products in particular the alcoholic drinks. Therefore, there is a proverb "Bahun le chyou khaosna swad paos = if the Brahmins have eaten the mushrooms, they could have known the actual taste of mushrooms". But now a day this caste has also started eating the mushrooms (Adhikari, 2000; 2004). The reasons behind this proverb found almost same in every study areas while asking to local people.

Despite of Ayurvedic and Mahabharat mythological concept (Adhikari, 1981-82; 1996; 2000; 2004; Adhikari and Durrieu, 1996) in both the study areas different stories

about the origin of mushrooms were found. In Lumle, the saying is like this- Once upon a time farmers were busy in planting rice and almost all the hours they spend in fields. There was an elderly sick person lying in the bed. In the morning when all the family members were just moving to the field, they found him dead. Having no time to cremate his dead body, they cover that body with mat. After completing their farming, while they were gathered to cremate him, they found that the mushrooms were growing on the mat. Since that event Brahmin have discarded mushrooms as food.

Local people of Lumle area thought that, both the youngsters and elders eat edible mushrooms up to Shrawan (middle of August) and after this month only elderly people eat and youngsters are not allowed to consume. According to their beliefs eating mushrooms after Shrawan by youths may cause some sort of unwanted events in their home. The favourable season for mushrooms collection is rainy season. The 'Purnima', 'Aunsi' and 'Domasey' are the best 'Tithis' in which local mushroom hunters prefer to go for hunting. It may be due to that during these days the moisture content in the atmosphere raises creating favourable condition for mushroom growth (Adhikari, 1987; 2000).

In Lumle the picking of mushrooms were found dominated by men than women and children. But women from the Gurung tribe frequently collect mushrooms. In contrast to men, women and children from the Kathmandu valley were interested to collect mushrooms which correlate with the studies shown by Adhikari (1997, 1987, 2000) and Akpaja *et al.* (2003). In both areas mushroom knowledge was disseminated orally from one generation to another. Brahmins from Thulakharka (Lumle) and Newars and Tamangs of Dakshinkali (Kathmandu) had

some knowledge to identify the edible and poisonous forms.

All together 18 edible species from both the study areas were recorded (table 1). In Kathmandu valley, despite of other species shown by Adhikari (2000) among the Clavariales, only *Ramaria botrytis* and *Clavulinopsis fusiformis* were found to be edible. The informants were also asked to categories the mushrooms according to their palatability values (table 1). In Lumle, the result of the survey concluded that *Cantharellus cibarius*, *Grifola frondosa*, *Laccaria laccata*, *Lactarius volemus*, *Laetiporus sulphureus* and *Termitomyces clypeatus* were good for edible purpose while in Kathmandu *Ramaria botrytis* was considered the best. Similarly, *Hericium erinaceus*, *Oudemansiella radicata*, *Ramaria flaccida* and *Russula chloroides* were considered good to eat where as *Auricularia auricula-judae*, *Clavulinopsis fusiformis*, *Exobasidium butleri* and *Lactarius piperatus* were considered not so tasty or good for edible purpose. The cause behind the less use of *Lactarius piperatus* was due to its acrid taste. Tamangs dwelling near by *Pinus roxburghii* forest also do not prefer *Lactarius piperatus* (Adhikari, 2000).

It can be generalized that people living in mountainous areas (Thulakharka, Lumle) preferred wood-inhabiting fungi while those living in village (near by Highway) preferred the species growing on soil (*viz.* *Termitomyces clypeatus*, *Russula chloroides*, *Laetiporus sulphureus* and *Ramaria flaccida*). In both the areas *Grifola frondosa* and *Termitomyces clypeatus* were most valued. *Ramaria botrytis* was found to be most delicious and highly preferred species in all the sites of Kathmandu valley. The present finding, though very confined, is correlates with the previous studies made by Adhikari

(1991, 1996, 1999, 2000), Adhikari and Adhikari (1996-1997, 1999) and Kharel and Rajbhandary (2005). Depending up on the altitude, type of forest, availability of mushrooms and the physiological activities of the body in different ethnic caste, the mushrooms are found used for culinary purposes (Adhikari, 1996; Adhikari and Durrieu, 1996). Thus Bills and Cotter (1989) reported a new species *Lactarius thakalorum* used by thakali community from Thak khola region. Tullons and Bhandary (1992) reported *Amanita chepangiana*, a new species used by Chepang community in Nepal.

It was observed that people of Lumle were unknown about the edibility of *Hericium erinaceus*. During the field study, the knowledge about edibility of this mushroom was demonstrated for the local people, then after that they have started eating. Similarly, most of the local people were unknown about the edibility of *Exobasidium butleri* found on the leaves of *Rhododendron arboreum*. Only few people, who are engaged in tourism, knew about it. They got knowledge from foreign tourists as they squeeze it during sunny days as alternate to water to make throat wet. They called it as “Pani Pokey Chyau”. This name is the first local name ever known to Nepalese mycoflora. This species was reported previously from Dhulikhel and Daman by Singh and Nisha (1974) and from Godavary by Adhikari (1996).

### **B. Medicinal species**

The list of medicinal mushrooms found in Nepal has been published previously by Adhikari (1988, 1990, 1991, 1994-95, 1995, 1996, 2000), Bhandary (1991) and Adhikari and Durrieu (1996).

In the both study areas information on medicinal use of mushrooms was scarce.

Most informants, however, used mushrooms only for food. Eight species, viz. *Coriolus hirsutus*, *Daldinia concentrica*, *Lycoperdon pyriforme*, *Pycnoporus cinnabarinus* and *Schizophyllum commune* were found used to cure wounds. The species like *Grifola frondosa* and *Ramaria botrytis* were found used to get relief from muscles pain. Like wise *Laetiporus sulphureus* used as vegetable is supposed to cure cancer. *Schizophyllum commune* is recorded as used for medicinal purpose.

### **C. Poisonous forms**

The list of poisonous forms from Nepal can be seen in Bhandary (1985, 1991), Adhikari (1991, 1995, 1996, 2000, 2004) and Adhikari and Durrieu (1996).

There is no any strong rule or method to differentiate the edible and poisonous forms in Ayurveda and recent studies (Adhikari, 1982; 2000; 2004). The diverse growth, dominance and distribution pattern of mushrooms correlate with the uses on distribution pattern of inhabitants, their physiological constrains and the knowledge on mushrooms (Adhikari, 2004). The mythology and the traditional knowledge is equally controlling factor to be aware with poisonous forms. In Nepal, the mortality rate due to consumption of poisonous mushrooms had been found to occur around 15-20 annually (Adhikari, 2004).

In these areas, the people break the fruit body, smell, taste and then say if it is edible or not. In both study areas people were well aware of the existence of poisonous mushrooms. Mushroom poisonings even serious ones, were reported from Dakshinkali but there were no any cases from Lumle. Local people of Lumle and Kathmandu used *Parish poryphylla* (Satuwa), *Xanthoxylum armatum* (Aakhen Timur), *Allium sativum*

Table 1. Culinary status of edible mushrooms in study areas

SN	Scientific name	Local name	Uses			P
			C	M	O	
1	<i>Auricularia auricula-judae</i> (Bull.: Fr.) Wettst.	Thalthaley chyau	●	–	–	3
2	<i>Cantharellus cibarius</i> (Fr.: Fr.) Fr.	Besarey chyau	●	–	–	1
3	<i>Clavulinopsis fusiformis</i> (Sow.: Fr.) Corner	Kesari chyau	●	–	–	3
4	<i>Coprinus comatus</i> (Mull.: Fr.) Pers.	Gobrey chyau	●	–	–	3
5	<i>Coriolus hirsutus</i> (Fr.) Quel.	Kathey chyau	–	●	●	–
6	<i>Daldinia concentrica</i> (Bull.:Fr.) Ces. & De Not.	Dalley chyau	–	●	–	–
7	<i>Exobasidium butleri</i> P. & H. Sydow	Pani Pokey chyau	●	–	–	3
8	<i>Ganoderma lucidum</i> (Fr.) Karst.	Kathey chyau	–	–	●	–
9	<i>Grifola frondosa</i> (Dick. & Fr.) S.F. Gray	Nangrey chyau	●	●	–	1
10	<i>Hericium erinaceus</i> (Bull.: Fr.) Pers.	–	●	–	–	2
11	<i>Laccaria laccata</i> (Scop.: Fr.) Cooke	Jhari chyau	●	–	–	1
12	<i>Lactarius piperatus</i> (Fr.) S.F. Gray	Dudhey chyau	●	–	–	3
13	<i>L. volemus</i> (Fr.) Fr.	Dudhey chyau	●	–	–	1
14	<i>Laetiporus sulphureus</i> (Fr.) Murr.	Rato chyau	●	●	–	1
15	<i>Lycoperdon pyriforme</i> Schaeff.: Pers.	Phusphusey chyau	–	●	–	–
16	<i>Oudemansiella radicata</i> (Rehl.: Fr.) Singer	–	●	–	–	2
17	<i>Pholiota squarrosa</i> (Mull.: Fr.) Kummer	Chipley chyau	●	–	–	2
18	<i>Pycnoporus cinnabarinus</i> (Jacq.: Fr.) Karst.	Rakthey chyau	–	●	–	–
19	<i>Ramaria botrytis</i> (Pers.: Fr.) Ricken	Kauli chyau	●	●	–	1
20	<i>R. flaccida</i> (Fr.: Fr.) Ricken	Kauli chyau	●	–	–	2
21	<i>Russula chloroides</i> (Krombh.) Bres.	Chatey chyau	●	–	–	1
22	<i>Schizophyllum commune</i> Fr.: Fr.	Mujurey chyau	–	●	–	–
23	<i>Termitomyces clypeatus</i> (Berk.) Heim.	Gobrey chyau	●	–	–	1
24	<i>Trametes versicolor</i> (L. Fr.) Llyod	Kathey chyau	–	–	●	–

C = Culinary, M = Medicinal, O = Others, P= Palatability (1 = Delicious, 2 = Good, 3 = Just edible)

(Lasun) to minimize possible poisoning along with vinegar. Addition of vinegar is a worldwide method to minimize mushroom poisoning. Many mycologist such as Rinaldi and Tyndalo (1985), Purukayastha and Chandra (1985), Chaube (1995) and Adhikari (2000) mentioned about the uses of vinegar.

Beliefs or ideas about the edibility of wild mushrooms found in the study areas other than Rinaldi and Tyndalo (1985) and Adhikari (1991) are as follows:

- Species with annulus nearby the cap are poisonous.
- Species with more curved pileus with annulus are also poisonous.

- Species turning black after touching are said to be edible
- Species turning to white after touching is poisonous.
- Species found on the fodder plants are generally edible.
- Species which peeled off easily are edible.

Regarding the collection, people of Lumle believed that especially *Termitomyces clypeatus* after picking from the ground a central black part of pileus should keep in the hole made by its stipe so that in next season same collector

could collect mushroom. This is a gentle thought for mushroom conservation that leaving some pileus portion over there means leaving spores for further life. Similarly, they believed that if a person hits a mushroom with leg, he/she would have lame children. By this way people of the very region had superstitions about mushroom conservation.

#### **D. Others**

Adhikari (1996, 2000) and Adhikari and Durrieu (1996) have reported previously the use of mushrooms for lighting the cigarettes. Similarly, the species like *Trametes versicolor*, *Ganoderma lucidum* and *Coriolus hirsutus* were found used for ignition of cigarettes in Lumle area. These species are also used to lock the crevices of the wooden pot (Thekaa). They are cut into small pieces, inserted into crevices and left for one whole night in water. Mushrooms after soaking in water completely, blocked the crevices. This was more common among the hoteliers of Australian Camp, Lumle.

In ceremonies among the Tamang and Newar community around Kathmandu valley, the use of *Schizophyllum commune* was reported by Adhikari (2000). No such ceremonial mushroom in Lumle was found used. It may be due to the dominance of Brahmins in the area.

#### **Conclusion**

It may be concluded that the wild mushrooms play a vital role to up lift the social and livelihood status of local people by gathering, selling, cultivating and producing the breeds of the local species of mushrooms. The mycologist can play a vital role and contribute in these aspects for not only for mycophagus society but to the national also. So, it is necessary to create their enthusiasm

and make them contribute in the field of mycology.

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