

## **Ethnobotanical Studies on Some Lower Plants of the Central Development Region, Nepal**

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### **Abstract**

Forty-eight lower plants used by the local communities of the villages of the Central Development Region, Nepal are reported based on a field survey. Local people have remarkable detailed knowledge of species identity, characteristics and their specific uses. At present, some species are under serious threat due to habitat destruction and over exploitation indicating urgent need of documentation and conservation of the useful plants and their habitats.

**Keywords:** Lower plants, mushrooms, pteridophytes, traditional knowledge, conservation.

### **Introduction**

The Central Development Region of Nepal are phytogeographically a diverse terrain and very rich in biodiversity and offers immense scope for ethnobotanical studies. In spite of the fast modernization process, the local communities of these areas still hold on to their traditional faith and depend on indigenous plants for their various domestic needs and traditional medicine. However, at present, the useful plants and their ethno-information are being eroded as a result of loss or degraded of appropriate habitats of the plants, unsustainable land use activities and over-exploitation of natural resources. Hence priority should be given to document the useful plants and their uses along with local knowledge and practices before these plants are eliminated from the areas. During the ethnobotanical survey of Nepal, an attempt has been made to document the useful lower plants with existing traditional practices which are being used by various tribes of the villages and surrounding areas of the region. Although some works related to the ethnobotany of the region have already been carried out by Bhandary and Shrestha, (1982, 1999); Bista *et al.*, (2002); Chaudhary, (1994); Dangol and Gurung, (1999); Gurung, (1999); Joshi, (1988, 1992); Joshi and Edington, (1990); Joshi and Joshi (2000, 2003, 2005, 2005a &b); Joshi *et al.*, (1996, 2003); Joshi, K. (1991, 1996, 2000, 2003 7 b, 2004, 2005); and Manandhar (2002), the vast store of ethnobotanical information of lower plants with traditional knowledge and practices have still not been comprehensively documented. In the present paper, an attempt has been made to enumerate the useful lower plants with indigenous uses.

### **Materials and Methods**

The ethnobotanical study was carried out in the villages and surrounding areas of the Sundarijal, Mahakal, Okharni, Mulkhadka, Tokha, Nagarjun, Nagarkot, Suryabinayak, Nala, Bajrajogini, Changu, Phulchoki, Godavari, Lele, of Kathmandu valley and Kakani, Thansing, Talakhu, Matragau, Thanapati, Likhu of Nuwakot district and Syabru of Rasuwa district. Several field trips in and around the study areas were undertaken during the years 2005 to 2007 with a view to document the indigenous practices and uses of plant resources. Ethnobotanical information was gathered mainly through repeated interview and open-ended participatory discussions with local informants, such as traditional healers / “jkankri”, teachers and experienced village elders including midwives and by direct observations on the way different plant materials were being collected and used (Joshi and Edington, 1990). Voucher specimens are deposited in the office of Biodiversity Management Programme (BMP), Environmental Management Action (EMA) Group, Kathmandu, Nepal.

## Results

During the field survey, ethnobotanical information of 48 species of plants have been collected from various habitats of the study areas. In the following enumeration, the species are arranged alphabetically in two groups (Mushrooms and Pteridophytes), Botanical name followed Nepalese name (Nep.), uses and habitat. Among the documented species, 41 species were used as food and 9 species for treatment of diseases, 1 species for fuel and 1 species for mulching. Though these species are distributed in various habitats, most of the species are mainly confined to the forests.

## Enumeration of Species

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### Mushrooms

*Amanita caesarea* (Scop. ex Fr.) Pers. ex Schw.

Nep. Salla chyau; Suntale chyau; Dhar shyamo; Phul chyau

Uses: edible, use in culinary purpose, mostly preferred by Tamang community. It is also sold in Asan market, Kathmandu with *Amanita hemibapha*,

Habitat: Moist places, dominantly found in the pine forest, Nagarkot and Tokha, Kathmandu valley.

*Amanita hemibapha* (Berk. et Br.) Sacc. subsp. *hemibapha* Corner & Bas.

Nep. Dhar shyamo, Suntale chyau, Phul chyau

Use: whole aerial parts are eaten as vegetables. It is also sold in Kathmandu market mixed with *Amanita caesarea*, *Amanita hemibapha* subsp. *similis* and *Amanita hamibapha* subsp. *javanica*,

Habitat: moist shady places of pine forest, Nagarkot.

*Amanita hemibapha* (Berk. et Br.) Sacc. subsp. *Javanica* Corner & Bas.

Nep. Dhar shyamo

Use: edible. It is also sold mixed with *Amanita caesarea*, *Amanita hemibapha* var. *hemibapha* in market,

Habitat: moist soil in pine forest, Nagarkot

*Amanita hemibapha* (Berk. et Br.) Sacc. Subsp. *similis*

Nep: Dhar shyamo.

Use: edible. It is also sold in Kathmandu market (Asan) with *Amanita hemibapha* subsp. *hemibapha*, .

Habitat : moist soil in pine forest, Nagarkot

*Auricularia auricula* (Hook.) Underwood

Nep. Kane chyau; Mushkane chyau; Naryang shyamo, Chiple chyau

Use: edible, few people used for culinary purpose.

Habitat: rotten stump of *Gravelia robusta*, Nagarjun, Kathmandu

*Boletus edulis* Bull ex Fr.

Nep. Pho shyamo

Use: edible, mostly used by Tamang community.

Habitat: moist shady places in mixed forest, Suryavinayak

*Cantharellus cibarius* Fr.

Nep. Ura shyamo; Kukhure Ko phul chyau

Use: edible. It is also sold in Asan market, Kathmandu

Habitat: moist places in mixed forests of pine and other deciduous trees,  
Sundarijal

*Cantharellus subalbidus* Fr.

Nep. Ura shyamo, Kurkure chyau

Use: edible. It is also sold in Asan market, Kathmandu,.

Habitat: moist places of mixed forests, Sundarijal

*Cantharellus tubiformis* Fr.

Nep. Budhi chyau

Use: edible

Habitat: moist places of mixed forests, Sundarijal

*Clavaria cristata* (Holmsk) Pers

Nep. Thokre chyau; Thakre chyau

Use: edible. It is also sold in Asan market, Kathmandu,.

Habitat: moist places of mixed forests .Godavari.

*Clavulina cinera* (Fr.) Corner

Use: edible/ It is also sold in market with *Laccaria laccata*, Kathmandu

Habitat: moist places in mixed forest, Suryavinayak and Nala.

*Craterellus cornucopoides* (L. ex. Fr.) Pers

Use: edible. It is also sold in Tarkari market, Daubahal with *Cantharellus cibarius*,

Habitat: moist places, Godavari.

*Grifola frondosa* (Dick ex Fr.) S.F. Gray

Nep : Sulshing marmo, Nagroom, Bhalu chyau

Use: edible. It is also sold in Sundarijal market,.

Habitat: moist places in mixed forests, Sundarijal and Lele.

*Hericium erinaceus* (Bull) Pers.

Nep. Thokre chyau; Thankar shyamo.

Use: edible. It is sold in Ashan market, Kathmandu

*Hydnum repandum* L.

Nep. Chwali shyamo, Ura shyamo, Chwali ura shyamo.

Use: edible, sometime eaten raw, preferred by Tamang community.

Habitat: moist places covered with pine litter, pine forest, Tokha

*Laccaria laccata* (Scop. ex Fr.) Berk & Br.

Nep. Budhi chyau; Jhari chyau, Kurkure chyau, Bhuinbapale chyau,  
Chinmrukan

Use: edible, mostly preferred by Tamang and Newar ethenic cast. It is also  
sold in Kathmandu market

Habitat: moist shady and open places in *Pinus roxburghii* forest and in  
mixed forest, Tokha, Sundarijal, Lele, Bajrayogini and  
Suryavinayak.

*Lactarius piperatus* (Fr.) S.F. Gray

Nep. Dudhe chyau, Nghe shyamo

Use: edible, but not preferred.

Habitat: pine forest, Nagarkot

*Laetiporus sulphureus* (Fr.) Murr

Nep. Wala shyamo; Sulsingwala marmo

Use: edible. It is also sold in Asan market .,

Habitat: moist places, Sundarijal.

*Lentinellus* sp

Use: edible. It is also sold in Kathmandu market with *Pleurotus*  
*cornucopiae*.,

Habitat: forest, Tokha.

*Lycoperdon pyriforme* Schaeffer ex Fr.

Nep. Phusphure chyau; Nagala Phum shyamo.

Use: edible;

Habitat: moist places in mixed tropical forests, Kakani and Changu.

*Meripilus giganteus* (Fr.) Karst

Nep. Bhalu Chyau

Use: edible

Habitat: *Quercus* stump, Phulchoki

*Oudemansiella radicate* (Rehl ex Fr.) Singer

Nep. Kagkhutte chyau, Tang shyamo

Use: edible, roasted on fire or fried with various things.

Habitat: soil in open moist places, Suryavinayak, Lele and Kakani.

*Pleurotus cornucopiae* (Paul ex Pers) Rolland

Use: edible, The mushrooms are sold in Asan market, Kathmandu and  
Mangal Bazar, Patan,

*Pleurotus pulmonarius* (Fr.) Quel

Nep. Kande chyau

Use: edible. It is sold in Kathmandu market, mixed with *Pleurotus conucopiae*  
and *Lentinellus* spp.,

*Polyporus arcularius* Fr.

Use: edible. It is also sold at Asan market, Kathmandu

Habitat: moist places of forest, Phulchowki

*Polyporus varius* Fr.

Use: edible.

This species is sold in Kathmandu Market

*Ramaria aurea* (Fr.) Quel.

Nep. Thakre chyau

Use: edible It is also sold in Kathmandu market

Habitat: moist places of pine forests, Nagarkot and Lele .

*Ramaria botrytis* (Pers.) Ricken

Nep. Thekre chyau

Use: edible. It is also sold at Asan market, Kathmandu

Habitat: soil in moist places in pine forest, Kakani .

*Ramaria flava* (Fr.) Quel

Nep. Thokre chyau

Use: edible. It is also sold at Kathmandu market.

Habitat: soil in pine forest, Kakani

*Ramaria formosa* (Fr.) Quel.

Nep. Thokre chyau

Use: edible.

Habitat: It is sold at Asan market mixed with *Ramaria aurea* and *Ramaria flava*.

*Russula adusta* Fr.

Nep. Kan shyamo

Use: edible, but poor in taste.

Habitat: moist shady places in pine forest or in mixed forests, Lele ,  
Nagarkot, Bajrayogine and Matatirtha.

*Russula densifolia* Gill

Use:edible, but poor in taste.

Habitat: moist shady places in pine forests,Bajrnyogini, Lele and  
Suryavinayak.

*Scleroderma citrinum* Pers

Nep. Phusphure chyau, Dalle chyau, Til chyau, Shakan shyamo, Allu chyau,  
Pattun chyau.

Use: edible. It is also sold in Asan market, Kathmandu

Habitat: soil in moist places of the mixed forest, Matatirtha,  
Sundarijal and Changu ,

*Termitomyces eurhizus* (Berk) Heim

Nep. Kalunge chyau, Puchina, Jhyarno, Chyarmo, Kalunge

Use: edible, aerial parts are eaten after roasted. It is also sold in Kathmandu  
market

Habitat: ` moist soil in pine forest as well as in mixed forests, Nagarkot ,  
and Kakani

## **Pteridophytes**

*Adiantum Capillus veneris* (Linn.) Adiantaceae

Nep. Rani uneu

Use: A paste made from the fronds is applied to the forehead to relieve

headaches and to the chest to relieve chest pains; decoction of plant is drunk to treat whooping cough and throat and bronchial disorders; squeezed leaf juice is applied on wounds.

Habitat: stone crevices and rocky slopes, Kakani

*Adiantum caudatum* L. Adiantaceae

Nep. Uneu

Use: Green leaves are pounded in water and juice is applied to the affected area of skin infection; dried leaf is decocted and then drunk to treat cough and fever; leaf juice is taken to cure diabetes.

Habitat: stone crevices and rocky slopes, Kakani and Talakhu of Nuwakot district.

*Adiantum incisum* Forssk, Adiantaceae

Nep. Uneu

Use: Frond is squeezed between thumb and then juice is applied externally to cure scabies.

Habitat: Forests, Matragau, Nuwakot district.

*Diplazium stoliczkae* Bedd. Aspidiaceae

Nep. Kalo neuro

Use : The tender shoots are commonly eaten as delicious vegetable.

Habitat: Forest, Kakani and Syabru

*Deparia boryana* (Willd.) M. Kato., Woodsiaceae

Nep. Kaloneuro

Use: Young parts are eaten as vegetable.

Habitat: Forest, Thanapati

*Dryopteris cochleata* (D. Don.) C. Chr. Aspidiaceae.

Nep. Dantheneuro

Use : The tender shoots are consumed as vegetable after boiling and are used to sell in market; juice extracted from the fronds is used to treat muscular and rheumatic pain

Habitat: Forest, waste moist areas, Thansing, Kakani, Mulkhadka, Okharni and adjoining areas

*Dryothyrium boryanum* (Willd.) Ching., Aspidiaceae

Nep. Kaloneuro

Use : The young parts are eaten as vegetable.

Habitat: Forest, Sundarijal

*Equisetum debile* Roxb. ex Vaucher, Equisetaceae

Nep. Ankhe jhar, kurkure

Use: Plants are pounded and paste is then applied in bone fracture and also used to cure old ulcers.

Habitat: stagnant water, shady moist areas, Kakani and Likhu, Nuwakot district

*Geleichenia gigantea* Wall ex Hook & Bauer. Gleicheniaceae

Use: Frond is used as fuel and mulching.

Habitat: Profoundly occur on dry exposed areas, Thansing

*Lycopodium clavatum* L. Lycopodiaceae,

Nep. Nagbeli jhar;

Use: decoction of shoot is drunk three times a day for stomach ache; spores are used to treat cuts and wounds; plant decoction is used in rheumatism.

Habitat: forest, exposed slopes, Okharni, Mulkhadka and Thansing

*Nephrolepis cordifolia* (L.) Presl. Davalliaceae

Nep. Pani-amala, Pani saru

Use: Fleshy tubers are eaten by village children. Herb is used against cough and skin diseases; water bulbs are taken to cure Leocorrhea.

Habitat: Shady or dry open places, Kakani and Syabru.

*Polystichum squarrosus* (D. Don) Fee. Aspidiaceae

Nep. Phusre neuro, Bhyagnte neuro, Thulo neuro

Use: Tender shoots are consumed.

Habitat: Shady as well as exposed parts of the forest, Mahakal and Syabru,

*Pteridium aquilinum* (L) Kuhn. Dennstaedtiaceae

Nep. Uneu

Use: Young frond is eaten as vegetable; Decoction of rhizome is used for the treatment of spleen.

Habitat: Exposed area, moist places, Kakani

*Selaginella biformis* A. Br. ex Kuhn. Selaginellaceae

Nep. Sindure

Use: powder of strobilus is applied on cuts and wounds to stop bleeding;

Habitat: shady slopes, riversides, Kakani.

## Discussion

The present study revealed that wild plants are widely used to fulfill basic needs and for therapeutic purposes in the villages of the Central Development Region. *Ramaria aurea* and *Ramaria flava* are considered as nonedible species in Japan (Imazeki *et al.* 1988), but they are used as vegetable in Kathmandu valley (Joshi and Joshi, 1999). The local inhabitants of the study areas have developed a traditional knowledge system related to utilisation of plant resources in a sustainable manner. Especially, women have significant knowledge regarding usefulness of the plants and their parts. But when questioned about the changing status of the existing plants, our respondents listed some important species such as *Auricularia auricula* and *Cantharellus cibarius* which have also declined in abundance during the last decade. Hence, efforts should be directed to conserve the valuable species and their habitats with the implementation of locally appropriate sustainable management measures involving local participation.

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## References

- Bhandary, H.R. and Shrestha, P. 1982. Ethnobotanical exploration of the poisonous plants of Kathmandu Valley. *Proc. First National. Sci. Tech. Cong.* National Council of Science and Technology, Kathmandu, Nepal. pp.89-97.
- Bhandary, H.R. and Shrestha, P. 1999. Poisonous plants of Kathmandu Valley. In: T.C. Majupuria and R.K. Majupuria (eds.), *Nepal-Nature's Paradise*, ( ), M. Devi, Gwalior, India. pp.151-158.
- Bista, M.S., Adhikari, M.K. and Rajbhadari, K.R. 2002. *Pteridophytes of Nepal*, Department of Plant resources, thapathali, Kathmandu, Nepal. 175 p.
- Chaudhary, R.P., 1994. Plants used in the treatment of domestic cattle in Narayani zone (Central Nepal). In: *Proceeding of IInd National Conference on Science and Technology*, pp. 835-847.
- Dangol, D.R. and Gurung, S.B. 1999. Ethnobotanical study of Darai tribe in Chitwan District, Nepal, *Proceeding of III National conference on Science and Technology*, March 8-11, 1999, RONAST, Nepal, pp. 1194-1213.

- Gurung, S.B., Dangol, D.R. and Bhandary, A. 1999, Preliminary study on plant communities of forest ecosystem in Chitwan, Central Nepal. *Proceeding of III National conference on Science and Technology*, March 8-11, 1999, RONAST, Nepal, pp1571-1578.
- Imazeki, R.Y., Otani, Y. and Hongo, J. 1988. *Fungi of Japan*, Yama-Kie Pub. Co. Ltd. Toyko, Japan.
- Joshi A.R., 1988. *A Study of the Environmental Relationship of Certain Village Communities in the Central Development Region of Nepal*, Ph.D. Thesis. University of Wales. U.K.
- Joshi, A.R. 1992. Environmental Dimension on Environment sound and sustainable development: A case study of Hill Ecosystem, ESCAP, Bangkok. Thailand.
- Joshi, A.R., Adhikari, M.K., Joshi, Kunjani., Gyawali, M.B., Thapa, B.B., Bhandari, R.C., Pradhan, Bimla., Prashad, B.N. and Adhikari, Kamala 1996. *Study on Food Value and Toxic Wild Mushrooms of Nepal*. A Research Report submitted to Nepal National Commission for UNESCO, Nepal. 97p.
- Joshi, A. R. and Edington, J. M. 1990. The uses of medicinal plants by two village communities in the Central Development Region of Nepal. *Economic Botany* 44(10):71-83.
- Joshi, Kunjani and Joshi, A.R. 1999. Ethnobotanical study of some wild mushrooms of two valleys (Kathmandu and Pokhara) of Nepal. *Ethnobotany* 11 : 47-56.
- Joshi A.R. and Kunjani Joshi 2000. Indigenous knowledge and uses of medicinal plants by local communities of the Kali Gandaki Watershed Area, Nepal. *J. Ethnopharmacology* 73: 175-183.
- Joshi, A. R. and Joshi, Kunjani 2003. Fodder plants of hilly areas of Bagmati and Langtang watershed of Nepal : ethnobotany and future conservation strategy. *Ethnobotany* 15 (1-2): 107-114.
- Joshi, A.R. and Joshi, Kunjani 2005. *Ethnobotany and Conservation of Plant Diversity in Nepal*, Rubrick, Kathmandu, Nepal
- Joshi, A.R. and Joshi, Kunjani, 2005a. Piscicidal plants of Bagmati watershed , Nepal: Indigenous practices. *Ethnobotany* 17, 184-186.
- Joshi, A. R. and Joshi, Kunjani 2005b. Non-Timber forest Products of Bagmati and Langtang watershed, Nepal : raw materials of plant origin and their indigenous uses. *Journal of Non-Timber Forest Products* 12(2), 76-86.
- Joshi, A.R., Shrestha, S.L. and Joshi, Kunjani 2003. *Environmental Management and Sustainable Development at the Crossroad*, AnKuS, Kathmandu, Nepal. 302p.
- Joshi, Kunjani 1991. The uses of wild plants by local communities in the mountainous region of Nepal. *Mountain Environment and Development* 1, 43-52.
- Joshi, Kunjani 1996. Uses of wild plants by local communities of Kakani area, *Network* (A newsletter of APINMAP/SCAMAP , Nepal) 1(1),2-3.
- Joshi, Kunjani 2000. Medicinal Plant-lore in some hilly villages of the Central Development Region, Nepal. *BIONOTES* 2(4): 69-71.
- Joshi, Kunjani 2003a. Leaf flavonoid patterns and ethnobotany of *Shorea robusta* Gaertn. (Dipterocarpaceae), In: *Proceeding of International Conference on Women, Science and Technology for Poverty Alleviation* (March 31-April 2, 2003), WIST, kathmandu, Nepal, pp. 101-107.
- Joshi, Kunjani 2003b. Flavonoid aglycones and Ethnobotany of *Alnus nepalensis* (Betulaceae), *Bionotes* 5(2), 32-33.
- Joshi, Kunjani 2004. Documentation of Medicinal plants and their indigenous uses in Likhu sub-watershed, Nepal, *Journal of Non-timber Forest Products* 11(20), 86-93.



Joshi, Kunjani 2005. Ethnobotanical note on *Cyperus rotundus* in Nepal, *Bionotes* 7(3), 86.

Manandhar, N.P. 2002. *Plants and People of Nepal*. Timber Press, Oregon.