

Medico-ethnobotany of the Monpas in Tawang and West Kameng districts of Arunachal Pradesh, India

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Abstract

Medico-ethnobotany of Monpa tribe in West Kameng and Tawang districts of Arunachal Pradesh was studied. We accompanied the elderly monpas in the field and conducted personal interviews to record the local uses of wild medicinal plants. A total of 21 species of angiosperms and one fungus were used by the Monpas for the treatment of various diseases. Some plants are also used for health care. Plants are enumerated along with their local name, useful parts, use and availability in the study area.

Key words: Ethnobotanical, Ethnomedicinal, Monpa tribe, Folk Medicine.

INTRODUCTION

Ayurveda (“teaching of life”) is considered to be the oldest medical tradition in the World (Anonymous 2000). Its roots can be traced back to antique India, around 5000 years back in history. In past decades there has been renewed attention and interest in the use of traditional medicine globally. In China, traditional medicine accounts for around 40% of all health care delivered. In Chile 71% of the population and Colombia 40% of the population use such medicines. In India 65% of the population in the rural areas use traditional plant-based medicines to meet their primary health care (Anonymous, 2002). According to an all India ethnobiological survey carried out by the Ministry of Environment & Forests, Government of India, there are over 8000 plant species being used by the people of India (Anonymous 2000).

Arunachal Pradesh is located between 26° 28' and 29° 30' N Latitudes and 91° 30' and 97° 30' E Longitudes covering an area of 83743 sq km. The entire territory forms a complex hill system with varying elevations ranging from 50 m to about 7000 m, traversed throughout by a number of rivers and rivulets. The forest cover of Arunachal Pradesh is around 51,540 km² (Singh 2003). The forests harbors a phenomenal range of biological diversity, both flora and fauna. Forests of different climatic types like Tropical, Sub-Tropical, Temperate and Alpine are prevalent in this remote state. Arunachal Pradesh is inhabited by 25 distinct classes of tribes and 100 sub tribes, who form the sizeable population. These people continue to live using local natural resources for sustenance and livelihood. Each of these tribal communities has distinct socio-cultural identity and customs. Generally the folk people are well acquainted with the medicinal properties of their surrounding component of vegetation. Arunachal Pradesh is rich with over 5000 plant species, out of which 500 species are with medicinal properties (Hegde 2000). Dam and Hajra (1981) studied the ethnobotany of Monpas of Kameng district and during our recent survey we had collected additional ethnomedicinal information on some species of plants from this community. The present paper looks into the Ethnomedicinal uses of some plants as practiced by Monpa tribe in Tawang and West Kameng districts of Arunachal Pradesh.

Study area: The study area is situated in two different locations of Arunachal Pradesh coming under the remote area of Indian subcontinent. There are two community conservation areas for the Monpa tribe of West Kameng district and Tawang district in Arunachal Pradesh (Figure-1). The Thembang Bapu Community Conservation Area (TBCCA) of West Kameng lies approximately in between 91° 30' to 92° 40' East longitudes and 26° 54' to 28° 01' North latitudes with an area of

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312 sq km. The Pangchen Lumpo Munchat Community Conservation Area (PLMCCA) is smaller, located in the Tawang district, lies in around the latitude $27^{\circ} 30'$ to $27^{\circ} 45' 2''$ N and the longitude $90^{\circ} 152'$ to $90^{\circ} 162' 30''$ E on the northwest extremity of Arunachal Pradesh and occupying an area of 98 sq km. The Tawang district is the home of tribal people like Akas, Daflas, Monpas and Sherdukpens. Elevations of the area are ranging between 1800 to 6500 m a.m.s.l. and total rainfall in this belt is within the range of 2500 mm to 3500 mm annually. The topography is mostly mountainous and experiences arid tundra or a cool temperate climate in the north. Snowfall occurs regularly during November to March in a year.

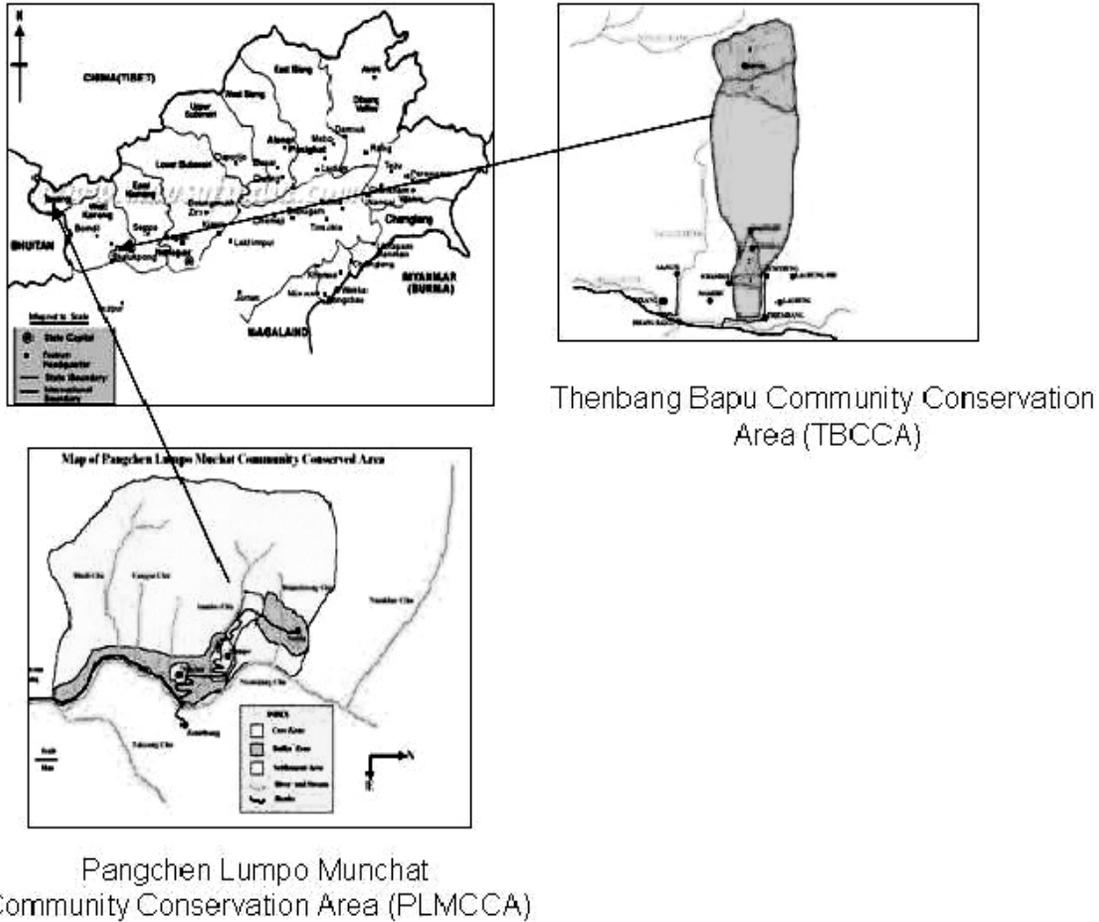


Figure 1. Study Area: Thenbang Bapu community conservation area; Pangchen Lumpo Munchat Community Conservation Area

METHODOLOGY

The present study is based on intensive field survey conducted during the year 2007. Ethnomedicinal information about the plants was collected on the basis of frequent interviews with the experienced old people following the methods suggested by Schultes (1962) and Jain (1963). Out of the 270 plant species collected during the survey, 22 species have been recognized with ethnomedicinal value and enumerated below along with their correct names, families, local names, reference to voucher specimens, etc.

Interaction with the tribal: This is the easiest method through which we tried to identify the species those occur in the both PLMCCA and TBCCA. We showed the tribal photographs of some animals and plants and asked whether any of them were to be found in either of the Community Conservation Areas. They described the animals, giving us the local name, morphological characteristics and behavior. Besides this, we also discussed about the plant species which they collect from the PLMCCA and TBCCA for the preparation of medicine.

Voucher Specimens: Voucher specimens for all the plants under discussion were collected to ensure proper identification and made into mounted herbarium specimens following Jain & Rao (1977). All the specimens are deposited in the Herbarium of the Wildlife Institute of India, Dehradun. Specimens were collected by Amit Kotia during August – September, 2007.

RESULTS

The present investigation provides the first hand information on the plants used by the people of Monpa tribe in Arunachal Pradesh living in TBCCA and PLMCCA for treatment of their different ailments. The recognized plants have been enumerated below alphabetically along with different other information.

Aconitum ferox Seringe [Ranunculaceae]; Local Name: *Niyong* (Monpas); perennial herb

Exsiccatae: AP 10569

Plant Parts used: Roots.

Ethnomedicinal uses: Small amount of dry root powder used with water in fever and digestive problem; also used as a poison.

Occurrence: Only few plants were seen on open slopes near Pottok (TBCCA), at an altitude of 4300 m.

Aconitum heterophyllum Wallich ex Royle [Ranunculaceae]; Local name: *Chando* (Monpas); perennial herb.

Exsiccatae: AP 492

Plant Parts used: Root

Ethnomedicinal uses: small amount of powder of dried root taken with water in digestive problem dysentery and constipation.

Occurrence: Rare around Pottok alpine area (TBCCA) at an altitude of 4300 m.

Anemone vitifolia DC. [Ranunculaceae]; English Name: *Vine-leaved Anemone*; perennial herb.

Exsiccatae: AP 10571

Plant Parts used: Roots & leaves.

Ethnomedicinal uses: Paste of root or leaf is used to cure skin infection mainly for ring worms and eczema.

Occurrence: Common in open slope in of TBCCA and PLMCCA both CCA with in an altitude of \pm 2000 m.

Artemisia annua L. [Asteraceae] Local Name: *Newglum* (Monpas); annual herb.

Exsiccatae: AP 745

Plant Parts used: Leaves

Ethnomedicinal uses: juice of fresh leaves used to cure dermatological problem and eye pain.

Occurrence: Common in open slopes and road side on way to Zimithang (PLMCCA) and Thungari (TBCCA), up to 2000 m elevation.

Centella asiatica (L.) Urban [Apiaceae]; Local Name: *Sher-Gor-Gor* (= *Round-shaped leaf*) (Monpas); annual with runners.

Exsiccatae: AP 624

Plant Parts used: Leaves & young shoot.

Ethnomedicinal uses: decoction of dry leaf is used against fever; fresh leaf juice is used against dysentery.

Occurrence: Very common around Zimithang (PLMCCA) and Larja to Thungari (TBCCA), up to \pm 2000 m altitude.

Cordyceps sinensis (Berk) Succ. [Clavicipitaceae; Ascomycetae]; Local name: *Yartse-gompe*.

Exsiccatae: AP 10553

Plant Parts used: Entire stroma or fruit-body.

Ethnomedicinal uses: The entire fruit-body is used for influenza, cough, cold, respiratory problem, stress and chronic fever; a cardiac tonic and aphrodisiac. It is a precious ingredient for different traditional Chinese medicines. Local people informed that 80% of the collection is sold in China.

Occurrence: Rare in Alpine areas of Pottok (TBCCA) and Lumpo Munchat village area (PLMCCA), at about 4300 m elevation.

Dactylorhiza hatagirea (D. Don) Soð [Orchidaceae]; Local Name: *Womba-lanpa*; terrestrial herb

Exsiccatae: AP 10545

Plant Part used: Tuberous roots.

Ethnomedicinal uses: General tonic. Decoction of tubers with sugar is useful drink providing energy sick-people and to remove weakness to women weakness after delivery.

Occurrence: Rare in Alpine area of Pottok (TBCCA) around 4300 m.

Gaultheria trichophylla Royle [Ericaceae]; Local Name: *Shskshima* (Monpas); undershrub.

Exsiccatae: AP 10509

Plant Parts used: Fruit.

Ethnomedicinal uses: Tribal people use fresh fruits directly for curing cough and cold.

Occurrence: Common in Changla to Pottok and alpine area of TBCCA and Lumpo Munchat village of PLMCCA (between 3000 to 4300 m elevations).

Gentiana crassuloides Bureau & Franchet [Gentianaceae]; Local Name: *Pong-chin-minto* (Monpas); small annual.

Exsiccatae: AP 10530

Plant Parts used: Whole plant.

Ethnomedicinal uses: Decoction of leaves and young shoot is used to cure cough and cold.

Occurrence: Only few plants were recorded in Changla (TBCCA), at an altitude of 3800m on way to Pottak.

Gymnadenia orchidis Lindley [Orchidaceae]; Local Name: *Womba-lanpa* (Monpa); terrestrial herb

Exsiccatae: AP 10533

Plant Parts used: Tuberous root.

Ethnomedicinal uses: General tonic. Root-tuber used in urinary problems, gonadic disorder and wounds; roots are also used as veterinary medicines in cuts and wounds.

Occurrence: Rare in alpine area of Pottok (TBCCA), at about 4300 m.

Houttuynia cordata Thunberg [Saururaceae]; Local Name: *Honya*; small perennial herb

Exsiccatae: AP 499

Plant Part used: Leaves.

Ethnomedicinal uses: Leaves are used in measles, dysentery, gonorrhoea, eye and skin troubles; anti-inflammatory, anti-viral, anti-fungal, and anti-microbial in action.

Occurrence: Common in open slope and grasslands of Lumpo and Munchat village area at an altitude of ± 2000 m.

Meconopsis napaulensis DC. [Papaveraceae]; Local Name: *Chhusen (Monpas)*; erect herb

Exsiccatae: AP 10543

Plant Parts used: Fruit

Ethnomedicinal uses: Fruits stimulate the mouth epidermis and used as Mouth-Freshener, tribal people chew the fruit for its sweetness.

Occurrence: Very rare in alpine area of Pottok (TBCCA), at an altitude of ± 4300 m.

Nardostachys jatamansi (D. Don) DC. [Valerianaceae]; Local Name: *Pang-posh (Pang = open, posh = place) (Monpas)*; small perennial with root-stock.

Exsiccatae: AP 10539

Plant Parts used: Root-stock.

Ethnomedicinal uses: Root-stock is used as general tonic; also used in skin diseases, fever, cough, cold and dysentery.

Occurrence: Rare in alpine areas of TBCCA and PLMCCA, both CCA at an altitude of ± 4300 m.

Neopicrorhiza scrophulariiflora (Pennell) Hong [Scrophulariaceae]; Local Name: *Khongleng (= Bitter in taste) (Monpas)*; small weak perennial herb

Exsiccatae: AP 10537

Plant Parts used: Root-stock.

Ethnomedicinal uses: Root-stock used to cure fever, dysentery, cold, influenza, chronic fever and jaundice; also a cardiac tonic.

Occurrence: Rare in alpine areas of TBCCA and PLMCCA, both CCA up to 4300 m.

Rubia manjith Roxburgh *ex* Fleming [Rubiaceae]; Local Name: *Langye (Monpas)*; shrubby climber

Exsiccatae: AP 710

Plant Parts used: Root, leaf and stem

Ethnomedicinal uses: Mixed with oil and used for body pain and headache mainly for joints and the stem of the plant used for local dye.

Occurrence: Common dense slope or mixed forest type in Thungri and Changla (TBCCA) at an altitude of 2000 – 3000 m.

Satyrium nepalense D. Don [Orchidaceae]; Local Name: *Peepee (= rounded) (Monpas)*; erect terrestrial herb

Exsiccatae: AP 10531

Plant Parts used: Tuberos roots.

Ethnomedicinal uses: Root-tubers are used as tonic and to cure cough and cold.

Occurrence: Very common in open hill-slopes and grasslands of both CCA (TBCCA and PLMCCA) at an altitude of 2500 m.

Saussurea gossipiphora D. Don [Asteraceae]; Local Name: *Ruiposh (Rui = cotton, Posh = Dhup or fumigation) (Monpas)*; erect herb.

Exsiccatae: AP 10550

Plant Parts used: Root-stock

Ethnomedicinal uses: Root-stock used to treat pre-menstruation cycle.

Occurrence: Very rare in alpine area of Pottok (TBCCA) at an altitude of \pm 4300 m but can be spotted easily in PLMCCA.

Swertia chirayita (Roxburgh) Karsten [Gentianaceae]; Local name: *Gonga Marpo* (Monpas); erect perennial herb

Exsiccatae: AP 10575

Plant Parts used: Whole plant

Ethnomedicinal uses: Decoction of plant used against malaria, cough and cold

Occurrence: A few individuals were recorded in open slope between Thungri to Changla area (TBCCA) at an altitude of 3800 m.

Swertia nervosa (G. Don) Clarke [Gentianaceae]; Local Name: *Yanshi-pong-yong* (Monpas); erect annual herb

Exsiccatae: AP 619

Plant Parts used: Whole Plant.

Ethnomedicinal uses: Decoction of plants used to cure fever, malaria and also used as blood purifier.

Occurrence: Common in Themang village (TBCCA) in open slope, cultivated farm boundaries and road side, ca. 2000 m.

Swertia speciosa D. Don [Gentianaceae]; Local Name: *Sherkuto* (Monpas); erect annual herb

Exsiccatae: AP 10580

Plant Parts used: Root.

Ethnomedicinal uses: Decoction of plants used against fever, cough, dysentery and cold.

Occurrence: Only few plants were found in open slope of Changla (3800 m).

Thalictrum chelidonii DC. [Ranunculaceae]; Local name: *Krekpa* (Monpas); undershrub

Exsiccatae: AP 716

Plant Parts used: Leaf.

Ethnomedicinal uses: Leaf-paste is applied on skin irritation or any infectious diseases.

Occurrence: Common in bushes in hill slopes near Thungri (2000 m.).

Viola biflora L. [Violaceae]; Local Name: *Sher-Minto* (Monpas); small perennial herb

Exsiccatae: AP 10664

Plant Parts used: Whole plant.

Ethnomedicinal uses: Used against constipation, cough and skin diseases.

Occurrence: Common along the slope in open vegetation and in grassland between Thungri to Changla (2000 – 3000 m).

DISCUSSION

The scrutinized information from the tribe was also retraced by consulting with important works pertaining to Indian medicinal plants and ethnobotany such as The Wealth of India (Anonymous 1948-1992), *Indian Medicinal Plants* (Kirtikar & Basu 1935), *Medicinal Plants of India* (Jain & Defilipps 1991), *Ethno-Medico Botany of Arunachal Pradesh* (Rawat & Chowdhury 1998), *Ethnobotany and its scope in Arunachal Pradesh* (Bhuyan 1999) and *Some commercially important medicinal Plants of north eastern India* (Bhuyan 2000). Several authors had worked on ethnomedicine of Arunachal Pradesh and adjacent areas like Hjara (1977), Sharma *et al.* (2003), Kar *et al.* (2005), Das & Kar (2006) and Kar & Borthakur (2008) were also consulted for this purpose.

During the present investigation, values of large number of medicinal plants growing in both the community conservation areas were recorded those were not recorded earlier authors worked on Monpas. As much as 21 species of angiosperms belonging to 11 different families and a fungus were recorded here and these plants can cure a wide range of diseases. With these plants they can cure diseases like fever, indigestion, dysentery, constipation, bacterial and fungal skin diseases, eye-pain, weakness after sickness and child-delivery, body pain, joint pain, menstruation problems, malaria etc. The fungus *Cordyceps sinensis* is used against cardiac diseases. It is also one well known anti-stress and aphrodisiac and is under use since long. So, Monpas also use plants and fungus in health care. Apart from *C. sinensis*, they use *Meconopsis napaulensis* fruits as mouth-freshener and plants like *Dactylorrhiza hatagirea*, *Gymnadenia orchidis*, *Nardostachys jatamansi* and *Satyrium nepalensis* are used as general tonic.

This report has been prepared from a short duration survey and many parts of the area remained unexplored and there is every reason to believe that proper scientific exploration over the entire area will produce huge mass of fruitful information about Monpa's traditional knowledge on local Medicinal Plants and those will be important addition to our database for future scientific evaluation and formulation of new drug for the improvement of human health care.

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