

EXPLORATION OF PLANT BASED TRADITIONAL KNOWLEDGE FROM SHAM REGION OF LADAKH (J&K), INDIA

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Abstract: Ethnobotanical forays were conducted in three villages viz. Wanla, Domkhar and Skurbuchan of Sham region in Ladakh (J&K). The present paper documents significant ethnobotanical information on traditional usage of some interesting high altitude plants by the indigenous villagers in Sham region of Ladakh as food, beverage, medicine, fodder, timber and fuel. Acquaintances on twenty plants including their botanical names, vernaculars and traditional usage and recipes were incorporated in the present paper.

Keywords:

INTRODUCTION

Owing to the seasonal constraints and geographical isolation, the people in Ladakh have developed a long history of traditional usage of locally available resources. The vast majority of the population has evolved subsistence farming confined to low lying areas along the river basins and valley floor. For centuries, indigenous people in rural Ladakh have been dependent on wild edible plants as one of their principal food commodity. Several wild edible plants are known to be collected for both personal consumption and as commodity in Leh-Ladakh. Some traditional recipes including 'Pabha' (prepared from barley flour), 'thukpa' (boiling tender shoots of *Lepidium latifolium*), 'thangthur' (mixing leaves of *Nepeta glutinosa* in curd or Whey), 'Kabbra tsotma' (recipe made from young shoots of *Capparis spinosa*) etc. are most common recipes prepared from the wild edible plants to meet their dietary needs. Ethnobotanical exploration related to high altitude food and medicinal plants from different areas of Ladakh is meager and not encouraging (Navchoo et al. 1990; Bhattacharyya 1991; Angchok et al. 2009; Pal Murugan et al. 2010; Dorjey et al. 2012). The present study, therefore, aims at documenting the traditional usage pattern of wild edible plants and to document some important recipes of plant origin from the Sham region of Ladakh.

MATERIAL AND METHOD

Ethnobotanical surveys were conducted in different localities in remote villages of Sham regions of Ladakh including Domkhar, Skurbuchan and Wanla. Traditional knowledge related to usage of plants as food, beverage, medicine, fodder, timber and fire wood was gathered by surveying different areas and using semi-structured interviews. Different rural

informants involving 120 inhabitants of Buddhist community (Boto tribes) aged between 18 to 80, out of which 45 were male and 75 were female, were questioned. The demographic features of the informants were presented in Table 1. Efforts were made to reach the older (above 50 years of age) informants in each village as they could distinguish maximum local plants implying that they had a genuine and broad traditional knowledge of plants in their locality. Interviews were conducted in local dialect *Sham-skat*. Plants were identified using relevant literature and consulting experts. The specific areas of Sham region from where ethnobotanical information was gathered include Wanla, Skurbuchan and Domkhar.

Study area

Sham region of Ladakh is about 90 km away from the Leh city. It is situated between 34°19' N Latitude and 76°52' E Longitude, and located at an altitude of approximately 2992 meters. The region is set among the jagged mountains with deep valley and encompasses a vast area along the Indus River. The region is home to interesting wild fauna (Snow-leopard, Ibex, wolf, Fox etc) and flora including medicinal herbs, juniper forests and deciduous forest of *Salix* and *Populus* as dominating vegetation. The lands are fertile and productive for crops like barley, wheat, buckwheat, pea, pulses, mustard and several green vegetables. Apricot and its products like 'Fating' (sun dried apricot), 'Tsegumar' (apricot oil) and apricot kernels constitute one of the famous products of this region. Besides, different varieties of apples, walnuts, cherries, grapes and pear are the main fruit crops grown in region. Inhabitants are predominantly Buddhist by religion. Sham dialect (*sham-skat*) is the main language spoken by them. Besides, the region harbours a unique and rich diversity of culture and tradition.

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Table 1. Demographic features of the informants n = 120

Features	Frequency of Informants			Total (Out of 120)
	Wanla	Skurbuchan	Domkhar	
Gender				
Male	15	20	10	45
Female	25	20	30	75
Marital status				
Married	35	38	32	105
Single	5	2	8	15
Widow	0	0	0	0
Age				
Between 18- 25	10	6	8	24
Between 25-50	12	14	10	36
Between 50-80	18	20	22	60
Level of formal education				
No formal education	12	8	10	30
Primary education	20	22	18	60
Adult education	0	0	0	0
Secondary education	6	0	6	12
College education	2	8	6	16
University education	0	2	0	2
Employment status				
Employed	0	4	2	6
Unemployed	6	6	4	16
Farmer/pastoralist	34	30	34	98
Retired	0	0	0	0
Tribe				
Boto	40	40	40	120
Brogpa	0	0	0	0
Balti	0	0	0	0

RESULT AND DISCUSSION

Ethnobotanical information on traditional usage of plants in Sham region with focusing on village Wanla, Skurbuchan and Domkhar were recorded and highlighted in the present paper. The information on each plants including botanical names, family, vernacular names, plant part used and traditional usage of plants for food, beverage, medicine, fodder, timber and fire wood have been described in Table 2. As many as 20 different species of plants representing sixteen families were enumerated and

discussed in the present paper. Out of 20, five plants were used in preparation of traditional recipes. In Skurbuchan village, recipes like ‘Ten-ten’ and ‘bPrapu’ were prepared from the seeds of *Fagopyrum esculentum* while as ‘Kabra-tstotma’, ‘Phololing-tangthur’, ‘Shakmazgok-tangthur’ were prepared from leaves of *Capparis spinosa*, *Mentha longifolia* and *Nepeta glutinosa* respectively. Similarly, grains of *Hordium vulgare* was used for making different recipes (‘Pabha’, ‘Kholak’ and ‘Snam-thuk’) while as *Allium carolinianum* and *Carum curvi*

Table 2. Traditional usage of Plants in Sham region of Ladakh.

S. No.	Botanical name, Family, Local name	Part used	Traditional usage
1	<i>Allium carolinianum</i> DC. Amaryllidaceae; <i>Skotse</i> , <i>Rasgokpa</i> .	Leaves	Leaves are used as flavoring the local recipes. Dried leaves are put in heated oil which is then poured into local dishes like <i>Thukpa</i> , <i>Tangthur</i> etc.
2	<i>Arnebia euchroma</i> (Royle) Jhon Boraginaceae, <i>Demok</i>	Roots	Mature roots are used for dyeing cloths by locals. In Buddhist tradition, <i>Demok</i> is also used in religious rituals. Dried roots were heated with Yak butter which is used by Lamas for colouring the <i>Chotpa</i> , structures made from barley dough, which signifies certain rituals in Buddhism.
3	<i>Artemisia brevifolia</i> Wall ex. DC. Asteraceae; <i>Burtse</i>	Whole plant	The plant is used as fuel and fodder. During extreme winter, the inhabitants burn <i>Artemisia</i> as <i>meh-spar</i> (fire initiator) as its soft shoots easily catches fire.

4	<i>Betula utilis</i> HD Don. Betulaceae; <i>Stakpa</i>	Bark, stem	The bark of this tree was believed to use as writing material in ancient Ladakh. The stem is used in making wooden plough as the wood of <i>Betula</i> was believed to be one of hardest natural timber and consequently suitable for making the plough in traditional farming system in Ladakh. The plough is pulled by the Yak, the most gorgeous domestic animal of Ladakh.
5	<i>Capparis spinosa</i> Linn. Capparidaceae; <i>Kabra</i>	Buds, young leaves	<i>Capparis</i> is an edible plant and has been consumed by Ladakhis for centuries. A recipe called <i>Kabra-tsotma</i> is prepared from the young leaves and buds in Ladakh. The buds and young leaves were usually handpicked during spring season, sun dry them and stored for winter consumption when the availability of resources is limited.
6	<i>Carum curvi</i> Linn. Apiaceae; <i>Kosnyot</i>	Seeds	The seeds of <i>Kosnyot</i> was supposed to be highly aromatic and used in several Ladakhi recipes as flavoring agent. For instance, it is used in <i>Tenten</i> , a traditional recipe, prepared especially during the occasion of <i>Losar</i> , the local new year.
7	<i>Echinops cornigerus</i> DC. Asteraceae; <i>Aczema</i>	Whole plant	The plant is used as fodder. <i>Aczema</i> is believed to be one of the best fodders for donkeys known as <i>Bongbu</i> . The people collect and make huge heaps of this plant as winter stock for domestic livestock.
8	<i>Elaeagnus angustifolia</i> Linn. Elaeagnaceae; <i>Sarssing</i>	Shoots, flowers, stem	The shoots of this plant bearing young leaves and fragrant flowers are used as offerings in <i>Chotkhang</i> (the shrines) and <i>Gonpa</i> (monasteries). The shoots are also used as fodder for domestic livestock. The plant is also grown on road sides as ornamental tree and for its pleasant fragrant.
9	<i>Ephedra gerardiana</i> Wall ex. Stapf Ephedraceae; <i>Tsepat</i>	Whole plant	The whole plant is used as fuel and fodder especially in winter. The fruits of this plant are edible, sweet in taste and consumed by locals. After burning, the ash is used in addictive narcotic known as <i>Snathak</i> which is taken by putting in the nostrils by locals.
10	<i>Fagopyrum esculentum</i> Polygonaceae; <i>Bro</i>	Seeds	The seeds of this plant are grind to make flour known as <i>bro-phey</i> which is used in preparation of traditional recipes like <i>Ten-ten</i> , <i>bPrapu</i> etc.
11	<i>Hippophae rhamnoides</i> Linn. Elaeagnaceae; <i>Tsermang</i>	Whole plant	The plant represents the most common fuel and fodder in winter. Because of its thorny nature, the plant is extensively used for fencing for orchards and agriculture lands. The plants is also used as a special fuel for roasting barley grains known as <i>Yozza</i> form which barley flour is obtained. The fruit is edible and recently used extensively for preparation of juices and sauces.
12	<i>Hordium vulgare</i> Poaceae; <i>Nas</i>	Seeds	This plant represents the principal cereal crop grown in the region. Seeds are eaten as roasted barley grains called <i>Yozza</i> from which <i>Snamphhey</i> , barley flour, is made by grinding the roasted grains in <i>Ranthak</i> (traditional water mill). Several recipes like <i>Pabha</i> (made by mixing barley flour in boiling water with added salt), <i>Kholak</i> (prepared by mixing barley flour with local salt tea), <i>Snam-thuk</i> , a recipe prepared by stirring 2 or 3 spoonful of barley flour in boiling water in which salt, <i>sha</i> (meat) and <i>churpe</i> (dried cheese) were added as ingredients. Besides, the straw and hay of barley were used as fodder during cold winter.

13	<i>Hyocyamus niger</i> Linn Solanaceae; <i>Gya-lantang</i>	Seeds, leaves	Fumigation of seed is considered useful in curing tooth infection in Wanla village. The seeds are placed on a strongly heated <i>Chagarmo</i> , special type of stone found in Ladakh, which is being placed on a steel plate containing water. This results in production of blackish fumes which is allowed to enter the mouth of patients suffering from toothache.
14	<i>Juglans regia</i> Linn. Juglandaceae; <i>Starga</i>	Seeds, wood	Seeds are edible and consumed as dry fruits. They are also mixed with <i>Yozza</i> , the roasted barley grains, and consumed. The wood of <i>Starga</i> is believed to be highly durable and hard. They are used for making <i>lakshing</i> , covering plate for Buddhist manuscripts.
15	<i>Juniperus macropoda</i> Boiss. Cupresaceae; <i>Shukpa</i>	Leaves, twigs	The Juniper species are known as <i>Shukpa</i> in local dialect and, according to indigenous inhabitants, these trees have been deeply rooted in the cultural and religious heritage of the people of this region and, for centuries, Juniper is considered to be the most sacred tree among the Buddhist inhabitants. The rich culture, tradition and festivals, especially <i>Losar</i> (the local New Year), in Ladakh would be, perhaps, incomplete without use of the fragrant Juniper incense and decoration of <i>Lha-thos</i> with green Juniper twigs. Besides its sacredness, the marvelous Juniper tree has a great ecological significance in fragile environment of Ladakh.
16	<i>Mentha longifolia</i> (L) Lamiaceae; <i>Phololing</i>	Leaves	The aromatic leaves are mixed with curd after washing and rinsing, spices, salts and other ingredients are also added to form a recipe known as <i>Phololong-tangthur</i> which is consumed with <i>taki</i> (chapattis) and <i>kholak</i> made from barley flour. The tender shoots are also grind in traditional mortar to prepare chutneys.
17	<i>Nepeta glutinosa</i> Benth. Lamiaceae; <i>Shakmazgok</i>	Leaves	The leaves, after washing with water, boiled for sometime and then rinsed. The boiled leaves are cut into pieces and mixed in curd to form <i>Shakmazgok-Tanthur</i> which is consumed with <i>kholak</i> and <i>Pabha</i> made from barley flour.
18	<i>Populus nigra</i> Linn. Salicaceae; <i>Yulat</i>	Wood	The wood of this plant is the main timber used for making door and window frames. Since poplar is straight and elongated, it is used as <i>dongma</i> , long roofing material, in traditional mud houses in Ladakh. The leaves are used as fodder.
19	<i>Prunus armeniaca</i> Linn. Rosaceae; <i>Chuli</i>	Fruit, seeds	Apricot has been consumed by the local people for decades. They serve dried or fresh apricot as an excellent dessert, particularly on traditional festival occasions. During the chilly winters, when people prefer to remain indoor, dried apricot fruits make an excellent eatable that compensates the long cold winter. Besides, the apricot seeds with sweet kernel is also consumed and marketed by locals while bitter kernel is used for oil extraction. The apricot oil (locally called <i>tseghumar</i>) is multipurpose oil with a peculiar apricot flavour and is sold in local market. Traditionally, the oil is extracted from the semi-roasted kernels by crushing them in <i>Thorn</i> , a large wooden mortar, followed by heating and compressing with few drops of water on <i>Tsigg</i> , a flat stone.

20	<i>Salix alba</i> Linn. Salicaceae; Malchag	Wood	The wood of <i>Salix</i> is cut into small pieces of approximately 2-3 ft called as <i>tallu</i> which are used in roofing the houses. Traditional <i>karkung</i> (window) and <i>zgo</i> (door) of mud houses are also made from wood of this plant. Wood is also used making <i>Zem</i> , a wooden drum used for extraction and filtering barley wine.
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were principally used as flavouring agents. Plants like *Ephedra gerardiana*, *Hippophae rhamnoides*, *Elaeagnus angustifolia*, *Juglans regia* were edible (fruits/kernels), used as fodder (leaves) and fuel (wood/whole plant) while as fruit and seed of *Prunus armeniaca* made into number of products. *Hyocyamus niger* was used in curing toothache while as *Echinops cornigerus* was considered special fuel for donkeys. Likewise, *Arnebia euchroma*, *Elaeagnus angustifolia* and *Juniperus macropoda* were considered sacred plants and used in various religious rituals and beliefs. *Betula utilis*, *Salix alba* and *Populus nigra* constitute main timber in the region.

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