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ETHNOMEDICINAL APPRAISAL OF MEDICINAL PLANTS USED BY ETHNIC COMMUNITIES OF DISTRICT ANANTNAG AND BUDGAM OF KASHMIR HIMALAYA, INDIA

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Abstract

India is amongst the most important medicinal plant resource collection centers of the world. Over 500 million people receive the benefits of traditional knowledge of well documented and standardized systems of medicine including Sidha, Unani, Aurvedic, etc. Global estimates indicate that over three fourth of worlds' population rely on traditional medicines. An ethnomedicinal survey was conducted during 2013-2016 in the high altitude areas of District Budgam and Anantnag of Jammu and Kashmir (32.5°-36.5°N and 72°-80°E) located on the northern Himalaya. Semi-structured interviews were carried out among the ethnic communities (gujjars and bakerwals), local people and the hakims in order to examine the present use of medicinal plants and their reputed therapeutic effects. During the present investigation 65 species of medicinal plants including two from others states of the country have been reported to be used by the hill communities of the two districts under reference for curing ailments like cough, cold, fever, diarrhoea, toothache, urine infection, indigestion, general body weakness, worm infestation etc. Diarrhoea and fever were the most common diseases in children while as back and joint pains and chest infection were the most prevalent among adults and old age persons. Some of the medicinal plant species are extensively used for the treatment of back and joint pains, urine infection, chest infection and fever; applied directly or made into a paste or poultice. The dosage measures varied from few grams to several tablespoons and nearly 200 ml to 500 ml day^{-1}. The present survey revealed that out of the 65 medicinal plants species 27.4 per cent were used as root/ root stock drugs, 20.6 per cent as seed/fruit drugs, 19.2 per cent each as aerial part and flower drugs, 13.7 per cent as whole plant drugs, 12.3 per cent as leaf drugs, 6.8 per cent each as corm, bark of root, rhizome and bulb drugs. However, in majority of the cases it is the root and seed, which were being used as drugs on a large scale. The present survey also revealed that 65 medicinal plant species belonged to 24 families. Asteraceae was the largest family representing 11 (45.83%) plant species. The second largest family contributing 7 (29.16%) species was Lamiaceae followed Apiaceae (20.83%).

Key words : Ethnomedicinal, local people, medicinal plants, diarrhoea, indigestion.

Introduction

Kashmir is situated in the lap of western Himalaya, which is decorated with snow-covered, silver headed mountains, magical lakes, green grass lands and has enjoyed the reputation of being home of herbal medicine. The valley harbours about 500 medicinal plant species found in different high altitude and low land areas. About 300 medicinal plant species find their use in the different recipes of Indian system of medicine (ISM); more than 100 species growing in Kashmir are regarded as high potential medicinal plants growing in different attitudes (Iqbal and Siddique, 2004). Kashmir has a long history of utilization of herbal drugs. There has been a continuously growing tradition of herbal treatments and

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both Unani and Ayurvedic systems of medicine have played a major role in the health care system of this region. Kashmir has produced famous hakims and vaids who have been reported to make miracles in alleviating the sufferings by prescribing herbal drugs.

Ethnomedicinal studies help mankind to search and develop new cures to ailments as the traditional societies residing in micro ecosystem have developed specific knowledge. This ethnomedicinal knowledge, usually limited to and scattered among the illiterate tribal people, is not in the form of a written treatise but handed down to generations by word of mouth and varies from place to which it is practiced. Ethnomedicinal and ecological status of plants in Garhwal Himalaya, India, was studied by Kumar *et al*. (2011). A large number of ethinobotanical publications of the Kashmir region have appeared during last few decades. Various authors (Sharma, 1991; Ara *et al*., 1992; Naqshi *et al*., 1992) reported ethnomedicinal studies of 129 species belonging to 57 families of Jehlum valley region of Kashmir Himalayas. Nawchoo *et al.* (1994) and Singh (1994) reported the folklore practices, medicinal properties, uses, pharmacology and clinical studies of *Ocimum sanctum* from Jammu region of Jammu & Kashmir. Kaul (1997) published a book entitled "Medicinal plants of Kashmir and Ladakh: temperate and cold arid Himalaya". Chaurasia *et al.* (1999) conducted an ethno-veterinary survey in 1993 in different areas of Ladakh, Jammu and Kashmir. Kirn *et al.* (1999) discussed botany, distribution and uses for timber, medicines, fuel, incense, food, fodder, cosmetics, dyes, etc. in Poonch District of Jammu and Kashmir. However, given the vastness of the state, there are still many areas to be studied from ethnomedicinal point of view. There has been no comprehensive inventory of medicinal plants used by ethnic tribals and cast communities of two districts *i.e.* district Anathnag and district Budgam in particular. This necessitated an in-depth survey of the folklore of the two districts. The present study was undertake by taking frequent exploration trips to the hilly regions of the two districts in order to interact with the ethnic communities to generate the data regarding usage of medicinal herbs, for curing important ailments prevailing in the area.

Physiography of the study area

The total geographical area of Jammu and Kashmir State including Pakistan occupied Kashmir is 22,2236 sq. kms and an estimated population is about 101, 43700 persons. The forest area of Kashmir is 12, 340 sq. kms (Digest of Statistics, 2005-06). There are six districts: Anantnag, Budgam, Baramulla, Kupwara, Pulwama and Srinagar. The climate of Kashmir is generally salubrious and invigorating and varies with the attitude.

District Anatnag : The district is with 22, 09 21 sq. kms of forest are. The area is hilly and comprises a number of densely covered forest areas where there is wealth of medicinal herbs. The various well known places in the area are Pahalgam, Biseran Aru, Liddervath, Sekhwas, Sukhnai, Tarsar mansar, etc. The rivers flowing through the area are River lidder, Jehlum.

District Budgam : The forest area of the district is 429.65 sq. kms. The well known places in the area include Yusmarg, Toasmaidaan, and Doodpathri and the rivers flowing through it are Doodh Ganga.

Inhabitants : The hilly areas of the region are inhabited by a number of ethnic groups. The Gujjar and Bakerwal form the two main tribal groups in the area (Census of India, 2001). The various tribes living in the districts and their population are as under:-

S. no.	Tribe	Population	
		District Anantnag	District Budgam
1.	Bakerwal	14798	252
2.	Balti	11	-
3.	Bot	7	2
4.	Brokpa	1	1
5.	Garra	-	1
6.	Gaddi	35	-
7.	Gujar	83423	14018
8.	Sippi	5	5
9.	Generic tribes, etc.	2563	2563

The tribals of the two districts still retain their distinct identity, as manifested in their peculiar beliefs, primitive ways of living, their own dilects, traditions, distinct rituals, customs and social setup. They are still totally cut off from the modern world because of poverty, negligence and illiteracy. Their sole source of income is the medicinal herbs which they collect at higher altitudes. They sell these to various villagers and hakims of the area and fulfill their basic requirements of life. In case of ill health they are totally dependent on medicinal plants, as no allopathic doctor or medical facility is available to them.

Materials and Methods

Frequent field trips were conducted during 2013-16 in the study area and plants were collected from diverse habitats. The team comprising of seven persons explored the higher reaches, making use of horses to take the tents and eatables to the exploration site and for carrying the collected medicinal plants from the higher reaches. The areas which were surveyed in district Anantnag include:

Pahalgam (2,440 m amsl), Baisaran (2,857 m amsl), Aru (2,946 m amsl), Tulian (3,273 m amsl), Liddarwath (4,545 m. amsl), Sekhwas (3,509 m amsl), Daksum Range-Kokernag, (3,050 m amsl), Avantipora (1,593 m amsl), Laripora (3,020 m amsl) and Aishmuqam (1,825 m amsl). Other places surveyed in the area include, Khanabal, Khudwani, Vanpoh and Kulgam. The areas which were surveyed in district Budgam include: Yusmarg (2400 m amsl), Toasmaidaan (4,182 m amsl), Chadura (1,636 m amsl), Chareshareif (2,200 m amsl). The other villages surveyed in district include, Beerua, Bugam, Gogji Pather, Nagum, Magam, Wathoora and Zoolwah.

Glaciers of the Lidderwath-Pahalgam were crossed to reach the Sukhnai valley where the shepherds and the tribal people were interviewed. Since the ethnomedicinal knowledge is largely restricted to elderly people, so the informants in the upper age group of 50 to 75 years from various tribes and local people were exhaustively interviewed during the course of present study. Information on medicinal plants, their uses, dosage, etc. was collected from each informant using a question-naire with the following questions:

1. Do you know the medicinal plants growing in the area?
2. Do you know their name, if yes, please name them?
3. For which ailment do you use these medicinal plants?
4. Which part of each plant is used for medicinal pur-poses?
5. How do you use them (as an extract or a poultice)?
6. Which time do you take the medicine: morning or evening?
7. What is your source of income?

The questions were asked in the Urdu and the Punjabi that was under-standable in almost all the cases. All plants were positively identified by informants with the names and uses.

The plant specimens collected were authenticated, dried, preserved and deposited in the Medicinal Herb Repository of Division of Floriculture, Medicinal and Aromatic Plants, SKUAST-K Shalimar, Srinagar, Jammu and Kashmir. The texa from serial number 1 to 65 are arranged in alphabetical order by their botanical names. Each entry showes in tabular form (Table 1) the common and vernacular name, disease for which the plant or plant part is used, mode of preparation and administration, dosage and duration of treatment.

Results and Discussion

Extensive studies have been carried out from time to time on the ethnomedicinal uses of various medicinal plant species in India and in other parts of the World (Sher *et al*., 2003; Tantray *et al*., 2009). Ethnobotanical studies help mankind to search and develop new cures to ailments. As the traditional societies residing in micro ecosystem have developed specific knowledge which is usually limited to and scattered among the illiterate tribal people. It is not in the form of a written treatise but handed down to generations by word of mouth and varies from place to place. Our country is amongst the most important medicinal plant resource collection centers of the world. Over 500 million people receive the benefits of traditional knowledge of well documented and standardized systems of medicine including Sidha, Unani, Aurvedic, etc. Global estimates indicate that over three fourth of worlds' population rely on traditional medicines (Kaul, 1997). The world trade figures are indicative of the fact that India exports 32,600 tonnes of medicinal raw material worth US $ 46 billion annually. This trend has resulted in over harvesting of many valuable medicinal plants (Siddique and Malik, 2004). Hence, a large number of these species have reached the brink of extinction. Further, indiscriminate harvesting by untrained and poorly motivated gatherer's has also led to resource depletion. Such a practice is quite visible in the study area also, where a number of species like *Aconitum heterophyllum*, *A. violaceum*, *Arnebia benthamii*, *Atropa acuminate*, *Podophyllum hexandrum*, *Rheum australe* and *Sassurea costus* are critically endangered. *Angelica glauca*, *Bergenia ligulata*, *Picrorhiza kurroa*, *Valeriana wallichii,* etc. are approaching rarity. These species are being used by the local communities for curing their ailments in absence of adequate modern health care facilities available to them.

During the present investigation, 65 species of medicinal plants including two from others states of the country have been reported to be used by the hill communities of the two districts under reference for curing ailments like cough, cold, fever, diarrhoea, toothache, urine infection, indigestion, general body weakness, worm infestation, jaundice, heart diseases, leucorrhoea, frost bite, nerve weakness, loss of memory power, semen thickness, loss of appetite, joint and back pains, throat and chest infection, excessive menstrual bleeding, etc. However, most common diseases of the area include diarrhoea, abdominal pain, headache, joint and back pains, toothache, throat and chest infection and fever. Diarrhoea and fever are most common diseases in children while as

Table 1 : Ethnomedicinal values f medicinal plants of Kashmir Himalaya.

S. no.	Botanical name (Family)	English name	Vernacular name	Disease	Part used	Mode of administration and preparation	Dosage
1.	*Achillea millefolium* (Asteraceae)	Yarrow	Pahel gasse	Wounds and urine infection (urinary tract infection, UTI)	Aerial part	Poultice/water extract.	20-22 g/day for 5 days
2.	*Aconitum heterophyllum* (Ranunculaceae)	Atis	Patris Patis	Pain in stomach (gastritis), fever (pyrexia) and tooth-ache (pulpits).	Root stock	Powder, the roots are collected dried and crushed into powder.	8-10 g/day for 7-8 days.
3.	*A. violaceum* (Ranunculaceae)	Moori	Ladderwal posh	Chest infection (pneumonitis), toothache (pulpi-ts) and breathless-ness (dysnola).	Root stock	Powder, the roots are dried and crushed into powder. To kill rats it is mixed with flour and few ml. of water.	10-11 g/day for 5-6 days.
4.	*Acorus calamus* (Araceae)	Sweet flag	Vaigundar	Headache, loss of appetite and chest infection (pneumonitis).	Rhizome	Water extract, obtained by boiling of 10-14 g of dried rhizome pieces in ½ lt. of water and a little quantity of sugar is added to it. Boiling is continued till the extract is reduced to 1 ½ cups only.	1-1½ cups of water extract per day for 4-5 days.
5.	*Adiantum capillus veneris* (Adiantaceae)	Maiden hair fern	Geutheer	Fever (pyrexia), kidney infections, bad cold (rhinites) and cough.	Whole plant	Water extract, a small quantity of herb is boiled in 1 ½ lt of water for half an hour, strained and cooled.	2-3 cups of water extract got by boiling of 9-10 g of herb per day for 7 days.
6.	*Aesculus hippo-castanum* (Hippo-castanaceae)	Horse chestnut	Handoon	Boils and frost bite.	Seeds/fruit	Poultice/water extract (feet are washed in water extract).	12-13 g per day for 10-14 days.
7.	*Ajuga bracteosa* (Lamiaceae)	Bungle	Jan-i-adam	Pain in arms, legs and back (brachial-gia and lumbago) hair tonic and abdominal pain.	Whole herb	Water extract, 30 to 40 g of herbal material are boiled in water for half an hour and the same water is used for bathing and washing of hair while as for abdominal pain 5-8 g of it are boiled in 2 cups of water for few minutes.	1 cup of water extract per day for 3 to 4 days.
8.	*Allium sativum* (Liliaceae)	Garlic	Rohan	Headache, heart ailments (palpitation, tachycardia and arrhythmias), stoma-ch ache (gastritis)	Bulb	Paste /small pieces.	3-4 g per day for 10-15 days during morning.

Table 1 continued...

Table 1 continued...

				and high blood pressure.			
9.	*Althea officinalis* (Malvaceae)	Marsh mellow	Sazposh/ sazmool	Dandruff (pitriasis alba), throat infection (tonsillitis and pharyngitis), labour pain, bad cold, diarrhoea and urine tract infection (UTI).	Roots/ flowers/ seeds	Water extract / flower paste/ seed powder 1. 50-60 g of fresh roots are washed, crushed and boiled in 2 to 3 lt. of water for 10 to 15 minutes. The water extract obtained is applied to head after washing hair with shampoo.2. In case of delivery pain one glass water extract is taken orally.3. Dried flowers are boiled in ½ lt of water for 20 to 30 minutes; cooled and kept in a clean piece of cloth and tied round the neck for throat infection.4. The seeds are dried and ground to fine powder, which is taken either with milk or water in case of diarrhoea bad cold and urine infection.	i) 2-2 ½ lt. of water extract weekly for a month. ii) One glass of water extract per day for 1-2 days. iii) 20-30 g of flowers per day for 2-3 days. iv) 9-10 g of seed powder per day for 5-6 days.
10.	*Anagalis arvensis* (Primulaceae)	Shepherds calendar	Chari-e-saban	Scruli for cleansing.	Whole plant	Fresh herb is rubbed in between hands, a large quantity of leather is formed, which removes dirt.	2-3 plants are used at a time.
11.	*Angelica glauca* (Apiaceae)	-	Chohor	Jaundice and worm infestation.	Roots	Powder; the root is dried and made into powder which is taken with milk or water early in the morning.	15-20 g per day for 8 to 10 days.
12.	*Arnebia benthamii* (Boraginaceae)	-	Kahzaban	Fever (pyrexia), chest infection (Pneumonitis) throat infection (tonsillitis and pharyngitis), and bad cold (rhinitis).	Above ground portion	Water extract of dried herb got by boiling 50 to 60 g of it in 1 ½ lt. of water for half an hour.	1 - 1½ glass of water extract per day for 7 to 10 days.
13.	*Artemisia absinthium* (Asteraceae)	Worm wood	Tethwein	Worm infestation, stomach weakness, liver and spleen swelling (Hepatitis and splenitis) excessive menstrual bleeding (menorrhagia) and kept in between clothes as an insect repellent.	Whole herb	Water extract of dried herb, obtained by boiling of 8 to 10 g in 100 ml. of water for 10 to 15 minutes; the extract is strained and cooled.	3-4 tablespoon per day for 3 to 4 days.

Table 1 continued...

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14.	*A. moorcroftiana* (Asteraceae)	-	Jungli tethwein	General body weakness, loss of appetite (anorexia), stomach pain and kept in between clothes as an insecticide.	Above ground portion	Water extract, prepared by boiling of 5-10 g of dry herb in 1 lt of water for 10 to 15 minutes. The extract is then cooled and strained.	1/4th of lt. per day for a fortnight.
15.	*Atropa acuminata* (Solanaceae)	Belladona	Brand	Chest infection (pneumonitis), joint pains (arthralgia) and eye diseases.	Roots/ leaves	Root paste/ water extract of leaf; the root is dried, powdered and mixed with oil or ghee to make paste which is used externally while water extract is obtained by boiling of 5-8 g leaf material for few minutes in 50 ml of water. The extract is then cooled and strained.	5 to 8 g of paste and 20 to 25 ml of water extract per day for 5 to 8 days early in the morning.
16	*Berberis aristata* (Berberidaceae)	Indian berberry	Dandleder	Diarrohoea, joint pains (arthralgia), stomach ache and indigestion (dyspepsia).	Bark of roots	Powder; the bark of root is dried and crushed to make powder. The powder is taken orally early in morning with a glass of milk or water.	15 to 16 g per day for 8 to 9 days.
17	*B. lycium* (Berberidaceae)	Berberry	Koadutch	Fever (pyrexia) and sty (hordeolum extranum).	Roots	Paste/ powder; the root is dried and crushed into powder and mixed with oil to make paste which is applied externally on the affected area. Root powder is also taken orally.	7 to 8 g per day for 4 to 5 days.
18	*Borago officinalis* (Boraginaceae)	Borage	Goazaban	Bad cold (rhinitis) cough (pneumonitis) and weakness of brain (dementia).	Above ground portion	Water extract, prepared by boiling 10 to 12 g of herbal material in 2 to 3 cups of water for few minutes. The extract is then strained and cooled.	1 to 2 cups of water extract per day for 5-6 days.
19	*Calendula officinalis* (Asteraceae)	Mari gold	Hamesh bahar	Wounds and burns.	Flowers (Inflorescence)	Powder, the flowers are dried and crushed into powder. The powder is sprinkled on the affected part.	5 to 6 g per day for 5 to 6 days.
20	*Centauria iberica* (Asteraceae)	-	Krech	Night blindness and allergy due to soap or water.	Leaves and seeds	Leaves are cooked as vegetable and taken with cooked rice to remove night blindness, while as dry seeds are burnt and the ash left is rubbed on the affected skin.	30 to 40 g of leaves weekly for a month and 10 to 12 g of seed powder for 3 to 4 days.
21	*Colchicum luteum* (Liliaceae)	Golden collyrium	Virekem	Joint pains (arthralgia) and fractures.	Corm	Paste; the corms are dried and crushed into powder and mixed with cooking oil to make paste. The paste is then rubbed /applied on the affected area.	15 to 20 g per day for 10 to 15 days.

Table 1 continued...

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22	*Cotula anthemoides* (Asteraceae)	Cotula	Thul-e-bobul	Fractures, pain in arms, and legs (brachialgia) and bathing of ladies after childbirth.	Above ground portion	Water extract got by boiling of herbal material in 10 to 12 lt. of water for an hour. The water extract obtained is strained and used for washing of arms, legs and bathing. In case of fractures, the herb, after boiling for 10 to 15 minutes, is tied on the affected part.	40 to 50 g per day for 3 to 4 days.
23	*Coriandrum sativum* (Apiaceae)	Coriander	Danival	Thirstiness, itching and lack of appetite (anorexia).	Seed/leaves	Powder, the seeds are dried and crushed into powder while as the leaves are used as salad.	3-5 g per day for 7 to 8 days.
24	*Cremanthodium retusum* (Asteraceae)	-	Richkut	Pain in legs and arms (brachialgia) and backache (lumbago).	Roots	Powder, roots are dried and ground into fine powder, which is taken either with milk or water and the patient is laid down in open sun till sweating occurs and the pain is relieved.	10 to 20 g per day for 2 to 3days.
25	*Cuminum cyminum* (Apiaceae)	Cumin	Safeed zeur	Appetiser (anorexia), abdominal pains and indigestion (dyspepsia).	Seeds	Water extract of seeds is obtained by boiling of 10 to 15 g of seeds in a cup of water for 8 to 9 minutes. A little quantity of sugar is also added to the extract.	½ cups of water extract per day for 4 to 5 days.
26	*Cydonia oblonga* (Rosaceae)	Quince fruit	Bumchoont	Bad cold (rhinitis) throat infection (pharyngitis), cough (pneumonitis) and weakness of heart, dandruff and silkiness of hair.	Fruit/seed	Jam, 1 kg of fruit is cut into small pieces, washed and boiled for an hour and about 250 g of sugar is added to it. The mixture is stirred continuously till it becomes thick. It is then cooled and kept in airtight bottles for future use. While as the seeds are kept in warm water for half an hour and then rubbed in between hands, a mucilaginous substance formed is applied to hair after washing hair with shampoo.	1 to 2 table spoons per day for 10 to 15 days.
27	*Datura stramonium* (Solanaceae)	Thorn apple	Datur	Frost bite sciatica, breast infection (mastitis), piles (haemorrhoids), joint and back pains (arthralgia and lumbago).	Seeds	Paste; 10 to 12 g seeds are dried and crushed to make powder which is mixed with oil to make it paste. The paste is applied on affected portions.	7-8 g per day for 7 to 8 days.
28	*Delphinium denudatum*	-	Mameri	Fever (pyrexia) and toothache (pulpitis).	Roots	Paste/water extract of root, the roots are dried and crushed into powder, which is mixed with	5 to 6 g of paste and ½ cup of water extract/day for 2-3 days.

Table 1 continued...

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	(Ranunculaceae)					oil to make paste. The paste is applied on the affected area. The same quantity of crushed roots is boiled in a cup of water for sometime; then cooled and strained.	
`29	*D. roylei* (Ranunculaceae)	-	Karipaet	Toothache (pulpitis)	Roots	Paste; the root is dried and made into powder and mixed with oil to make paste that is applied on the affected areas.	4-5 g per day for 5-6 days.
30	*Descuriana sophia* (Brassicaceae)	Fix weed	Charilestj	Measles and also used as mosquito repellent.	Whole plant	Water extract of dried herb obtained by boiling 20 to 30 g of it in 1 lt. of water for 15 to 20 minutes. Then it is strained and cooled.	1 glass of water extract per day for 5 to 7 days.
31	*Foeniculum vulgare* (Apiaceae)	Fennel	Jangli bodian	Constipation, stomach ache and diarrhoea.	Seed	Water extract got by boiling 10 to 15 g of seeds in a cup of water for 5 to 10 minutes. A small quantity of sugar is also added to the extract to get relief from constipation and stomach ache and it should be taken lukewarm. While as in case of diarrhoea it should be cool and without any sugar.	½ cups of water extract per day for 2 to 3 days.
32	*Fritillaria roylei* (Liliaceae)		Sheet kar (sheeth-80 kar=cure meaning remedy for 80 types of disorders)	Cancer (carcinoma), asthma and also used as folk medicine in many ailments.	Bulbs	Powder, the fresh bulbs are dried and grounded to fine powder. It is then taken either with milk or water.	(1/2) half teaspoon early in the morning per day for 20 to 21 days.
33	*Fumaria indica* (Fumariaceae)		Shahtar	Blood purifier itching, skin infection (dermatitis) like pimples (acne) etc. & urine infection (UTI).	Whole herb	Water extract obtained by boiling of 10-12 g of dried herb in a half lt. of water for 15 to 20 minutes. It is then strained, cooled and taken early in the morning.	1½ to 2 cups of water extract per day for 5-6 days.
34	*Heracleum candicans* (Apiaceae)		Krandel	Toothache	Roots	Powder; the roots are dried and grounded to powder, which is applied by brush or fingers on the affected tooth some times fresh roots are also chewed to relieve the pain.	Half tola per day for 5 to 6 days.
35	*Hypericum perforatum* (Hyperiaceae)	St. Johns wort	Chai gassa	Urine infection (UTI) diarrhoea, rheumatism and back pains	Whole plant	Water extract/paste; water extract is obtained by boiling 12 to 13 g of dried herb in ½ lt. of water for half an hour. The extract is cooled	1 cup of water extract and 10 g of paste per day for a fortnight.

Table 1 continued...

Table 1 continued...

				(lumbago).		strained and taken early in the morning. While as the past is made by crushing the dried herb to powder which is mixed with cooking oil and is applied on painful joints and back.	
36	*Inula racemosa* (Asteraceae)		Poshker	Stomach ache and joint pains (arthralgia).	Root	Powder and paste; 10 to 15 g of dried root is crushed to powder. The powder is mixed with oil to make paste which is applied externally on joints. Further, powder is taken early in the morning with water.	10 to 12 g of powder for 3 to 4 days and paste is applied for a month.
37	*Iris nepalensis* (Iridaceae)		Mazar-mund	Ripening	Roots of boils.	Paste; fresh root is washed crushed and applied on the affected part.	9 to 10 g per day for 6 to 7 days.
38	*Jurinea macrocephala* (Asteraceae)		Dhoopa	Wounds cuts, skin eruptions and is burnt at temples and home to drive evil spirits.	Roots	Powder, the root is dried and crushed into powder.	10 to 11 g per day 2 to 3 days.
39	*Lavendulla officinalis* (Lamiaceae)	Lavender		Chronic bad cold (rhinites), loss of memory power (dementia) and nerve weakness (neuropathy).	Flowers	Water extract got by boiling of 10 to 12 g of dried flowers in 1 ½ to 2 cups of water for 10 to 15 minutes. The extract is cooled, strained and taken early in the morning.	1 cup per day for 5 days.
40	*Malva sylvestris* (Malvaceae)	Common mellow	Satchel	Cough (pneumonitis), bad cold (rhinitis), urine infection (UTI) and constipation.	Seeds/ leaves	Water extract of seeds is obtained by boiling 9 to 10 g of seed in 1 ½ to 2 cups of water for 14 to 15 minutes. The extract is cooled and strained. Fresh leaves are taken as vegetable to get rid of constipation.	1 cup of water extract per day for 4 to 6 days.
41	*Melissa officinalis* (Lamiaceae)	Lemon balm		Spasm in heart (coronary heart disease), indigestion (dyspepsia), loss of appetite (anorexia) and nervous complaints, (neuropathy).	Above ground portion	Herbal tea; about 15 to 20 g of the herb is dried and crushed to make tea.	One cup of tea taken early in the morning for 4 to 5 days.

Table 1 continued...

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42	*Mentha arvensis* (Lamiaceae)	Corn mint	Pudina	Indigestion (dyspepsia) and cough (pneumonitis).	Leaves	Water extract of leaves, got by boiling of 10 to 15 g of leaves in one glass of water for some time. The mixture is then strained and cooled.	100 ml per day for 2 to 3 days.
43	*Nepeta cataria* (Lamiaceae)		Gand soi	Cough (pneumonitis), and toothache (pulpitis).	Whole plant	Water extract / paste the whole herb is chopped and boiled in water for half an hour strained and cooled. While as for relieving toothache, the chopped herb (few g) is placed on the affected tooth for 15 to 20 minutes.	4 to 5 tablespoon per day for 9 to 10 days in morning and evening.
44	*Nymphaea stellata* (Nymphaeaceae)	Indian blue water lily	Bum-i-posh	Leucorrhoea, intestinal weakness and migraine.	Flowers/ seeds	Water extract obtained by boiling of 10 to 15 g of dried flowers and seeds for half an hour in 1 lt. of water. It is then strained and cooled.	1 glass of water extract per day for a fortnight.
45	*Origanum vulgare* (Lamiaceae)	Marjoram	Van babber	Bathing of ladies after childbirth, exposures and bad cold (rhinitis).	Whole herb	Water extract, got by boiling of 6-10 g of herbal material in water for half an hour. The mixture is strained and made lukewarm, while as for bathing about 200 to 300 g of herbal material is boiled in water and that water is used for bathing.	1 glass / day for 2 to 3 days.
46	*Peganum harmala* (Zygophyllaceae)	Harmal	Isband	Nerve weakness (neuropathy) and joint pains (arthralgia).	Seeds	Powder; the seed is dried and crushed into fine powder.	3 to 5 g per day for 10 to 15 days.
47	*Picrorhiza kurroa* (Scrophulariaceae)		Kod	Jaundice (icterus) fever (pyrexia), abdominal pain, urine infection (UTI) & also used as coolant.	Roots	Water extract got by boiling 18-19 g of dried root pieces in 1 lt. of water for 20 to 30 minutes. The mixture is then strained and cooled.	Half glass of water extract per day for a fortnight early in the morning.
48	*Plantago lanceolata* (Plantigonaceae)	Rib grass	Lokut gull	Excessive menstrual bleeding (menorrha-gia) and joint pains (arthralgia).	Leaves	Water extract, about 30 to 40 g of fresh leaves are chopped, boiled in 1 lt. of water for an hour, strained and cooled.	Half glass of water extract per day for 5 to 7 days.
49	*P. major* (Plantigonaceae)	Isobgool	Veuth gull	Kidney infection soar throat and bad cold (rhinitis).	Leaves	Water extract, fresh leaves are chapped boiled in 2 lt. of water for half an hour. The mixture is then strained and cooled.	1 to 1 ½ glasses of water extract per day for a fortnight.
50	*Podophyllum hexandrum*	May apple	Van vangun	Burning sensation of stomach (epigastric	Roots	Powder/water extract obtained by boiling 8-9 g of dried roots in 2 lt. of water for an hour.	1 to 2 cups of water extract per day for 7 to 8 days.

Table 1 continued...

Table 1 continued...

	(Podophyllaceae)			pain) diarrhoea and wounds.		The mixture is strained and cooled. Powder is sprayed on wounds.	
51	*Polygonum amplexicaule* (Polygonaceae)	-	Machrun chaay	Indigestion, headache and fever (pyrexia).	Root stock	Herbal tea, prepared by boiling 20 to 25 g of dried root pieces in 1 to 1 ½ lt. of water for half an hour.	1 glass of water extract per day for 3-4 days.
52	*Portulaca oleracea* (Portulacaceae)	Common purslane	Nunar	Urine infection (UTI) and burning sensation of stomach (epigastric pain).	Above ground portion	100 to 200 g water extract of the fresh herb is crushed, boiled in water for some time, strained and cooled. It is also taken in the form of vegetable.	4-5 table spoons early in the morning per day for 7 to 8 days.
53	*Prunella vulgaris* (Lamiaceae)	Self heal	Kalveuth	Loss of appetite (anorexia), burning sensation of stomach (epigastric pain) headache and fever (pyrexia).	Flowers	Water extract obtained by boiling 20 to 30 g of dried herbal material in 2 lt of water for half an hour. The mixture is then strained and cooled.	1 glass of water extract per day during morning for 6 to 7 days.
54	*Rheum australe* (Polygonaceae)	Himalayan rhubarb	Pumb chalan	Joint pains (arthralgia), urine infection (UTI), boils and wounds in human beings. In animals like sheep and goat it is used to cure worm infestation and internal wounds which they develop by falling down the hill.	Rootstock	Powder/ paste, the roots are cut into small pieces, dried in open sun and stored in air tight containers. The fine powder of the roots is sprayed on wounds and is also taken with water for urine infection. The powder is mixed with some edible oil and applied on painful joints and boils. Fresh roots are fed to sheep and goat to get rid of various mentioned ailments.	5 to 8 g per day for one week.
55	*Rosa damoscena* (Rosaceae)	Rose	Gulab	Diarrhoea, cough (pneumonitis), liver inflammation (hepatitis) and uterus inflammation.	Flowers	Paste; it is prepared by mixing thoroughly 1 kg of fresh flower with 2 kg of sugar. A small quantity of water is also added to it and is kept in airtight container for about 40 days. A paste like substance formed is called khambeer.	Half table spoon per day during morning time for 7 to 10 days.
56	*Sassurea costus* (Asteraceae)	Costus	Kuth	Asthma, paralysis, black patches on face (melasma, colosma), pimples (acne), wounds and also acts as insect repellant when kept in between clothes.	Root stock	Root powder; roots are dried and crushed into powder. Paste is prepared by mixing powder of root with some edible oil and is applied on the affected parts.	10-12 g per day for 6 to 7 days.

Table 1 continued...

Table 1 continued...

57	*Solanum nigrum* (Solanaceae)	Black night shade	Kambai	Throat infection, swelling of heart and stomach.	Leaves	Water extract, 50 to 60 g of fresh leaves are crushed and boiled in 1 ½ lt. of water for 20 to 30 minutes and then strained.	1 glass of water extract early in the morning per day for 5 to 6 days.
58	*Taraxacum officinale* (Asteraceae)	Dandelion	Handh	Fractures and backache (lumbago).	Leaves	Paste; the fresh or dried herb is boiled in one lt. of water for some time The water extract is thrown away and residue left is tied on the affected part.	
59	*Tephrosia purpurea* (Fabaceae)	Wild indigo	Sarphooka	Leucorrhoea and purifies blood.	Whole herb	Water extract of dried herb got by boiling of 8 to 10 g of it in 1 lt. of water for half an hour. It is then strained and cooled.	1 cup of water extract per day for 10 to 12 days.
60	*Trapa nutans* (Trapaceae)	Water chest-nut	Gore	Itching, foul smell of mouth (halitosis), semen thickness, pimples and urine infection (UTI).	Seeds	Powder; the seeds are dried and then crushed into powder.	4 to 5 g per day for 4 to 5 days.
61	*Tribulus terristris* (Zygophyllaceae)	Caltrop	Meitcher kund	Urine infection (UTI).	Seeds	Water extract prepared by boiling 10 to 12 g of semi ground seeds in 1 lt of water for sometimes. It is then strained and cooled.	1 glass of water extract per day for 5 to 6 days.
62	*Urtica dioca* (Urticaceae)	Stinging nettle	Soi	Whooping cough (pertusis).	Roots	Water extract; about 20 to 25 g of fresh root is washed crushed and boiled in 2 to 3 cups of water for 9 to 10 minutes. It is then strained and cooled.	1 cup of water extract early in the morning per day for 8 to 9 days.
63	*Valariana jatamansi* (Valerianaceae)	Indian valerian	Mushki bala	Indigestion and palpitation, poor functioning and enlargement of heart.	Roots	Water extract got by boiling of 10 to 11 g of dried root pieces in 1 lt. of water till its quantity is reduced to 1 cup of water extract only. 5 to 6 g of sugar is also added to the extract.	1 cup of water extract early in the morning per day for 5 to 6 days.
64	*Viola odorata* (Violaceae)	Sweet violet	Bunufsha	Cough (pneumonitis), fever (pyrexia), bad cold (rhinitis) and sore throat.	Flowers	Paste, prepared by mixing of 1 kg of fresh flowers with 2 kg of sugar and a little quantity of water is also added to it and is kept in airtight container for about 40 days.	Half spoon of paste early in the morning per day for 5 to 6 days.
65	*Zizyphus vulgaris* (Rhamnacee)	Jujube	Brei	Cough (pneumonitis) and bad cold (rhinitis).	Fruit	Water extract, got by boiling of 8 to 10 g of fruit in half lt of water for 20 to 25 minutes. The water extract is strained cooled.	1 cup of water extract early in the morning per day for 5 to 6 days.

Cup = 200 ml, 1 Glass=500ml

back and joint pains and chest infection are most prevalent among adults and old age persons. Some of the medicinal plant species are extensively used for the treatment of back and joint pains, urine infection, chest infection and fever. Plant parts applied directly or made into a paste or poultice. The extracts are obtained by maceration, boiling or infusion. These extracts are generally given to patient in morning and evening before meals. In some cases the extract is also rubbed on affected areas. The dosage and duration of intake of these crude drugs varies from one healer to another. The dosage measures, for example, varied from few grams to several tablespoons and nearly 200 ml to 500 ml per day.

Some of the species like *Aesculus hippocastinum*, *Atropa accuminata*, *Colchicum luteum, Delphinium royleii, Hypericum perforantum, Descuriana sophia, Inula racemosa, Origanum vulgare, Picrorhiza kurroa, Podophyllum hexandrum*, *Prunella vulgaris*, *Tribulus terrestris* and *Viola odorata* recorded for curing various ailments in present investigation have earlier been reported for curing similar or different diseases (Kaul, 1997), whereas for others the uses suggested by Gujar and Bakerwal, local people and hakims of the area seem to be new. Nevertheless, these plants are well known for their uses other than those mentioned here. As such, the study represents a contribution to the present knowledge on the folk medicinal plants used against various diseases for the two mentioned districts (Anantnag and Budgam).

The present survey reveals that out of the 65 species of medicinal plants 27.4 per cent are used as root/ root stock drugs, 20.6 per cent as seed/fruit drugs, 19.2 per cent each as aerial part and flower drugs, 13.7 per cent as whole plant drugs, 12.3 per cent as leaf drugs, 6.8 per cent each as corm, bark of root, rhizome and bulb drugs, respectively. However, in majority of the cases, it is the root and seed, which are being used as drugs on a large scale.

The present survey also revealed that 65 medicinal plant species belonged to 24 families. Asteraceae was the largest family representing 11 (45.83%) plant species. Dar *et al*. (2007) while studying the Medicinal Flora of the Kashmir, Himalaya, also reported higher number of medicinal plant species contributed by the family Asteraceae. The second largest family contributing 7 (29.16%) species was Lamiaceae followed Apiaceae (20.83%). Family Ranunculaceae was represented by 16.66%, Lilliaceae by 12.50%, Boragonaceae, Malvaceae, Berberdaceae, Rosaceae, Zygophyllaceae, Plantagonaceae, and Polygonaceae each was represented by 8.33% of plant species, respectively. Similarly families like Araceae, Adiantaceae, Hippocastanaceae, Primulaceae, Brassicaceae, Fumariaceae, Hyperiaceae, Iridaceae, Nymphaeaceae, Scrophulariaceae and Podophyllaceae were represented each by 4.16% only. However, religious rites and beliefs seem to be one of the potential factors that the tribal people inherit from their ancestors for conservation and utilization of medicinal plants (Lohidas *et al*., 2014).

Consequent upon the use of these crude drugs on a large scale, the existence of species is being threatened particularly in absence of any cultivation programme as in most of the species the reproductive propagules (root and seed) are being indiscriminately harvested; the trend is, therefore, alarming. Due to the lack of basic health care facilities, the ethnic communities harvest more herbaceous vegetation at higher altitudes that resulted in gradual decrease in the available plant species (Kumar *et al*., 2011). Therefore, it is the need of the hour to initiate medicinal plant based conservation programme, which should also include involvement of villagers in income generating activities, such as cultivation of medicinal plants.

Conclusion

The cultivation of medicinal plants should be encouraged near the forest areas because this is the original home of a large number of species. Moreover, this will go a long way in reducing pressure on the natural resources and also assures the supply of quality raw material, besides generating employment opportunities for the local inhabitants. For this purpose, there is an urgent requirement of nursery seedlings and propagating materials that can be distributed among the local communities for commercialization. There is also need to popularize the folk practices, scientific harvest, post-harvest storage practices, etc. The research institutions may take lead from folklore and develop new drugs on scientific lines.

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