

Traditional Botanical Drugs of Kashmir and Their Therapeutic Value

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Abstract—Jammu and Kashmir has a long history of utilization of herbal drugs. There has been an everlasting growing tradition of herbal treatment, and both Ayurvedic and Unani systems of medicine have played a major role in the health care systems of this state. The current loss of medicinal plants in Kashmir due to natural and anthropogenic factors links with the missing of valuable of traditional knowledge associated with the plants. This link suggests a need to conduct ethnomedicinal research and to document the medicinal plants and the associated traditional knowledge. In the present study, an attempt has been made to study the indigenous knowledge of these medicinal plants and their therapeutic value. In the present study 30 medicinal plant species, used extensively by the people of Kashmir have been screened quantitatively to find out their ethnomedicinal properties. The list includes botanical names, local name, part used, chemical constituents and therapeutic use.

Keywords: Ethnomedicine, Traditional knowledge, Herbal Drugs, Kashmir.

1. INTRODUCTION

Every country has brought out herbals and Materia Medica with rich folk lore, recipes, prescriptions, etc indicating the application of crude drugs to be very ancient. Rigveda, which is considered to be the oldest available records dating back to 4000-5000 BC, recounts some medicinal plants. Atharvaveda another religious book of Hindus has described about 2000 plants having medicinal properties. Sushruta Samhita (1000 BC.) further records the medicinal virtues of 700 plants. Later on, there have been a number of workers from time to time who have described the medicinal importance of plants, namely Charak, Watts, Kirtkar and Basu, Chopra, Nadkarni etc. Our present day knowledge of Indian Materia Medica accounts for nearly 3500 species under various crude drugs, both of indigenous and exotic origin. The scientific study of Indigenous drugs was initiated in the early part of the last century when in 1810 John Fleming published, A catalogue of Indian Medicinal plants and Drugs. Ainslie published the Materia Medica of Hindustan in 1813 and Fluckiger & Handbury published the Pharmacographia in 1874, but the study of Indigenous drugs gained momentum with the publication of Chopra's book on Indigenous Drugs of India in 1933. Today, there is an increasing desire to unravel the centuries old secrets of traditional medicine (Kapoor and Chopra, 1961).

The systematic screening of ethnobotanical information from herbarium and museum labels is another area of research that has started at some centers (Altschul, 1967). As a result of the search for plant sources of anti cancer drugs, there are now more than 3000 species recorded for this use, of which two anti-tumor drugs, vincristine (VCR) and Vinblastine (VLB) from *Catharanthus roseus* G. Don are widely used in treating Leukemia and Lymph gland cancer. The total sales of these drugs are worth around 100 million dollars a year (Hartwell, 1967-1971). The plant materials and recipes from herbs used traditionally by various human societies is another challenging field of research in ethnobotanical studies. The Indigenous systems of medicine have their roots in folk medicine still practiced in remote rural and tribal areas, and aboriginal societies where modern civilization has not yet made in roads. Some of the tribal medicines and folk medicines got incorporated in the organized system of medicine, but much larger number of folk medicines remained endemic to certain regions on tribes in the country. Even today, some miraculous medicines are known to the tribal's, and much acquired knowledge through experience of ages is usually passed on from generation to generation as a guarded secret to certain families. The role of ethno-medico-botanical surveys and field work is of crucial importance. The field work is to be followed by laboratory work for phytochemical survey of the presence of alkaloids, both in the field and in the laboratory. Although plant alkaloids have been isolated, and even fewer of the isolated compounds have been carried to full elucidations of their structures. About 15 years ago Schultes (1972) estimated that at least 8000 new alkaloids remained to be discovered as a result of one survey of 20,000 species done by an American Pharmaceutical company. A recent survey enumerates nearly 5000 alkaloids now known to science. For field testing of alkaloids, Raffauf's spot-test techniques have been used (Raffauf, 1962). Bruhn has carried out cactus-testing of alkaloids during field work in Mexico

(Sandberg and Brahn, 1972). There are now several examples of plants used by traditional healers which have stood chemical and pharmacological testing (Chaudhuri, 1984).

Mangelsdorf (1983) has studied the origin, dispersal and domestication of maize corn (*Zea mays* Linn). Maize originated in the new world and was the basic food plant of all the advanced cultures and civilization of pre-Columbian America, including of South America and the Maya and Aztec of central America and Mexico. Today Maize corn along with rice and wheat has become one of the world's major cereals. It is as a result of research and cooperation among specialist in the field of botany, genetics, archaeology and history that it has been possible to throw light on the origin, antiquity, domestication and dispersal of maize corn.

In addition there have been studies on the plant remains in archaeological deposits, plant representations on bas-reliefs of temples and stupas, folk taxonomies, sacred groves, origin dispersal and domestication of cultivated plants etc (Sitholey 1976). During the last two decades, over 3000 plants have been screened in India after their biological activities. As a result, a number of new drugs have been introduced in clinical practice and some are in advanced stages of clinical development. The prospects of these studies are promising, since only a small proportion of the world's flora has yet been investigated by phytochemists and pharmacologists.

2. MATERIAL AND METHODS

Study Area

Jammu and Kashmir popularly known as “paradise on earth”, is famous all over the world for the enchanting beauty, the nature has liberally bestowed on it. Rightly called the crown of the Indian Union, the state consists of three regions; Jammu, the Kashmir valley And Ladakh. The Kashmir valley is famous for its beautiful mountainous landscape, which has attracted millions of tourists all over the entire world. Beset with considerable topographic, altitudinal climatic variation, it depicts great habitat diversity and harbors a rich flora. The state is mainly agrarian and most of the plants grow luxuriantly as weeds in wastelands, fallow lands, cultivated fields etc (Raza et al, 1978). The state is also richly endowed with diverse forest resources which play an important role in preserving the fragile ecosystem of the region and also serve as catchments for important Himalayan Rivers. Forest resources are indispensable for Human beings & have played the most significant role in the economy of the state of Jammu and Kashmir.

Methods

The present study has been carried out in different localities of Kashmir Himalayas during the years 2017-2018. Several field trips were undertaken with a view to collect plants species of medicinal value and to document the indigenous knowledge. Methods used to document the indigenous knowledge included questionnaire, interviews & discussions with people residing in the Kashmir Himalayas. Informant, were asked to share their knowledge about the utilization of medicinal plants, such as local name, part used etc. Data was collected according to the appropriate methodology (Schultes, 1962; Jain 1967). Samples of herbal drugs prescribed by local Hakims were collected from the market and their scientific identify was established. It has not been possible to identify all the available drugs. A list of traditional botanical drugs collected from wild sources and sold in Kashmir & their therapeutic value is given in the following table (Table 1). The chemical constituents written for each species in the enumeration have been taken from the Glossary of Indian Medicinal Plants (Chopra et al, 1956) and Medicinal Plants of Kashmir and Ladakh (Kaul, M.K. 1977).

Table 1: Traditional Botanical Drugs of Kashmir & Their Therapeutic Value.

S. No.	Botanical Name/Family	Local Name	Part Used	Chemical Constituents	Therapeutic Value
1	<i>Aconitum Heterophyllum</i> Wallich ex Royle Family- Ranunculaceae	Patis	Root	Atisine	Febrifuge, Bitter Tonic
2	<i>Aesculus Hippocastanum</i> L. Family- Sapindaceae	Handun	Fruit	Aesculin, Saponins	Anti-inflammatory
3	<i>Allium Victorialis</i> L. Family- Lilaceae	Wan Pran	Bulb	Allicin, Diallyl disulfide	Antifungal, Anti-bacterial
4	<i>Artemisia absinthium</i> L. Family- Asteraceae	Tethwan	Herb	Absinthin	Antihelmintic
5	<i>Artemisia maritima</i> L. Family- Asteraceae	Murin	Herb	Santonin	Antihelmintic
6	<i>Berberis aristata</i> DC. Family- Berberidaceae	Dande Lider	Root	Berberine	Anti-bacterial, Anti-inflammatory

7	<i>Berberis lycium</i> Royle Family- Berberidaceae	Kaoduch	Root/Fruit	Berberine	Anti-bacterial and Anti-inflammatory
8	<i>Calendula officialis</i> L. Family- Asteraceae	Hamesh Bahar	Flowers	Salicyclic acid, Calendulin	Against Burns
9	<i>Colchicum luteum</i> Baker Family- Lilaceae	Suranjan	Bulb	Colchicines	Antigout
10	<i>Cuscuta reflexa</i> Roxb Family- Convolvulaceae (Cusentaceae)	Kukilipot	Herb	Scoparone, Melanettin, Quacetin	Laxative
11	<i>Datura stramonium</i> L. Family- Solanaceae	Datur	Herb/Seed	Hyoscyamine, Hyoscine	Anti-Spasmodic, Sedative and Anti-cholinergic
12	<i>Discorea deltoidea</i> Wall Family- Dioscoreaceae	Krinch	Tubers	Diosgenin	Anti-inflammatory, Anti-fertility
13	<i>Euphorbia helioscopia</i> L. Family- Euphorbiaceae	Sarpgand (Gor Sochal)	Root	Heliscopial & Triterpene flavor	Antiseptic
14	<i>Fritillaria imperialis</i> Family- Lilaceae	Yemberzal	Bulb	Cevarin, Cevacin, Imperialin	High Fever, Asthma
15	<i>Hyoscyamus niger</i> L. Family-Solanaceae	Phagun, Zahar-kul	Leaf, Seed	Hyoscyamine	Sedative, Anti-spasmodic
16	<i>Malva sylvestric</i> L. Family-Malvaceae	Sochal	Leaf	Tannins	Laxative, Demulcent
17	<i>Mirabilis jalapa</i> L. Family- Nyctagibaceae	Abasi	Herb, Seed	Betaxanthin, Brassicasterol	Seed astringent
18	<i>Nymphaea stellata</i> Willd. Family- Nymphaeaceae	Bumposh	Herb, seed	Sterols, Saponins, Tannins, Flavonoids	Anti-periodic, Cardiac-stimulant
19	<i>Origanum vulgare</i> L. Family- Lamiaceae	Baber	Herb	Essential oil (Thymol 50%)	Cooling effect, Cardiaotonic
20	<i>Plantago major</i> L. Family- Plantaginaceae	Isbagul	Seed, Leaf	Glucosides, Saponins	Fever & Cough (Styptic)
21	<i>Podophyllum hexandrum</i> Royle. Family-Podophyllaceae	Wanwangun	Root	Podophyllotoxin	Anti-cancer
22	<i>Prunella vulgaris</i> L. Family- Lamiaceae	Kalveth	Herb	Essen oil	Antiseptic, Expectorant
23	<i>Rheum emodi</i> Wall Family- Polygonaceae	Pambchalan	Root	Rhaponticin, Chrysophanic acid	Cooling, Against Burns
24	<i>Rhododendron campanulatum</i> D. Don. Family- Ericaceae	Wan-nass	Leaf	Andromedotoxin	Cold, Toothache
25	<i>Rumex acetosa</i> L. Family- Polygonaceae	Holla	Leaf	Oxalates, Tartaric acid	Appetizer
26	<i>Saussurea sacra</i> Edgew Family- Asteraceae	Zog padshah	Herb	Essen oil, Alkaloid, Saussurine, resin	Against nervine debility
27	<i>Taraxacum officinalis</i> Weber ex Wiggers Family- Asteraceae	Handh	Herb	Taraxacin, Phytosterols	Toxic, Bone fracture
28	<i>Tribulus terrestris</i> L. Family-Zygophyllaceae	Meitcher	Fruit	Resins, Nitrates	Diuretic
29	<i>Valeriana jatamansi</i> Jones. (Caprifoliaceae) Family- Valerianaceae	Mushkibala	Herb	Valepotriates	Tranquillizer
30	<i>Viola odorata</i> L. Family- Violaceae	Banafsha	Leaf, Flower	Glucd, Methyl salicylate	Anti-pyretic

RESULTS OF DISCUSSIONS

The practice of using local herbs as medicinal remedies for a variety of health conditions is widely known in Kashmir. Even as modern drugs gain popularity, the tradition of using herbs to cure a headache, a cough, or a serious ailment like cancer still exists. But researchers from the flora-rich valley of Kashmir find how threats like tourism and over harvesting has lead to the decrease in native medicinal plants in the last few years. In recent times, serious threats of biopiracy and intellectual property rights, with huge economy at stake, have necessitated the early bio-prospecting of the potential medicinal plants used in the folklore (Utkarsh G, 2001 an Hariharan et al, 2002). In this process the first and foremost step would be the documentation of the ethnomedicinal uses of plants, as attempted in the present study, throughout the study.

In the present investigation an emphasis has been laid on ethnomedicinal aspects pertaining to various herbal drugs used invariably by the people in case of suffering from any sort of diseases. In this paper 30 plant species belonging to 20 families are incorporated, which reflect the ethnomedicinal importance among the local people of Kashmir. These medicinal plants are used by the local people for various remedies (Bhat et al, 2012). Hence these medicinal plants have a great potential to be used in drug and pharmaceutical industries (Tantary et al, 2009). The scientific name, family, local name, part used and therapeutic use for each medicinal plant is shown in the Table 1. The most dominant plant families on the list of medicinal plants were Asteraceae 5 species, Lilaceae 3 species, Berberidiaceae, Solanaceae, Lamiaceae and Polygonaceae 2 species each. (Fig 1). Out of 30 medicinal plant species recorded from study area, the highest numbers of parts used are of Root, Leaf, Seed and Fruit (Fig 2).

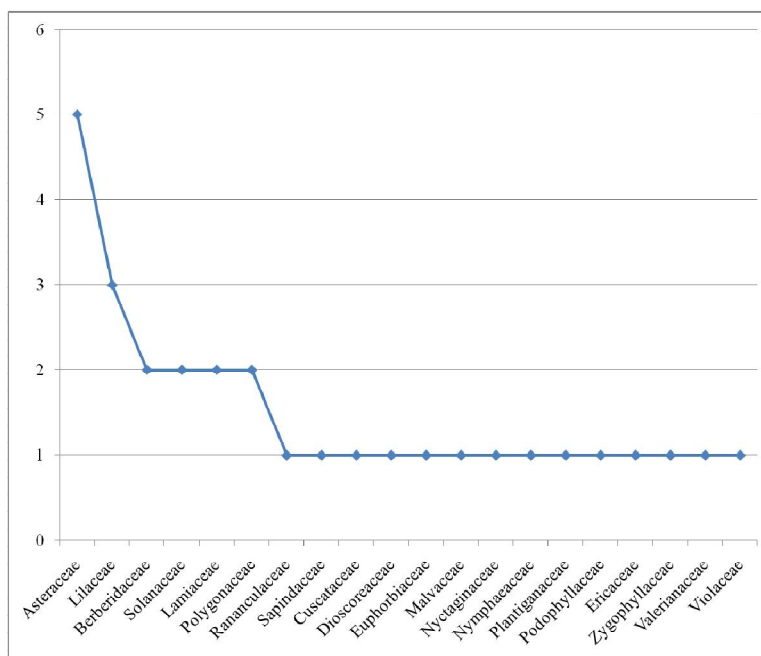


Fig.1: Showing Families of Medicinal Plants in the Study Area.

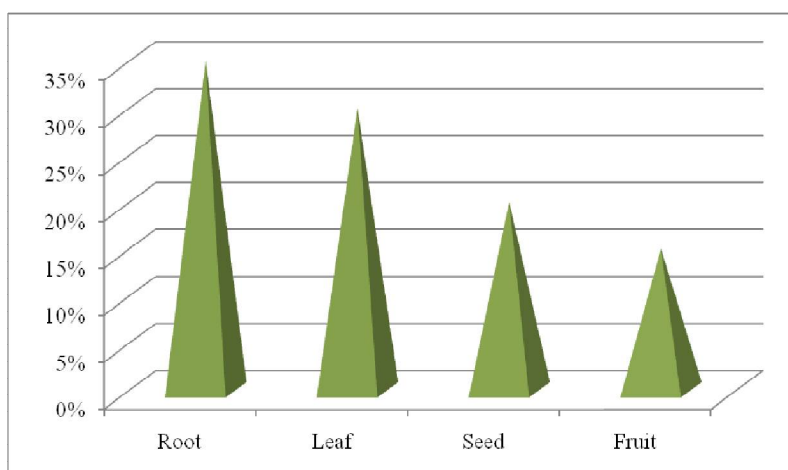


Fig. 2: Showing Different Plant Parts Used.

The high percentage of medicinal plants obtained from the family Asteraceae may be due to a wide range of biologically active compounds in that family, and also because it is one of the largest families, in the plant kingdom (Thomas et al, 2009). It could also be attributed to their relative abundance in the study area and their assumed efficacy as reported by the key informants. The preferential use of shrubs and herbs for medicinal herbs for medicinal purposes may be due to easy availability and high effectiveness in the treatment of ailment in comparison to other growth forms or because the study area is located in grasslands

which favor the growth of shrubs and herbs over trees. The common use of shrubs and herbaceous medicinal plants was also reported in other parts of the world (Addo-Fordjour et al, 2009) and could be attributed to their wide range of bioactive ingredients (Gazzaneo et al, 2005).

CONCLUSION

During the survey of different inaccessible regions of Kashmir, the author found that the local knowledge on medicinal plants abounds and their use is an important link between the dwelling communities and the biodiversity of the area. The use of effective medicinal plants is thus strength within this link. However, these plants cannot meet all the health needs, but have been confidently used as home remedies.

ACKNOWLEDGEMENT

The author is highly thankful to the people of Kashmir especially Tribal and rural people whom we consulted during the field survey. Special thanks to all the researchers who helped in writing this manuscript and giving valuable suggestions.

REFERENCES

- [1] Addo-Fordjour, P., A.K Anning., E.J.D. Belford and D. Akonnor. Diversity and conservation of medicinal plants in the Bomaa community of the Brong Ahafo region, Ghana. *Journal of medicinal plants research*, 2008; 2:226-233.
- [2] Altschul, S.V.R. Psychopharmacological notes in the Harvard University Herbaria. *Lloydia*, 1967; 30:192-196.
- [3] Bhat, T.A., Nigam, G and Majaz, M. Study of some medicinal plants of the shopian District, Kashmir (India). With emphasis on their traditional use by Gujjar and Bakerwal tribes. *Asian Journal of pharmaceutical and clinical Research*, 2012; 5 (2):94-98
- [4] Chaudhuri, Rai H.N. Ethnomedicine: Evaluation and clinical trials. *Proc. Nation, Symp, Applied Biotech. Med, Arom, Timber yielding PL*, 1984; 416-428. Calcutta University, Calcutta.
- [5] Chopra, R.N., Chopra, I.C and Nayar, S.L. Glossary of Indian Medicinal Plants. CSIR, New Delhi, India.
- [6] Gazzaneo, L.R.S., R.F.P., Lucena and U.P Albuquerque. Knowledge and use of medicinal plants by local specialists in a region of Atlantic Forest in the state of Nambia. *Journal of Ethnobiology and Ethnomedicine*, 2005; 1:9.
- [7] Hartwell, J.L. Plants used against cancer: A survey. *Lloydia*, 1967-1971, 30:379-436, 31:33:97-194, 280-392, 34:103-106.
- [8] Jain, S.K. Ethnobotany: Its scope and study. *Indian Museum Bulletin*, 1967; 2:39-43.
- [9] Kappor, L.D and Chopra, I.C. The Ancient History and Evolution of the present Indigenous Drugs in India. *Planta Medica*, 9, Jahrgang, 1961; 47-52.
- [10] Kaul, M.K. Medicinal Plants of Kashmir and ladakh (Temperate and Cold Acid Himalaya), 1997; Indus Publishing Company, New Delhi.
- [11] Hariharan, G.N, and Balaji, P. Taxonomic research in India: Future Prospects, *Curr Sci*, 2002; 83(9), 1068.
- [12] Mangelsdorf, P.C. The mystery of corn: New perspectives, *Proc. Am Philos, Soc*, 1983; 127: 215-246.
- [13] Raffauf, R.F. A simple field test for Alkaloid –containing plants. *Econ. Bot*, 1962; 16:171-172.
- [14] Raza, M.A and Mohammad, A. The Valley of Kashmir, A geographic interpretation, vol 1, 1978. The Land Vikas Publ. House Ltd, New Delhi
- [15] Sandberg, F and Bruhn, J.G. Pharmacogbostic Screening of plant materials. *Bot Notiser*, 1972; 125:370-378.
- [16] Schultes, R.E. The role of Ethnobotanist in the search for new medicinal plants *Lloydia*, 1962; 25:257-266.
- [17] Schultes, R.E. From witch Doctor to Modern Medicine: searching the American tropics for potentially New Medicinal Plants. *Arnoldia*, 1972; 32:198-219.
- [18] Sithology, R.V. Plants represented in Ancient Indian Sculpture. *Geophytology*, 1976; 6:15-26.
- [19] Tantray, M.A., Tariq, K.A., Mir, M.M., Bhat, M.A and Shawl, A.S. Ethnomedicinal survey of Shopian, Kashmir, India. *Asian journal of Traditional Medicine*, 2009; 4(1):1-6.
- [20] Thomas, E., I.Vandebroek., S.Sanca and P Van Damme. Cultural significance of medicinal plant families and species among the Quechua farmers in APILLAPAMPA, Bolivia. *Journal of Ethnopharmacology*, 2009; 112:60-67.
- [21] Utkarsh, G. Patenting life? Biodiversity and Intellectual Property Rights, *Resonance*, 2001; 51.