

Ethnomedicinal uses of some plants in the Kashmir Himalaya

Akhtar H Malik, Anzar A Khuroo*, GH Dar & ZS Khan

Centre of Plant Taxonomy, Department of Botany, University of Kashmir, Srinagar 190 006, J&K
E-mail: anzarak@gmail.com

Received: 27.11.2008; revised: 29.04.2010

Recent re-emergence of herbal medicine along with the ever-escalating threats to biodiversity, and the intensifying biopiracy controversies, have necessitated for an urgent documentation of the traditional use(s) of bioresources. Thus, a survey was carried out in the far flung areas of the Kashmir Himalaya, to record the traditional healthcare remedies currently practiced by the local population. The survey, in addition to the precious ethnomedicinal information, recorded the important natural history details. These medicinal plant species dwell in a diverse array of habitats along an elevation range of 1300–4500 m (asl), spanning from valley plains to alpine peaks in the montane Himalayan region. The knowledge base obtained in the investigation, besides contributing in the documentation of treasure troves of cultural diversity, requires to be rigorously subjected to pharmacological analysis in order to validate their authenticity and future prospects in the drug development, with due benefit-sharing with the primary stakeholders.

Keywords: Cultural diversity, Ethnomedicine, Herbal medicine, Medicinal plants, Kashmir

IPC Int. Cl.:⁸ A61K36/00, A61P1/02, A61P1/04, A61P1/14, A61P11/00, A61P13/00, A61P17/00, A61P19/00, A61P29/00, A61P39/02

The herbal medicine is gaining wide currency and acceptability and the documentation of invaluable indigenous knowledge about medicinal plant species is assuming urgent priority due to the recent controversies that have sprung up from the illegal biopiracy¹⁻⁵. The precious indigenous knowledge, when supplemented and validated by the latest scientific insights, can offer new holistic models of sustainable development that are economically viable, environmentally benign and socially acceptable⁶. Kashmir Himalaya, often referred to as *Terrestrial Paradise on Earth*, is located at the Northwestern tip of the Himalayan biodiversity hotspot⁷. The region supports a rich and spectacular biodiversity of great scientific curiosity and promising economic benefits; chiefly owing to its topographic variations spanning from valley floor through the terraced tablelands (*Karewas*) and dense forests, elevating up to snowcapped alpine peaks^{8,9}. Since ages, through trail and error, people in the Himalayan region have learned and practiced the medicinal usage of plants growing in their close vicinity for treating various ailments. The prized ancient wisdom usually been disseminated through the word-of-mouth, requires to be documented urgently. During the last half a

century, only few studies have been carried out to document the ethnomedicinal uses of the plant species growing in the region, particularly in the remote and difficult terrains¹⁰⁻¹⁴. In this backdrop, the main objective of the paper is to fill knowledge gaps in the important area of biocultural diversity, directly relevant to the welfare of the traditional communities living in far flung and inaccessible areas of the Kashmir Himalaya¹⁵.

Methodology

The methods employed during the study were designed with the sole purpose of eliciting the precious wealth of information on the ethnomedicinal uses of plants practiced by the people residing in Kashmir Himalaya. Field surveys and structured interview schedules were used to elicit secret knowledge from the traditional communities inhabiting inaccessible hinterland of the region. Field surveys were conducted in the various localities during 2005–2007 (Fig.1.). Usually, the survey in each locality started with the interview of elderly and experienced members, locally known as *Hakims*. Often, they were accompanied to the field for the identification of plant species used and authentication of plant specimens collected from their wild habitats. Besides this, the common people of the surveyed

*Corresponding author

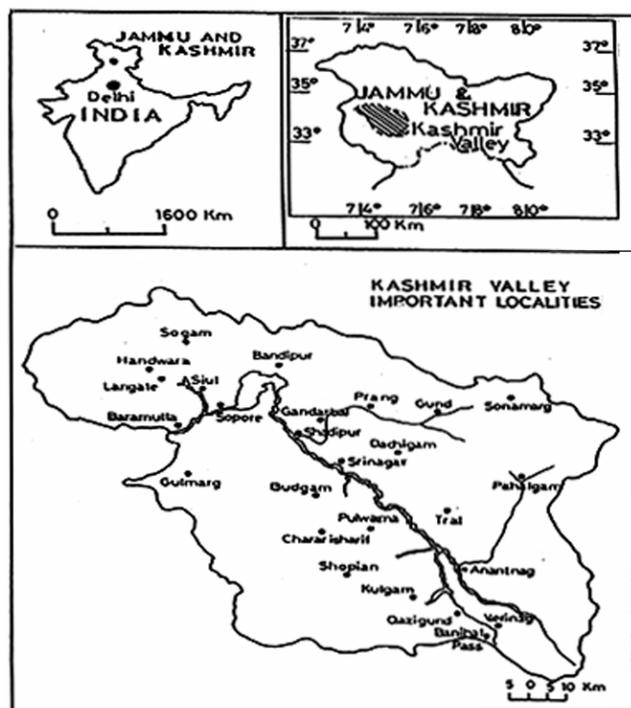


Fig. 1—Map of the study area

localities who themselves have used these plant-based for health treatments were interviewed to prove veracity of the curative features of plants.

In total, about 1,000 people were interviewed from these localities. Out of these, about 50–70% of the interviewees varying from locality to locality were unaware of the ethnomedicinal usage of these plant species. Amongst the interviewees, about 30–50% was aware about these ethnomedicinal uses and majority of them were the elders (>40 yrs). In each locality, the number of informants randomly interviewed was 35 to 40. In all, the total number of localities surveyed in the study region was 26. All the gathered information, in particular the part(s) used, mode of preparation, method of use and dosage of each medicinal plant species was recorded in detail. To bring an element of accuracy, the information obtained from one locality was cross-checked with that of others. Besides, growth form, flowering phenology, altitudinal range, and the present status of occurrence of each medicinal plant species was studied, recognized to be the crucial component for the protection, collection, cultivation and sustainable use of medicinal plants^{16,17}. The plant specimens collected were processed at the Laboratory of the Centre of Plant Taxonomy, and identified with the help of available literature^{18,19}. The properly processed plant specimens have been deposited in the Kashmir University Herbarium (KASH).

Results and discussion

Each medicinal plant species is provided with its scientific name followed by family, local name (in single commas), voucher specimen number deposited in the KASH, habit and habitat, altitudinal range (in meters), flowering phenology, and uses (Table 1). The investigation describes the ethnomedicinal uses of 30 plant species, belonging to 30 genera and 22 families, in the Kashmir Himalaya. Different plant parts, such as leaves, inflorescences, seeds, rhizomes, roots, etc. are used. The plant species are distributed along wide altitudinal range between 1,300–4,500 m (amsl). They grow in diverse range of habitats, such as valley plains, montane forests, sub-alpine and alpine pastures. These plant species through different modes of preparation are used to heal external burns, abrasions and wounds; orally taken to cure digestive, respiratory, skin and muscular disorders; and also used as diuretic, antipyretics, analgesic, anti-inflammatory, antiseptic, febrifuge, etc.

In essence, the ethnomedicinal knowledge about the biodiversity reflects many generations of experience and problem solving by the indigenous communities. It represents an immensely valuable database that provides the baseline information for the commercial exploitation of bioresources. Also, the information could be useful for the industry, pharmacologists, physicians, phytochemists, botanists, and alike interested in the development of alternative therapies^{20,21}. For lesser known plant species, such a secret treasure trove of information could prove beneficial in phyto-pharmacological research for the discovery of new therapeutic drugs^{22,23}. Also, during the recent past, there has been growing concern among the developing countries about the emerging threats of the biopiracy and the intensity of IPR controversies are increasing day by day. Thus, the need-of-the-hour is to speedily document reliable information about the biodiversity and its' different uses by the ethnic communities²⁴. It is hoped that the information base generated could contribute in filling the knowledge gaps for the compilation of a local biodiversity registers, a key instrument for achieving the regional and global biodiversity conservation and sustainable development goals. The results obtained in the the investigation need to be rigorously subjected to pharmacological analysis in order to validate their authenticity and future prospects. The paper has only documented the herbal health remedies presently in

Table 1—Ethnomedicinal uses of medicinal plants in the Kashmir Himalaya

Plant name/ Family/ local name	Altitudinal range (meters); flowering phenology	Uses
<i>Achillea millefolium</i> L. Asteraceae <i>Berguer</i>	1600-2800; July-September	Paste of extract mixed with corn flour is applied to heal the bruises of snakebite.
<i>Aconitum heterophyllum</i> Wall. ex Royle Ranunculaceae <i>Paewakh</i>	2200-2900; July-August	A semi liquid lotion made from fine powder of rhizome with a few drops of mustard oil is massaged externally on the forehead and chest to treat headache and cough.
<i>Allium sativum</i> L. Alliaceae <i>Rohun</i>	1600-2200; April-May	Tincture from bulbs boiled in mustard oil is rubbed to cure baldness (alopecia), and the recurrent dandruff.
<i>Arnebia benthamii</i> I. M. Jhonston Boraginaceae <i>Kah-Zaban</i>	2700-3500; July-August	Decoction of rhizome in sugary water is sipped to alleviate common cold, cough and fever; also a good blood purifier.
<i>Artemisia absinthium</i> L. Asteraceae <i>Tethwan</i>	1700-2200; May-July	Paste of dried leaves and inflorescences blended with a glass of lukewarm milk or water is used to cure stomach pain and worm infections of intestine.
<i>Berberis lycium</i> Royle Berberidaceae <i>Kawdach</i>	1800-2100; April-July	Soft root peelings boiled in sugary water is taken to relieve indigestion, constipation, and irregular bowel movements; paste prepared from fresh fruits is used to heal wounds.
<i>Corydalis govianiana</i> Wall. Fumariaceae <i>Sangi-harb</i>	1800-2200; May-June	Decoction of aerial portion is administered to treat whooping cough, respiratory disorders, chest infections, and asthma.
<i>Cynodon dactylon</i> Pers. Poaceae <i>Daramun</i>	1500-4500; May-November	Decoction of whole plant is given to cure common cold.
<i>Dioscorea deltoidea</i> Wall. Dioscoreaceae <i>Kraeth</i>	2300-2800; May-July	Leaf decoction is used as eye drops to treat ophthalmic infections; to sharpen eyesight.
<i>Dryopteris</i> sp Pteridaceae <i>Gautheer</i>	1600-2000	Aerial portion is boiled and the decoction is taken orally to cure kidney and gall stones.
<i>Hyoscyamus niger</i> L. Solanaceae <i>Bazarbang</i>	1600-2100; June-July	Seed powder is applied on gums to cure toothache.
<i>Lavatera kashmeriana</i> Camb. Malvaceae <i>Sozposh</i>	2100-2500; June-August	Paste of dried flowers in milk is used for the treatment of mumps in children.
<i>Malva sylvestris</i> L. Malvaceae <i>Sotsal</i> ; Dried seeds	1600-1900; July-September	Seeds boiled in sugary (<i>sharbat</i>) is taken to cure cough and fever.
<i>Mentha arvensis</i> L. Lamiaceae <i>Pudna</i>	1700-2500; June-August	Aerial portion powder mixed with dilute curd (<i>lassi</i>) is given to cure cough, sore throat, indigestion and constipation.
<i>Nasturtium officinale</i> L. Brassicaceae <i>KulHak</i>	1500-2000; March-April	Leaf juice is given to patients suffering from stomach ulcers and intestinal infections.

Contd.

Table 1—Ethnomedicinal uses of medicinal plants in the Kashmir Himalaya— *Contd.*

Plant name/ Family/ local name	Altitudinal range (meters); flowering phenology	Uses
<i>Prunella vulgaris</i> L. Lamiaceae <i>Kulwauth</i>	1600-1900; June-July	The hot water bath of flowering tops is used to cure headache, fever and body muscular pain.
<i>Rheum emodi</i> Wall. ex Meissn., Polygonaceae <i>Pam Tsalen</i>	2500-3500; June-August	Paste of rhizome powder in water is used to cure wounds of body, and winter frost of external body parts.
<i>Salix wallichiana</i> Andrs. Salicaceae <i>Danthiveer</i>	1900-2400; April-June	Decoction of leaves is used to wash the feet and lower portion of legs to cure fever and general body pain.
<i>Sambucus wightiana</i> Wall. ex Wt. & Arn. Sambucaceae <i>Gandula</i>	1800-2400; June-August	The fruits are used to initiate vomiting to treat stomach disorders, to wash stomach to expel poisonous substances.
<i>Saussurea costus</i> Lipstch. Asteraceae <i>Kuth</i>	2300-3000; May-July	Bitter rhizome powder is useful to treat joints pain, back pain, sole ulcers, dysentery and fever.
<i>Solanum tuberosum</i> L. Solanaceae <i>Alua</i>	1600-2500; March-April	Ripened tuber paste is applied to burns on the external body parts and tightly fastened with a woolen cloth.
<i>Stellaria media</i> L. Caryophyllaceae <i>Losdhi</i>	1500-2500; April-September	Seed powder is given to children with milk to cure skin infection and allergy. Leaf paste is applied to heal wounds caused by burning or frost.
<i>Taraxacum officinale</i> Weber Asteraceae <i>Haend</i>	1600-2400; May-July	Paste of boiled leaves mixed with small quantity of salt and turmeric (<i>haldi</i>) is used for treating bone fractures.
<i>Thymus serpyllum</i> L. Lamiaceae <i>Jawand</i>	1800-2300; May-July	Infusion of leaves is used in the treatment of itches and skin eruptions; leaf juice is applied to treat baldness (alopecia). Seed powder is given to children against worm infection.
<i>Triticum aestivum</i> L. Poaceae <i>Kaenak</i>	1600-1900; March-April	Seed decoction is given to children for the treatment of worms.
<i>Urtica dioica</i> L. Urticaceae <i>Soi</i>	1600-2400; May-July	Paste of roots boiled in mustard oil is used to treat cysts of feet and hands; also rubbed against joints pain.
<i>Viburnum grandiflorum</i> Wall. ex DC. Caprifoliaceae <i>Kulmanch</i>	1700-2100; February- March	Seed juice is given to treat typhoid and whooping cough.
<i>Viola odorata</i> L. Violaceae <i>Bunafsha</i>	1800-2600; May-July	Flowers (mixed with sugar is fermented (<i>khambir</i>) and given with drink, called <i>kahwa</i> to treat cough, hoarseness of voice, fever and sore throat.
<i>Vitis vinifera</i> L. Vitaceae <i>Daech</i>	1700-2100; April-May	Fresh leaves are tightly tied with muslin cloth on the skin rashes, sores, eruptions.
<i>Zizyphus mauritiana</i> Lam. Rhamnaceae <i>Brag Kund</i>	1300-1800; April-May	Leaves are boiled in water for about half an hour and then water bath is used to wash whole body to cure skin rashes.

vogue in the region and does not prescribe or recommend for their use till further determination by pharmacologists.

Acknowledgement

Authors are highly thankful to Prof PK Mukherjee, Jadavpur University, Kolkata, and Prof SS Gilani, Aga Khan University, Karachi, Pakistan, for their critical comments on the draft of the manuscript. Authors sincerely acknowledge the valuable knowledge base provided by respondents during the course of the study.

References

- Heywood VH, *Global Biodiversity Assessment*, (Cambridge University Press, Cambridge, UK), 1995, 75.
- Loreau M & Oteng-Yeboah A, Diversity without representation, *Nature*, 422 (2006) 245.
- Naranjo P, Urgent need for the study of medicinal plants, In: *Ethnobotany: Evolution of a Discipline*, (Dioscorides Press, Portland), 1995, 392.
- Mukherjee PK, Exploring green resources for drug development through ethnobotany, In: *Chemistry for Green Environment*, (Narosa Publishing House, New Delhi), 2005, 98.
- Utkarsh G, Patenting life? Biodiversity and Intellectual Property Rights, *Resonance*, 2 (2001) 51.
- Shinwari SK & Gilani SS, Sustainable harvest of medicinal plants at Bulashbar Nullah, Astore (Pakistan), *J Ethnopharmacol*, 84 (2003), 289.
- Mittermeier RA, Gil PR, Hoffmann M, Pilgrim J, Brooks T, Mittermeier CG, Lamoreux J & Da Fonseca GAB, *Hotspots Revised: Earth's Biologically Richest and most Threatened Terrestrial Ecoregions*, (Conservation International), 2005.
- Husain M, *Geography of Jammu and Kashmir*, (Rajesh Publications, New Delhi), 2001, 28.
- Dar GH, Bhagat RC & Khan MA, *Biodiversity of Kashmir Himalaya*, (Valley Book House, Srinagar), 2001.
- Dar GH, Vir J, Kachroo P & Buth HH, Ethnobotany of Kashmir 1, Sindh Valley, *J Econ Tax Bot*, 3 (1984) 668.
- Kachroo P & Nahvi IM, Ethnobotany of Kashmiris, In: *Forest Flora of Srinagar and Plants of Neighbourhood*, (Bishen Singh Mahendra Pal Singh, Dehra Dun), 1987.
- Ara S & Naqshi AR, Ethnobotanical studies in the Gurais Valley, *J Econ Tax Bot*, 17 (1992) 657.
- Kaul MK, *Medicinal Plants of Kashmir and Ladakh, Temperate and Cold Arid Himalaya*, (Indus Publishing Co, New Delhi), 1997.
- Khan ZS, Khuroo AA & Dar GH, Ethnomedicinal survey of Uri, Kashmir Himalaya, *Indian J Tradit Knowle*, 3 (2004) 351.
- Stapp JR, Wundham FS & Zargar R, *Ethnobiology and Biocultural diversity*, (University of Georgia Press, Athens, Greece), 2002.
- Etkin NL & Elisabetsky E, Seeking a transdisciplinary and culturally germane science: The future of ethnopharmacology, *J Ethnopharmacol*, 100 (2005) 23.
- Cordall GA & Colvard MD, Some thoughts on the future of ethnopharmacology, *J Ethnopharmacol*, 100 (2005) 5.
- Stewart RR, *An Annotated Catalogue of the Vascular Plants of West Pakistan and Kashmir*, (Fakhri Press, Karachi, Pakistan), 1972.
- BSI, *Flora of India*, (Botanical Survey of India, Kolkatta), 1996.
- Gilani AH & Atta-ur-Rahman, Trends in ethnopharmacology, *J Ethnopharmacol*, 100 (2005) 43.
- Mukherjee PK & Wahile A, Integrated approaches towards drug development from Ayurveda and other Indian System of medicines, *J Ethnopharmacol*, 103 (2006) 25.
- Cordell GA, Biodiversity and drug discovery: A symbiotic relationship, *Phytochemistry*, 55 (2000) 463.
- Dhar U, Rawal RS & Upreti J, Setting priorities for conservation of medicinal plants- a case study in the Indian Himalaya, *Biol Conserv*, 95 (2000) 57.
- Kala CP, Dhyani PP & Sajwan BS, Developing the medicinal plants sector in northern India: challenges and opportunities, *J Ethnobiol Ethnomed*, 32 (2006) 11.