



# Ethno-medicinal Notes of Hat-Kalika Watershed in West Himalaya, India

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**Abstract:** The present contribution relates to the diversity of the medicinal plant of Hat-Kalika Watershed Gangolihat (Pithoragarh), Kumaun Himalaya, Uttarakhand (India). The paper describes distribution and local/traditional uses of the 47 medicinal flora representing 30 families, in which 17 species were trees, 21 herbs, 8 shrubs and one climber. The leaves were highly utilized for medicinal purposes (34%), followed by roots(21%), whole plants (10%), fruits (10%), barks (9%), seeds (8%) and flowers (6%) for curing various ailments. The maximum number of plants used was for curing diarrhea (9 species) followed by fever (7), diabetes (6), skin (6), dysentery (5) and constipation (6). These plants need proper protection and conservation.

**Key word:** Ethno-botany • Medicine plant • Diversity • Kumaun Himalaya

## Introduction

Ethno-botanical information on medicinal plants and their utilization by local community is not only in the conservation of traditional cultures and biodiversity, but also for community health care and drug development. This information is utilized as a guide for drug development under the assumption that a plant which has been used by indigenous people over a long period of time may have an allopathic application (Farnsworth, 1993). The Himalayan region is well-known for the diversity and richness of its medicinal plants and it harbors a large number of ethnic communities, each with a diverse culture and traditional knowledge system (Kala 2005; Malik et al. 2015). In this region a total 1748 species are known as medicinal plants (Samant *et al.*, 1997). On the regional scale, the maximum species of medicinal plants have been reported from Uttarakhand part

of West Himalayan region (Kala, 2004), followed by Sikkim and North Bengal (Samant *et al.*, 1997).

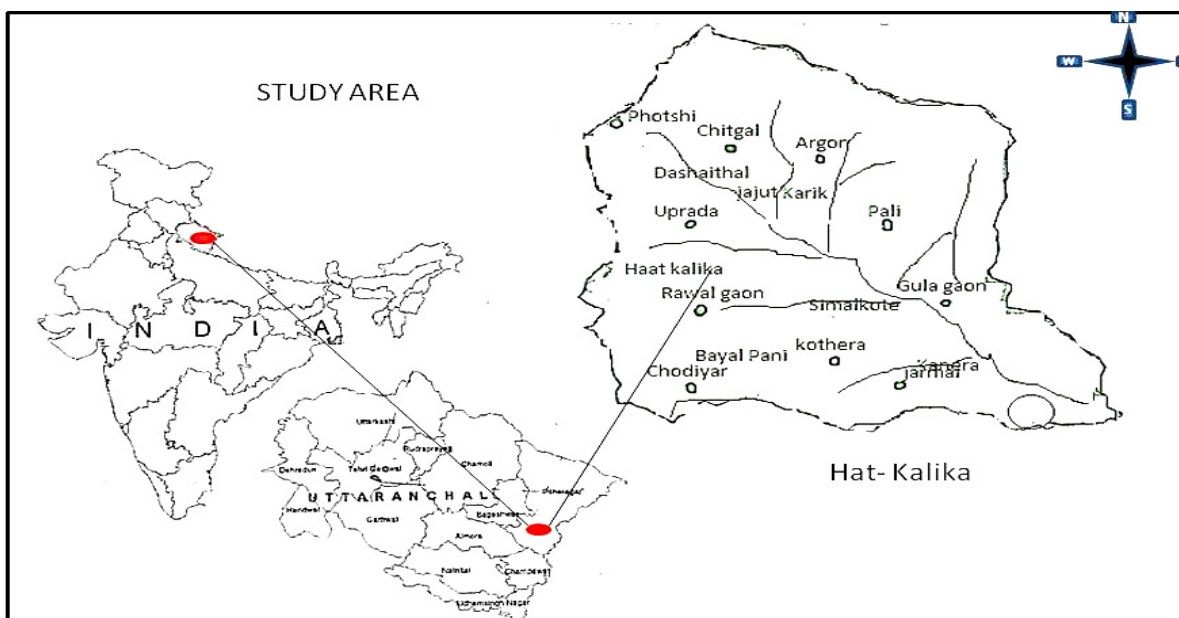
However, the knowledge of herbal medicines is gradually being lost and only few traditional herbal practitioners are still practicing the traditional system of healthcare systematically and effectively (Negi *et al.*, 2010; Singh and Rawat, 2011; Kandari *et al.*, 2012; Nijar, 2013; Malik *et al.*, 2015). Ethno-medicinal plants are effective and safe, without any side effect. Therefore in the present study an attempt has been made to; (i) assess the diversity and utilization pattern of ethno-medicinal plants, and (ii) patterns of utilization against different ailments.

## Study area

In views of the above objectives, the present study was carried out in Hat-Kalika Watershed and is located between latitude 29° 39' 22.99" N and

longitude 080° 03' 38.93'E of the district Pithoragarh in Kumaun Himalaya, Uttarakhand. It (Fig. 1).

covers an area of approximately 36.68 km<sup>2</sup> and a wide altitudinal range from 625 to 2152 m asl



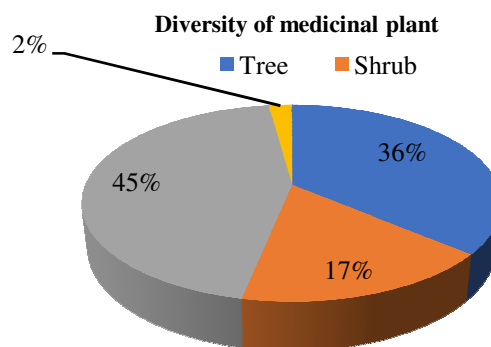
**Figure 1** Map of Hat-Kalika Watershed (Gangolihat) Pithoragarh, Uttarakhand

### Material and method

Identification of medicinal plants and groundwork of ethno-medicinal notes of the plants were mainly based on interviews, informal discussions and extensive field visits. The study area was surveyed during various seasons from 2016-2017, and ethno-medicinal plants were collected and recorded following standard methods (Jain and Rao, 1977). All the plant species were identified using standard literature (Pangtey *et al.*, 1989; Osmaston, 1927). Structured questionnaires, interviews and participatory observations were used to illicit information from the resource persons using standard methods. Information was collected on local name of the plant, plant part(s) being used for curing, methods along with dosage.

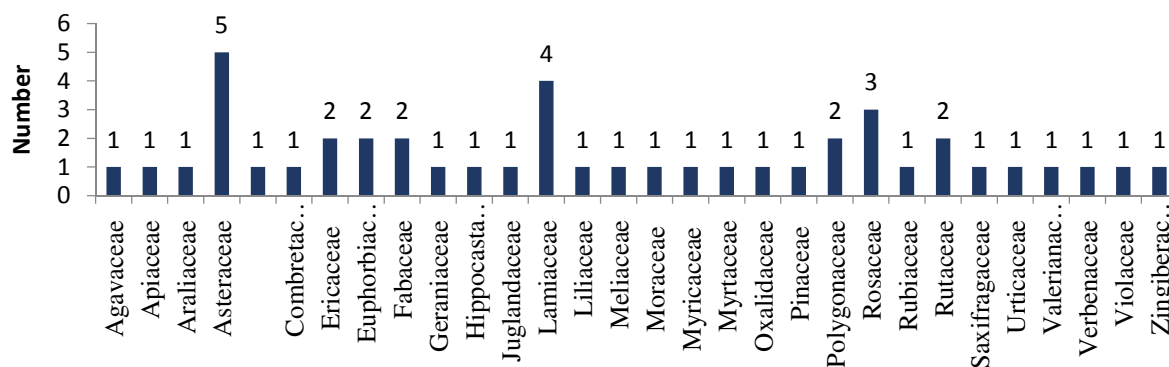
### Result and Discussion

The present study records 47 medicinal plants belonging to 46 genera under 30 families from the watershed (Table1) and its comprised of 17(36%) trees, 8 (17%) shrubs, and 21 herbs (36%) (Fig. 2).

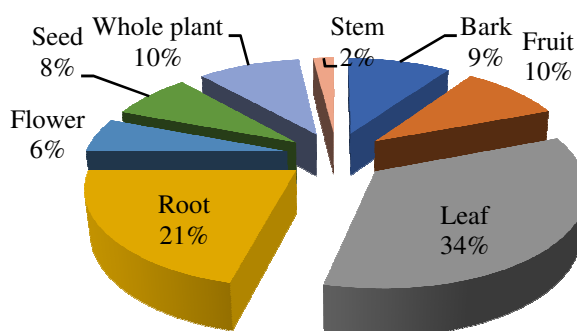


**Figure 2** Diversity of medicinal plants in the watershed

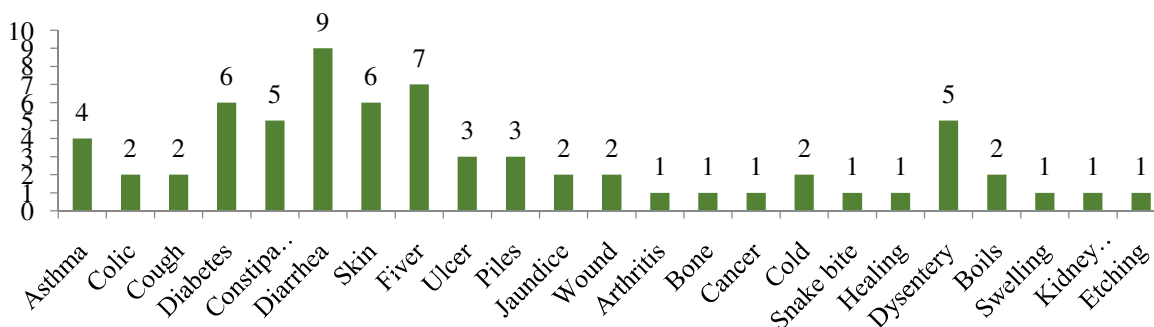
Amongst the families, maximum species were represented in Asteraceae (5 species), followed by Lamiaceae (4), Rosaceae (3), and Ericaceae, Fabaceae, Rutaceae with 2 species each (Fig. 3).



**Figure 3** Family use of Medicinal plant



**Figure 4** Part use of medicinal plants in the watershed



**Figure 5** Plants was used against different diseases

The maximum number of plants was used for curing Diarrhea (9 species) followed by fever (7), diabetes (6), skin diseases (6), dysentery (5) and constipation (6) which are common ailments found in the study area (Fig. 4). Leaves were highly used (34%), followed by roots (21%), whole plants (10%),

(10%), barks (9%), seeds (8%) and flowers (6%) (Figure 5). The paper provides comprehensive information on the diversity and uses pattern of ethno-medicinal plants in Hat-Kalika watershed traditionally used and is in practices. The maximum use of leaves in local medicine practices proposes



the advantage of utilizing the biodiversity on a sustainable basis over the root or whole plant, since the leaves are regenerative, virtual easiness of finding (Ghorbani, 2005). The present study may provide baseline information about diversity of ethno-medicinal plants against different ailments. The information provided in the manuscript may be small, but it holds significant relationship on plant diversity of this area. Conservation and sustainable utilization of ethno-medicinal plant resources is proposed and cultivation may be promoted for reducing the pressure on wild resources. Awareness and basic knowledge on resources need to be provided to school children as they are the future stakeholders and custodian in the region.

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### Reference

- Ghorbani, A., (2005). Studies on pharmaceutical ethnobotany in the region of Turkmen Sahra, north of Iran (Part 1): general results. *J. Ethnopharmacol.* 102:58-68.
- Farnsworth, E.J., Rosovsky, J., (1993). The ethics of ecological field experimentation. *Cons Biol.* 7(3), 463-472.
- Jain, S.K., Rao, R.R., (1977). *A hand book offield and Herbarium Merhods. Today & Tomorrow's Publ., New Delhi.*
- Kala, C.P., (2005) Current status of medicinal plants used by traditional Vaidyas in Uttaranchal state of India. *Ethnobot. Res. Appl.* 3: 267-278.
- Kala, C.P., (2004). Revitalizing traditional herbal therapy by exploring medicinal plants: A case study of Uttaranchal State in India. In Indigenous Knowledges: *Transforming the Academy, Proceedings of an International Conference Pennsylvania: Pennsylvania State University*; 15-21.
- Kandari, L.S., Phondani, P.C., Payal, K.C., Rao, K.S., Maikhuri, R.K., (2012). Ethnobotanical study towards conservation of medicinal and aromatic plants in upper catchments of Dhauli Ganga in the central Himalaya. *J. Mountain Sci.* 9(2), 286-296.
- Malik, Z.A, Bhat, J.A., Ballabha, R., Bussmann, R.W. and Bhatt, A.B., (2015). Ethnomedicinal plants traditionally used in health care practices by inhabitants of Western Himalaya. *J. Ethnopharmacol.* 172, 133-144.
- Negi, V.S, Maikhuri, R.K, Phondani P.C., Rawat L.S., (2010). An Inventory of Indigenous Knowledge and Cultivation Practices of Medicinal Plants in Govind PashuVihar Sanctuary, Central Himalaya, India. *Int. J. Biodiv. Sci. Eco. Ser.Mang.* 6 (3-4): 96-105.
- Nijar G.S., (2013). Traditional Knowledge Systems, International Law and National Challenges: Marginalization or Emancipation?. *Eur. J. Int. Law.*, 24(4), 1205-1221.
- Osmaston, A.E., (1927). *A Forest Flora for Kumaun.* International Book Distributors, Dehradun, India.
- Pangtey, Y.P.S., Samant S.S., Rawat, G.S., (1988). Contribution to the flora of Pithoragarh district. *Himalayan Res. Devel.* 7: 24-46.
- Samant, S.S., Dhar, U., Palni, L.M.S., (1998). Medicinal Plants of Indian Himalaya: Diversity Distribution Potential Values. Almora: G.B.Pant Institute of Himalayan Environment and Development.
- Singh, G., Rawat, G.S., (2011). Ethnomedicinal survey of Kedarnath wildlife sanctuary in Western Himalaya, India. *Indian J. Fund. Appl. Life Sc.* 1(1), 35-46.

**Table 1** List of ethno-medicinal plants recorded from Hat- Kalika watershed

S N	Name species plant	Local Name	Family	Part(s) used	Life form	Use(s)
1	<i>Aesculus indica</i> (Wall. ex Cambess.) Hook.	Pangar	Sapindaceae	Se	T	Skin diseases, rheumatic pain
2	<i>Agave americana</i> L.	Rambans	Asparagaceae	Lf	S	Diarrhea
3	<i>Ajuga parviflora</i> Benth.	Ratpatia	Lamiaceae	Lf	H	Diabetes
4	<i>Artemisia nilagirica</i> (C.B. Clarke) Pamp.	-	Asteraceae	Lf, Fl	H	Skin diseases
5	<i>Artemisia roxburghiana</i> Besser	Pati	Asteraceae	Lf	H	Fever and Skin diseases
6	<i>Asparagus racemosus</i> Willd.	Shataver	Asparagaceae	Rt	H	Diabetes
7	<i>Bauhinia variegata</i> L.	Qweral	Fabaceae	Br	T	Ulcers and skin diseases
8	<i>Berberis aristata</i> DC.	Kilmori	Berberidaceae	Rt	S	Ulcers, Jaundice, Fever
9	<i>Bergenia ciliata</i> Sternb.	Silphor	Saxifragaceae	Rt	H	Kidney stone, Piles, Paralysis
10	<i>Bidens bipinnata</i> L.	Kumar	Asteraceae	Wh	H	Cough, Bronchitis
11	<i>Cedrus deodara</i> (Roxb. ex D. Don) G. Don	Devdara	Pinaceae	Br	T	Piles, Arthritis.
12	<i>Centella asiatica</i> (L.) Urb.	Brahmi	Apiaceae	Wh	H	Memory power
13	<i>Cinnamomum tamala</i> (Buch.-Ham.) T. Nees & Nees	Dalchini	Lauraceae	Br, Lf	T	Cold, nausea & Vomiting
14	<i>Emblica officinalis</i> Gaertn.	Awala	Phyllanthaceae	Br	T	Diarrhea, Dysentery and Jaundice
15	<i>Ficus palmata</i> Forssk.	Beru	Moraceae	Fr, Lf	T	Constipation, Skin diseases
16	<i>Fragaria indica</i> Andrews	Bhikaphal	Rosaceae	Lf	H	Diarrhoea and leucorrhoea
17	<i>Geranium ocellatum</i> Cambess.	-	Geraniaceae	Rt	H	Dysentery, cold
18	<i>Hedera nepalensis</i> K. Koch	-	Araliaceae	Lf	Cl	Ulcers, Dyspepsia
19	<i>Hedychium spicatum</i> Buch.-Ham. ex Sm.	Van Haldi	Zingiberaceae	Rt	H	Liver disorder, Fever, Diarrhea
20	<i>Juglans regia</i> L.	Akhrot	Juglandaceae	Lf, Br	T	Constipation. Bone fractures
21	<i>Lyonia ovalifolia</i> (Wall.) Drude	Ayar	Ericaceae	Lf, Se	T	Wounds and Boils
22	<i>Mallotus philippensis</i> (Lam.) Mull. Arg.	Ruhini	Euphorbiaceae	Fr	T	Thread, Hook, Round, Tape worms.
23	<i>Melia azedarach</i> L.	Baken	Meliaceae	Fr, Lf	T	Rheumatic pain
42	<i>Micromeria biflora</i> (Buch.-Ham. ex D. Don) Benth.	Balmaghas	Lamiaceae	Rt	H	Snake bite, Healing
24	<i>Murraya koenigii</i> (L.) Spreng.	Karipata	Rutaceae	Lf	S	Diarrhea, Diabetes
25	<i>Myrica esculenta</i> Buch.-Ham. ex D. Don	Kafal	Myricaceae	Br	T	Cough, Asthma



26	<i>Origanum vulgare</i> L.	Van Tulsi	Lamiaceae	Lf	H	Toothache, Swelling
27	<i>Oxalis corniculata</i> L.	Chilmora	Oxalidaceae	Wh	H	Fever, urinary tract, Infections
28	<i>Pinus roxburghii</i> Sarg.	Chir	Pinaceae	Se	T	Asthma and bronchitis
30	<i>Prinsepia utilis</i> Royle	Jhatalu	Rosaceae	Se	S	High blood pressure, Cholesterol
29	<i>Pyracantha crenulata</i> (D. Don) M. Roem.	Ghigaru	Rosaceae	Fr	H	Burns
31	<i>Pyrus pashia</i> Buch.-Ham. ex D. Don	Aru	Rosaceae	Fr	T	Constipation
32	<i>Quercus leucotrichophora</i> A.Camus	Banj	Fagaceae	Rt	T	Diarrhea, Asthma
33	<i>Rhododendron arboreum</i> Sm.	Burans	Ericaceae	Fr	T	Heart and Diarrhea, Blood dysentery Headache
34	<i>Rubia cordifolia</i> L.	Mangitha	Rubiaceae	WP	H	Diabetes
35	<i>Rubus ellipticus</i> Sm.	Hisalu	Rosaceae	Rt	S	Dysentery, Stomach-ache
36	<i>Rumex nepalensis</i> Spreng.	Chilmora	Polygonaceae	Lf	H	Etching
37	<i>Salvia leucantha</i> Cav.	-	Lamiaceae	Lf	H	Colic and fever
38	<i>Senecio nudicaulis</i> Buch.-Ham ex C.B. Clarke	Ratpatiya	Asteraceae	Wh	H	Colic, fever, skin diseases
39	<i>Syzygium cumini</i> (L.) Skeels	Jamun	Myrtaceae	Br, Lf, St, Fr	T	Anaemia, Diabetes. Dysentery, Bleeding in gums
40	<i>Taraxacum officinale</i> F.H.Wigg.	Kanphul	Asteraceae	Rt	H	Blood purifier
41	<i>Terminalia chebula</i> Retz.	Harar	Combretaceae	Fr	T	Piles and Diarrhea
43	<i>Urtica parviflora</i> Roxb.	Siun	Urticaceae	Rt,Lf	S	Diabetes, Goiter, Boils
44	<i>Valeriana wallichii</i> DC.	Samyo	Caprifoliaceae	Rt	H	Wounds
45	<i>Viola biflora</i> L.	Banapsa	Violaceae	Fl	H	Constipation
46	<i>Vitex negundo</i> L.	Nirgundi	Verbenaceae	Lf,Fl	S	Asthma, Diarrhea, Fever
47	<i>Zanthoxylum armatum</i> DC.	Timur	Rutaceae	Se, Br	S	Constipation. Cleaning teeth

## Abbreviations:

Life form: Cl-Climber, H- Herb, S- Shrub, T- Tree Part(s) used: Br- Bark, Fl- Flower, Fr- fruit, Lf- leaf, Rt- Root, Se-seed, St- Stem, Wh- Whole Plant