

## ETHNO-MEDICINAL PLANTS AND THEIR USES BY VAN PANCHAYAT PEOPLE IN NAINITAL OF KUMAUN REGION, UTTARAKHAND

Bhawana Kapkoti<sup>1</sup>, Neelu Lodhiyal<sup>2</sup> And L.S. Lodhiyal<sup>3</sup>

<sup>1,2</sup>Department of Botany, D.S.B. Campus, Kumaun University, Nainital-263002, UK

<sup>3</sup>Department of Forestry and Environmental Science, D.S.B. Campus, Kumaun University, Nainital-263002, UK

E-mail: [kapkotibhawana@gmail.com](mailto:kapkotibhawana@gmail.com)

### ABSTRACT

Kumaun is characterized by a rich diversity of ethno-medicinal plants as well as a rich heritage site in traditional medicine system in the western Himalayan region. Present study deals with the status, identification and to explore the traditional knowledge of plant species about their uses in local medicine by village people in Gahelna Van Panchayat of Kumaun region. All these data were collected during field survey participatory rural appraisal method. A total 28 ethno-medicinal plants species belonging to 18 families were reported. The average density of ethno-medicinal herbs, shrubs and trees ranged from 332000-457000, 80-480 and 100-310 ind ha<sup>-1</sup> respectively in Gahelna Van Panchayat forest. We identified plant species and their parts that have been used by local people to cure various ailments through their traditional use system.

**Key words :** Van Panchayat, ethno-medicinal plants, traditional, ailments.

### INTRODUCTION

**K**umaun region of Himalaya has been the reservoir of enormous natural resources of medicinal wealth. From prehistorical time, the Himalayan flora has been in use for various purposes including some scientific therapeutic uses. The old Indian literature such as Rig-Veda, Athurveda, Charka Sanhita, included various uses of plants of Himalaya region (Sharma et al., 2011). India has one of the oldest, traditional cultures called 'folk tradition' associated with the use of medicinal plants based on indigenous belief, traditional knowledge and skill (Samant et al., 1998). The Indian Himalayan Region (IHR) is also the habitat of major tribal communities such as Bhotias, Boaxas, Tharus, Jaunsaries, Shaukas, Kharvar and Mahigiri, which use medicinal plants for curing the

diseases and ailments through the use of natural medicine (Singh et al., 2007). Himalayan region support approximately 1748 plant species of known medicinal value (Samant et al., 1998). Most of the plant products are being used by traditional healers as traditional medicine usually collected from the wild and hilly remote area.

Plant parts are directly used as medicines by a majority of community people in all over world and have no side effect like allopathic medicine (Gangwar et al., 2010). The basic ingredients in the traditional medicines are the medicinal plants, which are depleting at a faster rate due to increase in consumption and indiscriminate drawl of resources from the wild (Kumari et al., 2012). In addition to the requirement for conservation of medicinal plants it has also become essential to protect and patent the

traditional knowledge (Raghupathy, 2001). Due to various reasons, the medicinal plants that are naturally grown in abundance in this hilly area are now a day’s depleting fast. Lack of alternate income sources force people to over-exploit natural resources of the region.

According to WHO (World Health Organization) as many as 80% people of the world depend on traditional medicine for curing diseases (Mukherjee, 2004 and Vinata Naini, 2013). Non- sustainable collection methods and harvesting cause threat and many valuable medicinal herbs are becoming rare due to their continuous utilization (Swe and Win, 2005). The study on traditional remedies being used in Tarai region of Kumaun is important as it explores the treasure of traditional knowledge which can provide an opportunity to get the benefits of Intellectual Property Right (IPR) to the persons having this knowledge (Mathur and Joshi, 2012). Present study gives the status of ethno-medicinal flora in Van Panchayat and its importance as medicine by local people in Kumaun region.

**MATERIALS AND METHODS**

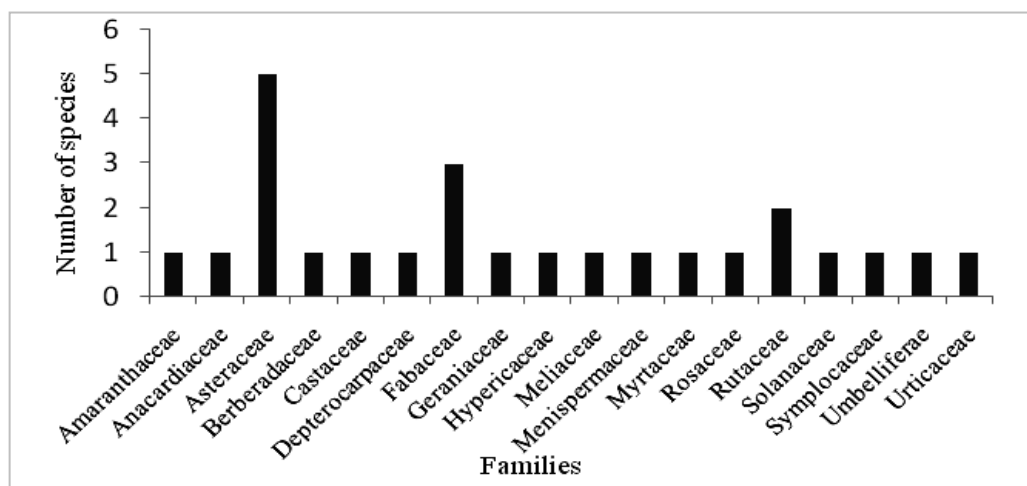
The study sites were located in Gahelna Van Panchayat of Nainital district in Kumaun of Uttarakhand. The study sites were located at 29° 21’ 01.9” N latitude to 79° 23’ 54.1” E longitudes and between 810m to 1447m elevation.

Folk stream system (Non Codified System) was used to collect the information (Bargali et al., 2013) and also was based on extensive and intensive field surveys. The vegetation analysis was carried out to determine the density and frequency by quadrat method (Misra, 1968; Saxena and Singh, 1982; 1984). PRA tool was used for identification of medicinal plant species collected during the survey and to explore the more information about the traditional knowledge with the help of indigenous people of the concern areas who have knowledge about the use of these medicinal plant species. The collected information was re-examined by consulting important works pertaining to medicinal plants and ethno-botany. The collected plant specimens were identified with the help of herbarium that occurs at different institutes and taxonomic experts of the organization. The well preserved specimens were deposited in the Herbarium.

**RESULTS AND DISCUSSION**

This study provides information on 28 species belonging to 18 families. Asteraceae and Fabaceae families were showing large number of medicinal plant species in study site (Figure-1). The results are given in form of table and graphs. Out of these plant species 12 species are herb, 06 shrub, 08 tree species and 02 are climber (Figure-2). Earlier Mathur and Joshi 2012, has reported 41 plant species belonging to 27

**Figure-1. Bar diagram showing number of families and ethno- medicinal plant belong to different families.**



**Table-1. List of medicinal plants and their parts traditionally used by villagers in the study area.**

S. No	Botanical name	Family	Local name	Habit/category	Part use	Uses
1.	<i>Achyranthes bidentata</i> Blume	Amaranthaceae	Latjira	Herb/*	Stem	The decoction of herb is taken internally to treat back pains, urine in the blood, menstrual pain, bleeding etc
2.	<i>Ageratum conyzoides</i> Linn.	Asteraceae	Gamlwa	Herb/*	Leaf	Leaf juice is applied to stop bleeding.
3.	<i>Artemisia nilagirica</i> (Clarke)Pamp.	Asteraceae	Pati	Herb/**	Leaf	Leaves and flowering topes are used in asthma, bronchitis, nervous affection and skin disease.
4.	<i>Bauhinia variegata</i> Linn.	Fabaceae	Kachnar	Tree/**	Root	Juice of root is given in snakebite and bark is used as a liver tonic and curing asthma.
5.	<i>Berberies asiatica</i> Roxb.	Berberidaceae	Kilmori	Shrub/*	Root	Decoction of root eases Diarrhoea disease.
6.	<i>Centella asiatica</i> Linn.	Umbelliferae	Brahmi	Herb/*	Leaf	Leaf is used in hair fall control and increasing power of memory. Brain enhancers.
7.	<i>Cissampelos pariera</i> Linn.	Menispermaceae	Pahari patt	Climber/*	Leaf	Leaf juice is used for menstrual problems, hormonal imbalance and ease childbirth. It is also used for heart problems, kidney stones, kidney infections and pains, asthma, arthritis and stomach pains.

Table-1...

S. No	Botanical name	Family	Local name	Habit/category	Part use	Uses
8.	<i>Citrus limon</i> (L.) Burm. f.	Rutaceae	Niboo	Tree/**	Fruit	Decoction of root eases stomach disease.
9.	<i>Costus speciosus</i> Smith.	Costaceae	Kyol	Herb/*	Rhizome	Cooked rhizomes are used as vegetable and eases in cough, cold and various stomach diseases.
10.	<i>Desmodium gangeticum</i> (L.) DC.	Fabaceae	Sakinghas	Shrub/*	All parts	Whole plant used in liver swelling.
11.	<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Gethi	Climber/*	Bark and fruit	Bark juice apply in skin disease. Cooked fruits are used as vegetable.
12.	<i>Duchesnea indica</i> (Andr.) Focke	Rosaceae	Bankasa	Herb/*	Leaf	Leaf juice apply in eye disease i.e. cataract.
13.	<i>Eupatorium adenophorum</i> Spreng.	Asteraceae	Kalabasa	Herb/*	Leaf	Leaf juice is used in blood clotting.
14.	<i>Flemingia strobilifera</i> R. Br.	Fabaceae	Veer-brat	Herb/*	Root	Root decoction is used in cough, fever and bronchial disorder.
15.	<i>Hypericum oblongifolium</i> Choisy	Hypericaceae	Piyoli	Shrub/*	Flower	Powder of flowers given in jaundice.
16.	<i>Mangifera indica</i> Linn.	Anacardiaceae	Aam	Tree/**	Bud	Bud dry in shaded place and its powder mixed with Singhara' flour given in diabetes.
17.	<i>Melia azedarach</i> Linn.	Meliaceae	Bakain	Tree/**	Flower	Flower paste used in headache.
18.	<i>Murraya koenigii</i> Linn.	Rutaceae	Carry patta	Shrub/*	All parts	Paste applies in skin disease.
19.	<i>Oxalis corniculata</i> Linn.	Geraniaceae	Khatimit hi	Herb/*	Leaf	Leaf paste is used in skin disease.
20.	<i>Pyrus pashia</i> Linn.	Rosaceae	Mehal	Tree/*	All part	Paste applies in skin disease.
21.	<i>Rubus ellipticus</i>	Rosaceae	Hishalu	Shrub/*	All parts	Whole plant used

**Table-1...**

S. No	Botanical name	Family	Local name	Habit/category	Part use	Uses
21.	<i>Rubus ellipticus</i> Smith	Rosaceae	Hishalu	Shrub/*	All parts	Whole plant used in Diarrhoea.
22.	<i>Shorea robusta</i> Roxb.	Dipterocarpaceae	Sal	Tree/*	Bark	Bark paste used in skin disease.
23.	<i>Solanum nigrum</i> Linn.	Solanaceae	Makoy	Herb/**	All part	Decoction of plant given in swelling.
24.	<i>Sonchus asper</i> Linn	Asteraceae	Karnfool	Herb/**	Root	Root decoction given in stomach problem.
25.	<i>Symplocos chinensis</i> (Lour.) Druce	Symplocaceae	Lodh	Tree/*	Bark	Bark juice given in Leucoderma.
26.	<i>Syzygium cumini</i> (L.)	Myrtaceae	Jamun	Tree/*	Bark and fruit	Powder of bark given in diabetes.
27.	<i>Tagetes erecta</i> Linn.	Asteraceae	Genda	Herb/**	Leaf	Leaves juice apply in earache.
28.	<i>Urtica dioica</i> Roxb.	Urticaceae	Bichhu ghas	Shrub/*	All parts	Applied in body cramp and external pains.

\*Medicinal plant species found in forest

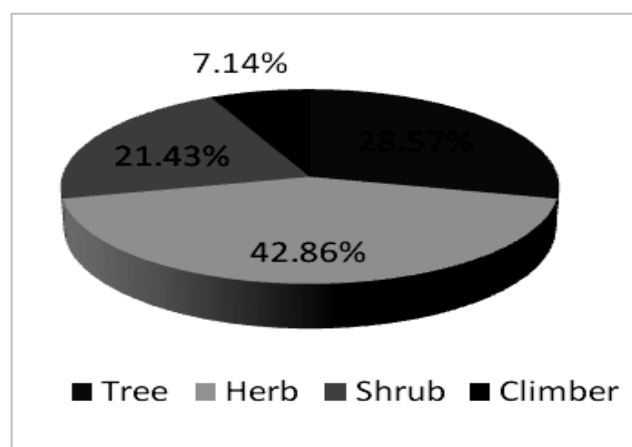
\*\*Medicinal plants species occurred in village and its surrounding.

Families in Tarai region of Kumaun, Uttarakhand. About 23 plants species belonging to 18 families were reported in Garhwal Himalaya by Dangwal et al. 2010. The study area is rich in medicinal plant resources which are mostly herb species and are used in indigenous traditional method for curing diseases. The plant parts used for medicinal preparation were root, leaves, bark, flower, rhizome, fruit, bud, stem and whole plant.

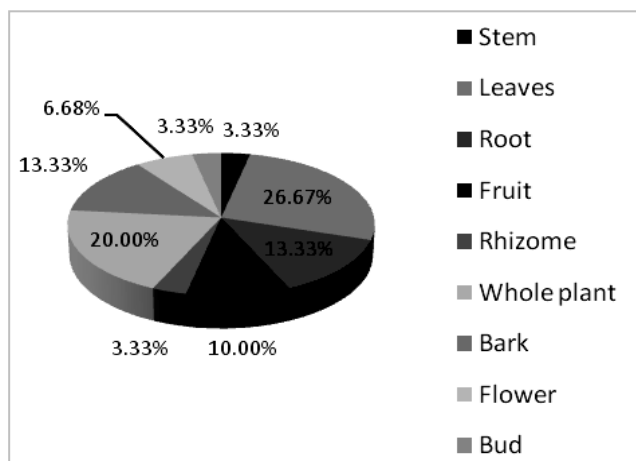
Most of parts i.e. leaf (*A. conyzoides*, *A. nilagirica*, *D. indica*, *C. asiatica*, *C. pariera*, *E. adenophorum*, *O. corniculata* and *T. erecta*), root(*B. variegata*, *B. asiatica*, *F. strobilifera* and *S. asper*), bark(*D. bulbifera*, *S. chinensis*, *S. robusta* and *S. cumini*), Fruit(*C. limon* and *D. bulbifera* and *Syzygium cumini*), rhizome(*C. speciosus*), bud(*M. indica*), flower(*M. azedarach* and *H. oblongifolium*) and whole plant(*D. gangeticum*, *M. koenigii*, *P. pashia*, *U. dioica*, *R. ellipticus* and *S. nigrum*) are used in curing

disease by traditional method (Figure-3 and Table-1). The average density of ethno-medicinal herbs, shrubs and trees, ranged from 332000-457000, 80-480 and 100-310 ind ha<sup>-1</sup> respectively in Gahelna Van Panchayat forest (Table-2).

**Figure-2. Pie chart showing the percent of medicinal plants in contribution different vegetation layers.**



**Figure-3. Pie chart showing the parts of medicinal plants used.**



**CONCLUSION**

Uses of medicinal plants in the indigenous medicines are well known by villagers to many Indian communities. Increased demand of herbal medicines, at global level has exerted a heavy pressure on medicinal plants. At present, the conservation and cultivation of natural resources especially of medicinal plants is required. These findings would support use of medicinal plants and their conservation in the region. Therefore, the listing of medicinal plants and their existing ethno-botanical knowledge as a tool will be beneficial in future understanding, research and sustainable management of medicinal plants

**Table-2. Density and frequency of certain important ethno-medicinal plant belongs to different vegetation layer in forest site.**

S. No	Name of Species	Density (ind ha <sup>-1</sup> )			Frequency (%)		
		Hill Base	Hill Slope	Hill Top	Hill Base	Hill Slope	Hill Top
<b>Herb species</b>							
1.	<i>Achyranthes bidentata</i> Blume	13000	60000	12000	50	40	40
2.	<i>Ageratum conyzoides</i> Linn.	182000	70000	87000	80	60	70
3.	<i>Duchesnea indica</i> (Andr.) Focke	-	-	15000	-	-	10
4.	<i>Centella asiatica</i> Linn.	5000	-	10000	10	-	20
5.	<i>Cissampelos pariera</i> Linn.	1000	1000	-	10	10	-
6.	<i>Oxalis corniculata</i> Linn.	-	10000	21000	-	10	20
7.	<i>Dioscorea bulbifera</i> L.	-	3000	3000	-	20	20
8.	<i>Eupatorium adenophorum</i> Spreng.	232000	175000	298000	100	100	100
9.	<i>Flemingia strobilifera</i> R. Br.	07000	13000	11000	30	40	30
	<b>Total</b>	440000	332000	457000	280	280	310
<b>Shrub species</b>							
1.	<i>Berberies asiatica</i> Roxb.	40	40	-	10	10	-
2.	<i>Rubus ellipticus</i> Smith	160	160	80	20	30	10
3.	<i>Murraya koenigii</i> Linn.	-	160	-	-	10	-
4.	<i>Urtica dioica</i> Roxb.	200	120	-	30	20	-
	<b>Total</b>	400	480	80	50	70	10
<b>Tree species</b>							
1.	<i>Symplocos chinensis</i> (Lour.) Druce	30	-	-	10	-	-
2.	<i>Syzygium cumini</i> (L.)	240	10	20	60	10	20
3.	<i>Pyrus pashia</i> Linn. (Seedling)	40	90	70	40	30	30
4.	<i>Shorea robusta</i> Roxb.	-	-	30	-	-	10
	<b>Total</b>	310	100	120	110	40	60

occurring particularly in the region as well as those poor people who cannot afford expensive medicine from market and can get immediate relief from such medicinal plants traditionally used by villagers. Moreover conservation and cultivation of medicinal plants can help the villagers to earn their livelihood to some extent.

### ACKNOWLEDGEMENT

I am thankful to Head, Department of Botany for providing necessary lab facilities. I am also thankful to UGC (BSR fellowship) for the financial support. I am also thankful to village peoples who provide information about local medicinal plants.

### REFERENCES

- Bargali, K., Lodhiyal, N., Kapkoti, B. and Parihaar, R. S. 2013. Indigenous traditional knowledge on some medicinal plants from Kotabagh Block (Ramnagar), Nainital. *IJBPAS*. 2(1): 20-25.
- Dangwal, L. R., Sharma, A and Rana, C. S. 2010. Ethno- medicinal plants of the Garhwal Himalaya used to cure varies diseases. A case study. *New York Science Journal* Vol 3(12) pp28-31.
- Gangwar, K. K., Deepali and Gangwar, R. S. 2010. Ethnomedicinal Plant Diversity in Kmaun Himalaya of uttarakhand, India. *Nature and Science*. 8(5): 66-78.
- Kumari, P., Joshi, G. C. and Tewari, L. M. 2012. Indigenous uses of threatened Ethno-medicinal plants used to cure different diseases by Ethnic people of Almora District of Western Himalaya. *International Journal of Ayurvedic & Herbal Medicine*. 2:4.
- Mathur, A. and Joshi, H. 2012. Traditional remedies in Tarai region of Kumaun, Uttarakhand. *India Journal of Traditional Knowledge*. Vol. 11(4) pp. 652-657.
- Misra, R. 1968. *Ecology Work Book*. Oxford and IBH Publ. Calcutta.
- Mukherjee, T. K. 2004. Protection of Indian Traditional knowledge: In *Ethno medicinal Plants*, edited by Trivedi, P.C. & Sharma, N.K. (Poiner Publishers, Jaipur). Pp.18-33.
- Raghupathy, L. 2001. Conservation and sustainable use of Medicinal plant: Current Issue, *Himalaya Medicinal Plants: Potential and prospects* (Edited by S. S. Samant)
- Samant, S. S., Dhar, U. and Palni, L.M.S. 1998. *Medicinal plants f Himalaya, diversity, distribution and potential values*. Gyonadaya Prakashan, Nainital.
- Saxena, A. K. and Singh, J. S. 1984. Tree population structure of certain Himalayan forest associations and implications concerning their future composition. *Vegetatio*, 58: 61-69.
- Saxena, A. K. and Singh, J. S. 1982. Quantitative profile structure of certain forest in the Kumaun Himalayan: *Proceeding of the Indian Academy of Sciences*, 91: 529-49.
- Sharma, J., Gaur, R. D. and Paiuli, R. M. 2011. Conservation status and diversity of some important plant in the Shiwalik Himalaya of Uttarakhand, India. *Int. J. Med Aron Plants*. Vol. 1 (1), No.2, pp 75- 82.
- Singh, M. P., Srivastava, J. L. and Pandey, S. N. 2007. *Indigenous Medicinal Plants, Social Forestry And Tribals*. Daya Publ. House. pp.2
- Swe, T. and Win, S. 2005. Herbal gardens and cultivation of medicinal plants in Myanmar regional consultation on development of traditional medicine in the South East Asia region, Department of Traditional Medicine, Ministry of Health, Myanmar, Pyongyang, DPR Korea, 22-24 June 2005, World Health Organization (Regional office for South-East Asia).
- Vinatha Naini and Estari Mamidala. 2013. An Ethnobotanical Study Of Plants Used For The Treatment Of Diabetes In The Warangal District, Andhra Pradesh, India. *Biolife*, 1(1), 24-28..

DOI:

<https://dx.doi.org/10.5281/zenodo.7205959>

Received: 5 April 2014;

Accepted: 21 May 2014;

Available online : 13 June 2014