

*Full Length Research Paper*

# Indigenous uses of medicinal plants by the Vanraji tribes of Kumaun Himalaya, India

Deepika Bhatt<sup>1\*</sup>, Ravi Kumar<sup>1</sup>, G. C. Joshi<sup>1</sup> and L. M. Tewari<sup>2</sup>

<sup>1</sup>Regional Research Institute (AY) CCRAS, Tarikhet, India.

<sup>2</sup>Department of Botany, DSB Campus, Kumaon University, Nainital, India.

Accepted 19 September, 2013

**The uses of medicinal plants in traditional healthcare practices and its importance in providing clues to new areas of research and in biodiversity conservation is now well recognized. This study aimed to look into the diversity of plant resources that are used by Raji people for curing various ailments. Questionnaire surveys, participatory observations and field visits were elicited information on the uses of various plants. It was found that 48 plant species were used by local people for curing various diseases, which are categorized under 14 broad classes.**

**Key words:** Plant population, Raji, disease, ethno-medicines, medicinal plants.

## INTRODUCTION

Tribes have their own ways of living with social and cultural moorings, purely governed by local conditions and ethos (Figure 1). Homogeneity, lack of proper health care, exploiting resources for their daily needs, rich culture and tradition but irrational beliefs and least desire to change their cultural and traditional beliefs, are some factors said to be aggravating the health and nutritional problems in these tribes which needs special attention. These people have their own way to diagnose and treat their ailments. Along with the various uses of herbal drugs, this system is interwoven with magic, religion and traditional social values and they serve multiple cognitive functions (Hughes, 1968). Documentation of such folk systems of medicines were initiated in 1956 (Rao, 1996) and off late such studies are gaining recognition and popularity due to the increased eagerness on herbal medicines in recent days.

Among the native societies of the Central Himalaya, the Raji is one of the under developed and smallest tribal society (1,300 persons in Uttarakhand) inhabiting forested pockets in Champawat, Pithoragarh and Udham Singh Nagar districts of Uttarakhand, India (Samal et al.,

2000). Raji tribe is mainly dependent on animal husbandry and also daily wages in various developmental activities. They are also described as Van Rawat (king of forest), van Raji (royal people of forest) or Van Manush (wild man) and claim themselves to be Rajputs and the original inhabitants of Central Himalaya.

According to Atkinson (1884), the Raji's may be associated with the "Rajyakitras of the sacred Hindi scripture "Kiratarjuniya". They collect a large variety of natural resources which make significant contribution to their food security and health care system similar to other traditional societies elsewhere in India (Maikhuri and Ramakrishnan, 1992; Rao and Saxena, 1996; Purohit, 1997). The Central Himalayan region is explored by several workers for the documentation of ethno-botanical knowledge (Maikhuri et al., 2000; Nautiyal et al., 2001a; Tiwari and Pande, 2010; Pant et al., 2009; Pant and Pant, 2011) and with special reference to ethno-medico-botany (Bhatt et al., 2009, 2010; Singh et al., 2011, 2009). However, this community have their own traditional knowledge is least documented by workers. Therefore, the present study is aimed to document the



Figure 1. Vanraji women.

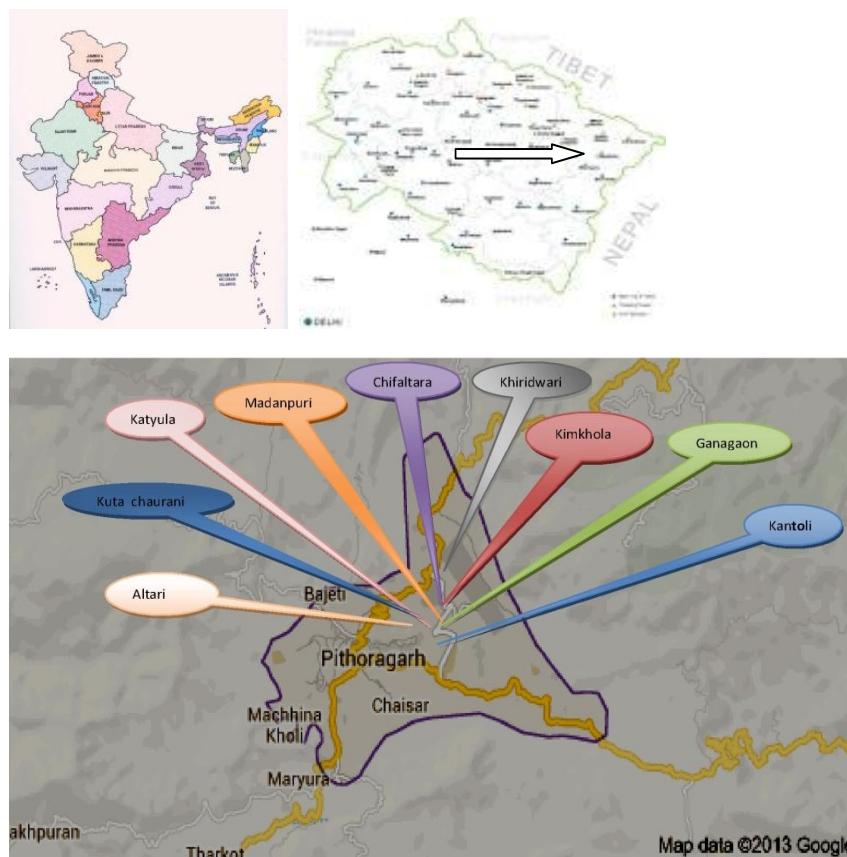


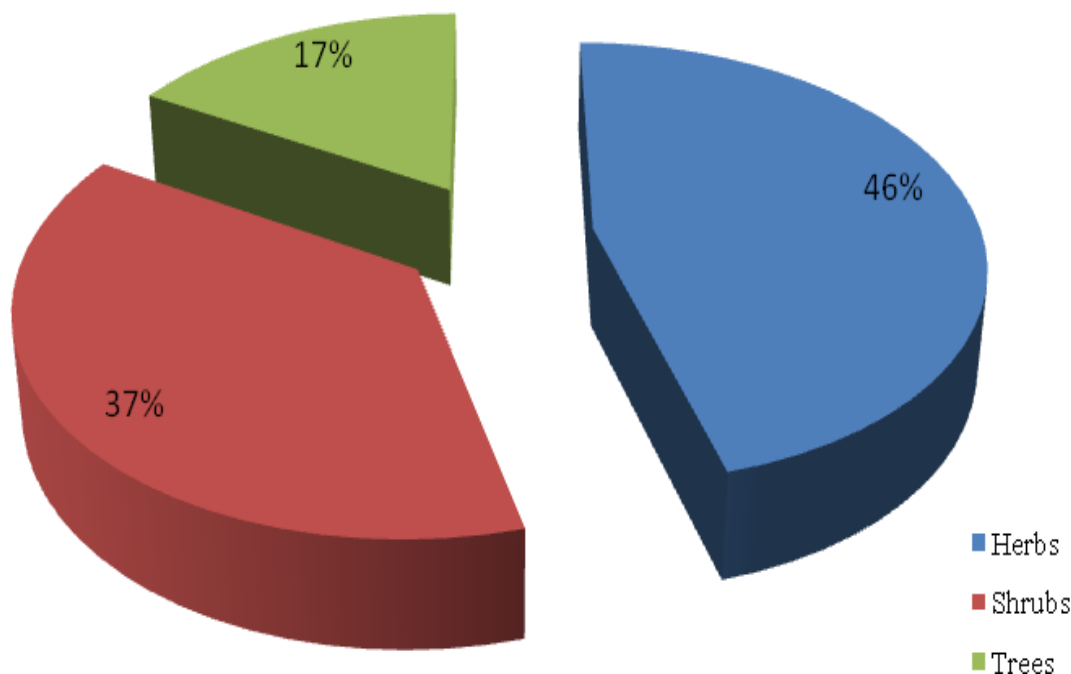
Figure 2. Location of Raji settlement.

ethno-botanical and ethno-medicinal importance related to plants used by Raji community.

### Study area

There are eleven settlements (villages) (Kimkhola,

Ganagaon, Chifaltara, Madanpuri, Katyula, Kantoli, Kutachurani, Altari, Khirdwari, Kauli and Bilhari) of Raji tribal community in the study region, nine settlements in Pithoragarh district, one settlement in Champawat district and one settlement in Udham Singh district (Samal et al., 2000) (Figure 2).



**Figure 3.** Habit of medicinal plants used by Raji tribe.

## METHODOLOGY

Extensive survey was carried out in all 11 villages inhabited by Raji tribal community during October, 1999 to October, 2000. After completion of primary survey, general interviews and gatherings were carried out in the study area. To identify the plants, field trips made with practitioners, herbarium specimens was also prepared for the identification of specimens by taxonomist of the institute. Gathered information was further cross checked with the help of knowledgeable people, elders, and traditional healers. The gathered data is further analyzed to clarify the number of ailments treated through respective plant species.

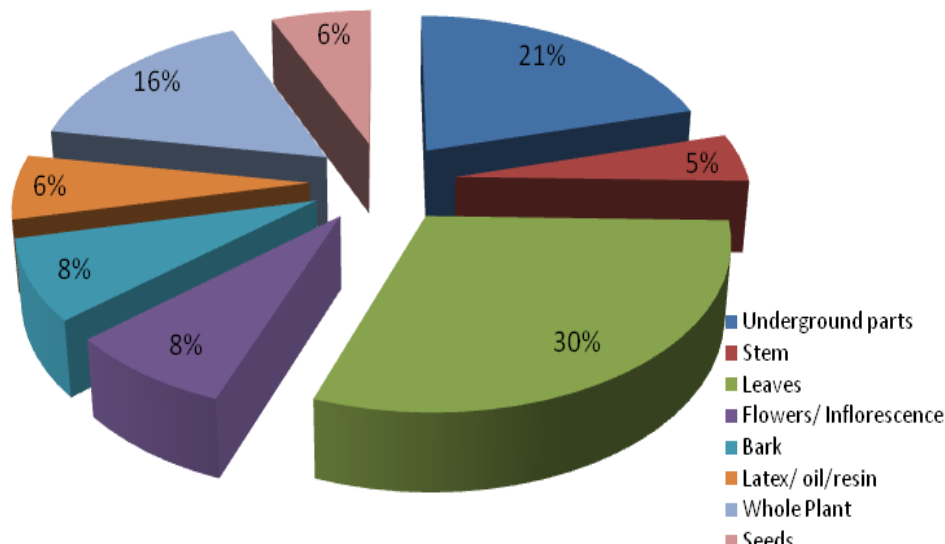
## RESULTS AND DISCUSSION

The study reveals that due to poor modern health care facilities, people in the study area depend on plants for their primary healthcare needs as well as for other daily needs. Based on the initial reconnaissance survey and group discussions with knowledgeable resource persons, where emphasis was on the documentation of information about valuable uses of medicinal plants and traditional health care systems, it was found that information on the medicinal uses of plants is confined to elder people (above 40 years of age) only, due to declining population of medicinal plants in natural resources and less availability of raw drugs for practitioner, and the younger generation is ignorant about it.

In all, the people use 48 different common plants for curing various ailments, out of which 22 are herbs, 18 are

shrubs and 8 are trees (Figure 3). In most of the cases (30%), leaves were used for curing different ailments followed by underground parts (21%), whole plant (16%), bark (8%), flower/inflorescence (8%), latex/oil/resin (6%), seeds (6%) and stem (5%) (Figure 4). The information on scientific name, local name of the plant, plant part, and their mode of uses in various ailments is given in Table 1.

These plants were used for curing various ailments ranging from body ache to highly complicated diseases of human beings. Most of the plant species were used to cure more than one ailment. Since the number of ailments is quite high, in order to describe and to include all of them in the analysis, the ailments were categorized and grouped into fourteen broad classes of diseases (Figure 5). Among the 48 documented medicinal plant species used by Raji tribe, the highest number of medicinal plant species were documented to cure dermatological problems (13 species, 21%), followed by digestive disorders (6 species, 10%), generalized body ache (ache in any part of body) (6 species, 10%), reproductive disorders (6 species, 10%), musculo-skeletal disorders (5 species, 8%), venereal and Urinogenital disorders (4 species, 7%), nervous disorders (4 species, 7%), antidotes (snake and scorpion bite) (4 species, 7%), ophthalmic disorders (4 species, 7%), respiratory disorders (3 species, 2%), liver and gall bladder disorders (2 species, 3%), dental disorders (2 species, 3%), cardio vascular disorders (1 species, 2%) and others (1 species, 2%). The most prevalent ailments were skin diseases, followed by digestive disorders such as diarrhea and dysentery.



**Figure 4.** Graphical presentation of plant parts used by Raji tribe.

**Table 1.** Some indigeneous plants and their uses.

Botanical name	Family	Altitudinal range (meter)	Local name	Life form	Part used	Ethnomedicinal uses	System which effected
<i>Adhatoda vasica</i> Nees ( <i>Justicia adhatoda</i> L.)	Acanthaceae	300-1600	Vasa	Sh	Lf, Fl	Decoction of flowers and leaves is given in common cold and bronchitis	Respiratory system
<i>Barleria cristata</i> L.	Acanthaceae	200-2000	Kala-bansa	H	Lf	Leaf paste is applied externally in dermatitis	Dermatological system
<i>Dicliptera bupleuroides</i> Nees	Acanthaceae	500-2000	Kuthi	H	Sd, WP	Seeds or whole plant decoction is useful in dysentery	Digestive system
<i>Achyranthes bidentata</i> Blume	Achyranthaceae	1000-2200	Apamarga	H	Lf, Rt	Tablets (5 mg) made from the Leaf poultice of <i>A. bidentata</i> with q. s. jiggery is given during dog bite for three days. Root paste is applied on mouth blisters.	Antidote (For dog bite), others
<i>Rhus parviflora</i> Roxb.	Anacardiaceae	1000-2000	Samak Dana	Sh	Br, Lf	Decoction of bark and leaves is given at short period of intervals during Cholera and Stomachache.	Digestive system
<i>Acorus calamus</i> L.	Araceae	1400-2300	Vach	H	Lf, Fl	Leaves and flower decoction juice is given cough, fever, coryza	Respiratory system
<i>Arisaema flavum</i> (Forssk.) Schott	Araceae	2400-3800	Bang	H	Rh	Wounds are washed with decoction of rhizomes. Rhizome paste with water is applied on body part stung by snake or scorpion	Dermatological system. Antidote (against snake bite)
<i>Calotropis procera</i> (Aiton) Br.	R. Asclepidaceae	Upto-800	Aak	Sh	Lf, WP	Powder of dried leaves mixed with jaggery given orally before sunrises for 5 days to cure migraine. Juice of whole plant is administrated orally, it acts as Abortifacient.	Nervous system, reproductive System

Table 1. Contd.

<i>Asparagus adscendens</i> Roxb	Asparagaceae	1000-2200	Kairuwa	Sh	Rt	To cure redness in eyes, root is crushed slightly and used as eye pencil thrice a day	Ophthalmic disease
<i>Ageratum conyzoides</i> L.	Asteraceae	200-2000	-	H	Lf	Juice of the leaves is applied on cuts to avoid bleeding and pus formation	Dermatological system
<i>Artemisia nilagirica</i> (C.B. Clarke) Pamp.	Asteraceae	Upto-1800	Pati	Sh	Rt, Lf	Freshly and washed roots/leaf are dipped overnight in cold water and taken orally for 5-6 days before meal to cure intestinal worm	Digestive system
<i>Bidens bipinnata</i> L.	Asteraceae	1000-2000	Arka-jhar	H	Lf	Leaves crushed and juice rubbed on itching feet during rainy season	Dermatological system
<i>Taraxacum officinale</i> Weber.	Asteraceae	1800-4000	Dudhi	H	Inf, Ltx	Decoction of inflorescence is taken orally to cure blisters. Latex is applied externally during skin irruption	Others, dermatological system
<i>Berberis aristata</i> DC.	Berberiadaaceae	2000-3000	Kilmora	Sh	Rt	Root juice mixed with water is dropped in eyes to cure redness and infection	Ophthalmic disease
<i>Bombex cieba</i> L.	Bombacaceae	200-1600	Semal	T	Rt, Br	Poultice made through bark is plastered on fractured bones	Bone, joints and muscles
<i>Cynoglossum zeylanicum</i> (Vahl ex Hornem.) Thunb. ex Lehm.	Boraginaceae	1000-4100	Chitkuri	H	WP	Whole plant is grounded and make into paste to heal the wounds	Dermatological system
<i>Bauhinia vahlii</i> Wight and Arnott	Caesalpiaceae	200-1300	Malu	Sh	Br	Stem bark is pasted and applied on skin irruption	Dermatological system
<i>Cassia fistula</i> L.	Caesalpiaceae	Up to 1500	Amaltas	T	St, Br	Fresh stem bark is warmed on gentle fire and juice extracted from it is given in stomachache due to worms	Digestive system
<i>Mesua ferrea</i> L.	Clusiaceae	400-1000	Nagkesar	T	Rt, Fl, Sd	Root paste is given orally as antidote against Snake bite. Stamens of flowers are given before 5 days of menstruation to control Menorrhagia. The seed oil is considered for healing purpose as in sores, wounds and Rheumatism	Antidote, reproductive system, dermatological system infection, bone, joints and muscles
<i>Ipomoea nil</i> (L.) Roth.	Convolvulaceae	500-2000	Bharar	Sh	Sd	Crushed seeds are considered as Abortifacient when taken in heavy doses	Reproductive system
<i>Ipomoea purpurea</i> (L.) Roth.	Convolvulaceae	900-2400	-	H	WP	Whole plant is grounded and poultice is applied on venereal infection called Syphilis	Venereal and urogenital system
<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	150-2100	Gethi	H	Rh	Tubers are roasted in hot ash and given with salt to cure old cough	Respiratory system

Table 1. Contd.

<i>Euphorbia hirta</i> L.	Euphorbiaceae	Upto-2000	Dudhi	H	Ltx	Latex of plant is dropped on the root of tooth during toothache	Dental pathology
<i>Euphorbia ligularia</i> Roxb.	Euphorbiaceae	Upto-1800	Syon	Sh	Ltx	Lukewarm latex is dropped in ear during earache	GBA
<i>Euphorbia thymifolia</i> L.	Euphorbiaceae	700-1200	Choti-dudhi	H	WP	Whole plant is crushed with water and taken in diarrhoea and cholera	Digestive System
<i>Aesculus indica</i> (Wall. ex Cambess.) Hook.	Hippocastanaceae	1500-2500	Pagar	T	Fr	Warm paste of fruit is applied on joints during Rheumatic pain	Bone, muscles and joints
<i>Ajuga bracteosa</i> Wall. ex Benth.	Lamiaceae	1200-5100	Neelkanth	H	Lf	The decoction of leaves is given to regulate Menstrual cycle	Reproductive system
<i>Colebrookea oppositifolia</i> Sm.	Lamiaceae	250-1700	Bursong	Sh	Lf	Leaf is chewed and juice is swallowed in cough	Respiratory system
<i>Gossypium arboreum</i> L.	Malvaceae	Upto-1500	Kapas	Sh	Sd	Seeds are pasted and applied on fractured bone for bone setting	Bone, muscles and joints
<i>Sida cordifolia</i> L.	Malvaceae	400-1200	Bala	Sh	Rt, St	Stem bark or Root powder is given in general debility	GBA
<i>Sida rhombifolia</i> L.	Malvaceae	Up to 800	Khareti	Sh	Rt	The powdered Root bark is administered with milk and sugar as treatment for urinary trouble and leucorrhoea	Venereal and urogenital system. Reproductive system
<i>Cissampelos pareira</i> L.	Menispermaceae	200-2200	Patha	H	WP, Rt	Whole plant is grounded and administrated orally during Hyper acidity. Same application is given in Diarrhoea, Dysentery. Roots are chewed during Stomachache	Digestive system
<i>Ficus benghalensis</i> L.	Moraceae	300-1400	Bar, Bargad	T	Rt	Root is crushed and mixed with Bans Mishri is given to cure Metrorrhagia.	Reproductive system
<i>Ficus palmata</i> Forssk.	Moraceae	600-2300	Beru	T	Ltx	Milky Latex is applied on boils, cuts and wounds	Dermatological system
<i>Ficus religiosa</i> L.	Moraceae	Up to 1600	Peepal	T	Br	Bark grounded with turmeric powder is applied externally on cuts, wounds and skin diseases	Dermatological system
<i>Boerhaavia diffusa</i> var. <i>hirsuta</i> Kuntze	-	300-1200	Punernava	H	Lf	Leaf juice of plant mixed with goat's milk is dropped in eyes to cure cataract problem	Ophthalmic diseases
<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Up to 3000	Doob	H	WP	Entire aboveground parts are crushed with water. Two to three drops of this extract are poured in the nostril to cure nasal bleeding	GBA
<i>Rumex nepalensis</i> Spreng.	Polygoniaceae	1200-2500	Jangli Palak	H	Lf	Young leaves are crushed and applied on nettle stung portion for immediate relief	Antidote
<i>Clematis orientalis</i> L.	Ranunculaceae	1500-3300	-	Sh	Lf, WP	1-2 drops of Leaf juice is dropped into ear to check Migraine	Nervous system

Table 1. Contd.

<i>Leptodermis lanceolata</i> Wall.	Rubiaceae	1800-3500	Chirar	Sh	Lf, Fl	Leaves and Flowers are boiled with water and filtered water is drunk to cure fever	GBA
<i>Rubia cordifolia</i> L.	Rubiaceae	1200-2200	Manjith	H	WP	Whole plant pulp rubbed with honey is recommended as a cure for acne and dark spots on face	Dermatological System
<i>Zanthoxylum armatum</i> DC.	Rutaceae	1100-2500	Timoor	T	St	Stem twig is used to brush the teeth to check bad breath and pyorrhea	Dental Pathology
<i>Verbascum thapsus</i> L.	Scrophulariaceae	1000-4000	Aklbeer	H	Fl, Lf	Powder of Flowers are mixed with mustered oil is applied on boils. Leaf juice is dropped in eyes to cure cataract	Dermatological system, ophthalmic diseases
<i>Solanum nigrum</i> L.	Solanaceae	800-3000	Gewain, Makoi	H	WP	Juice of whole plant is administrated orally during intermittent fever. Juice of whole plant is given to cure Jaundice	GBA, liver and biliary system
<i>Triumfetta rhomboidea</i> Jacq.	Tiliaceae	500-1500	Leswa-Kura	Sh	Lf	Leaves are pounded with curd and applied on cuts and wounds for healing purpose.	Dermatological system
<i>Callicarpa macrophylla</i> Vahl	Verbenaceae	300-1500	Daya	Sh	Lf, Fr	Leaves are heated and tied over affected painful joints and rheumatic pain. Fruits are eaten during Urinary trouble. Fruit paste mixed with yoghurt is eaten to cure mouth blisters.	Bones, muscles and joints, venereal and urogenital system
<i>Vitex negundo</i> L.	Verbenaceae	100-1300	Nirgundi	Sh	Lf	2-3 drops are dropped in nose to cure the Migraine. Leaves are pounded with rice and water made into a syrup, given to patient suffering from Syphilis.	Nervous system venereal and urogenital system
<i>Hedychium spicatum</i> Buch.-Ham. ex Sm.	Zingiberaceae	1000-2000	Sathi	H	Rh	Powder of Rhizome is used orally in Neuro-muscular disorders.	Nervous system

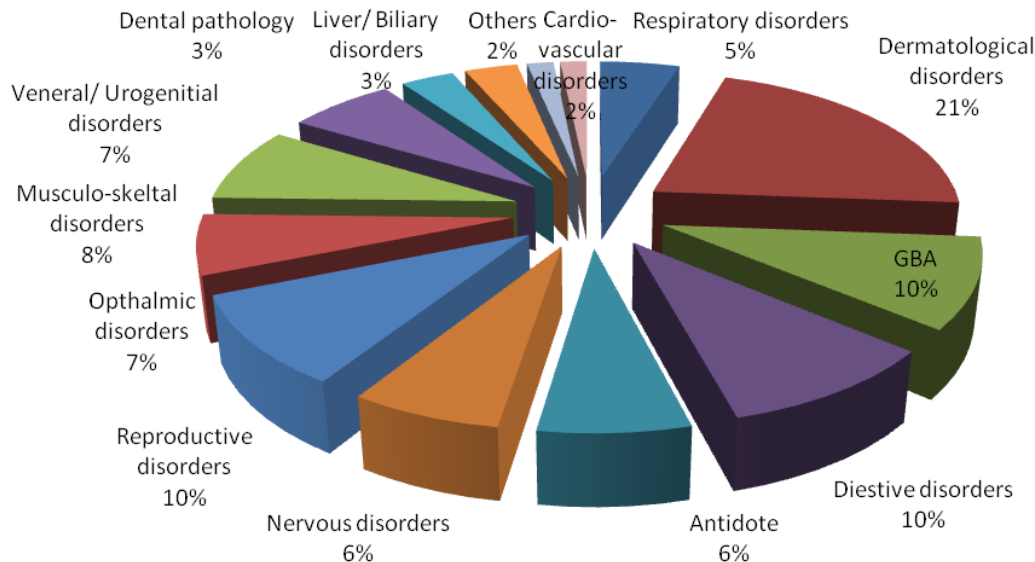
## Conclusion

Due to the distance of the settlements from the urban or nearest market centers and lack of modern health care facilities, Raji tribal community of Kumaon Himalaya is rich in traditional medicinal knowledge and this knowledge is being transmitted from one generation to another. Their livelihood is totally dependent on the available natural resources. The sustainable extraction of 48 plant species for medicinal purposes by this tribal community mostly from the forested areas and crop fields indicates that almost all families are mostly dependent on wild plant products for medicinal purposes (Nautiyal et al., 2001a). Thus, in search of real alternative of modern medical science, we need to explore maximum number of

traditional medicines and systems which are going to erode in near future due to the lack of proper documentation and conservation. Since the existence of indigenous medicines depends on the bio-resources, thus along with this ancient knowledge, sustainable uses of natural resources is also very helpful in conservation of biodiversity for the goodness of living beings.

## ACKNOWLEDGMENT

We are heartily thankful to the *Raji* people for their immense help during field survey and providing information about the traditional health care systems of their community.



**Figure 5.** Categories of prevalent diseases in Kumaun.

## REFERENCES

- Atkinson ET (1884). *The Himalayan Gazetteer*, Vol.2.
- Bhatt, Deepika, Joshi GC, Tewari LM (2009). Culture, Habitat and Ethno-Medicinal practices by Bhotia Tribe people of Dharchula Region of Pithoragarh District in Kumaun Himalaya, Uttarakhand. *Ethnobot. Leaflets*, 13:975-983.
- Bhatt, Deepika, Joshi GC, Tewari LM (2010). *Helminthostachys zeylanica* (L.) Hook: an important therapeutic herb form leucorrhoea among the Tharu community of Udham Singh Nagar District, Uttarakhand. *Souvenir, National seminar on Medicinal Plants of Himalaya: Potential and Prospect*. 137-143.
- Gaur RD (1985). *Flora of Garhwal Himalaya*, Print media, Srinagar, Garhwal.
- Hughes Charles C (1968). *Ethnomedicine in International Encyclopedia of the Social Sciences*, (Free press/ macmillan, New York, 10:87-93.
- Maikhuri RK, Ramakrishnan PS (1992). Ethnobiology of some tribal societies of Arunachal Pradesh in northeast India. *J. Econ. Taxonomic Bot. Addl. Ser.* 10:61-78.
- Maikhuri RK, Nautiyal S, Rao KS, Saxena KG (2000). Indigenous knowledge of medicinal plants and wild edibles among three tribal subcommunities of Central Himalayas, India. *Indigenous Knowledge and Development Monitor*, 8(2):7-13.
- Nautiyal S, Rao KS, Maikhuri RK, Semwal RL, Saxena KG (2001a). Traditional knowledge related to medicinal and aromatic plants in tribal societies in a part of Himalaya. *J. Med. Aromatic Plant Sci.* 22(4A) & 23(1A):528-541.
- Pant, Shreekar, Samant. SS. Arya SC (2009). Diversity and indigenous household remedies of the inhabitants surrounding Mornaula reserve forest in West Himalaya. *Indian J. Tradit. Knowl.* Vol. 8(4), pp. 606-610.
- Pant, Shreekar, Virbala Sharma Pant. (2011) Status and Conservation Management Strategies for Threatened Plants of Jammu and Kashmir. *J. Phytol.* 3(7):50-56.
- Purohit AN. (1997). Medicinal plants: Need for upgrading technology for trading the traditions. In: *Harvesting Herbs – 2000 A.R.* Nautiyal, M.C. Nautiyal, A.N. Purohit (Eds.). Bishen Singh Mahendra Pal Singh, Dehradun, India, pp. 46-76.
- Rao RR (1996). Traditional knowledge and sustainable development key role of ethnobiologists. *Ethnobot.* 8:14-24.
- Rao KS, Saxena KG (1996). Minor forest products management – Problems and prospects in remote high altitude villages of Central Himalaya. *Int. J. Sustain. Dev. World Ecol.* 3:60-70.
- Samal PK, Topal YPS, Pant P (2000). *Van Rawats: A Tribe in Peril*. Himavikas Publication No. 14. Gyanodaya Prakashan Nainital.
- Singh, Priti, Bibhesh K. Singh, Girish C. Joshi, Lalit M. Tewari (2009). *Veterinary Ethno-Medicinal Plants in Uttarakhand Himalayan Region*, *Ethnobotanical Leaflets* 2009, 13:1312-27.
- Singh, Priti, Joshi, GC, Tewari LM (2011). Diversity and status of ethnomedicinal plants of Almora district in Uttarakhand, India. *International J. Biodivers. Conserv.* 3(7):298-326. ISSN No. 2141-243X.
- Tiwari Lalit, Pande PC (2010). Ethnoveterinary medicines in Indian perspective: Reference to Uttarakhand, Himalaya. *Indian J. Tradit. Knowl.* (09)3.