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Ethnobotanical Wisdom among the *Kiratas* and *Hindu-Gujjar* Tribes in Dharampur Region of Mandi District, Himachal Pradesh, (India)

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ABSTRACT: The present paper deals with the documentation of field observations on traditional use of medicinal and aromatic plants by the inhabitants of area of Dharampur region of Mandi district of Himachal Pradesh in North-Western Himalaya. These hills range are inhabited by different ethnic groups including two main tribes, *Kiratas* and *Hindu-gujjars*. These inhabitants have been dependent directly on the plant resources for food, fuel, fiber, timber, household articles and medicines to a great extent for ages. A large number of plants of local flora are used to cure various ailments of human and livestock. First hand information about 88 plants from Dharampur region belonging to 42 families were recorded by conducting extensive field surveys during February to September, 2018. The information is represented in a tabulated form as scientific names of plants followed by family in alphabetic order and collected as Herb, Shrub and Tree. Information on vernacular names of plants, parts used and diseases treated are given in detail. The highest number of ethno-medicinal plants was recorded from the family Brassicaceae and Cucerbitaceae (8 species) followed by Leguminosae (5 species) and Rutaceae, Moraceae and Poaceae (4 species) and Apiaceae, Lamiaceae and Solanaceae, (3species). Leaves (48%) were the most frequently used plant part used to treat various ailments followed by whole plant (16%) and roots/rhizomes (16%). A wide range of diseases ranging from cough and cold to asthma and bronchitis, and cuts and wounds to snakebites are treated by the traditional healers of *Dharampur* region of Mandi district with the help of local plant remedies. This study documents valuable information for traditional remedies and contributes to the usage of medicinal plants in the research area.

Keywords: Ethnobotanical; *Kiratas*; *Hindu-Gujjars*; Traditional usage; *Dharampur*

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INTRODUCTION

Traditionally, the tribal groups are known to use a large number of wild plants for various purposes like medicine, food, fodder, fuel, essence, culture, and other miscellaneous purposes (Nath and Khatri, 2010). Thus, forests have maintained the very existence of numerous tribes and their culture for centuries, while fulfilling their social, economic, cultural, religious, nutritional, and medical needs (Mishra and Mishra, 2014; Britta *et al*., 2003; Setalaphruk and Price, 2007; Sundriyal and Sundriyal, 2001; Verma, 2007; Singh, 2006; Rashid *et al*., 2008). The state of Himachal Pradesh includes the parts of the Trans and Northwest Himalaya and covers 55,673 square kilometer area. It is almost mountainous with altitude ranging from 450 to 7,025 m above the mean sea level. Being located between latitude 30°22′ 40″ N to 33° 12′ 20″ N and longitude 75° 45′ 55″ E to 79° 04′ 20″ E, the topography is deeply dissected with complex geological structure with a rich temperate flora in the sub-tropical altitudes. In the north it is bounded by Kashmir; in the south-east by Uttaranchal; in the south by Haryana and in the west by Punjab.

Thus, the tribal communities are a rich depository of various ethno botanical uses of plants and guardians of indigenous traditional knowledge associated with surrounding biological resources which they have used for generations in their day-to-day life (Khoshoo, 1991; Sharma, 1998; Kumar *et al.* 2016). Among all the tribal groups, *Kiratas* and *Hindu-Gujjars* are described as the largest pastoral community in Himachal Pradesh (Tambs-Lyche, 1997). The tribe is described by varying names as 'Goojar or Gurjara' and is believed to have originated in the times of Huns.

The tribe migrated to northern India and settled in various regions of Himachal Pradesh mainly Mandi, Chamba, Kangra, Una, and Bilaspur (Sahni, 2016). The *Kiratas* and *Hindu-Gujjars* are known to have first set foot in the princely states of Mandi, Kangra and Bilaspur because of the growing inadequacy of grazing resources in the adjoining states viz., Jammu and Kashmir, Uttrakhand and then gradually migrated to other localities of the Himachal Pradesh (Negi, 1982; Census of India, 2011; Crooke, 1974; Farooquee and Saxena, 1996; Ssegawa and Kasenene, 2007; Ullah, 2013). The *Gujjars* of Chamba and Kangra are called as the 'Ban Gujjars' as they are nomads/semi-nomads practicing a pastoral lifestyle and comprise primarily of the Muslim population. In Chamba, the total *Gujjar* population is 9784 out of which 97.12% are Muslims (Sadeghi and Mahmood, 2014; Araya, 2015; Guler, 2015), while *Gujjars* of Mandi and Bilaspur are settled *Gujjars* called the 'Heer Gujjars' and comprise mainly of Hindu population. The snowy ranges of Dhauladhar that divide the districts of Kangra and Mandi are form an extensive abode of the tribal communities such as *Kiratas* and *Hindu-Gujjars* (Ghorbani, 2005; Weckerle *et al*., 2006; Sadeghi *et al*., 2014; Li *et al*., 2015; Aryal *et al*., 2018). Their main profession is semi-nomadic, semi-pastoral and semi-agricultural type (Tsering, 2017). During summers they migrate to high hills in search of grass and fodder for their flocks and in severe winters descend to plains since there is hardly any vegetation left for grazing due to heavy snowfall (Thakur, 2016). These people are the guardians of indigenous traditional knowledge associated with their surrounding biological resources. They have been using these resources for various purposes in their daily life for ages (Singh, 2017). The Beas is one of the major rivers of the district contributing to the fertility of the land. The altitude ranges between 900-1155 m. The Bayas is the major river of the district. The district harbors rich plant biodiversity including around 2,200 species of flowering plants (Srithi, 2009; Balemie and Kebebew, 2006; McCabe, 2002; Thakur, 2014; Dorji, 2009). The vegetation of the district Mandi varies considerably, chiefly owing to elevation and rainfall (Sharma *et al*., 2005).

These regions are rich repositories of medicinal wealth that occupy an important place in the Vedic treatise. In ancient times, it had been the abode of *rishies* and *munies* (prophet, sages or saints), who pursued their meditational and scholarly endeavors here (Abbas *et al*., 2016). To cure the sufferings and ailments of the people, the first ever seminar is reported to have been held in some parts of Himachal Pradesh, at a place situated somewhere in 'Shivalik' range (Adnan *et al*., 2014). The research and practices of *rishies* and *munies* on herbs proved a panacea for the people of the region (Kang *et al*., 2014). It created awareness and curosity among the people to seek real knowledge in close association with these ascetics and scholars. The knowledge acquired by a few local inhabitants, descended down from generation to generation still forms the traditional practice of herbal cure (Thakur, *et al*., 2017). Despite a rich heritage and enormous herbal wealth existing in the state, it is disheartening to point out that the knowledge acquired and disseminated by the great saints and scholars, is on the verge of extinction on the very land of its origin (Liu *et al*., 2018; Kumar *et al*., 2009; Kumar 2012; Kumar and Chander, 2017). Owing to illiteracy and lack of proper written records, the traditional practice of herbal-cure had to suffer a lot during the course of time. Therefore, an attempt has been made to provide comprehensive information on traditional use of plants in *Dharampur* region of Mandi district of Himachal Pradesh (Kumar and Chander, 2018). That is why, the present study was undertaken to investigate and document the ethnobotanical knowledge of the *Kiatas* and *Hindu-Gujjars* of *Dharampur* region of Mandi district of Himachal Pradesh, which they inherit based on the experiences and observations from their ancestors (Sharma and Kumar, 2015).

MATERIAL AND METHODS

A. Study area

Extensive field survey were conducted in various locations of Dharampur region of Mandi district and Longitude as well as Latitude range 76.733291 to 31.700009 and altitude lies as 900-1155 (m amsl) during the Feburary to September, 2018 (Fig. 1). The climate in the study areas can be divided into three distinct season cool and relatively dry winter(November to March), warm and dry summer (April to June), and rainy (July to September). An ethno botanical survey was undertaken in study area to collect information related to medicinal plants for the treatment of various diseases. The information was obtained through questionnaire, face to face interviews of the different age groups (11-92 years old) tribes. The specimen was identifying by using regional flora and monographic works (Kumar and Chander, 2018; Kumar and Chander, 2017; Kumar and Chander, 2018).

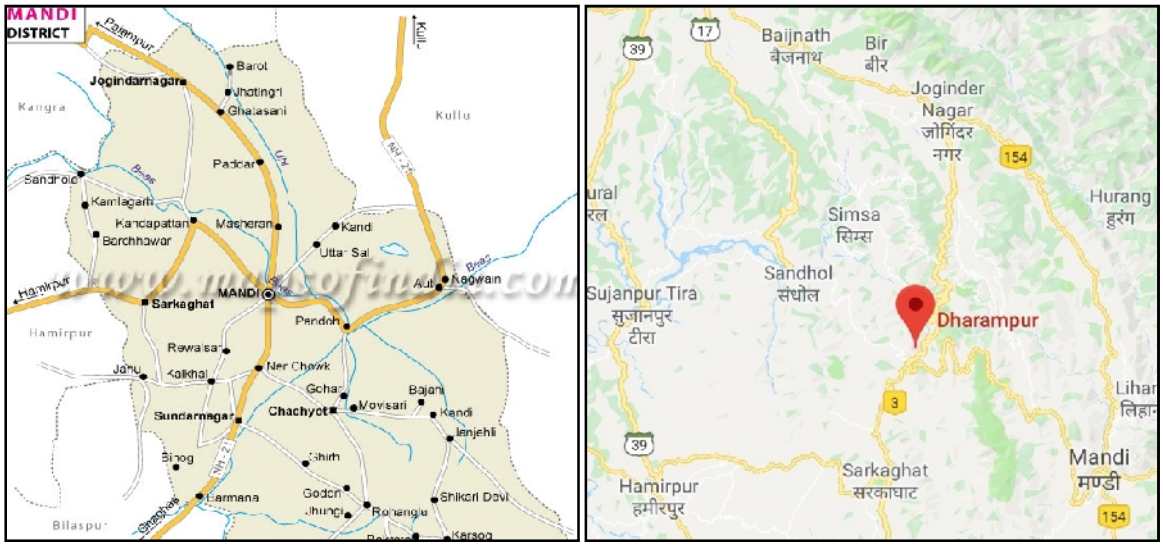

Fig. 1. Maps of Dharampur region of Mandi district, Himachal Pradesh, India.

B. Methodology

Prior to the visit to research sites, a questionnaire was designed and pre-tested to find out if it actually worked. Revisions needed as a result of this pre-test were noted and undertaken in the following day of the visit. Focus groups were held with key informants and others in each household. The traditional usage of plant resources were learned with both the questionnaire and through participatory appraisal techniques. Participation was focused on learning how people gather plant material. Informants were asked about their interest as local user of plants, collectors or trader of forest resources. Information on the market value of the plants was collected from local collectors, residents and traditional healers of both the tribes. The ethno-medicinal importance of the collected plants containing the information about the local name(s) of the plants, part used, type of animal treated, method of crude drug preparation and medicinal use were recorded through detailed discussion with local people, traditional healers, *Kiratas* and *Hindu-Gujjars.* To facilitate the process of identification, the voucher specimens with flowers or fruits were collected. The collected specimens were dried and assigned field book number and kept in the herbarium of Institute of Career point University, Hamirpur, Himachal Pradesh as a permanent record. The plants were enlisted depending upon the information collected along with their traditional use and photochemical constituents reported in the literature.

RESULTS AND DISCUSSION

The plants from both the districts are arranged in alphabetical order. For each species, scientific name, voucher numbers, family, vernacular name, part used, type of animal treated, mode of crude drug preparation and diseases treated are provided. Each species is compared with previously reported literature for their ethno-medicinal usage as well as bio-chemicals present. A total of 88 plant species and 42 families were documented for the treatment of 40 diseases in the studied area. The local people and traditional healers were using these plants to treat various diseases of human as well as animals like anemia, asthma, bloating, body pain, bone fracture, cholera, cold, conception, constipation, cough, diabetes, diarrhea, fever, healing wounds, hepatitis, high blood pressure, improving appetite, indigestion, influenza, jaundice, joint pain, kidney stones, leucorrhea, malaria, measles, mouth ulcers, piles, pneumonia, purify blood, respiratory disorders, rheumatic pain, skin and eye infections, stomach worms, toothache and whooping cough. The results of the study are presented in Table 1. The Kiratas and Hindu-Gujjars are main source to supply unnoticed information regarding traditional uses of these plants in Dharampur region of Himachal Pradesh in Northwestern Himalaya. The following wisdom about tradition uses, local and international weights as well as weight equivalents are based on source of field data research (Table 2; Table 3; Table 4).

Table 1: Tabulated Enumeration of Important Ethno medicinal Edible Plants of Shivalik Zone of Himalaya.

Family	Scientific Name	H/ S/T	Medicinal Properties	E/ F/ R/ M	Local Name	Parts Used	Used Citations
Alliaceae	*Alium cepa* Radic	H	Ear & Eye Drops, Cholera	E, M	Piaz	Bulbs	Dorji, 2009; Abbas *et al*., 2016; Kumar and Chander, 2017
	Alium sativum L.	H	Cough, Whooping cough, Skin troubles, Hemicranias, Asthma	E, M	Lahassan	Bulbs	Nath and Khatri, 2010; Thakur, *et al*., 2017; Thakur, *et al*., 2017; Kumar *et al*., 2009; Kumar and Chander, 2017
Anacardiaceae	*Mangifera indica* Thwaites	T	Gonorrhea, Throat troubles, diarrhea, Piles, sunstrokes, Scurvy	E, R, M	Aam	Fruits, Pulp, Stone	Mishra and Mishra, 2014; Abbas *et al*., 2016; Sharma and Kumar, 2015; Kumar and Chander, 2017
	Spondias pinnata (L.f.) kurz	T	Antiscorbutic, Dyspepsia, Diarrhoea, Dysentery, Rheumatism	E, M	Bwara	Fruits, Bark, roots	Mishra and Mishra, 2014; Liu *et al*., 2018; Thakur, *et al*., 2017
Apiaceae	*Corianduum sativum* L.	H	Carminative, Diuretic, Stimulant, Piles, Cough, Impotent	E, M	Dhania	Fruits, Seeds	Dorji, 2009; Kumar *et al*., 2009; Sharma and Kumar, 2015; Kumar and Chander, 2017
	Daucus carota L.	H	Aromatc, Carminative	E, M	Gajar	Roots, Seeds, Leaves	Liu *et al*., 2018; Kumar and Chander, 2017
	Foeniculum Vulgare Mill.	H	Aromatic, Stimulant, Carminative, Purgative, dysentery, Dyspepsia, Urinary troubles	E, M	Saunf	Leaves, seeds, Fruits	Dorji, 2009; Liu *et al*., 2018; Sharma and Kumar, 2015; Kumar and Chander, 2017
Apocyanaceae	*Carissa opaca* Stapf ex Haines	S	Gum problems, Wormicides, Snake-biting	E, F, R, M	Garna	Roots,Fruits	Abbas *et al*., 2016; Liu *et al*., 2018; Kumar and Chander, 2017
Araceae	*Colocasia esculenta* (L.)	H	Astringent, Swelling pain	E, M	Kachyalu	Tubules, Petioles	Liu *et al*., 2018; Sharma and Kumar, 2015; Kumar and Chander, 2017; Onkar AA, 2016
Beganiaceae	*Begonia picta* Hort. Henders. Ex A. DC.	H	Wormicides, Diabetes, Respiratory troubles	E, M	Pethu	Pulp, Seed, Fruits	Mishra and Mishra, 2014; Kumar *et al*., 2009; Kumar and Chander, 2017
Berberidaceae	*Berberies lyceum* Hort.ex K. Koch	H	Eye disorder	E, M	Rasaunt	Roots, Stem	Nath and Khatri, 2010; Abbas *et al*., 2016; Sharma and Kumar, 2015; Kumar and Chander, 2017
Bignoniaceae	*Oroxylum indicum* (L.) Benth. Ex Kurz	H	Diarrhea, Dysentery, respiratory diseases, Stomachic, Rheumatism, Piles	E, M	Tatpalanga	Roots, Bark, Leaves	Mishra and Mishra, 2014; Sharma and Kumar, 2015; Kumar and Chander, 2017
Boraginaceae	*Cordia dichotoma* G. Forst.	T	Astringent, Anthelminite, Diuretic, Expectorant, Urinary problems, Skin problems	E, F, M	Lasura	Leaves, Fruits, Bark	Dorji, 2009; Abbas *et al*., 2016; Liu *et al*., 2018; Verma RK, 2017

To be continued…

Family	Scientific Name	H/ S/T	Medicinal Properties	E/ F/ R/ M	Local Name	Parts Used	Used Citations
Brassicaceae	*Brasssica Compestries* L.	H	Muscular rheumatism	E, F, R, M	Saronh	Seeds	Sharma and Kumar, 2015; Kumar and Chander, 2017
	Brassica napus L.	H	Chronic cough, Bronchial catarrh	E, F, M	Toria	Fruits	Nath and Khatri, 2010; Sharma and Kumar, 2015; Kumar and Chander, 2017
	Brassica nigra (L.) Andrz.	H	Wormicides, Digestive secretion	E, M	Banarsi rai	Leaves, Seeds	Mishra and Mishra, 2014; Abbas *et al*., 2016
	Brassica oleracea L. *var. botrytis* L.	H	Fever, Intoxication	E, F, M	Phul Gobhi	Root-powder	Liu *et al*., 2018; Kumar and Chander, 2017
	Brassica oleracea L. *var. capital* L.	H	Liver troubles, Strangury, Hydrophobia	E, M	Band Gobhi	Stem, roots	Mishra and Mishra, 2014; Thakur, *et al*., 2017; Sharma and Kumar, 2015
	Brassica rapa L.	H	Stomachic, Diuretic, Aperients, Hemorrhages, Parturition	E, M	Shalgum	Leaves	Dorji, 2009; Abbas *et al*., 2016; Sharma and Kumar, 2015
	Raphanus sativus L.	H	Piles, Diuretic, Carminative, Bronchitis, Stone in kidney, Goiter	E, M	Muli	Roots, Seeds	Nath and Khatri, 2010; Sharma and Kumar, 2015; Kumar and Chander, 2017
	Rorippa nasturtium-aquaticum (L.) Schinz & Thell.	H	Appetizing, Antiscorbutic, Stimulant, Goiter, diuretic, Vermifuge, asthma, Tuberculosis	E, M	Chhuchh	Leaves	Kumar *et al*., 2009; Liu *et al*., 2018; Sharma and Kumar, 2015; Kumar and Chander, 2017; Thakur MK and Waske S, 2018
Caesapliniaceae	*Cassia occidentals* L.	T	Night blindness, epilepsy	E, M	Ailon	Leaves, Pods	Aryal *et al*., 2018; Mishra and Mishra, 2014; Thakur, *et al*., 2017; Sharma and Kumar, 2015
Caricaceae	*Carica papaya* L.	T	Carminative, Diuretic, Eczema, Skin troubles, Diphtheria, Digestion	E, M	Kharbuja	Fruits, Latex	Aryal *et al*., 2018; Kumar *et al*., 2009; Sharma and Kumar, 2015; Kumar and Chander, 2017
Chenopodiaceae	*Chenopodium album* L.	H	Laxative, Anthelminites	E, M	Ghanaun	Whole plant	Mishra and Mishra, 2014; Abbas *et al*., 2016
	Chenopodium ambrosioides Hance	H	Anthelminites, digestive disorder in cattle	I	Kah jawyan	Seeds	Nath and Khatri, 2010; Aryal *et al*., 2018; Liu *et al*., 2018; Sharma and Kumar, 2015; Kumar and Chander, 2017
Combretaceae	*Terminalia bellirica* Wall.	T	Diarrhoea, rheumatic swellings, Purgative	E, M	Bhera	Fruits, Kernels	Aryal *et al*., 2018; Abbas *et al*., 2016; Jade Ann Grace P *et al*., 2018
	Terminalia chebula Willd. Ex Flem.	T	Laxative, digestants, stomachic, Attenuating, Aphrodisiacs, Diarrhoea, Hemicrania, Apoplexy, Constipation	E, R, M	Harar	Fruits, Bark, Leaves	Mishra and Mishra, 2014; Thakur, *et al*., 2017
Convolvulaceae	*Ipomoea batatas* (L.) Poir.	H	Purgative, Astringent, tonic, Diarrhea	E, M	sakarkand	Roots	Aryal *et al*., 2018; Kumar *et al*., 2009; Kumar and Chander, 2017

To be continued…

Family	Scientific Name	H/ S/ T	Medicinal Properties	E/ F/ R/ M	Local Name	Parts Used	Used Citations
Crassulaceae	*Kalanchoe pinnata* (Lam.) Pers.	S	Diarrhea, Piles, Nose bleeding	E, M	Lakandru	Leaf	Kumar *et al*., 2009; Liu *et al*., 2018; Sharma and Kumar, 2015
Cucerbitaceae	*Cucumis sativus* L.	S	Diuretic, Tonic, refrigerant, stone, Nephritis	E, R, M	Kakri	Seeds, Roots	Abbas *et al*., 2016; Thakur, *et al*., 2017; Kumar and Chander, 2017
	Cucerbita maxima wall.	S	Taeniacides, tonic, Diuretic, Inflammation	E, M	Kaddu	Seeds	Aryal *et al*., 2018; Sharma and Kumar, 2015
	Lagenaria siceraria Standl.	S	Strangely, Xanthopsy, Dropsy, Anthelmintic	E, M	Lauki	Fruits, Leaf, Seeds	Dorji, 2009; Kumar and Chander, 2017
	Luffa acutangula (L.) Roxb.	S	Conjuctives, Urenia, Amenorrhea, Purgative, Ematic	E, M	Kangher	Leaves, Seeds	Mishra and Mishra, 2014; Liu *et al*., 2018; Sharma and Kumar, 2015
	Luffa aegyptiaca Mill.	S	Carminative, Diuretic, Catharti	E, M	Ghangeri	Fruits, Leaf, seeds	Nath and Khatri, 2010; Abbas *et al*., 2016; Sharma and Kumar, 2015
	Momordica charantia L.	S	Measles, Eczema, Vermifuge, Astringent, Snake biting, Hemorrhoids	E, M	Karela	Fruits, leaves	Aryal *et al*., 2018; Kumar *et al*., 2009; Liu *et al*., 2018
	Berberis chitria D. Don	S	Fever, Jaundice, Skin trouble	E, M	Kashmalu	Root, Bark	Abbas *et al*., 2016; Liu *et al*., 2018
	Cucumais melo L.	S	Laxative, Astringent, Demulcent, Refrigerant, Urinary troubles	E, M	Phot	Fruits, Seeds, kernels	Liu *et al*., 2018; Sharma and Kumar, 2015; Kumar and Chander, 2017
Discoreaceae	*Dioscorea bulbifera* Russ. Ex Wall.	S	Ulcers, Dysentery, Piles, Diarrhea	E, F, M	Ratalu	Fruits, Tubers	Thakur, *et al*., 2017; Liu *et al*., 2018
Euphorbiaceae	*Emblica officinalis* Gaertn.	T	Diarrhea, Eye trobles, Urinary troubles	E, F, R, M	Ambla	Fruits	Mishra and Mishra, 2014; Abbas *et al*., 2016; Sharma and Kumar, 2015
Fabaceae	*Trigonella foenum-graecum* L.	H	Intestinal inflammation, Small pox, Dysentery, Ulcers	E, F, M	Mirthya	Seeds	Kumar *et al*., 2009; Liu *et al*., 2018
Flacourtiaceae	*Flacourtia indica* (Burm.f.) Merr.	T	Digestive, Appetizer, Jaundice, Diuretic	E, F, R, M	Kangu	Fruits, Bark, Seeds	Kumar and Chander, 2017; Liu *et al*., 2018
Lamiaceae	*Mentha piperita* L.	H	Bronchitis, Stimulant, Stomachic, Carminative	E, M	Pudina	Leaves	Aryal *et al*., 2018; Abbas *et al*., 2016; Liu *et al*., 2018; Sharma and Kumar, 2015
	Ocimum basilicum L.	H	Gonorrhoea, Diarrhea, dysentery, Carminatives, Toothache, Piles	E, M	Bhabri	Seeds, Fruits	Mishra and Mishra, 2014; Thakur, *et al*., 2017
	Ocimum sanctum L.	H	Throat disorder, Stomachic, Expectorant, Malaria, Urino-genital problems	R, M	Tulsi	Leaves, Seeds	Gautam and Bhadauria 2009; Kumar *et al*., 2009; Liu *et al*., 2018; Kumar and Chander, 2017
Leguminosae	*Bauhinia variegata* L.	T	Diarrhea, Dysentery, Piles, Prolepses, Corpulence, Toothache	E, F, M	Karyala	Flower-buds, Bark	Aryal *et al*., 2018; Abbas *et al*., 2016; Liu *et al*., 2018

To be continued…

Family	Scientific Name	H/ S/ T	Medicinal Properties	E/ F/ R/ M	Local Name	Parts Used	Used Citations
Leguminosae	*Cajanus cajan* (L.) Huth	S	Apoplexy, Hemicranias	E, F, M	Arhar	Leaves, Seeds	Nath and Khatri, 2010
	Cicer arietinum L.	H	Scurvy, Impotency, Cold	E, F, R, M	Chhole	Seeds	Liu *et al*., 2018; Kumar and Chander, 2017; Radha and Puri S, 2018
	Macrotyloma uniflorum (Lam.) Verdc.	S	Diuretic, Urinary problems, Diarrhea	E, M	Kolth	Seeds, Herbs	Aryal *et al*., 2018; Kumar *et al*., 2009; Sharma and Kumar, 2015
	Pisum sativum L.	S	Blood purifier, Laxative, Antipyretics	E, F, M	Mattar	seeds	Aryal *et al*., 2018; Mishra and Mishra, 2014
Linaceae	*Linum usitatissimum* Griseb.	H	Gonorrhea, Backache, Laxative in cattle	E, F, R, M	Alsi	Seeds	Sharma and Kumar, 2015; Kumar and Chander, 2017
Lythraceae	*Punica granatum* L.	S	Diarrhoea, piles	E, M	Nar	Roots, bark, rind	Liu *et al*., 2018; Sharma and Kumar, 2015
Malvaceae	*Abelmoschus esculentus* Moench	S	Copulation power, Diuretic	E, M	Tori	Roots, Seeds	Aryal *et al*., 2018; Abbas *et al*., 2016
	Gossypium arboreum Vell.	H	Diuretic, Digestive	F, M	Kapah	Seeds, Fruits	Kumar *et al*., 2009; Liu *et al*., 2018
Menispermaceae	*Cissamplos pareira* L.	S	Dyspepsia	E, M	Patindoo	Roots, Leaves	Mishra and Mishra, 2014; Sharma and Kumar, 2015
	Cocculus hirsuts (L.) Diels	S	Stomachache, Eczema	E, M	Tardya/Jal -Jamni	Leaves, Roots	Nath and Khatri, 2010; Liu *et al*., 2018
Moraceae	*Ficus palmate* Forssk.	T	Laxative, Lungs, Bladder problems	E, I, M	Khasara	Fruits	Sharma *et al.* 2009; Thakur, *et al*., 2017; Liu *et al*., 2018
	Ficus racemosa Willd.	T	Stomachic, Carminative, Diarrhea, Diabetes, Vulnerary, Piles	E, M	Tarayamb lu	Fruits, roots, Bark, latex	Kumar *et al*., 2009; Sharma and Kumar, 2015
	Ficus religiosa Decne. Ex Miq.	T	Asthma, Cutaneous troubles, Stomachic, Menstruation disorderness	R, M	Pippal	Leaves, bark, Fruits	Aryal *et al*., 2018; Mishra and Mishra, 2014
	Morus alba Bureau	T	Refrigerant, Purgative, Vermifuge, Anthelmintic, Diaphoretic	E, F, M	Toot	Fruits, Bark, Roots, Leaves	Abbas *et al*., 2016; Sharma and Kumar, 2015
Musaceae	*Musa sapientum* L. f. hookeri. King	T	Intestinal disorders, Nephritis, Respiratory problems, Gonorrhoea, Hypertension	E, R, M	Kela	Fruits, Leaves	Aryal *et al*., 2018; Kumar *et al*., 2009
Myrtaceae	*Psidium guajava* L.	T	Astringnent, Wounds, Ulcers, Prolepsis, Toothache, Stool	E, M	Amrood	Leaves, Bark	Kumar *et al*., 2009; Sharma and Kumar, 2015
	Syzygium cumini (L.) Skeels	T	Throat problems, mouth washes, Diabetes, Eye Troubles	E, F, M	Jamun	Bark, Leaves, Seeds	Aryal *et al*., 2018; Sharma and Kumar, 2015
Papilionaceae	*Lens culinaris* Medik.	H	Piles, Vomiting, Diarrhea	E, M	Masar	Seeds	Mishra and Mishra, 2014
Pedaliaceae	*Sesamum orientale* Sieber ex C. Presl	H	Diuretic, Emollient, Lactagogue, Cough, Piles, Menstrual disorder, Diarrhoea	E, F, R, M	Til	Leaves, Seeds	Abbas *et al*., 2016
Poaceae	*Oryza sativa* L.	H	Hemicramia, Pneumonia	E, F, M	Dhan	Seeds, Stem, Leaves	Nath and Khatri, 2010; Thakur, *et al*., 2017
	Triticum aestivum L.	H	Skin irritations, Cough, Urine	E, F, R, M	Kanak	Seeds	Sharma and Kumar, 2015; Kumar and Chander, 2017

To be continued…

Family	Scientific Name	H/ S/ T	Medicinal Properties	E/ F/ R/ M	Local Name	Parts Used	Used Citations
Poaceae	*Zea mays* L.	H	Piles, Swellings in Kidney	E, F, R, M	Chhali	Grains, Syles	Kumar *et al*., 2009; Thakur P and Sarita, 2016
	Hordeum vulgare L.	H	Diuretic, Diabetes	E, R, M	Jau	Seeds	Aryal *et al*., 2018
Ranunculaceae	*Adonis aestivalis* M. Bieb.	H	Heart weakness	E, M	Ban-saunf	Seeds	Sharma and Kumar, 2015; Kumar and Chander, 2017
Rhamnaceae	*Zizyphus manuritiana* Adans.	S	Diarrhoea, Nose bleeding, Whooping cough	E, F, M	Ber	Bark, Leaves	Mishra and Mishra, 2014
Rosaceae	*Amygdalus communes* L.	S	Cough, Bronchitis, Diuretic, Gonorrhea, Urinal troubles	E, M	Badam	Kernels	Kumar *et al*., 2009
	Eriobotrya japonica (Thunb.) Lindl.	S	Sedative, Diarrhea, Expectorant	E, M	Loquathh	Fruits, Flowers, Leaves	Abbas *et al*., 2016; Sharma and Kumar, 2015
	Prunus persica Stokes	S	Demulcent, Antiscorbutic, Ascaricide, Diuretic, Purgative, Cough	E, M	Aru	Leaves, Flowers, Fruits, Bark	Nath and Khatri, 2010; Thakur, *et al*., 2017
	Pyrus pashia Buch.	S	Wormicides, Vermifuge, Astringnent	E, F, M	Kainth	Seeds, leaves	Aryal *et al*., 2018
	Rubus ellipticus Sm.	S	Laxative, Demulcent, Diuretic, appetizer	E, M	Akhey	Fruits	Kumar *et al*., 2009; Sharma and Kumar, 2015
Rubiaceae	*Galium aparine* L.	H	Diuretic, Refrigerant, Aperients, Antiscorbutic	E, F, M	Ghaa	Whole plants	Sharma and Kumar, 2015; Kumar and Chander, 2017
Rutaceae	*Aegle marmelos* (L.) Correa	T	Diarrhea, Dysentery, Renal Problems, Dyspepsia, Fever, Jaundice	E, R, M	Bil	Fruits, Pulp, Bark	Nath and Khatri, 2010; Sharma and Kumar, 2015
	Citrus aurantium L.	S	Digestive disorders, Diarrhoea, Wormicides	E, M	Sangtra	Fruits, Rind	Abbas *et al*., 2016; Verma R *et al*., 2016
	Citrus limon (L.) Burm. f.	S	Carminative, Scurvy, Hemicranias	E, M	Nimbu	Fruits, Rind	Kumar *et al*., 2009
	Citrus maxima (Burm.) Merr.	T	Cholera, Convulsive cough, Refrigerants	E, M	Choktra	Leaves, fruits	Mishra and Mishra, 2014
	Murraya koenigii (L.) Spreng.	S	Diarrhea, Dysentery, Piles, Stomachic, Renal troubles	E, M	Gandhela / Karri patta	Leaves, Roots	Aryal *et al*., 2018; Sharma and Kumar, 2015
Solanaceae	*Capsicum annuum* L.	S	Cholera, dysentery	E, R, M	Pipali	Fruits	Kumar *et al*., 2009
	Solanum nigrum L.	H	Tonic, Diuretic, Cathartic, Heart problems, Fever, Anthrax pustules, Dysentery	E, M	Kyaoon	Herb	Aryal *et al*., 2018; Sharma V, 2016
	Solanum tuberosum L.	H	Diuretic Cough, Catarach	E, M	Alu	Tubers	Kumar and Chander, 2017
Urticaceae	*Pouzolzia zeylanica* Kuntze	H	Wormicide, Galactagogue	E, M	Shigra	Seeds	Kumar *et al*., 2009
Vitaceae	*Vitis vinifera* L.	S	Laxative, Diuretic, Demulcent, Dog-biting, Diarrhoea, Skin infections	E, M	Angoor	Leaves, Fruits	Gautam and Bhadauria. 2008; Mishra and Mishra, 2014; Sharma and Kumar, 2015
Zingiberaceae	*Curcuma longa* L.	S	Stimulant, Stomachic, Gonorrhea, Diuretic, stimulant, Aromatic, Carminative	E, R, M	Haldar	Rhizomes	Aryal *et al*., 2018; Abbas *et al*., 2016; Kumar *et al*., 2009
	Zingiber officinale Roscoe	H	Dyspepsia, Cough, Cold, Jaundice	E, M	Adra	Rhizomes	Mishra and Mishra, 2014; Thakur, *et al*., 2017; Sharma and Kumar, 2015

ABERRATION: H=Herb; S=Shrub; T=Tree; E=Edible; F=Fodder; M=Medicine; R=Religious

Table 2.

S. No.	Botanical Name/(Vernacular Name)	Traditional Uses
1.	*Abelmoschus esculentus* (Tori, Bhindi)	The capsules and seeds (after removing stickiness), mixed with sugar-candy are useful in strangury. Powder of dried root mixed with sugar-candy or powder of tender capsules mixed with sugar-candy, when take with milk, proves to be much effective to persons from whom sperms and other vital humors of the body emanate through urine.
2.	*Adonis aestivalis* (Ban saunf)	Used for treating heart weaknesses but the risks involved n its used are much higher.
3.	*Aegle marmelos* (Bil)	Pulp of dried unripe fruits has been used as a remedy for diarrhea and dysentery for long. Pulp o ripe fruits is consumed with molasses in case of diarrhea attended with blood in the stools, also given for other irritations of the alimentary canal.
4.	*Allium cepa* (Piaz, Gatthhu, Gandha)	Poultice of roasted bulbs are applied on unripe sores and them an incision is made in them after ripening. Old barbers used to do this job with their tool "Nhernu".
5.	*Allium sativum* (Lessan, Lhassan)	The poultice (of bulb) is used for hemicranias. The oil is used for massaging in rheumatism. The extract is used with hot water in asthma; also applied on worm-infested wounds.
6.	*Amygdalus communes* (Badam)	Grinded kernels mixed with peppermint are given to relieve cough and bronchitis. The kernels are demulcent and stimulant nervine tonic, also used as diuretic. Kernels (soaked of a night) and candy-sugar(3-mashas) are grinded and the extract of "Giloe" (*Tinospora cordifolia*) and fresh butter (3-3 mashas each) and honey (6 mashas) are added to it. The substance, thus prepared if licked twice a day, it extricate form the problem of night-pollution.
7.	*Artocarpur heterophyllus* (Kut-Hal)	According to the tribes, "Kuthal" should never be used in fasting. They further warn, not to chew the PAN (Betel leaves) after the "Kuthal" is eaten, as it strongly affects. It happens; butter is taken to pacify its effect. The excessive use of "Kuthal" causes vomiting and to stop them, banana is required.
8.	*Bauhinia variegate* (Karyalya)	Dried flower-buds are used for diarrhea, dysentery and piles. The flower-buds are made into an excellent vegetable, also eaten as "Rita" after boiling and mixing with curd. These are specially relished when prepared with meat into a dry curry. The flower-bud is also pickled.
9.	*Begonia picta* (Petthu)	The young fruits are consumed as vegetable. In big functions, a sweet vegetable is made of the fruits, locally called "Pethhu-ra-mithha" which is always served first. The mature fruits are cut into pieces to prepare a sweet "pethha".
10.	*Berberis chitria* (Sumblu, Kashmalu)	The decoction of root (a few drops) is useful in fever.The root-bark along with "trifala", (*Terminalia chebula*), *Terminalia belerica* and *Emblica officinalis*) and "Loh-Bhasma" (Iron-burnt) is given in jaundice. The bark is also useful in skin troubles.
11.	*Berberis lyceum* (Rasaunt, Kasmal)	"Rasaunt" (A brown colored extract prepared form root and lower stem wood by boiling in water) is useful for eye complaints.
12.	*Brassica campestris* (Saronh)	The tender twigs and young leaves with a half bowl of rice is cooked as a pot-herb "Sarnoh-ra-sag". No other dish is as much liked in the area, as this pot=herb with butter. "Chhaliya-ri-roti". (Bread of maize flour) and "Chhah" (Whey) Some folk songs are also sung in the area related to this food. The seed-oil is edible and is the chief cooking medium for vegetables. In villages, it has been extracted by crushing the seeds in wooden crushes (Kolhu) drawn by bullocks, in the past but with the advancement, its place has been taken by the machines.
13.	*Brassica napus* (Toria)	The seeds are used for exacerbations and tumors. The roots are emollients and diuretic, the root-extract is used in chronic cough and bronchial catarrh.
14.	*Brassica nigra* (Saronh, Banarasi-rai)	Tender leaves are consumed as salad. The seeds are employed in pickles and "dal" (particularly moong).
15.	*Brassica oleracea* (Phul-Gobhi)	The inflorescence is eaten raw or is cooked as a vegetable, in some place. It is dried and preserved for the off-season use. Besides vegetables, the curds are used in soups, palao and pickles.
16.	*Brassica oleracea* (Band-Gobhi)	The decoction of leaves with butter is considered useful in hydrophobia. On taking boiled leaves, one loses the effect of intoxication due to excessive drink.
17.	*Brassica rapa* (Shalgam)	These are uses in hemorrhages after parturition.
18.	*Cajanus cajan* (Arhar)	Green leaves, tops and broken pods are given to the cattle as a feed. Seeds grounded with water are given in case of intoxication due to Bhang (*Cannabis sativa*).
19.	*Capsicum annuum* (Pipli, Mirch)	Red-coloured berries are taken and the seeds are removed. These seedless berries are finely grounded and filtered. It is given with honey to the patients suffering from cholera.
20.	*Carica papaya* (Papita, Kharbuja)	The unripe fruits are cooked as vegetable while the ripe ones are eaten as such. These are also used for preparing soft drinks and marmalades.

To be continued…

S. No.	Botanical Name/(Vernacular Name)	Traditional Uses
21.	*Carissa opaca* (Garna)	Sometime worms develop in the wounds in animals, if the roots powder is filled in those wounds; it acts both as wormicids and healer. In snake biting, the root is grounded in water, filtered and is given to drink. If the sufferer does not vomit, the venom is understood to have shown its effect, in this condition, the abstract of grounded toot is massaged form lower part of the heart to the waist and side by side the decoction of root is given to drink.
22.	*Cassia occidentals* (Ailon)	The fresh leaves are grounded in water, mixed in equal part with wheat flour and made into bread. This bread is useful for night-blindness if eaten with sesame oil.
23.	*Chenopodium album* (Ghanaun)	Eye drops of its extracts are useful in night-blindness.
24.	*Chenopodium ambrosioides* (Kah-Ajwain, Kah-Jwanyan)	The seed oil is anthelminite against many forms of intestinal parasites which includes round-worms, hook-worms and intestinal amoebae.
25.	*Cicer arietinum* (Chhole)	The flour of seeds ("Besan") is used for preparing "Pokoras". The young tops of the herb are largely collected and are made into a pot-herb locally called "Chholyan-Ra-Sag").
26.	*Cissampelos pariera* (Patindoo)	The leaves are considered a best fodder and are supposed to increases the flow of milk in cattle.
27.	*Citrus aurantium* (Sangtr)	In Digestive disorders and diarrhea, the fruits juice and water in equal part is given to the infants with mother's milk.
28.	*Citrus lemon* (Nimbu)	Lemon is chiefly used in the preparation of "sherbet", "shikanjvi" and squash. It is also used for flavoring jams, jellies and marmalades. These are also pickled.
29.	*Cirtus maxima* (Chokotra)	The leaves are used in cholera and convulsive coughs. The juicy hairs are refrigerant.
30.	*Cocculus hirsuts* (Tardya, Jal-Jamni)	The big root-tubers which lies deep in the soil, serves as a vegetable. It is also pickled.
31.	*Colocasia escenta* (kachyalu)	The tuber are boiled or fried and eaten as a vegetable. The leaves are spiced, folded and boiled. These are locally called "Patroru" a very delicious dish.
32.	*Cordia dichotoma* (Lasura)	The mucilaginous ripe fruits are edible. The unripe fruits are cooked as a vegetable and are also pickled.
33.	*Coriandrum sativum* (Dhania)	The leaves are used as flavorings agent and the fruits and seeds are used as condiment and spice.
34.	*Cucumis melo* (Phot)	The raw fruits are used as vegetable and the ripe ones are eaten as a dessert.
35.	*Cucumis sativus* (Kakri)	The tender fruits are eaten as such, as a salad or are cooked as a vegetable.
36.	*Cucurbita maxima* (Kaddu)	The ripe fruits are cooked as a palatable dish. The fruits are cut pieces, boiled and eaten as such in fast.
37.	*Curcuma longa* (Haldar, Haldi)	The fresh rhizomes are made into suitable dish. These are grounded, fried in ghee and then sugar, almonds raisins etc are added to it. It is then made into small balls and eaten.
38.	*Daucus carota* (Gajar)	The roots are either eaten raw or used as vegetable, soups and curries etc. They young root are pickled. "Gajrela" a sweet preparation is relished by all.
39.	*Dioscorea bulbifera* (Tard,Ratalu)	The tubers are used a vegetables but after considerable preparation only, as they are acrid.
40.	*Emblica officinalis* (Ambla, Amla)	It diarrhea, the fruits are pounded in water and put in a pouch with ginger extract in it and tied near the navel.
41.	*Eriobotrya japonica* (Loquathh)	"Loquathh" is eaten as a table fruits, generally after meals, also can eaten or made into jams and jellies etc.
42.	*Ficus palmate* (Khasra, Dahgla, Dhoora)	The fruits are edibles. Very tender fruits are cooked as a vegetable locally called "Bharooni".
43.	*Focus racemosa* (Gular, Taryamlu)	The bark powder is given to cattle in render pest disease and its decoction used as a vulnerary.
44.	*Ficus religiosa* (Pipal, Pippal)	The powder of dried fruits it taken with unboiled milk for 14 days after the menstruation period, it overcomes infertility.
45.	*Flacourtia indica* (Kangu)	The seeds along turmeric (Haldi) are grinded and used in massaging the woman after delivery.
46.	*Foeniculum vulgare* (Soonf, Saunf)	The mericarps are used for flavoring different vegetables soups, sauces and confectionery.
47.	*Gossypium arboretum* (Kapah)	The oil-cake "Khal" is again a very nourishing cattle-feed.
48.	*Hordeum vulgare* (Jau)	In sprains and fractures, the flour is mixed with the powder of Khurasani-Ajwain (*Hyoscyamus niger*) and is battered in water. The unguent is applied.
49.	*Ipomoea batatas* (Shakar-Kandi)	Tuberous roots are edible and are boiled before use. The roots are also used after frying or candying.
50.	*Kalanchoe Pinnata* (Lakundru)	Leaf extract (upto 1 tolla) with equal part of cumin seed powder and twice butter (of that of cow) are mixed and given to the patients of diarrhea and bleeding piles.
51.	*Lagenaria siceraria* (Tumri, Lauki, Danni)	The fruits are useful in strangely and chronic leaves.
52.	*Lens culinaris* (Masar, Masr)	The seeds are used as pulse, also used in soups.

To be continued…

S. No.	Botanical Name/(Vernacular Name)	Traditional Uses
53.	*Lilnum usitatissimum*(Alsi)	Alsi (16 part) 'Rai" (*Brassica juncea*) are mixed, grinded and boiled. The poultice is applied for the early ripening of ulcers.
54.	Luffa acutangula (Kangheri, Grangeri)	The decoction of leaves is given in uremia and amenorrhea.
55.	Luffa aegyptiaca (Kangheri, Ghangehri)	Leaf extract and urine of cow are mixed and heated. The poultice is applied in swellings.
56.	*Macrotyloma uniflorum* (Kolth)	Seed powder (upto 2 mashas) mixed 1 ratti of shilajit (Bitumen) if taken with a bit hot water, it relieves urinary problems.
57.	*Mangifera indica* (Am, Amb)	The unripe fruits are used for Chutney and preparation of powder (Amchur). These are also dried after making pieces, without the stone. These are locally called "Bukrian" and store for months to make sour vegetable called "Mhani".
58.	*Mentha piperita* (Pippermint)	The leaves are used for flavoring especially the puddings.
59.	*Momordica charantia* (Karela)	Young fruits are consumed as a vegetable; these are also sliced and preserved for later use.
60.	*Mours alba* (Toot)	The leaves and twigs serve as a common fodder in the area.
61.	*Murraya koenigii* (Kandhela, Gandhela)	The leaves are used to flavor curries.
62.	*Musa sapientum* (Kela)	The leaves (which hae turned yellow on the plant) are roasted in Mustard oil and the powder of 'Shankh' (dead conch shell) is added to it. The mixture is applied in leucoderma.
63.	*Ocimum basilicum* (Bhabri)	Used as a flavouring agent for dal, pickles, sauces and confectionery.
64.	*Ocimum sanctum* (Tulsi)	The leaves are used as a flavoring material for cooking and 2-3 leaves are generally used to flavor tea.
65.	*Oroxylum indicum* (Arlu, Tat-palangha, Sona -patha)	Bark –powder is taken with the extract of ginger and honey, in case of respiratory troubles.
66.	*Oryza sativa* (Dhan, chaul)	Rice is perhaps, the great cereal which is simply boiled for direct consumption; the parched rice and the beaten rice are normally consumed by the poor sections of the society.
67.	*Pisum sativum* (Matar)	The poultice of seed powder is applied on sores; also used in burnings.
68.	*Pouzolzia zeylanica* (Shigra)	Very tender fruits are cooked as a vegetable.
69.	*Prunus persica* (Aru)	The poultice of herb is applied to sore and boils.
70.	*Psidium guajava* (Amrood, Marood)	The leaves are sometimes used as a flavoring agent.
71.	*Punica granatum* (Nar, Daru)	The dried seeds are a source of 'anardana' which is mainly used for acidification of chutneys.
72.	*Pyrus pashia* (Kainth)	Over ripped or half-decayed fruits are eaten.
73.	*Raphanus sativus* (Mooli)	Fleshy roots are eaten in salads or used for vegetables, soups and curries etc., tender leaves are also used in salad, young roots are pickled. The fruits "Moongre or Mungre" are also eaten new as well as cooked.
74.	*Roripp anasturtium-aquaticum* (Chhuchh)	Tender leaves are cooked as a favorite pot-herb locally called 'Chhuchha-ra–sag'.
75.	*Rubus ellipticus* (Akhey)	Fruits are edible, have excellent flavor (as that of "raspberry") and taste.
76.	*Sesamum orientale* (Til)	Seeds are grounded in water, mixed with butter and licked. It gives relief in bleeding piles.
77.	*Solunum nigrum* (Kyaoon)	Berries are used as tonic, diuretic and cathartic, used in heart problems.
78.	*Solanum tuberosum* (Alu)	The tuberous underground stems are edible. The tubers are used for preparing 'Tikkies', 'Papars' and potato chips.
79.	*Spondias pinnata* (Bwara)	The ripe fruits are eaten. Fruits are also making into chutneys, pickles and jams.
80.	*Syzygium cumini* (Jamun, Jamnu)	Ripe fruits are consumed as such or salted.
81.	*Terminalia belerica* (Bhera)	The stem-bark and 'Laung' (Flower buds of *Syzygium aromaticum*) are grounded, mixed with honey, are given for diarrhoea.
82.	*Trigonella foenum-graecum* (Mirthya, Methi)	Leaves are used as 'Sag' (pot-herb), commonly consumed in winters.
83.	*Triticum aestivum* (Kanak)	Porridge (locally called 'Sheera') is a special preparation for which wheat is soaked and grinded. The extract is collected and dried in sunlight, making small flat balls. These balls are roasted in ghee, adding sugar to it and relished.
84.	*Vitis vinifera* (Angoor)	The raisin is grounded in stale-water and is consumed with fresh- water in painful discharge of urine.
85.	*Zea mays* (Chhalli, Chhaliyan)	The grains are milled in flour "Chhalyan-ra-atta" and baked into roti (Bread). The grains of the ear are roasted and eaten. Pop-corn and corn-flakes are some of other preparations.
86.	*Zingiber officinale* (Adrak Adra)	The extract mixed with Allium cepa extract (1tolll) is given to control vomiting, the extract is given with old molasses to doff the swellings of the body.
87.	*Zizyphus mauritiana* (Ber)	The leaves are browed by the goats with case other cattle find it difficult due to the presence of thorns.
88.	*Zizyphus nummularia* (Malah, Jhitt)	The leaves and tender swigs are browsed by sheep's and goats.

Table 3.

Weights.		
S. No.	**Local Measurements**	**International Measurement**
1.	Ratti	1.75grains (approx . 120 mg)
2.	Masha	1 gm
3.	Tolla	10gms

Table 4.

Weight Equivalents	
Rattis	1 Masha
Masha	1 Tolla

The highest number of ethno-medicinal plants was recorded from the family Brassicaceae and Cucerbitaceae (8 species) followed by Leguminosae (5 species) and Rutaceae, Moraceae and Poaceae (4 species) and Apiaceae, Lamiaceae and Solanaceae, (3species). Rest of the reported families contributed two and one species each respectively (Fig. 2). Different plant parts were used by the people and the traditional healers for the treatment of various diseases of human and animals. Leaves (48%) were the most frequently used plant part used to treat various ailments followed by whole plant (16%), roots/rhizomes (16%), fruits/seeds (10%), buds/flowers (5%) and bark (5%).

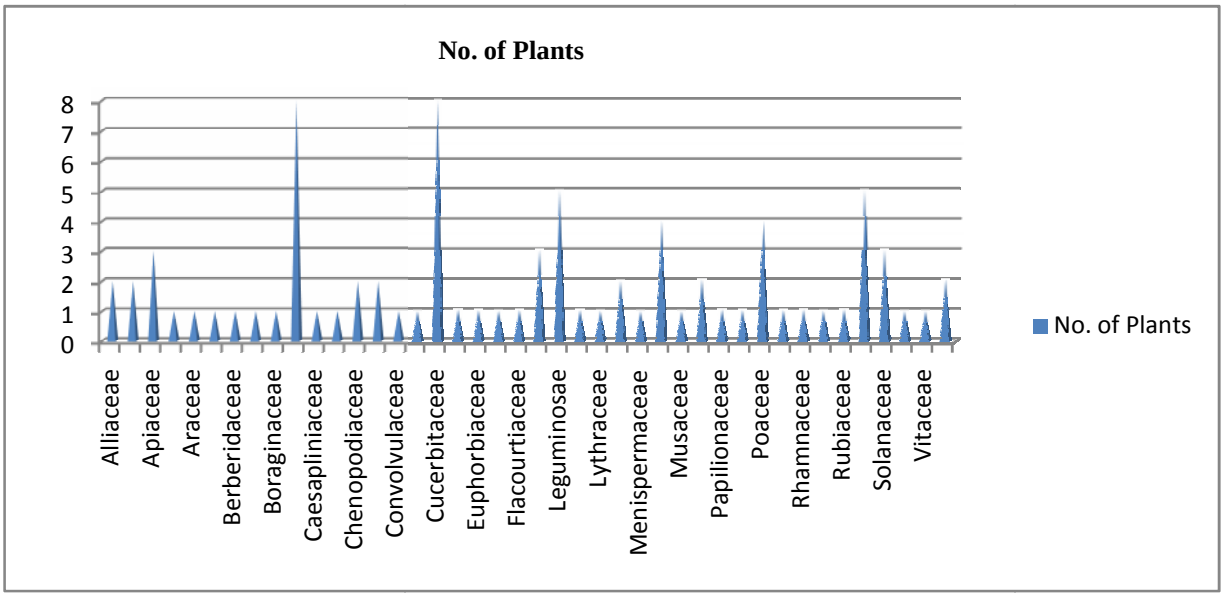

Fig. 2. Representation of the families and number of plants studied at study site.

A wide range of diseases ranging from cough and cold to asthma and bronchitis, and cuts and wounds to snakebites are treated by the traditional healers of *Dharampur* region of Mandi district with the help of local plant remedies. Among different plant parts, the leaves were found to be the most frequently used part for the treatment of various ailments followed by whole plant, roots or rhizomes, fruits/seeds, buds/flowers and bark respectively (Fig. 3).

The methods of using these plant parts vary according to the nature of disease. The methods of preparation fall into categories *viz.*, grinding, dried powder, decoction, juice extraction, poultice or usage in cuisine preparation. In some cases plant parts are used as such in fresh form directly.

The most common method was grinding of plant parts of various species along with other ingredients like jaggery, carom seeds, black pepper, onion, wheat flour, alum, sugar etc. Maximum number of plants was used to cure cough and cold followed by digestive disorders, arthritis/joint pain/rheumatism, kidney diseases and to purify blood (Fig. 4).

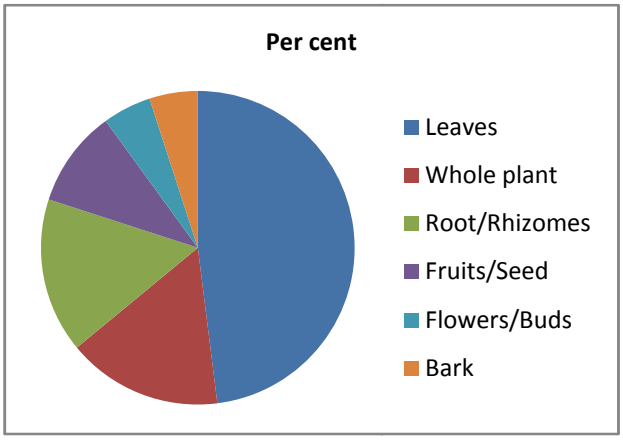

Fig. 3. Representation of the number of plants and plant part used for treating various ailments.

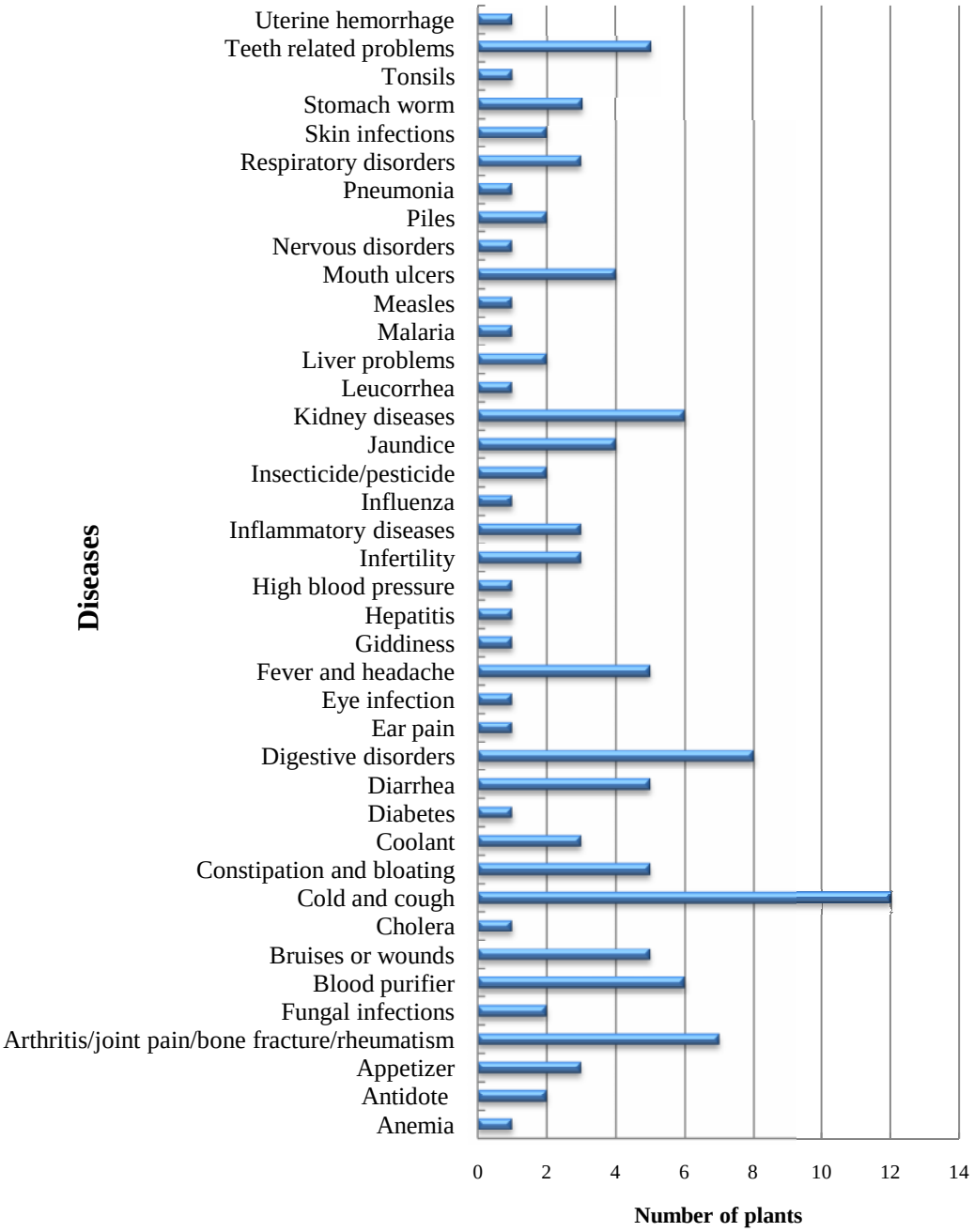

Fig. 4. Frequency of plant species used for the treatment of various diseases.

Many of the plants reported are likely to provide new cures to the world of medicine. The medicinal and aromatic plants reported in the paper are rich sources of bioactive constituents including alkaloids, flavonoids, phenolics, sterols, glycosides, saponins, tannins, etc. All these phytochemicals are responsible for the biological properties of the plants such as antimicrobial, antidiabetic, wound healing, hepatoprotective, anti-inflammatory, etc.

Important plant species such as *Abelmoschus esculentus*, *Aegle marmelos*, *Bauhinia variegate*, *Brasssica Compestries*, *Capsicum annuum*, *Carissa opaca*, *Cicer arietinum*, *Cissamplos pareira*, *Cocculus hirsuts*, *Cordia dichotoma*, *Cucumis sativus*, *Curcuma longa*, *Dioscorea bulbifera*, *Emblica officinalis*, *Ficus palmate*, *F. racemes*, *F. religiosa*, *Flacourtia indica*, *Linum usitatissimum*, *Macrotyloma uniflorum*, *Morus alba*, *Musa sapientum*, *Pisum sativum*, *Sesamum orientale*, *Syzygium cumini*, *Triticum aestivum* etc..

Also *Zea mays*, *Zizyphus manuritiana* and *Zingiber officinale* were used by the local inhabitants for the treatment of diseases arthritis, bruises, boils, bone fractures, cholera, cold, constipation, cough, diabetes, diarrhea, dyspepsia, eye and skin infections, fever, giddiness, headache, high blood pressure, hepatitis, impotence, inflammation, jaundice, joint pain, kidney stones, leucorrhea, malaria, measles, mouth ulcers, piles, pneumonia, pulmonary infections, rheumatism, stomach ache, stomach worms, tonsils, toothache and wounds other than the reported literature. *Alium cepa* and *Brasssica Compestries* are also used in Ayurveda and Unani for treating ear and eye disorders. Similarly, *Carissa opaca* is used for curing urinary disorders, splenic enlargement, ulcers and dysentry in ayurveda. In Unani it is used against hydrophobia, splenic enlargement, mennorrhgia and liver disorders. Tribal people are more close to nature and more accustomed to the power of nature. The poor economic condition of the *Kiratas* and *Hindu- Gujjars* and remoteness of the area have made them adopt indigenous knowledge passed through their ancestry (Fig. 5).

Fig. 5. The *Hindu-Gujjar* of *Dharampur* region during field survey.

CONCLUSIONS

The *Kiratas* and *Hindu-Gujjar* of *Dharampur* region constitute an important segment of the population in the region who have in-depth knowledge of diverse plant. The infinite ethnobotanical knowledge of this tribe can also be related to their greater dependency on the wild plant resources for their sustenance because of poor living standards, illiteracy, and poverty.

The present study revealed the in-depth ethnobotanical knowledge of the tribes. The local communities have accumulated this immense knowledge through experimentation and modifications since centuries. Knowledge and use of medicinal plants to cure various ailments is part of their life and culture that requires preservation of this indigenous knowledge. In the present scenario, it forms an essential component of sustainable development. But this traditional knowledge which is transferred from one generation to another through the words of mouth is eroding exigently. Thus, there is an urgent need for the documentation of this traditional knowledge and in-depth bio-chemical investigations to evaluate potentially active compounds of the plant species to prove their efficacy. It is essentially required to develop agro technological tools for plant species for which the same is lacking to ensure plantation in the forests/community lands available in the villages to check unsustainable harvesting of wild edibles. Thus, bio-prospection and bio-chemical profiling and evaluation of economically viable products can lead to the optimum harnessing of Himalayan bio-resources in this region.

ACKNOWLEDGEMENTS

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