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Traditional Usage of Ethno-medicinal Plants of Sikandra Hill Range in Mandi District of Himachal Pradesh, India

Gulshan Kumar[1*] and Hem Chander[2]

[1 & 2] Division Botany, Department of Bio-Sciences, Career Point University Hamirpur, Himachal Pradesh- 176041, INDIA

[*] Correspondence: E-mail: sharmagulshan1980@gmail.com

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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 Sikandra Hill range of Mandi districts of Himachal Pradesh in North-Western Himalaya. These hills range are inhabited by different ethnic groups. A large number of plants of local flora are used to cure various ailments of human and livestock. First hand information about 88 plants belonging to 41 families was recorded by conducting extensive field surveys during 2018-2019. The highest number of ethno-medicinal plants was recorded from the family Brassicaceae (8 species) followed by Cucerbitaceae (8 species), Leguminosae (6 species) Rosaceae (5 species) and Rutaceae (5 species). This study documents valuable information for traditional remedies and contributes to the usage of medicinal plants in the study area.

Keywords: Ehtnic groups; Ethno-medicinal plants; Mandi; Sikandra hill and Traditional usage.

INTRODUCTION: Indian Himalayan region is enriched with unique location, geography and culture.[1] It is one amongst the biodiversity hotspots.[2] It is harbors more than 9000 plant species, of which nearly 33 % are endemic.[3] A large number of studies on medicinal and aromatic plants have been carried out in the Indian H Region.[4-6] However, in particular Pradesh, such studies are incomplete and mainly focused on inventory.[7-15] Some workers have mentioned medicinal uses of plants in ethnobotanical notes, floristic and biodiversity studies.[16-23] However, in particular of Himachal Pradesh, such studies are incomplete and mainly focused on inventory mentioned medicinal uses of plants in ethnobotanical notes, floristic and biodiversity studies and alternative for primary health care system.[24-37]

MATERIALS AND METHODS: Sikander hills are situated in Shivalik hills zone of North Western Himalaya and is located in district Mandi of Himachal Pradesh (India). This area is characterized by temperature ranging between -10^{0}C to 25^{0}C. Precipitation occurs in the form of snow and rainfall. The altitude of this range is 7000 feet. The vegetation of this area chiefly comprises of deodar, silver fir, chir pine and oak. Greater part of it consists of rich grass slopes. It is rich in lichen flora.[38-40] Extensive field surveys were conducted in various locations of Sikandra hill of district Mandi of Himachal Pradesh during the study period. 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 techniques. Participation was focused on learning how people gather plant material. The ethno-medicinal importance of the collected plants containing the information about the vernacular name of the plants, part used and medicinal use were recorded through detailed discussion with local people, traditional healers, *Kohlies* and *gujjars*. The plants were enlisted depending upon the information collected along with their traditional use reported in the literature.

RESULTS AND DISCUSSION: The results of the study are presented in Table 1. The families of plant species from the study area are arranged in alphabetical order. For each species, scientific name, family, vernacular name, part used, traditional mode of its use as edible, fodder, religious and medicinal as well as diseases treated are provided. Each species is compared with previously reported literature for their ethno-medicinal usage.

A total of 88 plant species in 41 families were documented for the treatment of various chronic ailments

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 Astringent, Anthelminite, Diuretic, Expectorant, Urinary problems, Skin problems, asthma, body pain, bone fracture, cholera, cold, conception, constipation, cough, diabetes, diarrhea, fever, healing wounds, high blood pressure, improving appetite, indigestion, influenza, 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.

Table 1: Ethnomedicinal Plants of Shikandra Hills.

Botanical Name	**Family**	**Herb (H) / Shrub (S) / Tree (T)**	**Medicinal Properties**	**Edible (E)/ Fodder (F) / Religious (R)/ Medicinal (M)**	**Vernacular Name**	**Parts Used**
Alium cepa Radic	Alliaceae	H	Ear & Eye Drops, Cholera	E, M	Piaz / Gathhu	Bulbs
Alium sativum L.	Alliaceae	H	Cough, Whooping cough, Skin troubles, Hemicranias, Asthma	E, M	Lahassan	Bulbs
Mangifera indica Thwaites	Anacardiaceae	T	Gonorrhea, Throat troubles, diarrhea, Piles, sunstrokes, Scurvy	E, R, M	Aam	Fruits, Pulp, Stone
Spondias pinnata (L.f.) kurz	Anacardiaceae	T	Astringent, Anthelminite, Diuretic, Expectorant, Urinary problems, Skin problems	E, M	Bwara	Fruits, Bark, roots
Corianduum sativum L.	Apiaceae	H	Carminative, Diuretic, Stimulant, Piles, Cough, Impotent	E, M	Dhania	Fruits, Seeds
Daucus carota L.	Apiaceae	H	Aromatc, Carminative	E, M	Gajar	Roots, Seeds, Leaves
Foeniculum Vulgare Mill.	Apiaceae	H	Aromatic, Stimulant, Carminative, Purgative, dysentery, Dyspepsia, Urinary troubles	E, M	Saunf	Leaves, seeds, Fruits
Carissa opaca Stapf ex Haines	Apocyanaceae	S	Gum problems, Wormicides, Snake-biting	E, F, R, M	Garna	Roots,Fruits
Colocasia esculenta (L.)	Araceae	H	Astringent, Swelling pain	E, M	Kachyalu	Tubules, Petioles
Begonia picta Hort. Henders. Ex A. DC.	Beganiaceae	H	Wormicides, Diabetes, Respiratory troubles	E, M	Pethu	Pulp, Seed, Fruits
Berberies lyceum Hort.ex K. Koch	Berberidaceae	H	Eye disorder, conception, constipation	E, M	Rasaunt	Roots, Stem
Oroxylum indicum (L.) Benth. Ex Kurz	Bignoniaceae	H	Diarrhea, Dysentery, respiratory diseases, Stomachic, Rheumatism, Piles	E, M	Sonapathha / Tatpalanga/ Arlu	Roots, Bark, Leaves
Cordia dichotoma G. Forst.	Boraginaceae	T	Astringent, Anthelminite, Diuretic, Expectorant,	E, F, M	Lasura	Leaves, Fruits,

			Urinary problems, Skin problems			Bark
Brasssica Compestries L.	Brassicaceae	H	Muscular rheumatism	E, F, R, M	Saronh	Seeds
Brassica napus L.	Brassicaceae	H	Chronic cough, Bronchial catarrh	E, F, M	Toria	Fruits
Brassica nigra (L.) Andrz.	Brassicaceae	H	Wormicides, Digestive secretion	E, M	Banarsi rai	Leaves, Seeds
Brassica oleracea L. *var. botrytis* L.	Brassicaceae	H	Fever, Intoxication	E, F, M	Phul Gobhi	Root-powder
Brassica oleracea L. *var. capital* L.	Brassicaceae	H	Liver troubles, Strangury, Hydrophobia	E, M	Band Gobhi	Stem, roots
Brassica rapa L.	Brassicaceae	H	Stomachic, Diuretic, Aperients, Hemorrhages, Parturition	E, M	Shalgum	Leaves
Raphanus sativus L.	Brassicaceae	H	Piles, Diuretic, Carminative, Bronchitis, Stone in kidney, Goiter	E, M	Muli	Roots, Seeds
Rorippa nasturtium-aquaticum (L.) Schinz & Thell.	Brassicaceae	H	Appetizing, Antiscorbutic, Stimulant, Goiter, diuretic, Vermifuge, asthma, Tuberculosis	E, M	Chhuchh	Leaves
Cassia occidentals L.	Caesapliniaceae	T	Night blindness, epilepsy	E, M	Ailon	Leaves, Pods
Carica papaya L.	Caricaceae	T	Carminative, Diuretic, Eczema, Skin troubles, Diphtheria, Digestion	E, M	Kharbuja	Fruits, Latex
Chenopodium album L.	Chenopodiaceae	H	Laxative, Anthelminites	E, M	Ghanaun	Whole plant
Chenopodium ambrosioides Hance	Chenopodiaceae	H	Anthelminites, digestive disorder in cattle	I	Kah jawyan	Seeds
Terminalia bellirica Wall.	Combretaceae	T	Diarrhoea, rheumatic swellings, Purgative	E, M	Bhera	Fruits, Kernels
Terminalia chebula Willd. Ex Flem.	Combretaceae	T	Laxative, digestants, stomachic, Attenuating, Aphrodisiacs, Diarrhoea, Hemicrania, Constipation	E, R, M	Harar	Fruits, Bark, Leaves
Ipomoea batatas (L.) Poir.	Convolvulaceae	H	Purgative, Astringent, tonic, Diarrhea	E, M	sakar-kand	Roots
Kalanchoe pinnata (Lam.) Pers.	Crassulaceae	S	Diarrhea, Piles, Nose bleeding	E, M	Lakandru	Leaf
Cucumis sativus L.	Cucerbitaceae	S	Diuretic, Tonic, refrigerant, stone, Nephritis	E, R, M	Kakri	Seeds, Roots
Cucerbita maxima wall.	Cucerbitaceae	S	Taeniacides, tonic, Diuretic, Inflammation	E, M	Kaddu	Seeds
Lagenaria siceraria Standl.	Cucerbitaceae	S	Strangely, Xanthopsy, Dropsy, Anthelmintic	E, M	Lauki	Fruits, Leaf, Seeds

Luffa acutangula (L.) Roxb.	Cucerbitaceae	S	Conjuctives, Urenia, Amenorrhea, Purgative, Ematic	E, M	Kangher	Leaves, Seeds
Luffa aegyptiaca Mill.	Cucerbitaceae	S	Carminative, Diuretic, Cathartic	E, M	Ghangeri	Fruits, Leaf, seeds
Momordica charantia L.	Cucerbitaceae	S	Measles, Eczema, Vermifuge, Astringent, Snake biting, Hemorrhoids	E, M	Karela	Fruits, leaves
Berberis chitria D. Don	Cucurbitaceae	S	Fever, Jaundice, Skin trouble	E, M	Kashmalu	Root, Bark
Cucumais melo L.	Cucurbitaceae	S	Laxative, Astringent, Demulcent, Refrigerant, Urinary troubles	E, M	Phot	Fruits, Seeds, kernels
Dioscorea bulbifera Russ. Ex Wall.	Discoreaceae	S	Ulcers, Dysentery, Piles, Diarrhea	E, F, M	Ratalu	Fruits, Tubers
Emblica officinalis Gaertn.	Euphorbiaceae	T	Diarrhea, Eye trobles, Urinary troubles	E, F, R, M	Ambla	Fruits
Trigonella foenum-graecum L.	Fabaceae	H	Intestinal inflammation, Small pox, Dysentery, Ulcers	E, F, M	Mirthya	Seeds
Flacourtia indica (Burm.f.) Merr.	Flacourtiaceae	T	Digestive, Appetizer, Jaundice, Diuretic	E, F, R, M	Kangu	Fruits, Bark, Seeds
Mentha piperita L.	Lamiaceae	H	Bronchitis, Stimulant, Stomachic, Carminative	E, M	Pudina	Leaves
Ocimum basilicum L.	Lamiaceae	H	Gonorrhoea, Diarrhea, dysentery, Carminatives, Toothache, Piles	E, M	Bhabri	Seeds, Fruits
Ocimum sanctum L.	Lamiaceae	H	Throat disorder, Stomachic, Expectorant, Malaria, Urino-genital problems	R, M	Tulsi	Leaves, Seeds
Bauhinia variegata L.	Leguminosae	T	Diarrhea, Dysentery, Piles, Prolepses, Corpulence, Toothache	E, F, M	Karyala / Kachnar	Flower-buds, Bark
Cajanus cajan (L.) Huth	Leguminosae	S	Apoplexy, Hemicranias	E, F, M	Arhar	Leaves, Seeds
Cicer arietinum L.	Leguminosae	H	Scurvy, Impotency, Cold	E, F, R, M	Chhole	Seeds
Macrotyloma uniflorum (Lam.) Verdc.	Leguminosae	S	Diuretic, Urinary problems, Diarrhea	E, M	Kolth	Seeds, Herbs
Pisum sativum L.	Leguminosae	S	Blood purifier, Laxative, Antipyretics	E, F, M	Mattar	seeds
Lens culinaris Medik.	Leguminosae	H	Piles, Vomiting, Diarrhea	E, M	Masar	Seeds
Linum usitatissimum Griseb.	Linaceae	H	Gonorrhea, Backache, Laxative in cattle	E, F, R, M	Alsi	Seeds
Punica granatum L.	Lythraceae	S	Diarrhoea, piles	E, M	Nar	Roots, bark
Abelmoschus Esculentus Moench	Malvaceae	S	Copulation power, Diuretic	E, M	Tori / Bhindi	Roots, Seeds

Gossypium arboreum Vell.	Malvaceae	H	Diuretic, Digestive	F, M	Kapah	Seeds, Fruits
Cissamplos pareira L.	Menisperma-ceae	S	Dyspepsia	E, M	Patindoo	Roots, Leaves
Cocculus hirsuts (L.) Diels	Menisperma-ceae	S	Stomachache, Eczema	E, M	Tar-dya/Jal-Jamni	Leaves, Roots
Ficus palmate Forssk.	Moraceae	T	Laxative, Lungs, Bladder problems	E, I, M	Khasara	Fruits
Ficus racemosa Willd.	Moraceae	T	Stomachic, Carminative, Diarrhea, Diabetes, Vulnerary, Piles	E, M	Ta-rayamblu	Fruits, roots, Bark, latex
Ficus religiosa Decne. Ex Miq.	Moraceae	T	Asthma, Cutaneous troubles, Stomachic, Menstruation disorderness	R, M	Pippal	Leaves, bark, Fruits
Morus alba Bureau	Moraceae	T	Refrigerant, Purgative, Vermifuge, Anthelmintic, Diaphoretic	E, F, M	Toot	Fruits, Bark, Roots, Leaves
Musa sapientum L. f. hookeri. King	Musaceae	T	Intestinal disorders, Nephritis, Respiratory problems, Gonorrhoea, Hypertension	E, R, M	Kela	Fruits, Leaves
Psidium guajava L.	Myrtaceae	T	Astringnent, Wounds, Ulcers, Prolepsis, Toothache, Stool	E, M	Amrood	Leaves, Bark
Syzygium cumini (L.) Skeels	Myrtaceae	T	Throat problems, mouth washes, Diabetes, Eye Troubles	E, F, M	Jamun	Bark, Leaves, Seeds
Sesamum orientale Sieber ex C. Presl	Pedaliaceae	H	Diuretic, Emollient, Lactagogue, Cough, Piles, Menstrual disorder, Diarrhoea	E, F, R, M	Til	Leaves, Seeds
Oryza sativa L.	Poaceae	H	Hemicramia, Pneumonia	E, F, M	Dhan	Seeds, Stem, Leaves
Triticum aestivum L.	Poaceae	H	Skin irritations, Cough, Urine	E, F, R, M	Kanak	Seeds
Zea mays L.	Poaceae	H	Piles, Swellings in Kidney,	E, F, R, M	Chhali	Grains, Syles
Hordeum vulgare L.	Poeaceae	H	Diuretic, Diabetes	E, R, M	Jau	seeds
Adonis aestivalis M. Bieb.	Ranunculaceae	H	Heart weakness	E, M	Ban-saunf	seeds
Zizyphus mauritiana Adans.	Rhamnaceae	S	Diarrhoea, Nose bleeding, Whooping cough	E, F, M	Ber / Malah	Bark, Leaves
Amygdalus communes L.	Rosaceae	S	Cough, Bronchitis, Diuretic, Gonorrhea, Urinal troubles	E, M	Badam	Kernels
Eriobotrya japonica (Thunb.) Lindl.	Rosaceae	S	Sedative, Diarrhea, Expectorant	E, M	Lo-quathh	Fruits, Flowers, Leaves
Prunus persica Stokes	Rosaceae	S	Demulcent, Antiscorbutic, Ascaricide, Diuretic, Pur-	E, M	Aru	Leaves, Flow-

			gative, Cough			ers, Fruits, Bark
Pyrus pashia Buch.	Rosaceae	S	Wormicides, Vermifuge, Astringnent	E, F, M	Kainth	Seeds, leaves
Rubus ellipticus Sm.	Rosaceae	S	Laxative, Demulcent, Diuretic, appetizer	E, M	Akhey	Fruits
Galium aparine L.	Rubiaceae	H	Diuretic, Refrigerant, Aperients, Antiscorbutic	E, F, M	Ghaa	Whole plants
Aegle marmelos (L.) Correa	Rutaceae	T	Diarrhea, Dysentery, Renal Problems, Dyspepsia, Fever, Jaundice	E, R, M	Bil	Fruits, Pulp, Bark
Citrus aurantium L.	Rutaceae	S	Digestive disorders, Diarrhoea, Wormicides	E, M	Sangtra	Fruits, Rind
Citrus limon (L.) Burm. f.	Rutaceae	S	Carminative, Scurvy, Hemicranias	E, M	Nimbu	Fruits, Rind
Citrus maxima (Burm.) Merr.	Rutaceae	T	Cholera, Convulsive cough, Refrigerants	E, M	Choktra	Leaves, fruits
Murraya koenigii (L.) Spreng.	Rutaceae	S	Diarrhea, Dysentery, Piles, Stomachic, Renal troubles	E, M	Gandhela / Karri patta	Leaves, Roots
Capsicum annuum L.	Solanaceae	S	Cholera	E, R, M	Pipali	Fruits
Solanum nigrum L.	Solanaceae	H	Tonic, Diuretic, Cathartic, Heart problems, Fever, Anthrax pustules, Dysentery	E, M	Kyaoon	Herb
Solanum tuberosum L.	Solanaceae	H	Diuretic Cough, Catarach	E, M	alu	Tubers
Pouzolzia zeylanica Kuntze	Urticaceae	H	Wormicide, Galactagogue	E, M	Shigra	Seeds
Vitis vinifera L.	Vitaceae	S	Laxative, Diuretic, Demulcent, Dog-biting, Diarrhoea, Skin infections	E, M	Angoor	Leaves, Fruits
Curcuma longa L.	Zingiberaceae	S	Stimulant, Stomachic, Gonorrhea, Diuretic, stimulant, Aromatic, Carminative	E, R, M	Haldar	Rhizomes
Zingiber officinale Roscoe	Zingiberaceae	H	Dyspepsia, Cough, Cold, Jaundice	E, M	Adra / Adrak	Rhizomes

Abbreviations: *H=Herb, S=Shrub, T=Tree, E=Edible, F=Fodder, R=Religious, M=Medicinal*

The highest number of ethno-medicinal plants was recorded from the family Brassicaceae and Cucerbitaceae having eight plant species followed by Leguminosae having six plant species. Two families namely Rosaceae and Rutaceae contributed five plant species each. Two families namely Moraceae as well as Poaceae contributed four species each. Three species each were contributed by three families namely Apiaceae, Lamiaceae and Solanaceae. Two species each were contributed by eight families namely Alliaceae, Anacardiaceae, Chenopodiaceae, Combretaceae, Malvaceae, Menispermaceae, Myrtaceae and Zingiberaceae. Rest of the reported families contributed one species each (Figure 1).

Different plant parts were used by the people and the traditional healers for the treatment of various diseases of human and animals. Among different plant parts, the Fruits were found to be the most frequently used part for the treatment of various ailments followed by leaves, roots or rhizomes, bark, flowers, whole plant, and stem. 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 jiggery, carom seeds, black pepper, onion, wheat flour, alum, sugar etc.

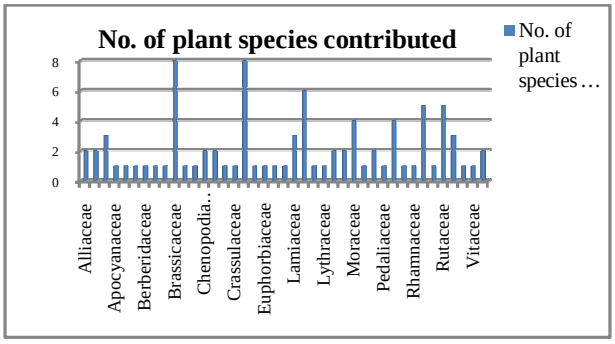

Figure 1: Representation of the families and number of plants studied at study site.

Maximum number of plants was used to cure cough and cold followed by digestive disorders, arthritis/joint pain/rheumatism, and kidney diseases and to purify blood. Many of the plants reported are likely to provide new cures to the world of medicine. Human diseases such as arthritis, bruises, boils, bone fractures, cholera, cold, constipation, cough, diabetes, diarrhea, dyspepsia, eye and skin infections, fever, headache, high blood pressure, impotence, inflammation, jaundice, joint pain, kidney stones, malaria, measles, mouth ulcers, piles, pneumonia, rheumatism, stomach ache, stomach worms, toothache and wounds were treated by the plant species namely *Aegle marmelos, Bauhinia variegata, Carica papaya, Cordia dichotoma, Curcuma longa, Ficus palmate, Ficus racemosa, Flacourtia indica, Murraya koenigii, Ocimum sanctum, Pyrus pashia, Rubus ellipticus, Syzygium cumini, Terminalia bellirica, Terminalia chebula and Zizyphus mauritiana.*

CONCLUSION: The modern system of medical treatment has become a costly affair beyond the reach of low economy class people living in tribal areas. In contrast, the traditional system of medicine has played a pivotal role in providing healthcare to the people living in the remote areas where the modern facilities have failed to flourish. Hence, it becomes necessary to explore the alterations to provide healthcare for all and that lies with the wild species of medicinal and aromatic plants. The role of ethno-medicinal plants for the welfare of humanity will be of immense value in the years to come.

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