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ETHNOBOTANICAL SURVEY OF MEDICINAL PLANT SPECIES IN THE FOOTHILLS OF DHARAMSHALA, DISTRICT KANGRA, HIMACHAL PRADESH (INDIA)

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ABSTRACT

Ethnobotany is the study of correlation between man and his surrounding vegetation. Around, 70-80% of the world's population depends on the ancestral therapeutic practices. So, it is necessary to archive the traditional knowledge and vegetation. Ethnobotany also assists in unearthing the traditional knowledge concerning about the civil society ethics, aphorism, medico-religious belief, symbols and taboos which are predominant in a particular culture or area as well as scrutinizes the usefulness of herbs as emergency foods. The Himalayan region has immense prosperity of medicinal flora and conventional wisdom on healthcare maintenance. In the Western Himalaya, Himachal Pradesh is rich in plants diversity with great medicinal value and is also called as hot spot of medicinal flora. The present research paper deals with the medicinal potential of 40 plant species which are used frequently by the rural populace of study area. The used quantitative ethnobotanical parameters explore the quantitative figures *e.g.* Informant Consensus Factor (ICF) and Use Value (UV) in order to investigate the most prominent medicinal species.

Keywords: Ethnobotany, Traditional knowledge, Taboos, Informant Consensus Factor, Use Value.

Introduction

Ethnobotany is the study of correlation between man and his surrounding vegetation. The term ethno-botany was coined by J.W. Harshberger for the first time in 1895 to specify plants which are used by the indigenous people (Jain, 2004). Around, 70-80% of the world's population depends on the ancestral therapeutic practices. So, it is necessary to archive the traditional knowledge and vegetation. Herbs are employed as home remedies to encounter various diseases and infections from the long time. In Ayurvedic formulations, most of the pharmaceutical ingredients are plant based (Guleria & Vashishth, 2009). Ethnobotany also assists in unearthing the traditional knowledge concerning about the civil society ethics, aphorism, medico-religious belief, symbols and taboos which are predominant in a particular culture or area as well as scrutinizes the usefulness of herbs as emergency foods. At present, ethnobotany has been in great demand and become progressively important in the evolvement of preservation and wellness programs in distinctive areas of the world. Ethnobotanical study that helps to conserve and investigate information and education are therefore instantly vital before this classical mythology is vanished forever (Jain, 2004). In ancient texts (*e.g.*, Atharvaveda and Rig-Veda), there is a mention of usage of herbs for medicinal purposes. Ethnobotanical information in the form of mythology is passed through generation to generation in certain constricted and distant abode (Rawat & Kharwal, 2013). The Himalayan region has immense

prosperity of medicinal flora and conventional wisdom on healthcare maintenance. In the Western Himalaya, Himachal Pradesh is rich in plants diversity with great medicinal value and is also called as hot spot of medicinal flora (Sharma *et al.*, 2014). The significance of tribal knowledge for the protection of biodiversity and in uplifting livelihood is now well understood (Uniyal *et al.*, 2011). Each part of the plant has a distinctive result on different ailments and disorders. But, on the other hand, due to disinterest of youth, diverse style of living and folk healers which keep the indigenous knowledge confidential; traditional medicine knowledge is diminishing universally (Kalyani *et al.*, 2022). Dharamshala, a tehsil of Kangra District of Himachal Pradesh that lies in the Northern Western Himalaya has affluent diversity of flora and fauna. Till date, no research has been reported to document the precious ethnobotanical knowledge of this region. Hence, the present work has been undertaken to explore the medicinal potential of plant species of the study area which are used conventionally by the local people for primary health care. The quantitative ethnobotanical parameters were used to explore the quantitative figures *e.g.* Informant Consensus Factor (ICF) and Use Value (UV) in order to investigate the most prominent medicinal species.

Materials and Methods

Study Area

Dharamshala, precisely means 'holy refuge' situated in the lap of sovereign Dhauladhar range is the district

headquarters of Kangra district and is the second administrative capital of Himachal Pradesh. Dharamshala lies in the North-Western Himalaya, situated between latitude 32°23' North and longitude, 76°32' East. The unique topographical location of the area offers view of the Kangra valley below with thick deodar and pine forests and the snow capped Dhauladhar mountain ranges above. The average elevation of the town is 1,457 m from mean sea level that ranges from 1,250 m to 2,082 m. The climatic conditions of the region falls under humid subtropical climate, which is altered by the monsoon. Here, monsoon stays from July to mid-September and summer stays from April to June and peaks in early June. The mean annual temperature of the area is approximately 19.1 degree Celsius and the mean annual rainfall is approximately 278.6 cm.

Field Study and Data Collection

Intensive ethnobotanical surveys were conducted during the period of 2021-2022 in the study area. People of this

region can easily understand and speak Hindi but they communicate in their local dialect (Kangri) amongst themselves. The ethnomedicinal data was collected by consecutive interviews and with the help of structured questionnaire from the respondents (especially local healers and knowledgeable people) about the conventional uses of plants. The respondents profile in general bears sex, age group and education level. Local healers mainly include gaddi community, 'vaid's', resource person mainly woman and local people. The resultant information gathered for each plant species was recorded in the field notebook along with the locality and local name. For collection of plant specimens, their drying, mounting, preparation and preservation on herbarium sheets, standard methods were pursued, following Jain and Rao (1976). To get the information on the medicinal uses of the plants, three basic approaches were followed (Phondani *et al.*, 2010).

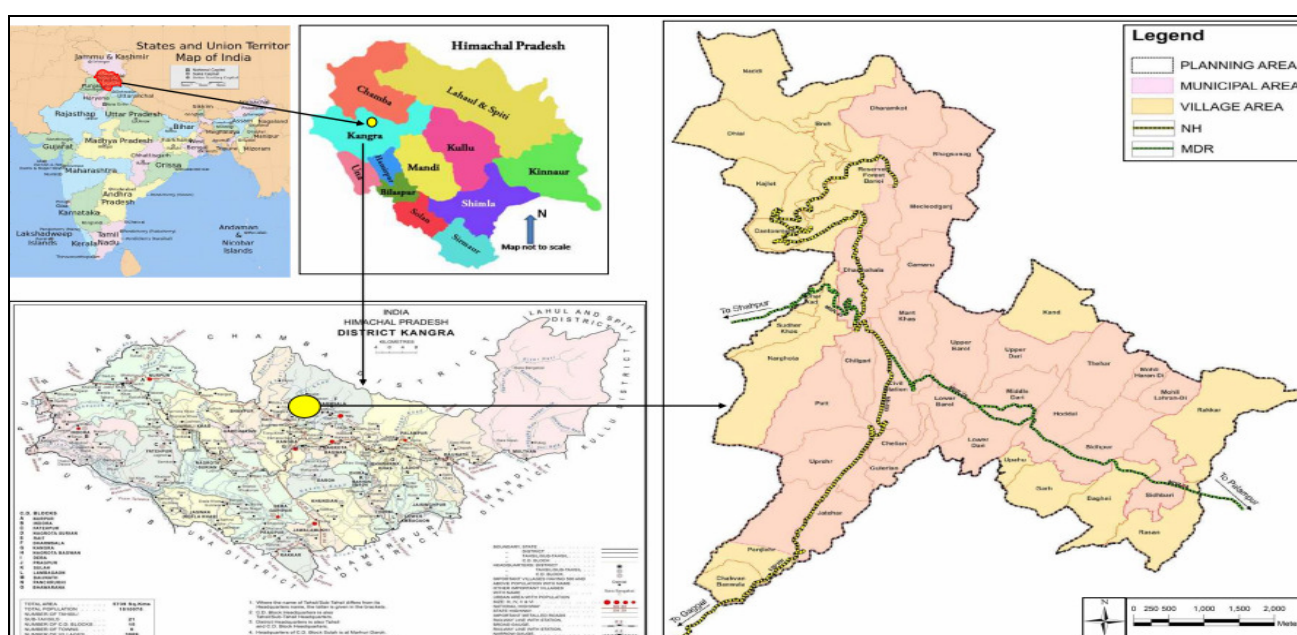


Fig. 1 : Location map of Dharamshala in Kangra District (Himachal Pradesh)

An interview based approach: in this approach questions were asked and recorded from the informants about the uses of plants while visiting the field area.

An inventory based approach: which involves consecutive interviews with the local people and collection of plant species. In this approach information about the plant specimens also gathered such as –

- Local name of the plant
- Plant part/s used
- Disease to be cured
- Mode of usage.

An interactive discussion approach: open discussion through meetings with different participants. Questionnaires were filled with the help of participants to acknowledge the different uses of plant species used to cure different diseases. The ethnobotanical information pertaining to different plant species of the area have been listed in an alphabetical order as per details provided by the rural population of the region (Table 3).

Quantitative Ethnobotany

The ethnobotanical statistics were evaluated with the help of two quantitative indices *i.e.* Informant Consensus Factor (ICF) and Use Value (UV).

Informant Consensus Factor (ICF)

According to Heinrich *et al.* (1998), the ICF was calculated using the following formula

$$ICF = \frac{Nur - Nt}{(Nur - 1)}$$

Where, 'Nur' refers to the absolute number of uses described for particular disease group and 'Nt' refers to the absolute number of species used for that disease group. This formula was used to determine the uniformity in the ethnomedicinal data collected from the acknowledged informants. Low ICF value indicates that the plant species were chosen arbitrarily and there is no exchange of information between the informants about the plant uses. Where as, high ICF value indicates that some plants were customarily used by a large number of informants (Xavier *et al.*, 2014).

Use Value (UV)

Use value (UV) was calculated using the formula given below following Philips *et al.*, 1994:

$$UV = \sum U / N$$

Where, ‘U’ is the number of plant uses cited for a given species by the informants and ‘N’ is the total number of informants quized. High UV score of a plant species designates that there are many uses described for that particular plant and if the UV score is low, that means there are lesser uses described for the specific plant by the informants and the plant species is less well-known in the study area.

Table 1 : Statistical profile of informants

Sex	Number	Percentage (%)
Male	31	45.59
Female	37	54.41
Age groups	Male	Female
50-60	7 (22.58%)	11 (29.73%)
60-70	9 (29.03%)	14 (37.83%)
70-80	15 (48.39%)	12 (32.43%)
Education	Male	Female
0-5th	11 (35.48%)	19 (51.35%)
5th-12th	13 (41.93%)	13 (35.13%)
Above 12th	7 (22.58%)	5 (13.51%)

Results & Discussion

Demography of informants

A total of 68 rural informants were interviewed with ages ranging from 50 to 80 years. Out of total, 31 (45.59%) were male and 37 (54.41%) were female. The informants were divided on the basis of three different aspects – sex, age groups and education as shown in Table 1. Most of the informants were educated.

Attributes of Documented Plant Species

From the study area, a total of 40 plant species associated with 26 families were collected for their medicinal uses. All the documented plant species are indicated in Table 2 with their family, common name, local name and ethnomedicinal uses along with the quantitative indices *i.e.* use value and informant consensus factor. Of all the plants enumerated, 11 cultivated species and 29 wild species were collected. Some of the plant species are well-known for their medicinal uses such as *Achyranthes aspera* Linn., *Ageratum conyzoides* Linn., *Centella asiatica* (L.) Urb., *Cynodon dactylon* (L.) Pers., *Spilanthes acmella* (L.), *Withania somnifera* (L.) Dunal, *Zanthoxylum armatum* DC., *Ocimum basilicum* Linn. and *Ocimum sanctum* Linn.

During the survey, most of the documented plant species owing to Asteraceae (4 species), Amaranthaceae (3 species), Lamiaceae (3 species), Solanaceae (3 species) and Apocyanaceae, Fabaceae, Poaceae, Polygonaceae and Rutaceae with two species each. The remaining families contributed for single plant species. Herbs (60%) were used predominantly followed by shrubs (35%) and trees (5.0%) (figure 3). This is conceivably due to their easy access in the study area. Herbs were also used for curing more than one diseases. The most exploited plant parts were leaves (34%), followed by roots (19%), whole plant (19%), seeds (14%), flower (10%), fruit (3%) and stem (1%) (figure 2).

Depending on the nature of diseases, the different methods of crude drug preparations were used. The most commonly used methods of usage of medicinal plant species was a poultice, followed by decoction, extract and dried powder.

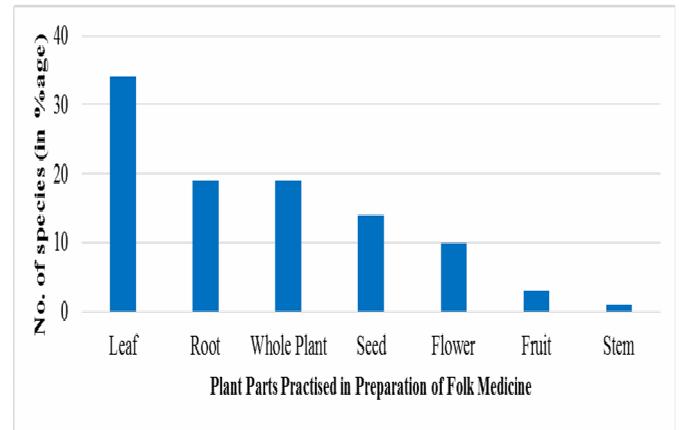


Fig. 2 : Catalog of plant parts together with their prevalence of use amid documented species for the formation of folk medicine.

Use Value of Plant Species

On the basis of use-value (UV), the most important medicinal plant species of the area were classified. In the present study, UV ranged between 0.04 to 0.51. Based on the UV data, the seven most commonly used ethnomedicinal plant species were *Hibiscus-rosa-sinensis* (UV=0.51), *Withania somnifera* (UV=0.50), *Cymbopogon citratus* (UV=0.47), *Sesamum indicum* (UV=0.47), *Cynodon dactylon* (UV=0.41), *Ocimum basilicum* (UV=0.38) and *Ipomoea quamoclit* (UV=0.37). The least used species were *Catharanthus roseus*, *Clematis grata* and *Persicaria capitata* (UV=0.10 each), *Persicaria nepalensis* (UV=0.07) and *Ageratum conyzoides* (UV=0.04). These species were used to treat various diseases, such as cough, cold, boils, abdominal pain, skin infections, anti-fertility and abortion, gastritis, to alleviate flatulence, carminative and anti-allergic activity, while the species with lowest UV were exclusively used to treat inflammation, poisoning, wounds and cuts.

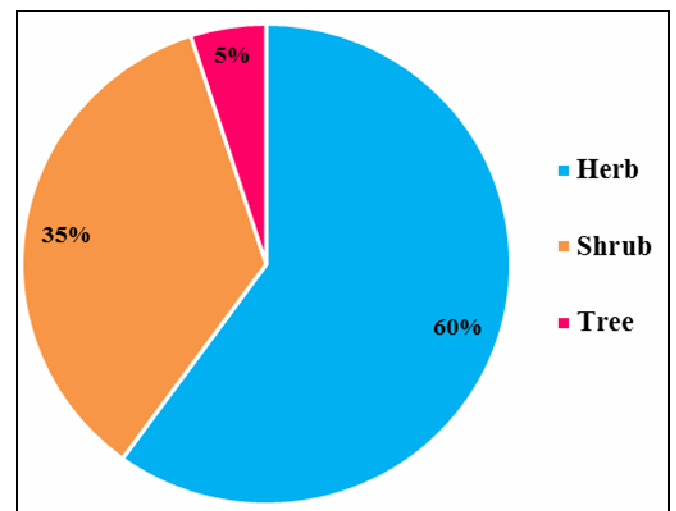


Fig. 3 : Habit of ethnomedicinal plant species used in Dharamshala, District Kangra (H.P.)

Informant Consensus Factor

The diseases were distributed into 10 categories. The ICF values ranged from 0.65 to 0.95. Based on the survey, the

highest ICF value was for oral disorders (ICF=0.95), followed by neurological and psychological disorders (ICF=0.94), fever and physical pain (ICF=0.93), respiratory problems (0.89), dermatological problems (ICF=0.89), gastro-intestinal disorders (ICF=0.88), inflammatory (ICF=0.88), circulatory and urinary problems (ICF=0.88), reproductive disorders (ICF=0.80) and poisoning (0.65). The highest number of ethnomedicinal species were used to treat dermatological disorders (17), followed by gastrointestinal disorders (16), fever and physical pain (11), inflammation (9), circulatory and urological disorders (6) and poisoning

(4). The lowest number of species were used to treat oral and neurological/psychological disorders (3 each) followed by reproductive disorders (2). According to the data, oral disorders (0.95) and neurological disorders (0.94) have comparatively high values close to 1.0, which shows that information about some diseases is adequately shared between the informants. The low ICF value shows that information regarding certain species which should be used for specific illness is not well known among the informants.

Table 2 : Categorisation of diseases by Informant Consensus Factor (ICF)

S. No.	Category of ailment	Use citations (Nur)	Number of species (Nt)	ICF Value
1.	Oral hygiene: Toothache, gum infections	40	3	0.95
2.	Neurological and psychological disorders: insanity, anomalous behaviour	35	3	0.94
3.	Fever and physical pain: headache, weakness, body pain	141	11	0.93
4.	Dermatological disorders: allergy, baldness, boils, wounds and cuts	155	17	0.89
5.	Respiratory disorders: asthma, pneumonia, throat infection	48	6	0.89
6.	Gastro intestinal disorders: flatulence, indigestion, gastritis, constipation, piles	130	16	0.88
7.	Inflammation: rheumatism, arthritis	68	9	0.88
8.	Circulatory and urological disorders: kidney stones, diuretic, high blood pressure	44	6	0.88
9.	Reproductive disorders: sexual abnormality, impotence, infertility, abortion	6	2	0.80
10.	Poisoning: wasp stings, snake bite, dog bite	24	4	0.65

Table 3 : Documented ethnomedicinal plant species along with their uses

S. No.	Botanical Name	Common Name	Family	Local Name	Habit	Part(s) Used	Disease/Ailment treated (no. of informants)	Total citations (∑U)	Use value (UV)	Treatment/ Mode of usage
1.	<i>Achyranthes aspera</i> Linn.	Prickly chaff flower	Amaranthaceae	Puthkanda	Herb	Roots, Whole plant	Skin detonation (10), Kidney stone (2)	12	0.18	Skin detonation : Add mustard oil (10g) to the ash collected by burning the plant. This paste is applied on the infected portion of the skin three times a day for about 8-10 days. Kidney stone: Whole plant decoction (20ml) is consumed in morning and evening.
2.	<i>Ageratum conyzoides</i> Linn.	Billygoat - weed	Asteraceae	Neela-Phulnu	Herb	Flowers and Leaves	Wounds and cuts (3)	3	0.04	The fresh leaves of the plant are crushed into paste and is applied into the cuts.
3.	<i>Amaranthus viridis</i> Linn.	Green amaranth	Amaranthaceae	Chaleri	Herb	Leaves	Sprain and bruise (5), Stomach disorder (9)	14	0.20	Sprain and bruise: Crush the fresh leaves of the plant and apply promptly on the affected area. Stomach disorder: The infusion prepared from the young leaves is consumed during the ailment.
4.	<i>Asclepias curassavica</i> Linn.	Blood flower	Apocynaceae	Kaktundi	Shrub	Whole plant	Pneumonia (2), Bronchitis (3), external and internal bleeding (10)	15	0.22	Decoction prepared from the dried whole plant is used for external and internal bleeding, bronchitis and pneumonia, also used as a cardiac tonic.

5.	<i>Asparagus adscendens</i> (Roxb.) Kunth	Asparag us	Asparagaceae	Sanspa	Shrub	Root	Wound/ Injury (8)	8	0.11	Root (5g) of the plant is mixed with 5-6 drops of cow's urine and 2-5 drops of cow's milk. To this equal amount of thyme powder is added with black pepper. This paste is applied on wounds three times a day for 3-4 days.
6.	<i>Brassica nigra</i> (L.) W.D.J. Koch	Black Mustard	Brassicaceae	Saron	Herb	Leaves, Seed	Antibacterial (4), Pulmonary edema (4) and Throat infection (5)	13	0.19	Antibacterial: Oil from seeds act as bactericide, removes blotchiness of skin. Pulmonary edema: Mustard plaster is applied on the affected area. Throat infection: Crushed seeds are consumed to relieve throat infection.
7.	<i>Camellia sinensis</i> (L.) Kuntze	Tea	Theaceae	Chaii	Shrub	Leaves	Astringent (7), Stimulant and Diuretic (8)	15	0.22	The green leaves of the plant are used as green tea which act as astringent, stimulant and diuretic.
8.	<i>Cannabis sativa</i> Linn.	Hemp	Cannabaceae	Bhang	Herb	Seed	Sexual abnormality (2), Wasp and Scorpion stings (6).	8	0.11	Sexual disorders: Seed powder of the plant is taken three times a day with a glass of hot water for 10-15 days. Wasp and Scorpion stings: The paste prepared from the crushed leaves is applied on the sting part of the skin.
9.	<i>Catharanthus roseus</i> (L.) G. Don	Rose periwink le	Apocynaceae	Sadabahar	Herb	Whole plant	Diabetes (7)	7	0.10	The whole plant is dried and crushed in powder form which is mixed with cow's milk or goat milk and taken orally to cure diabetes.
10.	<i>Centella asiatica</i> (L.) Urb.	Indian pennywo rt	Apiaceae	Brahmi, Mink ke pattee	Herb	Leaves	Blood Pressure (10), Memory enhancer (11)	21	0.31	Blood Pressure: 50ml of leaf juice is added to a glass of water and is taken for 5-6 days two times a day to cure blood pressure. Memory Enhancer: Decoction prepared from the leaves given to the patient suffering from the loss of memory.
11.	<i>Chenopodium album</i> (Linn.)	White goosefoo t	Amaranthaceae	Sathu bathu	Herb	Leaves	Antiseptic (7), Constipation and piles (16)	23	0.33	Antiseptic: Leaf powder is used for burns or wounded skin as antiseptic. Constipation and piles: Leaves of the plant are used in the form of vegetable for curing piles, also used as laxative for constipation.
12.	<i>Clematis grata</i> Wall.	Charmin g clematis	Ranunculaceae	Geetan, Murhar	Shrub	Flower, Leaves	Wounds/ cuts (7)	7	0.10	The fresh leaves are grinded and the juice taken is applied on wounds and cuts.
13.	<i>Cymbopogon citratius</i> (DC.) Stapf.	West Indian lemon grass	Poaceae	Nimboo ghaa	Shrub	Leaves	Skin infection (11), Digestive sickness (21)	32	0.47	Skin infection: The essential oil obtained from the plant is very effective in the treatment of athlete's foot, ring worm, scabies and lice. Digestive disorders: The boiled leaves of the plant are consumed to cure digestive problems.
14.	<i>Cynodon dactylon</i> L. Pers.	Bermuda grass	Poaceae	Dhrub	Herb	Whole Plant	Diarrhoea (4), Body revitalizing (24)	28	0.41	Diarrhoea: 10ml juice of crushed plant (with honey) is given for 5-6 days two times a day. Body revitalizing: Decoction (50ml) of whole plant is taken orally.
15.	<i>Cynoglossum glochidiatum</i> Wall. ex Benth.	Barbed forget- me-not	Boraginaceae	Balraj	Herb	Root	Digestive disorder (11), Urinary complaints (9), Muscular pain (3)	23	0.34	Infusion of root with warm water is given to cure urinary, digestive problems and muscular pain.

16.	<i>Datura stramonium</i> Linn.	Jimson weed	Solanaceae	Dhatura	Shrub	Leaves, Seeds	Purgative (6), skin infection and ear pain (9)	15	0.22	Purgative: As purgative, seeds of the plant are used in asthma, cough and fever. Skin infection: Leaves of the plant mixed with mustard oil used to cure skin disorder. Ear pain: For this, juice of flower petals used.
17.	<i>Eclipta alba</i> (L.) Hassk.	False daisy	Asteraceae	Bhringraj	Herb	Whole plant	Piles (5), Skin infection (13)	18	0.26	Piles: Black pepper mixed with dry leaves of the plant used against piles. Skin infection: The crushed leaves of the plant are mixed with mustard oil to get rid of dandruff from hair. The fresh root paste is used for ulcers and wounds.
18.	<i>Hibiscus-rosasinensis</i> (Linn.)	China rose	Malvaceae	Gudhal	Shrub or Tree	Flower and Stem	Antifertility and abortion (4), Diuretic (8), Healthy hair (23)	35	0.51	Abortion and Antifertility: Hot water decoction prepared from the powder of the crushed dried flowers of the plant is used. Diuretic: Dry stems and flower are crushed to powder form and hot water extract is diuretic. Healthy hair: Paste of leaves is applied on the hair.
19.	<i>Impatiens balsamina</i> Linn.	Garden balsam	Balsaminaceae	Gulmehndi, Tiyoor	Herb	Leaves	Scabies (13)	13	0.19	Crush the leaves of the plant and apply as poultice on the affected area.
20.	<i>Ipomoea quamoclit</i> (Linn.)	Cypress vine	Convolvulaceae	Nagarbel	Herb	Leaves, Root, Seeds	Snake bites (4), piles (6), Physical weakness (6), anomalous behaviour (9)	25	0.37	Decoction of stem and leaves used to cure bloody cough, snake bites, diabetes and fever. Crushed leaves are used in the treatment of sores and piles.
21.	<i>Jasminum officinale</i> Linn.	Jasmine	Oleaceae	Safed - Chameli	Shrub	Leaves	Gum infections (6), Ulcers (2) and toothache (12).	20	0.29	Gum infections: Fresh leaves of the plant are chewed with black pepper (<i>Piper nigrum</i>) which is frequently known as 'Dandiajehar'. Ulcers and toothache: The fresh leaves are chewed in case of mouth ulcers and toothache.
22.	<i>Lantana camara</i> Linn.	Common lantana	Verbenaceae	Panchfulli	Shrub	Whole plant	Pulmonary tuberculosis (4) and haemoptysis, Constipation (9) and fever (11)	24	0.35	Pulmonary tuberculosis and haemoptysis: The dried flower's decoction is used to cure pulmonary tuberculosis and haemoptysis. Constipation and fever: An infusion from the flowering tops and dried leaves of the plant are used.
23.	<i>Mimosa pudica</i> Linn.	Touch-Me-Not	Fabaceae	Chui-Mui	Herb or Shrub	Leaves, Root	Goiter (5), Injury/Wound (19)	24	0.35	Goiter: Roots boiled with water is consumed three times a day. Wounds: Poultice of leaves applied directly to treat wounds.
24.	<i>Murraya koenigii</i> (L.) Spreng.	Indian curry tree	Rutaceae	Gandhela	Shrub	Leaves, Branch	Internal bruises (7), Skin infection (8)	15	0.22	Internal bruises: The crushed fresh leaves of the plant are warmed in a pot along with the linseed oil. With the help of cloth, it is then tied on the internally injured part of the body. Skin infection: The poultice of the branch is applied for 2-3 days (two times a day) on the infected portion of the skin.
25.	<i>Ocimum basilicum</i> Linn.	Thai basil	Lamiaceae	Bhabhari	Herb	Leaves, Roots and Seeds	Cold and cough (18), Asthma (8)	26	0.38	Decoction prepared from the flowers and leaves is consumed to cure cold, cough and asthma.
26.	<i>Ocimum sanctum</i> Linn.	Holy basil	Lamiaceae	Kapoor Tulsi	Herb	Leaves, Flower	Headache (8), Cold and cough (13)	21	0.31	Fresh juice prepared from the crushed leaves and onion bulbs is given in case of headache, cold and cough.
27.	<i>Oenothera rosea</i> L'H'er. ex Aiton	Evening primrose	Onagraceae	Buti	Herb	Leaves	Boils (18)	18	0.26	The leaves of the plant are crushed and the paste made is applied on the hard boils for untimely healing.

28.	<i>Persicaria capitata</i> (Buch.- Ham. ex D. Don) H. Gross	Pink clover	Polygonaceae	Kalovar	Herb	Whole plant	Snake bite (2),Boils (5)	7	0.10	The whole plant paste is prepared with water and is applied to boils, also used in snake bites.
29.	<i>Persicaria nepalensis</i> (Meisn.) H. Gross	Nepal knot weed	Polygonaceae	Trod, Nalora	Herb	Whole plant	Inflammation (5)	5	0.07	Whole plant in the form of poultice is applied on the affected area.
30.	<i>Phyllanthus niruri</i> (Linn.)	Gale of the wind	Phyllanthaceae	Bhumi aamla, Choti- aamble	Herb	Seeds	Fever and cold (11), Gastric troubles (9)	20	0.29	Fever and cold: Decoction prepared from seeds is consumed to cure cold and fever. Gastric troubles: Seeds decoction is used to treat digestive disorders.
31.	<i>Piper longum</i> Linn.	Long pepper	Piperaceae	Magan	Shrub	Inflores- cence	Cold-Cough (11)	11	0.16	Decoction of pod of <i>Piper longum</i> , <i>Glycyrrhiza glabra</i> and <i>Viola serpens</i> (50g each) is suggested at night, for 4-5 days, before going to sleep.
32.	<i>Sesamum indicum</i> Linn.	Benne, Sesame	Pedaliaceae	Til	Herb	Seed	General debility (21), Burns and scabs (11)	32	0.47	General debility: Puthkanda roots are left overnight to the bathing water. Next morning, to this water, add <i>Sesamum indicum</i> , rice and cow's urine. Bathing with this water for 5-6 days is beneficial. Burns and scabs: Oil and lime water (in equal parts) is applied as dressing for burns and scabs.
33.	<i>Solanum americanum</i> Mill.	America n black nightsha de	Solanaceae	Makoi	Herb or Shrub	Leaves, Fruit and Root	Headache (5), Jaundice (2), Diarrhoea(2) and fever (5)	14	0.20	Headache: Fruit paste and fresh leaves is applied on the head to cure headache. Jaundice: Paste prepared from the fresh leaves of the plant is consumed as pills in morning and evening. Diarrhoea and fever: During fever, root decoction is taken in the day and in night.
34.	<i>Spilanthes acmella</i> (L.) L.	Toothac he plant	Asteraceae	Akarkara	Herb	Inflores- cence	Toothache (15)	15	0.22	Inflorescence of the plant used for toothache and gum inflammation.
35.	<i>Taraxacum officinale</i> (L.) Weber ex F. H.Wigg.	Dandelio n	Asteraceae	Dudhli, Kanphul	Herb	Root	Dog bite (12)	12	0.18	Roots of the plant are applied as paste in case of dog bite.
36.	<i>Urtica dioica</i> Linn.	Stinging nettle	Urticaceae	Ainn	Herb	Leaves, Root	Arthralgia (Joint pain) (11)	11	0.16	Root's paste is applied on the affected area for 10-15 days.
37.	<i>Vigna vexillata</i> (L.) A. Rich.	Snail vine	Fabaceae	Baker bel, Shilpi fool	Herb	Whole Plant	Ulcer (6), Cholera (8)	14	0.20	Roots of <i>Podophyllum hexandrum</i> with raw turmeric along with decoction of roots of <i>Vigna vexillata</i> is taken for 3-4 days twice a day to treat cholera and ulcer.
38.	<i>Vitex negundo</i> Linn.	Chaste tree	Lamiaceae	Banna	Small Tree	Whole plant	Body inflammation (13), Fever (6)	19	0.28	Body inflammation: Mix in hot water the crushed leaves of <i>Vitex negundo</i> , <i>Justicia adhatoda</i> and <i>Impatiens balsamina</i> (in equal quantity). By bathing with this water (after staining) for 1 week helps in relieving body swelling. Fever: Decoction of leaves of <i>Vitex negundo</i> and <i>Justicia adhatoda</i> is used to cure fever.

39.	<i>Withania somnifera</i> (L.) Dunal	Winter cherry	Solanaceae	Ashwagan dha	Small Herb or Shrub	Root	Rheumatism and arthritis (24), Constipation (6) and Aphrodisiac tonic (4).	34	0.50	Rheumatism and arthritis: Dry roots are crushed in powdered form and consumed with milk regularly. Constipation: Dry root powder with hot milk is taken to treat constipation. Aphrodisiac tonic: Dry root in powder form (1-2g) is consumed with milk as aphrodisiac tonic at night.
40.	<i>Zanthoxylum armatum</i> DC	Winged prickly ash	Rutaceae	Tirmira, Trimbar	Shrub	Fruit, Seed	Toothache (7), Fever and throat infection (5), Scabies (2)	14	0.20	Toothache: A dry or fresh fruit is kept over the affected area till the fruit loses its pungency. Young shoots are useful to cure gum diseases and to make toothbrush. Fever and Throat infection: Decoction made from plant used to gargle for fever and throat infection. Scabies: As Poultice, fruit used to treat scabies.

Conclusion

The present study revealed that the rural inhabitants of Dharamshala of North Western Himalaya have a affluent knowledge of natural resources and employment of these plant resources is still an indispensable part of their socio-economic livelihood. It is evident from the above account that the local populace have acquired this extensive learning since ages through investigation and modifications. Use and knowledge of medicinal plant species is a part of their culture and life. In the prevailing situation, it forms an integral element of sustainable economic growth. However, this traditional knowledge which is passed from one generation to another generation is deteriorating significantly due to the knowledge being restricted to very elderly folks and traditional healers and today's youth does not show enthusiasm. Thus, there is an urgent need for the substantiation of this valuable information to avail their maximum benefits and for the well being of future generation.

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