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Original Article

Relative popularity level of medicinal plants in Talagang, Punjab Province, Pakistan

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ABSTRACT

This is the first ethnobotanical exploration with the aim to document the traditional medicinal usage of plants with the therapeutic values in Tehsil Talagang of Punjab province, Pakistan. The study shows the dependence of local people on medicinal plants in their daily life and provides practical evidence regarding the traditional usage of medicinal plants in health care practices. A total of 196 respondents including residents of the study area with gender representation and traditional healers were interviewed by using visual appraisal approach and rapid rural appraisal methods along semi-structured interviews and open-ended questionnaire. The data was quantitatively analyzed by using quantitative indices like use value, the relative frequency of citation, informant consensus factor, fidelity level and relative importance. A comparison with 25 published ethnobotanical and pharmacological studies was carried out to authenticate the ethnomedicinal relevance of the data recorded. The ethnomedicinal practices of 101 medicinal plants belonging to 36 families were reported. The results indicated that the dominant family was Brassicaceae (nine species). Herbs (57%) were the most dominant life form and leaves (29%) were the frequently used plant part with 45 reports. *Mentha arvensis* was found as highly cited plant species by respondents. The highest informant consensus factor value (0.65) was found for gastrointestinal disease category. There are 25 plant species having 100% fidelity level value. Use value and relative frequency of citation ranges from 0.04 to 0.16 and 0.15 to 0.36, respectively. The majority of the plant species were found to have strong pharmacological evidence. The current study will provide the basis for the preservation of ethnomedicinal heritage, knowledge and practices as well as for the further scientific investigations regarding the development of new herbal drugs.

Introduction

Ethnobotanical surveys provide information about indigenous communities and their traditional uses of medicinal plants (Ford et al., 1994; Verpoorte et al., 2005). Besides, these surveys have developed a focus on the discovery of drugs using herbal products as 50% of the drugs are prepared from these herbal products and their derivatives all over the world (Verpoorte, 2000; Yang et al., 2009; Stefkov et al., 2011). These investigations also highlight the conservation of medicinal flora biodiversity (Leonti, 2011).

In developing world, more than 4.5 billion people depend on medicinal plants as they are considered a part of their primary healthcare (Mussarat et al., 2014). According to rough estimates, about 35,000–75,000 medicinal plants have been reported to be useful to fill the gaps by providing the basis for health care system (Khalil et al., 2013). Various studies have been conducted around the globe on the usage of medicinal plants among several indigenous communities (Vandebroek et al., 2004; Kargıoğlu et al., 2008; Jamila and Mostafa, 2014). A quantum of ethnomedicinal studies have progressively been changed into fitness and health care programs (Balick, 1996). In recent years, the ethnobotanical studies concerning the usage of medicinal plant has gained considerable attention among the scientific communities (Tripathi et al., 2017). The reasons behind the increasing interest in medicinal plants documentation and their usage as re-emerging health assistance are the rising cost of synthetic drugs for personal health care and the exploration of new plant-derived drugs (Hoareau and DaSilva, 1999).

Ethnomedicinal practices by the local communities since immemorial times have helped to transfer this knowledge from generation to generation (Ugulu et al., 2009). Therefore,

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ethnomedicinal knowledge is not only a health care system but also culture and tradition (Heyd, 1995). In the present era, the basic issue is the loss of medicinal plants and the knowledge of ethnomedicinal preparations which can aid many scientists around the world as a guideline for the research of plant-based therapies (Adnan et al., 2014).

Climatic conditions in Pakistan are widely diverse with diverse flora having hefty number of medicinal plants (Gilani et al., 2010). The rich floral diversity of Pakistan contains approximately 1572 genera and about 6000 wild plant species (Ahmad et al., 2014). About 60,000 traditional health practitioners in rustic and remote areas are reported to use medicinal plant species in household remedies against various diseases. About 600 medicinal plants are reported to be collected by people as non-timber forest products (NTFP) (Adnan et al., 2014). Previous studies reported that 84% population of Pakistan is relying on traditional herbal medicines for their health care (Qureshi et al., 2007). The most common traditional medicinal system of Pakistan is based on medicinal plants including "Greeco-Islamic medicines" and "Yunani Dawakhana" (Ahmad et al., 2003). The use of herbal medicines for the cure of several ailments and other infections, such medicinal system is also known as "Tibb-e-Nabwi" common in Pakistan based on the use of herbs and natural commodities prescribed by the Holy Prophet (PBUH) for curing several diseases (Khalil et al., 2014). In the last few years, in different areas of Pakistan there has been a growing inquisitiveness in the research for remedial plants and their folk usage (Kayani et al., 2014). In Pakistan, a number of studies has been carried out in local communities which were found to use medicinal plant species for the treatment of several diseases and they were practicing it for a long time (Gilani et al., 2009; Mohy-ud-din et al., 2010; Shinwari, 2010).

Indigenous medicines have been consumed at large scale in the province of Punjab (Arshad et al., 2011; Ikram et al., 2014; Mahmood et al., 2013; Parvaiz, 2014; Qureshi et al., 2011; Qureshi et al., 2009; Sardar et al., 2015) but unfortunately, this ethnobotanical knowledge is not being properly documented and Talagang-Punjab is no exception in this regard. Consequently, the current study can be considered as the first study in the area of Talagang as the area has never been assessed ethnobotanically. Talagang has its unique topography having a rich diversity of medicinal plant species. The elderly people of rural areas, both men and women, have adequate knowledge about ethnomedicinal practices and prefer to use medicinal plants for the cure of various ailments. Due to widespread and outreach of modern health facilities, the ethnobotanical knowledge is gradually fading out from some urban areas of Talagang. Considering all these issues, it was deemed appropriate to document the traditional knowledge about the use of medicinal plants by the inhabitants of Talagang. The aim of the current study was to investigate and document the ethnomedicine to describe the status of contemporary ethnobotanical knowledge among different age groups and to access the level of traditional knowledge using quantitative indices like fidelity level (FL), use value (UV), frequency citation (FC), informant consensus factor (ICF) and relative frequency of citation (RFC).

Materials and methods

Geo-ethnographical overview of study area

In the Punjab province of Pakistan, Talagang is the subdivision of district Chakwal. It lies 45 km away from the Chakwal city. It is situated at 32° 55′ N and at 72° 25′ E. Talagang is one of the five administrative centers of Chakwal. There are 102 villages under the administrative division of Talagang. Talagang shares boundaries with Dudial, Tehi, Traggar, Chatwal and Dhok Marianwali villages in the north and with Dhok Jamal, Murat, NakkaKahut and Nara Pir villages in the east. The local people mainly use Punjabi language. About 80% of the total population living in Talagang is ethnically Punjabi of Aryan origin. The study area comprises of subtropical semi-arid, sub-humid and sub-mountainous zone. The weather remains cool mostly because of its elevation from the Central Punjab and due to hilly and mountainous areas near it like Soon valley and Kallar Kahar. The summer and winter temperature ranges between 15 to 40 °C and −4 to 25 °C respectively (Fig. 1).

Talagang is bestowed with a large no of medicinal plants and has a diversity of flora. Adequate health facilities are present for inhabitants in the form of single government hospital and a number of private hospitals but the majority of people are still partially dependent on traditional medicines because of common tradition that the old people prefer to use indigenous traditional methods for treating various ailments rather than modern medicinal system. Agriculture is the major source of earnings for local people as 50% of the total population of the study area is related to agriculture. The socio-economic conditions of the study area can be strongly affected by promoting the cultivation of medicinal plants.

Ethnobotanical field survey and data collection

The field data was collected through ethnobotanical surveys from October 2014 to October 2015 following ordinary approaches. Ethnomedicinal data was compiled using different protocols like field interpretations, semi-structured and open-ended interviews (Martin, 1995). Ethnomedicinal knowledge was also documented through a questionnaire. Written Prior informed consent' (PIC) was obtained from the local communities which included the right of an indigenous community to give or withhold her consent to the proposed research project that may affect the lands, resources, traditional knowledge and customs that they customarily own, occupy or otherwise use.

A total of 196 local respondents were interviewed randomly in the study area for the collection of ethnomedicinal knowledge. These informants included 105 male, 91 female and 17 traditional health practitioners. The questionnaire contained information on the demography of local informants including gender, age, education and experience. Besides, it also included the local name, parts used, preparation methods, folk recipes, mode of utilization and the ailments treated with medicinal plant species.

Medicinal plant species were collected, dried, preserved and mounted on standard herbarium sheets. The collected medicinal plant species were identified by using local names of the plants as reported by the local conversant respondents and by comparing with herbarium specimens of Herbarium of Pakistan (ISL), Quaid-i-Azam University Islamabad. The medicinal plant names services (https://www.kew.org/mpns) was also consulted for taxonomic and botanical authentication. The collected plant specimens were assigned voucher specimen numbers and deposited in the Herbarium of Pakistan (ISL), Quaid-i-Azam University Islamabad.

Quantitative analysis of ethnobotanical information

Ethnomedicinal data was quantitatively analyzed using various quantitative indices such as use value (UV), relative frequency of citation (RFC), fidelity level (FL), relative importance (RI) and informant consensus factor (ICF).

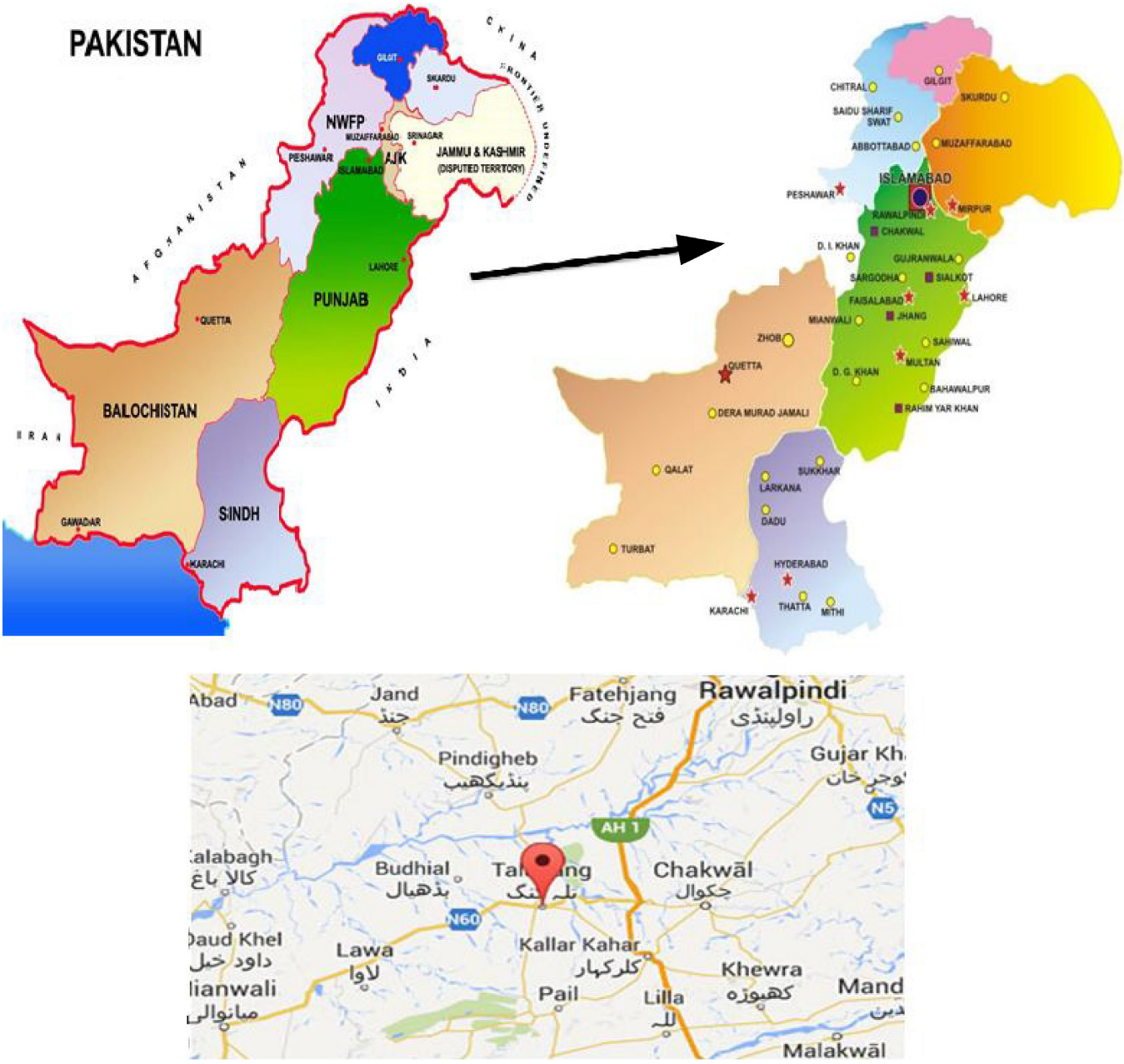

Fig. 1. Map of Pakistan showing Punjab Province and Talagang.

Informant consensus factor (ICF)

Informant consensus factor (ICF) was calculated using given formula (Trotter and Logan, 1986; Tabuti et al., 2003; Teklehaymanot, 2009):

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

where *Nur* indicates the number of use reports for a specific disease category and *Nt* mentions the number of taxa used for the disease category. ICF is used to indicate the consensus of knowledge on the usage of medicinal plant species for a particular ailment (Canales et al., 2005). The ICF value ranges from 0 to 1. The highest ICF value indicates the taxa used for the treatment of number of various ailments is reported by large proportion of the informants while low ICF value indicates the taxa used for the treatment of few different ailments which were chosen randomly or informants had lack of knowledge about the usage of plant species (Kloutsos et al., 2001; Abu-Irmaileh and Afifi, 2003; Gazzaneo et al., 2005; Teklehaymanot, 2009).

Use value (UV)

Use value (UV) was calculated by applying standard procedure as indicated in literature (Phillips et al., 1994; Šavikin et al., 2013):

$$\text{UV} = \frac{U}{n}$$

where *U* is the total number of use reports for a given plant species and '*n*' is the total number of informants inquired for a given plant species. UV will be high if the value is close to 1 which indicates many use reports for a given plant and significance of plant species

among informants whereas the UV will be low if its value is close to 0 which indicates few use reports for a given plant species.

Relative frequency citation (RFC)

Ethnomedicinal data was quantitatively analyzed using RFC which indicated the local importance of medicinal species. The RFC was calculated using given formula (Tardío and Pardo-de-Santayana, 2008; Vitalini et al., 2013):

$$RFC = FC/N (0 < RFC < 1)$$

where FC is the number of informants who reported the use of plant species and *N* is the total number of informants who participated in the survey. High RFC value indicates the prominence of a plant species among the informants. The RFC value may be 1 for a given plant species if informants report the particular plant species as useful and the RFC value could be 0 if nobody mentions the use of plant species (Medeiros et al., 2011).

Fidelity level (FL)

Fidelity level (FL) index is used to indicate the plant species more ideal for the treatment of specific ailment (Musa et al., 2011). FL was calculated using following formula (Friedman et al., 1986):

$$FL = \frac{Ip}{Iu} \times 100$$

where *Ip* shows the number of informants mentioning the use of plant species for a particular disease category and *Iu* shows the number of informants citing the usage of that plant species for any disease category. The high value of FL shows the importance of particular plant species over other plants for the treatment of specific disease as high value confirms the high frequency of plant usage against a particular disease. The low value of FL shows the use of plant species for different medicinal purposes and it confirms its low frequency usage against a particular disease by the informants of the study area.

Relative importance (RI)

The value of RI was calculated (Bennett and Prance, 2000) by using following formula:

$$RI = (PP + AC) \times \frac{100}{2}$$

where PP indicates the pharmacological properties which are calculated by dividing the number of UR for plant species with the highest number of UR, while AC indicates the diseases treated related to a particular body system. The value of AC is obtained by dividing the number of body systems treated using a particular plant species with the highest number of disease categories treated using a most extensively used species.

Comparison with previous studies

In this study, the documented data was compared with a total of 25 published ethno-botanical studies (Table 2). During comparative analysis, the percentage of similar and dissimilar uses was calculated. The similar uses were calculated by dividing similar use reports for plant species with all given use reports for plant species multiply by 100. These comparative similarities show the considerable authenticity of documented data.

Results and discussion

Demographic data

A total of 196 informants were interviewed, out of which seventeen were traditional healers and the rest were inhabitants of research area including a majority of Punjabis and Pathans. The majority of informants consisted of males 105 (53.57%) whereas females were 91 (46.42%). On the basis of age, informants were divided into six major cohorts. The majority of informants were between 51–60 years (27.55%) and 41–50 years (22.9%). A great majority of the informants (30.10%) was uneducated and the level of indigenous knowledge on the use of medicinal plants was found to be more prevalent among illiterate people. The role of educated people (20.91%) in this survey was also significant. The experiences of traditional healers were also given in the study showed in Table 1. Among the total seventeen traditional healers, the majority were found to have 5–10 years' experience (3.06%).

Table 1
Demographic data of informants in Talagang (Punjab).

S. no	Variable	Categories	No. of persons	Percentage
1.	Informant category	Traditional health practitioners	17	8.67
		Indigenous people	179	91.32
2.	Gender	Female	91	46.42
		Male	105	53.57
3.	Age	Less than 20	08	4.08
		20–30	23	11.73
		31–40	40	20.40
		41–50	45	22.9
		51–60	54	27.55
		More than 60	26	13.26
4.	Educational background	Illiterate	59	30.10
		Completed 5 years education	17	8.67
		Completed 8 years education	5	2.55
		Completed 10 years education	38	19.38
		Completed 12 years education	22	11.22
		Graduate	14	7.14
		Higher education	41	20.91
5.	Experience of the traditional health practitioners	Less than 2 years	02	1.02
		2–5 years	04	2.04
		5–10 years	06	3.06
		10–20 years	03	1.53
		More than 20 years	02	1.02

Medicinal plant diversity, frequently cited plant species and habit

A total of 101 plants belonging to 36 families were documented during this ethnobotanical survey. The detailed information on medicinal plant species included their local names, family name, part used, mode of utilization, folk recipes and diseases treated along with quantitative analysis given in Table 2. The dominant family in terms of the number of medicinal plant species used was Brassicaceae followed by Solanaceae and Fabaceae. Brassicaceae was dominant family because most of the members of this family were cultivated for food and used by the local people for treatment of various ailments (Marwat et al., 2008; Adnan et al., 2014). In the present study, herbs (57%) were the most dominant life form followed by trees (26%), shrubs (13%) and climbers (4%). The reasons behind the high percentage of herbs included their easy availability (Ayyanar and Ignacimuthu, 2005; Uniyal et al., 2006; Sanz-Biset et al., 2009), collection and efficacy in the treatment of various ailments due to the presence of active pharmacological constituents (Adnan et al., 2012). Other reason may be the ease in herbal preparation using herbs (Arshad et al., 2011; Lulekal et al., 2013) and have an active role in metabolism and digestion (George and Nimmi, 2011).

The present study also enlisted the most-frequently cited medicinal plant species with at least 60 citations or more (Table 2). The most frequently cited species were used by the majority of local people especially old age people because of the common occurrence and easy availability of these plant species. The majority of local informants were also found to have belief in the efficacy of traditional uses of medicinal plants and they prefer to use indigenous ethnomedicinal knowledge over synthetic drugs because of the high cost of synthetic drugs and various side effects.

Plant part used and modes of utilization

Local people utilized various parts of medicinal plants in crude herbal drug preparations; therefore, usage of different plants and its recipes were recorded. Mostly leaves (29%) were the major plant part used by local communities against various ailments because of their easy plucking and conservation (Kadir et al., 2012). In other studies at various places, ethnic populations were found to show similar results in case of plant parts used for the preparation of herbal medicines as in the current study (Srithi et al., 2009; González et al., 2010; Ayyanar and Ignacimuthu, 2011; Adnan et al., 2014; Ahmad et al., 2014; Dolatkhahi et al., 2014; Ahmed et al., 2015; Kumar et al., 2015; Patale et al., 2015). Other plant parts reported for treatment of several ailments are given in Table 2.

Indigenous communities were found to utilize medicinal plants for the treatment of different diseases using various modes of administration. The major populace was found to treat ailments by using medicinal plants in raw form (17.8%) followed by extract (17.2%). In the study area, mostly people preferred to take fruits and seeds in raw form. Traditional healers of the study area reported multiple preparations by using various parts of the plants because these preparations are more effective for treating ailments. Indigenous people do not store plant parts for drying but they preferred to use fresh plant parts especially for obtaining their extract and juice because of medicinal efficacy. Some people were also found to use different preparation methods as decoction (11.9%) which is the boiling of plant parts in water and infusion (3.97%) which is the addition of boiling water to plant parts and allow it to extract for c.a. 10 min. It was also noticed that the dosage of medications varies among informants depending on the age and treated ailment of the informants. The high number of informants were found to use these medicinal plants orally which is similar to earlier studies conducted in other parts of the world in which they reported oral as a major route of administration (Mood, 2008; Samy et al., 2008; Poonam and Singh, 2009; Nadembega et al., 2011; Brandão et al., 2012; Kadir et al., 2012). Some of the drugs were used in combination with water, oil, milk and jaggery (brown sugar).

Quantitative analysis of ethnomedicinal data

Relative frequency of citation (RFC) and use value (UV)

RFC was calculated to describe the most frequent medicinal plants and the local significance of plant species with reference to informants. The RFC values ranged from 0.15 to 0.36. The medicinal plant species with highest RFC are *Coriandrum sativum* L., *Melia azedarach* L. and *Mentha arvensis* L. (0.36). The high RFC value recorded for *Melia azedarach* L. may be due to its medicinal value but it was noticed that people also used it for fuel, timber and construction purposes; therefore, it was a well-known plant of the area. Other important species were *Coriandrum sativum* L. and *Mentha arvensis* L. with highest RFC because of their easy availability to informants and easy cultivation in kitchen gardens and fields. The plant species with least RFC value were *Eucalyptus camaldulensis* Dehnh., *Ficus benghalensis* L., *Malva parviflora* L. and *Parthenium hysterophorus* L. The ethnomedicinal studies conducted in Iran and Pakistan reported some plant species with low RFC values similar to the current study (Barkatullah et al., 2015; Dolatkhahi et al., 2014; Mahmood et al., 2013; Sultana et al., 2006; Ullah et al., 2014).

UV index was used to analyze the data quantitatively for the confirmation of the relative importance of species or family for the population (Vendruscolo and Mentz, 2006). UV value ranged from 0.04 to 0.16. The plant species with highest UV were *Ajuga integrifolia* Buch.-Ham. ex D. Don (0.16), *Solanum nigrum* L. (0.16) and *Trianthema portulacastrum* L. (0.15). The high use value of these species indicates the common occurrence and the importance of these species among informants as they frequently used these species in herbal therapies for various ailments. The medicinal plant species with least UV are given in Table 2. The preceding reports showed that the plant species with least UV in the current study were more effective as these medicinal plant species can be used in the development of human pharmaceuticals (Holling et al., 2012; Macuja et al., 2015; Oliveira et al., 2015).

Informant consensus factor (ICF)

Informant consensus factor (ICF) is a good tool to elaborate the frequency of usage of medicinal plant species for various disease categories. The present study reported 12 major ailment categories based on ICF values. The ICF of medicinal plants ranged from 0.4 to 0.65 (Table 3). The highest ICF value (0.65) was reported for gastrointestinal disorders. GIT disorders were found to be more prevalent in the study area because of the intake of low-quality foods especially by youngsters and children who like to eat fast food than homemade dishes. Similar results were reported by other studies conducted in Pakistan and in other countries which reported highest ICF value for GIT disorders (Logan, 1986; Rokaya et al., 2010; Teklehaymanot, 2009). In the study area, second highest ICF value (0.55) was reported for respiratory disorders mostly prevalent in thickly populated areas and around industrial zones. The least ICF values were found for ear, nose, eye disorders and for body energizers. Similar results were shown by a survey conducted in Morocco which also reported respiratory diseases with second highest ICF value (0.83) and eye disorders with least ICF value (0.22) (Jamila and Mostafa, 2014).

Fidelity level (FL)

The present study reports FL values varying from 45% to 100%. The results reported 23 medicinal plant species having maximum 100% FL. The medicinal plants with high FL show the preference of these plant species by informants for the treatment of specific diseases (Bibi et al., 2014; Islam et al., 2014). This revealed the

Table 2
List of medicinal plants with herbal recipes used among the local people of Talagang, Pakistan.

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%_	R.I[f]	Herbal recipes	Comparative previous studies[g]
Acanthaceae *Dicliptera chinensis* (L.) Juss. ISL-268	–	Herb	Leaf, flower	Powder	[i]**Earache** (SO/I), Bones weakness (MS/I), Ulcer (DS/I)	33	0.09	0.17	93.94	41.67	The dried leaves are grinded to make powder which is eaten for earache and ulcer The dried flowers are crushed to make powder and then mix water in it. Apply it dermally on effected areas to treat bone weakness	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Aizoaceae [h]***Trianthema portulacastrum* L.** ISL-386	Itsit	Herb	Whole plant	Paste, Juice	Wounds healing (MS/E), Rheumatism (MS/I), Fever (CS/I), Dropsy (MS/I), **Jaundice** (GS/I), **Liver diseases** (GS/I)	41	0.15	0.21	85.37	58.33	The roots are crushed to make paste which is applied on wounds for healing The fresh leaves are crushed in pestle and mortar to make paste and mix little water in it, then strain it to obtain juice which is used orally against jaundice and liver diseases	1●,2●, 3♦, 4■, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Amaranthaceae *Amaranthus viridis* L. ISL-109	Cholai	Herb	Leaf	Paste	Influenza (RT/I), Fever (CS/I), Snake bite (CS/E), Scorpion sting (CS/E), **Constipation** (DS/I)	43	0.12	0.22	100	52.78	The paste of the fresh leaves is dermally applied to reduce inflammation in case of snake and scorpion sting The powder of root is taken orally to relieve from constipation	1■, 2●, 3■, 4●, 5■, 6●, 7●, 8●, 9●, 10●, 11■, 12●, 13●, 14■, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Atriplex stocksii Boiss. ISL-270	Gerukh pari	Shrub	Whole plant	Decoction, Paste	Boils (MS/E), Fever (CS/I), Jaundice (GS/I), Dropsy (MS/I), Liver diseases (GS/I), **Wounds** (MS/E), **Rheumatic pain** (MS/I)	51	0.14	0.26	45.1	63.89	The roots of this plant and *Nigella sativa* are boiled in water then after straining used this water orally for rheumatic pain and liver diseases The paste is obtained by crushing fresh leaves in pestle and mortar, then applied on wounds and boils to treat them	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Chenopodium album L. ISL-180	Bathu	Herb	Root, leaf, Seed	Decoction, infusion	**Jaundice** (GS/I), Urinary problems (US/I), Intestinal worms (DS/I)	32	0.09	0.16	96.88	41.67	The leaves are cut into large pieces and boiled in water. After straining, this water is used orally to treat jaundice The seeds are lightly crushed and soaked in water overnight to obtain extract of seeds which is used in morning after straining against intestinal worms and urinary problems	1♦, 2■, 3♦, 4■, 5●, 6●, 7●, 8●, 9●, 10●, 11♦, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20♦, 21●, 22●, 23●, 24●, 25●
Dysphania ambrosioides (L.) Mosyakin & Clemants ISL-106	Chandan Bathu	Herb	Whole plant	Decoction	Backache (MS/E), **Wound inflammation** (MS/E), Cough (RT/I), Motions (DS/I), Dropsy (MS/I), Joint pains (MS/E), **Urinary problems** (US/I)	56	0.13	0.29	98.21	72.22	The decoction of leaves is obtained by boiling leaves in water then after straining mix it with juice of *Foeniculum vulgare* seeds which is used for urinary problems The dried leaves and stem are crushed to make powder then add oil of burnt *Allium cepa* bulbs in it and apply dermally to relieve joints pain, inflammation and backache	1■, 2●, 3●, 4●, 5●, 6●, 7■, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%)	R.I[f]	Herbal recipes	Comparative previous studies[g]
Spinacia oleracea L. ISL-233	Palak	Herb	Leaf, Stem	Cooked, Paste	Blood purification (CS/I), Anemia (CS/I), Bones problems (MS/I), **Digestive problems** (DS/I)	54	0.07	0.28	59.26	47.22	The leaves are crushed to make paste which is used orally with water for blood purification and digestive problems The fresh leaves and stem of spinach and fresh aerial parts of *Chenopodium murale* are cooked with other food additives which are used against various bones problems and anemia	1■, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Amaryllidaceae *Allium cepa* L. ISL-277	Piaz	Herb	Bulb	Raw, Paste	Aphrodisiac (RS/I), **Digestive problems** (DS/I), **Skin injuries** (MS/E)	65	0.05	0.33	98.46	41.67	The bulbs paste is fried in oil and apply in tepid condition on skin injuries to treat them The cut pieces of bulb are used as a salad for digestive problems and it is aphrodisiac also	1●, 2♦, 3●, 4■, 5♦, 6♦, 7●, 8●, 9●, 10●, 11♦, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19♦, 20■, 21●, 22♦, 23●, 24●, 25■
Allium sativum L. ISL-209	Lehsan	Herb	Bulb	Paste	Reduce blood pressure (CS/I), **Obesity** (MS/I), Digestive problems (DS/I), **Gastric problems** (DS/I)	67	0.06	0.34	92.54	47.22	The pieces of bulb are used in raw form orally to reduce blood pressure The 200 mg garlic bulbs are crushed to make a paste. Shaped it in a tablet form and left for drying for 2 days. 1 tablet per day is consumed with water to reduce obesity	1♦, 2■, 3♦, 4♦, 5●, 6■, 7●, 8♦, 9●, 10■, 11♦, 12●, 13●, 14●, 15●, 16●, 17■, 18●, 19●, 20■, 21●, 22■, 23●, 24●, 25♦
Anacardiaceae *Mangifera indica* L. ISL-560	Aam	Tree	Seed, Leaf	Extract	**Obesity** (MS/I), Earache (SO/E), Stop vomiting (DS/I)	36	0.08	0.18	72.22	41.67	100 g of crushed mango seeds are boiled in water for 15 min to obtain extract then used this extract before lunch and dinner to reduce obesity and treat earache also The extract is obtained from fresh leaves by soaking leaves in hot water, mix seeds powder of *Piper nigrum* and *Foeniculum vulgare* in it. The half teaspoon of this extract is used orally once in a day to prevent vomiting	1●, 2■, 3●, 4●, 5●, 6●, 7●, 8●, 9■, 10●, 11●, 12●, 13●, 14■, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Apiaceae *Anethum graveolens* L. ISL-680	Sowa	Herb	Seed, Flower	Cooked, Decoction	Digestive problems (DS/I), Diuretic (US/I), Eye diseases (SO/I), **Gastric problems** (DS/I)	53	0.08	0.27	83.02	47.22	Fresh flowers of this plant are cooked with paste of fenugreek leaves, *Spinacia oleracea* leaves, coriander leaves and salt. Cook it in soybean oil for 15 min. Eaten twice a day for gastric and digestive problems The 60 g seeds are boiled in one liter of water. This decoction is used after straining twice in a day to treat weak eyesight and it is anti-diuretic also	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10♦, 11●, 12●, 13♦, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21♦, 22●, 23●, 24●, 25●

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%)	R.I[f]	Herbal recipes	Comparative previous studies[g]
Coriandrum sativum L. ISL-188	Dhanya	Herb	Leaf, Seed	Paste, Juice	Diuretic (US/I), Stomach stimulant (DS/I), **Digestive problems** (DS/I), Gastric problems (DS/I), Colic (DS/I), Piles (DS/I), Flue (RT/I), **Carminative** (DS/I)	70	0.11	0.36	80	69.44	Fresh leaves are grinded with fresh leaves of *Mentha arvensis*, bulbs of *Allium cepa* and little salt. This paste is used orally for digestive and gastric problems and it is anti-diuretic also The seeds are blended with hot water to obtain juice of seeds which is used after straining against piles	1♦, 2♦, 3●, 4■, 5♦, 6♦, 7●, 8●, 9●, 10●, 11♦, 12●, 13■, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Daucus carota L. ISL-367	Gajjar	Herb	Root	Raw, Juice	**Eyesight** (SO/I), Jaundice (GS/I), Skin problems (MS/I), **Liver diseases** (GS/I), Heart problems (CS/I)	62	0.08	0.32	100	61.11	The root is eaten in a raw form against liver diseases, jaundice and to improve eyesight The juice is obtained by grinding roots with brown sugar which is used to treat various skin and heart problems	1●, 2♦, 3●, 4♦, 5♦, 6●, 7♦, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
***Foeniculum vulgare* Mill.** ISL-450	Sonf	Herb	Seed	Powder	**Digestive problems** (DS/I), Gastric problems (DS/I), Influenza (RT/I), **Eyesight** (SO/I), Constipation (DS/I), Diarrhea (DS/I)	63	0.1	0.32	88.89	58.33	The 250 g of dried seeds are grinded to obtain powder. Mix 3–4 fruit powder of *Elettaria cardamomum*, 350 g of sugar candy and 250 g leaves powder of *Mentha arvensis*. This powder is used three times a day for various digestive system disorders and to improve eyesight also	1●, 2●, 3♦, 4♦, 5■, 6♦, 7♦, 8●, 9●, 10♦, 11♦, 12●, 13■, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21♦, 22●, 23●, 24♦, 25●
***Trachyspermum ammi* (L.) Sprague** ISL-399	Ajwain desi	Herb	Whole plant	Powder	Kidney stone (US/I), Digestive problems (DS/I), **Cough** (RT/I), Appetizers (DS/I), **Gastric problems** (DS/I)	56	0.09	0.29	100	52.78	The powder is obtained by drying and grinding 125 g seeds. Mix fruit powder of *Foeniculum vulgare, Phyllanthus emblica*, 10 g seeds powder of *Piper nigrum* and 30 g black salt in it. 1 teaspoon of this powder is eaten before meal thrice a day to treat various disorders	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10♦, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Apocynaceae *Catharanthus roseus* (L.) G. Don ISL-412	Sada bahar	Herb	Leaf	Extract	**Diabetes** (GS/I), **Skin problems** (MS/E), Headache (NS/I), Piles (DS/I)	42	0.1	0.21	100	55.56	The extract is obtained by crushing and soaking fresh leaves and flowers in water overnight then after straining it is used for the treatment of various disorders	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9♦, 10●, 11●, 12●, 13●, 14●, 15■, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Arecaceae *Phoenix dactylifera* L. ISL-396	Khajoor	Tree	Fruit	Raw, Paste	Fever (CS/I), Gonorrhea (RS/I), **Constipation** (DS/I)	35	0.09	0.18	82.86	41.67	The paste of un-ripened fruit is boiled in 550 ml of milk. After becoming this mixture viscous; it is taken twice a day for relieving from constipation 5–6 fruits are prescribed to eat in raw form for gonorrhea	1♦, 2■, 3●, 4■, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25■

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%_	R.I[f]	Herbal recipes	Comparative previous studies[g]
Asclepiadaceae ***Calotropis procera* (Aiton) Dryand.** ISL-555	Aak	Shrub	Whole plant	Paste, Infusion	Malaria (CS/I), Obesity (MS/I), **Cholera** (DS/I), Asthma (RT/I), Cough (RT/I), **Skin problems** (MS/E), Ulcers (DS/I), Piles (DS/I), Leprosy (MS/I)	63	0.14	0.32	100	83.33	The secretion from the root bark is soaked in hot water for 30 min; after straining add 1 teaspoon of honey in it. ½ teaspoon is consumed in morning and evening for the reduction of obesity The paste of flowers is applied on affected area to treat various skin problems and leprosy	1■, 2■, 3■, 4♦, 5■, 6■, 7●, 8●, 9●, 10♦, 11●, 12■, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Asteraceae *Calendula arvensis* (Vaill.) L. ISL-532	Gul-e-ashrafi	Herb	Flower, Leaf	Extract	Tonic (BS/I), **Diaphoretic** (MS/I)	32	0.06	0.16	100	27.78	The leaves and flowers are grinded with little water to obtain extract; add powder of *Nigella sativa* seeds in extract which is eaten twice in a day after straining as a tonic and diaphoretic	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Helianthus annuus L. ISL-720	Sooraj mukhi	Herb	Flower, Seed	Oil, Extract	Itching (MS/E), **Skin diseases** (MS/E), Diuretic (US/I), Expectorant (RT/I)	42	0.1	0.21	80.95	47.22	The seeds are squeezed after crushing them to obtain oil which is applied dermally for various skin diseases. Flower petals are soaked and crushed in little amount of rose water to obtain extract which is taken orally as a diuretic and expectorant	1●, 2●, 3●, 4●, 5●, 6■, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25■
Parthenium hysterophorus L. ISL-777	Chatak chandni	Herb	Whole plant	Decoction, Powder	Dysentery (DS/I), **Diabetes** (GS/I)	30	0.07	0.15	70	27.78	The powder is obtained by crushing dried plant. 1 teaspoon of this powder is prescribed to eat in a day for diabetes The plant material is boiled in water then after straining mix black salt and cinnamon powder in it. Half cup of this decoction is taken in morning to treat dysentery	1●, 2●, 3♦, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Sonchu arvensis L. ISL-150	Dodh bhatal	Herb	Stem, Leaf, Root	Decoction, Paste	Phthisis (RT/I), **Skin inflammation** (MS/E), Asthma (RT/I), Cough (RT/I), Chest complaints (RT/I)	47	0.11	0.24	72.34	44.44	The leaves are crushed then add little amount of rose water to make paste which is used as cool tonic in skin inflammation and chest complaints The roots of this plant and leaves of *Camellia sinensis* are boiled in water which is used after straining for cough and asthma	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%_	R.I[f]	Herbal recipes	Comparative previous studies[g]
Sonchus asper (L.) Hill ISL-98	Dotak	Herb	Whole plant	Paste	Wounds healing (MS/E), **Boils** (MS/E)	31	0.06	0.16	61.29	19.44	The leaves are crushed to make paste which is tied on wounds and boils with a bandage to treat them	1●, 2■, 3●, 4■, 5■, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Tagetes erecta L. ISL-210	Sadburga	Herb	Flower	Extract	Piles (DS/I), **Skin problems** (MS/E)	37	0.05	0.19	72.97	27.78	The flowers are soaked in water for 5–6 h to obtain extract which is applied on skin after straining for many skin problems. 1 teaspoon is eaten three times a day orally to treat piles	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10■, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Brassicaceae *Brassica napus* L. ISL-343	Sarson	Herb	Seed, Leaf	Oil	Skin dryness (MS/E), **Hairs treatment** (MS/E)	52	0.04	0.27	92.31	19.44	Oil is obtained from seeds which is applied externally on skin to treat skin dryness and on hairs to make hairs smooth and shiny	1●, 2■, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11♦, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Brassica nigra (L.)W.D.J.Koch ISL-256	Kali sarson	Herb	Whole plant	Decoction	Toothache (DS/E), Headache (NS/I), **Constipation** (DS/I), Rheumatic pains (MS/I)	43	0.09	0.22	88.37	47.22	The stem with its leaves are boiled in water for 15 min then applied topically on infected area to treat rheumatic pains The leaves are chewed to treat toothache Leaf paste is applied externally on forehead to treat headache	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Brassica oleracea L. ISL-298	Band gobhi	Herb	Leaf	Raw	**Constipation** (DS/I), Obesity (MS/I), Jaundice (GS/I), Eczema (MS/I), Gout (MS/I), Alzheimer's disease (NS/I)	51	0.12	0.26	82.35	66.67	The leaves of cabbage are eaten as a salad in a raw form to treat various diseases	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16♦, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Brassica rapa L. ISL-388	Shaljam	Herb	Leaf, Root	Cooked	Stomach problems (DS/I), **Ulcer problems** (DS/I)	36	0.06	0.18	97.22	19.44	The roots with its leaves are cooked with bulb paste of *Allium cepa* and *Allium sativum*, fruit of *Lycopersicon esculentum* and leaves of *Coriandrum sativum* which is eaten 2 times in a day as a meal to treat stomach and ulcer problems	1♦, 2●, 3●, 4■, 5●, 6●, 7●, 8●, 9●, 10●, 11♦, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Capsella bursa-pastoris (L.) Medik. ISL-506	Jangli sarson	Herb	Seed, Leaf	Paste	Dropsy (MS/I), Diarrhea(DS/I), Wounds healing (MS/E)	39	0.08	0.2	92.31	33.33	The paste of fresh leaves with water is taken orally for diarrhea The seeds are crushed to make paste which is applied dermally on affected area for healing of wounds and dropsy	1●, 2■, 3●, 4●, 5●, 6●, 7■, 8■, 9●, 10●, 11♦, 12●, 13■, 14●, 15●, 16■, 17●, 18■, 19♦, 20♦, 21●, 22■, 23●, 24●, 25●

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%_	R.I[f]	Herbal recipes	Comparative previous studies[g]
***Eruca vesicaria* (L.) Cav.** ISL-279	Tara meera	Herb	Leaf, Seed	Raw, Oil	Skin diseases (MS/I), **Digestive problems** (DS/I), Gastric problems (DS/I), Abscesses (MS/I), Piles (DS/I), Epilepsy (NS/I), Ulcers (DS/I), Toothache (DS/I), **Earache** (SO/I)	65	0.14	0.33	95.38	83.33	The leaves are eaten in raw form as a salad to treat an earache, toothache, digestive, gastric and skin The oil is obtained by pressing seeds, 1 spoon of this oil is taken once in a day to treat abscesses, piles, ulcers and epilepsy	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Lepidium didymum L. ISL-168	Thandi booti	Herb	Whole plant	Decoction	Jaundice (GS/I), Wounds healing (MS/I), **Ulcer** (DS/I)	37	0.08	0.19	100	41.67	The leaves and stem are boiled for 15 min in water with coriander leaves powder, add 1 tablespoon of lemon juice in this decoction after straining. Half cup of this decoction is taken once in a day for jaundice and ulcer The paste of fresh leaves is applied dermally on wounds for healing	1●, 2♦, 3●, 4●, 5●, 6●, 7■, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Raphanus raphanistrum subsp. *sativus* (L.) Domin ISL-170	Mooli	Herb	Leaf, Root	Raw	**Jaundice** (GS/I), Piles (DS/I), Urinary diseases (US/I), Digestive problems (DS/I), Diuretic (US/I)	61	0.08	0.31	98.36	52.78	The fresh root and leaves are eaten in raw form to treat Jaundice and digestive problems and it is anti-diuretic also	1♦, 2●, 3●, 4●, 5■, 6●, 7●, 8■, 9●, 10♦, 11●, 12●, 13●, 14●, 15●, 16♦, 17●, 18♦, 19●, 20●, 21●, 22●, 23●, 24●, 25●
***Sisymbrium irio* L.** ISL-710	Khoob kalan	Herb	Seed	Extract	Dropsy (MS/I), Eyesores (SO/E), Pimples (MS/E), Asthma (RT/I), **Measles** (RT/I)	35	0.14	0.18	68.57	52.78	The dried seeds are grinded to make powder, then use methanol to prepare extract which is applied on skin to treat pimples and measles scars The paste of fresh flowers is prescribed to eat orally with milk for asthma	1■, 2●, 3●, 4●, 5■, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Cannabaceae *Cannabis sativa* L. ISL-422	Bhang	Herb	Seed, Leaf	Juice	**Convulsion** (NS/I), Diarrhea (DS/I), Obesity (MS/I)	54	0.06	0.28	98.15	41.67	The oil is obtained from the leaves and buds of mature *Cannabis sativa* plant.1 drop of this oil is recommended by old people to take in a day for the suppression of hunger and indigestion The juice is obtained from fresh leaves by crushing and pressing them in batis which is consumed as anti-diarrheal	1■, 2●, 3♦, 4♦, 5■, 6●, 7■, 8●, 9●, 10●, 11■, 12■, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%)	R.I[f]	Herbal recipes	Comparative previous studies[g]
Commelinaceae *Commelina benghalensis* L. ISL-365	Kana keerai	Herb	Whole plant	Extract, Infusion	Pimples (MS/E), **Bedsores** (MS/E), Breast sores (MS/E)	33	0.09	0.17	90.91	25	The 3 kg whole plant is soaked in water overnight; add 1 teaspoon honey, ½ teaspoon of *Curcuma longa* roots powder and 5–6 drops of lemon juice in it after straining. This mixture is applied on skin to treat various skin problems including pimples and bedsores	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14■, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Convolvulaceae *Convolvulus arvensis* L. ISL-177	Lehli	Herb	Leaf, Seed	Extract, Paste	Abdominal pain (DS/I), **Abdominal worms** (DS/I), Skin disorders (MS/I)	40	0.08	0.2	100	33.33	The leaves are crushed to make paste, pour 6-liter hot water over it to obtain extract which is taken orally to treat various skin diseases The seeds are grinded to make powder which is eaten with water twice a day to relieve from abdominal worms and abdominal pain	1■, 2■, 3♦, 4■, 5●, 6●, 7■, 8●, 9●, 10♦, 11♦, 12●, 13●, 14●, 15●, 16♦, 17●, 18♦, 19●, 20●, 21●, 22●, 23●, 24●, 25●
***Ipomoea cairica* (L.) Sweet** ISL-267	Kaan kati	Climber	Seed	Raw	**Jaundice** (GS/I), Intestinal worm (DS/I), Intestinal pain (DS/I), Body swelling (MS/I)	44	0.09	0.22	97.73	47.22	The seeds are eaten in a raw form for intestinal worm and pain The fresh leaves are grinded in pestle and mortar to make paste which is applied externally on swell body part to reduce swelling	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Cucurbitaceae *Citrullus colocynthis* (L.) Schrad. ISL-187	Tumba	Herb	Root, Fruit	Oil, Juice	**Diabetes** (GS/I), Stomach problem (DS/I), Snake bites (CS/E), Leprosy (MS/I)	45	0.09	0.23	97.78	55.56	Fruit is crushed to make paste and cooked into *Citrullus colocynthis* oil for 10 min. 2 teaspoons are taken twice a day for leprosy The small roots are blended in water then applied on snake bite to remove poison	1■, 2■, 3♦, 4♦, 5♦, 6●, 7●, 8●, 9●, 10♦, 11●, 12♦, 13♦, 14●, 15■, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Cucumis melo L. ISL-868	Kharbooza	Herb	Fruit, Seed	Raw, Infusion	Stomach problems (DS/I), Obesity (MS/I), Digestive problems (DS/I), **Constipation** (DS/I)	54	0.07	0.28	88.89	38.89	The fruit is eaten in a raw form to maintain diet and control obesity The seeds are crushed and soaked in water overnight. This extract is taken after straining in morning to relieve constipation	1●, 2●, 3♦, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Cucumis sativus L. ISL-67	Kheera	Climber	Fruit, Leaf, Root	Juice, Raw	Dyspepsia (DS/I), **Skin problems** (MS/E), Tonic (BS/I), Diuretic (US/I)	42	0.1	0.21	88.1	55.56	The fruit pulp of this plant is used as a salad in raw form for indigestion The piece of fresh fruit and juice of fresh leaves is dermally applied to treat dark circles around the eye and acne on the skin	1♦, 2●, 3●, 4●, 5●, 6●, 7●, 8♦, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25■

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%)	R.I[f]	Herbal recipes	Comparative previous studies[g]
Cucurbita moschata Duchesne ISL-162	Ghia kadoo	Herb	Fruit	Cooked	Obesity (MS/I), **Jaundice** (GS/I), Heart problems (CS/I), Stomach problems (DS/I)	43	0.09	0.22	97.67	55.56	The fruit of this plant is cut into pieces and cooked with bulbs paste of *Allium cepa* and *Allium sativum* and root paste of *Zingiber officinale* for 10 min which is prescribed to eat 2 times in a day with loaf. It does not allow body fats to increase and maintain diet The fruit is crushed to make a paste, add 105 g of seeds powder of *Piper nigrum* and *Trachyspermum ammi* seeds with 2 spoon root juice of *Daucus carota*. This paste is taken once in a day to treat arrhythmia	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Luffa aegyptiaca Mill. ISL-153	Tori	Climber	Fruit	Cooked	Stomach problems (DS/I), **Ulcer problems** (DS/I)	38	0.05	0.19	78.95	19.44	The fruit is cut into pieces and cooked with bulbs paste of *Allium cepa* and *Allium sativum*, fruit of *Lycopersicon esculentum* and *Capsicum annuum* with leaves of *Coriandrum sativum* which is eaten twice in a day for stomach and ulcer problems	1●, 2●, 3●, 4●, 5●, 6♦, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Momordica charantia L. ISL-156	Karela	Herb	Fruit	Juice	**Diabetes** (GS/I), Earache (SO/I)	56	0.04	0.29	100	27.78	The fruit juice is obtained by grinding it in water which is consumed after straining three times in a day to treat diabetes and earache	1♦, 2♦, 3●, 4●, 5♦, 6♦, 7●, 8●, 9■, 10●, 11●, 12●, 13●, 14●, 15■, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Euphorbiaceae *Euphorbia helioscopia* L. ISL-297	Chatri dhodak	Herb	Leaf, Root	Extract	**Skin problems** (MS/E), Constipation (DS/I)	36	0.06	0.18	97.22	27.78	The powder of dried roots is mixed in rose water and dermally applied on the skin to treat various skin problems The fresh leaves are crushed and boiled in water for ½ h to obtain extract of leaves, mix husk of *Plantago ovata* in it.1 teaspoon is prescribed to eat once in a day with milk for relieving from constipation	1♦, 2♦, 3♦, 4●, 5♦, 6●, 7■, 8●, 9●, 10●, 11●, 12●, 13♦, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Euphorbia neriifolia L. ISL-238	Thohr	Shrub	Root	Extract	Snake bite (CS/E), Wounds healing (MS/E), **Boils** (MS/E)	32	0.09	0.16	84.38	33.33	The roots are soaked in a water for 10 h to obtain extract of roots which is applied dermally on snake bite to relieve pain and on boils and wounds for healing	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9■, 10●, 11●, 12●, 13●, 14●, 15■, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
***Euphorbia prostrata* Aiton** ISL-102	Hazaar dani	Herb	Whole plant	Decoction, Paste	**Ringworm** (MS/E), Chronic fever (CS/I), Abdominal diseases (DS/I), Blood purification (CS/I)	48	0.08	0.24	97.92	47.22	The plant pieces are boiled in water, mix 1 teaspoon oil of burnt *Allium cepa* bulbs in it which is taken to treat ringworm The paste of leaves is taken orally for blood purification	1●, 2♦, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12♦, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%)	R.I[f]	Herbal recipes	Comparative previous studies[g]
Ricinus communis L. ISL-194	Arind	Shrub	Whole plant	Decoction, Oil	Rheumatoid arthritis (MS/I), Body swelling (MS/I), **Constipation** (DS/I)	44	0.07	0.22	97.73	33.33	The oil is obtained by pressing seeds which is rubbed on organs to treat swelling and rheumatoid arthritis, it is taken twice in a day to treat constipation Leaves are boiled in water for 10 min, after straining this water is topically applied on infected area to treat body swelling	1■, 2●, 3■, 4♦, 5♦, 6♦, 7●, 8■, 9●, 10■, 11■, 12♦, 13■, 14■, 15■, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Fabaceae *Acacia nilotica* (L.) Willd.ex Delile ISL-509	Kikar	Tree	Leaf, Fruit	Juice	Cough (RT/I), Dysentery (DS/I), **Gonorrhea**(RS/I)	40	0.08	0.2	97.5	41.67	Leaves of the plant are boiled in mustard oil, ½ teaspoon of it is orally consumed after straining with glass of milk for gonorrhea The fruit is grinded with water and *Piper nigrum* seeds to make juice. This mixture is taken orally to treat cough	1■, 2■, 3♦, 4■, 5●, 6●, 7●, 8●, 9●, 10♦, 11●, 12♦, 13●, 14●, 15■, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Acacia modesta Wall. ISL-712	Phulai	Tree	Bark, Gum	Extract	Backache (MS/I), **Joints pain** (MS/I),Tonic (BS/I)	38	0.08	0.19	92.11	33.33	The extracted juice is obtained by boiling the bark of plant and Cardamom seeds in water which is consumed orally for joints pain The gum is boiled with the ripen fruit of *Avena sativa* and 125 g of *Trachyspermum ammi* seeds to make syrup. This syrup is taken for backache	1♦, 2●, 3■, 4♦, 5●, 6●, 7●, 8●, 9●, 10■, 11●, 12♦, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Arachishypogaea L. ISL-230	Moong phali	Herb	Seed	Oil	Gonorrhea (RS/I), Rheumatism (MS/I), **Malaria** (CS/I)	42	0.07	0.21	85.71	41.67	The oil is obtained from the seed kernels, mix *Trachyspermum ammi* seeds powder and little sugar in it. The two teaspoon at morning and evening time is taken to treat rheumatism The one spoon of oil is mixed with 4–5 drops of *Citrus limon* juice and is used to take at early morning before breakfast to treat malaria	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Cassia fistula L. ISL-247	Amaltas	Tree	Whole plant	Extract	Tonsils (RT/I), **Motions** (DS/I), Leprosy (MS/I), Tuberculosis (RT/I), Rheumatism(MS/I), Ringworm (MS/I)	54	0.11	0.28	100	58.33	Fruit pulp layer is soaked in hot water for 2 h, after straining half cup of milk is added in this extract and given to infants twice a day for motions and other digestive disorders	1■, 2●, 3●, 4●, 5●, 6♦, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14♦, 15■, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Dalbergia sissoo Roxb. ex DC. ISL-265	Tali	Tree	Bark, Leaf	Juice	Skin allergy (MS/E), **Boils** (MS/E)	34	0.06	0.17	76.47	19.44	The juice of leaves is obtained by crushing and pressing them through strainer and topically applied on infected parts three times daily	1■, 2■, 3♦, 4■, 5●, 6♦, 7●, 8●, 9●, 10■, 11●, 12●, 13●, 14●, 15■, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%)	R.I[f]	Herbal recipes	Comparative previous studies[g]
Millettia pinnata (L.) Panigrahi ISL-345	Sukh chain	Tree	Whole plant	Paste	Teeth problems (DS/E), **Malaria** (CS/I)	32	0.06	0.16	81.25	27.78	The fruit paste is mixed with *Piper longum* fruit powder and applied twice a day on jaw to treat toothache. The leaves juice is obtained by grinding them with water and little salt which is taken thrice a day to treat malaria.	1●, 2●, 3♦, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15■, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Pisum sativum L. ISL-285	Mattar	Herb	Seed	Raw, Paste	Heart diseases (CS/I), **Diabetes** (GS/I)	34	0.06	0.17	73.53	27.78	The seeds are eaten in a raw form with a glass of milk before meals for heart diseases One teaspoon of seeds paste is taken thrice a day for diabetes	1●, 2●, 3●,4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Trigonella foenum-graecum L. ISL-435	Methi	Herb	Seed, Leaf	Decoction, Cooked	Skin infections (MS/I), Digestive problems (DS/I), **Gastric problems** (DS/I)	55	0.05	0.28	63.64	33.33	The leaves are boiled in water with *Foeniculum vulgare* seeds for 15 min. This decoction is prescribed to take after straining before meals to treat digestive problems The cut leaves of *Trigonella foenum-graecum*, *Anethum graveolens*, *Spinacia oleracea* and *Mentha arvensis* are cooked for 15–20 min with salt in soybean oil which is taken twice a day to cure gastric problems	1●, 2■, 3●, 4●, 5●, 6■, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Lamiaceae *Ajuga integrifolia* Buch.-Ham. ex D.Don ISL-566	Kauri booti	Herb	Leaf	Decoction	Headache (NS/I), Pimples (MS/E), Measles (RT/I), Stomach acidity (DS/I), **Acnes** (MS/E), Jaundice (GS/I), Hypertension (NS/I), Sore throat (RT/I), Constipation (DS/I)	56	0.16	0.29	100	91.67	The leaves are boiled in water with *Piper nigrum* seeds and black salt for 15–20 min. This decoction is consumed early in the morning against several diseases including skin problems	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11♦, 12♦, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Mentha arvensis L. ISL-288	Podina	Herb	Leaf	Juice, Paste	Boils (MS/I), Diarrhea (DS/I),**Gastric problems** (DS/I), Dysentery (DS/I), **Stomach acidity** (DS/I), Earache (SO/I)	**71**	0.08	0.36	95.77	58.33	The fresh leaves are grinded with small pieces of peel tomato and green chilli with 1–2 teaspoon of salt. This paste is taken before meals for gastric problems Fresh leaves are blended with water to make juice, half cup is consumed once in a day to treat stomach acidity	1●, 2●, 3●, 4♦, 5●, 6●, 7●, 8●, 9■, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Ocimum basilicum L. ISL-246	Niazboo	Herb	Seed	Decoction	Stop vomiting (DS/I), Stomach problems (DS/I), **Mouth sores** (DS/E)	46	0.07	0.23	76.09	25	The seeds and leaves are boiled in rose water for 7–10 min which is taken orally thrice in a day to enhance digestion and helpful in stop vomiting	1■, 2●, 3●, 4●, 5■, 6●, 7●, 8●, 9●, 10♦, 11●, 12●, 13♦, 14●, 15●, 16●, 17●, 18●, 19♦, 20■, 21●, 22●, 23●, 24●, 25●

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%)	R.I[f]	Herbal recipes	Comparative previous studies[g]
Lythraceae *Punica granatum* L. ISL-153	Anar	Tree	Leaf, Fruit	Paste, Juice	Wounds treatment (MS/I), Cough (RT/I), Blood purifier (CS/I), Skin diseases (MS/I), Dysentery (DS/I), **Jaundice** (GS/I), Eyesight (SO/I)	69	0.1	0.35	100	88.89	The fruit peel is crushed to make paste which is used orally with water and act as blood purifier; leaf juice is applied on wound and skin diseases; fruit juice is a useful gastric tonic	1■, 2♦, 3♦, 4♦, 5♦, 6♦, 7♦, 8●, 9●, 10■, 11■, 12■, 13♦, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24■, 25■
Malvaceae *Abelmoschus esculentus* (L.) Moench ISL-196	Bhindi	Herb	Fruit, Leaf	Cooked, Paste	[i]**Diuretic** (US/I), Dermatological (MS/E)	32	0.06	0.16	84.38	27.78	Fruit paste is mixed with mustard oil which is applied externally for skin problems Fruit is cooked in canola oil with a paste of bulbs of *Allium sativum* and leaves of *Mentha arvensis* for 15 min, it is diuretic.	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11♦, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Bombax ceiba L. ISL-158	Simbal	Tree	Whole plant	Extract	Leucorrhea (RS/I), **Snakebite**(CS/E), Gonorrhea (RS/I)	37	0.08	0.19	81.08	33.33	The root and leaves are break into large pieces and soaked for 10–12 h to obtain extract which is taken orally thrice a day for leucorrhoea and gonorrhea	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14■, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Hibiscus rosa-sinensis L. ISL-267	Gurhal	Shrub	Flower, Root	Raw, Powder	**Gynecological problems** (RS/I), Piles (DS/I), Gonorrhea (RS/I)	35	0.09	0.18	65.71	33.33	The dried flowers and roots are crushed in pestle and mortar to make powder which is used orally with water twice a day to treat gynecological disorders Flowers are eaten in raw form with water once in a day to cure gonorrhea	1●, 2♦, 3■, 4●, 5●, 6●, 7●, 8●, 9■, 10●, 11●, 12●, 13●, 14●, 15■, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Malva parviflora L. ISL-269	Sonchal	Herb	Whole plant	Decoction	**Fever** (CS/I), Influenza (RT/I), Ulcer (DS/I)	30	0.1	0.15	66.67	41.67	The stem and leaves of plant are break into large pieces and boiled in water for 20 min which is used orally after straining three times a day to cure fever	1●, 2●, 3♦, 4♦, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13■, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Malvastrum coromandelianum (L.) Garcke ISL-455	Damhni	Herb	Leaf, Flower	Decoction, Paste, Raw	Abdominal pain (DS/I), Piles (DS/I), **Bodyswelling** (MS/I)	31	0.1	0.16	74.19	33.33	The Leaves are boiled in water which is used orally after straining three times a day for digestive tract disorders Flowers are blended with husk of *Plantago ovata*, this paste is taken twice a day to treat piles	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Meliaceae ***Azadirachta indica* A. Juss.** ISL-88	Neem	Tree	Leaf	Juice	Malaria (CS/I), Obesity (MS/I), **Blood purification** (CS/I), Hysteria (NS/I)	48	0.08	0.24	93.75	47.22	The leaves are grinded with water with little salt to make juice and consumed two times in a day for four days to treat malaria; juice is also a potent blood purifier	1●, 2●, 3●, 4♦, 5●, 6●, 7●, 8●, 9■, 10■, 11●, 12●, 13●, 14♦, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%)	R.I[f]	Herbal recipes	Comparative previous studies[g]
***Melia azedarach* L.** ISL-248	Dharek	Tree	Flower, Leaf	Juice	Headache (NS/I), Gastric problems (DS/I), Digestive disorders (DS/I), Cough (RT/I), **Piles** (DS/I), Ulcers (DS/I), Cardiac problems (CS/I), **Earache** (SO/I)	70	0.11	0.36	97.14	86.11	The leaves are grinded with *Piper nigrum* seeds, water and black salt to make juice which is used orally for digestive disorders	1♦, 2●, 3■, 4●, 5■, 6■, 7■, 8■, 9●, 10♦, 11♦, 12♦, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Moraceae *Broussonetia papyrifera* (L.) L'Hér.ex Vent. ISL-347	Jungli shehtoot	Tree	Fruit	Raw	Jaundice (GS/I), **Throat problems** (RT/I), Constipation (DS/I)	39	0.08	0.2	92.31	41.67	Dried fruit powder is eaten three times a day to cure throat problems Raw fruit is also prescribed to eat with butter to relieve constipation	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Ficus benghalensis L. ISL-173	Boher	Tree	Leaf, Root	Extract	**Abscesses** (MS/E), Gonorrhea (RS/I)	29	0.07	0.15	72.41	27.78	The fresh leaves are crushed and pressed in strainer to obtain extract of leaves which is taken three times a day to relieve gonorrhea	1●, 2●, 3♦, 4■, 5●, 6■, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Ficus carica L. ISL-103	Injeer	Tree	Fruit	Raw, Juice	Constipation (DS/I), Piles (DS/I), Urinary bladder problems (US/I), Obesity (MS/I), **Eyesight** (SO/I), **Tonic** (BS/I)	54	0.11	0.28	64.81	75	Fresh fruit juice is used orally to relieve constipation and treat piles Fruit is eaten in raw form to improve eyesight and it is tonic also	1■, 2●, 3●, 4●, 5♦, 6♦, 7♦, 8●, 9●, 10●, 11●, 12■, 13♦, 14●, 15●, 16●, 17♦, 18●, 19●, 20●, 21●, 22♦, 23●, 24●, 25♦
Ficus religiosa L. ISL-117	Peepal	Tree	Leaf, Shoot	Powder, Extract	Skin diseases (MS/E), **Digestive problems** (DS/I), Diaphoretic (MS/I)	40	0.08	0.2	60	33.33	Powder of dried leaves is applied on infected skin along with mustard oil Small pieces of shoot are crushed in little water to make paste which is pressed in strainer to obtain extract which is taken once in a day for digestive problems	1♦, 2■, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Morus alba L. ISL-107	Sufaid shehoot	Tree	Root, Leaf, Fruit	Decoction, Raw, Juice	**Throat problems** (RT/I), Jaundice (GS/I), Obesity (MS/I)	43	0.07	0.22	100	41.67	The fruit is boiled in water for 10 min, this decoction is consumed twice in a day for throat problems Fruit is eaten in a raw form to control appetite	1■, 2■, 3●, 4●, 5●, 6♦, 7■, 8■, 9●, 10♦, 11■, 12■, 13■, 14●, 15●, 16♦, 17●, 18●, 19♦, 20●, 21●, 22■, 23●, 24●, 25●
Morus nigra L. ISL-517	Siah shehtoot	Tree	Fruit	Raw	Jaundice (GS/I), **Throat problems** (RT/I)	41	0.05	0.21	100	27.78	Dried fruits are eaten with water for throat problems	1■, 2●, 3♦, 4●, 5■, 6●, 7♦, 8●, 9●, 10●, 11●, 12■, 13■, 14●, 15●, 16●, 17■, 18●, 19●, 20■, 21●, 22■, 23●, 24●, 25●

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%)	R.I[f]	Herbal recipes	Comparative previous studies[g]
Musaceae *Musa paradisiaca* L. ISL-101	Kela	Tree	Leaf	Extract	Fever (CS/I), **Influenza** (RT/I)	35	0.06	0.18	97.14	27.78	The leaves are crushed in little water and pressed with the help of batis cloth to obtain extract of leaves, this extract is prescribed to take twice a day for reducing fever	1●, 2●, 3●, 4●, 5●, 6■, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Myrtaceae *Eucalyptus camaldulensis* Dehnh. ISL-123	Safaida	Tree	Leaf, Shoot	Paste	Headache (NS/I), **Hemorrhoids**(DS/I)	30	0.07	0.15	100	27.78	Leaf paste is orally used twice in a day along with a cup of water to treat hemorrhoids	1●, 2●, 3●, 4■, 5●, 6●, 7●, 8●, 9●, 10■, 11●, 12■, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Psidium guajava L. ISL-229	Amrood	Tree	Fruit	Raw	Stomach problem (DS/I), **Improvement of appetite** (DS/I)	37	0.05	0.19	83.78	19.44	Dried and fresh fruit is eaten in raw form to treat digestive problems	1■, 2♦, 3●, 4●, 5●, 6♦, 7●, 8●, 9●, 10■, 11●, 12●, 13●, 14●, 15■, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Syzygium cumini (L.) Skeels ISL-249	Jaman	Tree	Leaf, Fruit, Seed	Juice, Raw	Diuretic(US/I), **Spleen diseases** (CS/I), Toothache (DS/I)	43	0.07	0.22	97.67	41.67	Fruit is grinded with lemon water and *Saccharum officinarum* stem juice, a cup of this juice is taken twice a day for urinary problems Dried fruit is chewed twice a day to treat toothache	1●, 2■, 3■, 4●, 5●, 6●, 7●, 8●, 9●, 10■, 11●, 12●, 13●, 14●, 15■, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Oxalidaceae *Oxalis corniculata* L. ISL-369	Khati booti	Herb	Fruit, Seed	Raw, Infusion	Snake bite (CS/E), Stomach disorders (DS/I), Dysentery (DS/I), Teeth problems (DS/E), Fever (CS/I), **Acute headache**(NS/I)	51	0.12	0.26	66.67	58.33	The fruit is eaten in raw form with milk to treat dysentery The seeds are crushed lightly and soaked overnight to obtain extract of seeds which is orally used three times a day to reduce fever	1♦, 2♦, 3♦, 4●, 5■, 6●, 7♦, 8■, 9♦, 10●, 11♦, 12■, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Papaveraceae *Corydalis incisa* (Thunb.) Pers. ISL-363	Shahtra papra	Herb	Whole plant	Decoction, Extract	Diarrhea (DS/I), Blood purifier (CS/I), Fever (CS/I), **Hepatic ailment** (GS/I)	45	0.09	0.23	97.78	47.22	The flowers and small pieces of stem are boiled in water which is cooled and taken two times in a day for blood purification and fever Flowers are placed in hot water for 15 min to obtain extract which is prescribed to take once in a day to treat diarrhea	1♦, 2●, 3●, 4●, 5♦, 6●, 7♦, 8●, 9●, 10●, 11●, 12♦, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Piperaceae ***Piper nigrum* L.** ISL-413	Kali mirch	Shrub	Seed	Powder	Pimples (MS/I), **Earache** (SO/I), Diabetes (GS/I), **Blood purification** (CS/I)	46	0.09	0.23	100	55.56	Seeds are grinded to make powder which is orally used twice a day with lemon juice for diabetes and blood purification	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%_	R.I[f]	Herbal recipes	Comparative previous studies[g]
Poaceae *Avena sativa* L. ISL-193	Joo	Herb	Seed	Powder	**Nerve tonic** (NS/I), Constipation (DS/I), Skin allergy (MS/E)	33	0.09	0.17	100	41.67	The seeds powder is mixed with butter and prescribed to take to relieve constipation	1●, 2■, 3♦, 4●, 5■, 6●, 7●, 8●, 9●, 10●, 11♦, 12●, 13●, 14●, 15●, 16♦, 17●, 18♦, 19●, 20●, 21●, 22●, 23●, 24●, 25■
Cynodon dactylon (L.) Pers. ISL-108	Khabal ghass	Herb	Leaf, Stem	Extract	Dysentery (DS/I), Fever (CS/I), **Ulcer** (DS/I)	32	0.09	0.16	90.63	33.33	Leaves are grinded with little water and pressed with hands to obtain extract which is used orally three times a day for dysentery and to reduce effects of ulceration	1■, 2●, 3♦, 4●, 5●, 6●, 7♦, 8●, 9■, 10●, 11■, 12■, 13●, 14■, 15●, 16■, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Zea mays L. ISL-183	Jawar	Shrub	Flower	Extract	Urinary disorders (US/I), Bladder cleaning (US/I), **Kidney disorders** (US/I)	38	0.08	0.19	47.37	25	Flowers are crushed and soaked in water overnight to obtain extract which is prescribed to take three times in a day for renal disorders	1●, 2♦, 3●, 4●, 5●, 6●, 7●, 8■, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19♦, 20♦, 21●, 22♦, 23●, 24●, 25■
Rhamnaceae *Ziziphus mauritiana* Lam. ISL-129	Bairi	Tree	Fruit, Leaf	Powder, Raw	Wounds healing (MS/E), **Cancer** (CS/I), Insomnia (NS/I), Obesity (MS/I)	42	0.1	0.21	97.62	47.22	Fruit powder is used orally with water for healing of wounds Fruit is eaten in raw form to reduce fats	1■, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10■, 11●, 12♦, 13●, 14■, 15■, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Rosaceae *Eriobotrya japonica* (Thunb.) Lindl. ISL-259	Louqat	Tree	Fruit, Leaf	Juice, Raw	**Diabetes** (GS/I), Skin cancer (MS/I), Liver disorders (GS/I), Obesity (MS/I)	43	0.09	0.22	97.67	38.89	The fruit pulp is pressed to obtain juice and used orally twice a day to treat diabetes Fruit is eaten in a raw form to treat obesity	1■, 2●, 3●, 4●, 5●, 6●, 7●, 8■, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Malus sylvestris (L.) Mill. ISL-397	Saib	Tree	Fruit	Raw, Juice	Obesity (MS/I), Skin problems (MS/I), Liver diseases (GS/I), **Heart problems** (CS/I), **Bones weakness** (MS/I), Eyesight (SO/I)	62	0.1	0.32	100	66.67	Fruit is grinded with water and little sugar in a blender to make juice and given orally for heart problems and liver diseases Fruit is eaten in a raw form for obesity and bones weakness	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23♦, 24●, 25♦
Rosa chinensis Jacq. ISL-715	Gulab	Shrub	Flower, Seed	Extract	Wounds healing (MS/E), Sprain injuries (MS/E), Foul ulcers (DS/I), **Eye disorder** (SO/E), Heart disease (CS/I), **Skin diseases** (MS/E)	66	0.09	0.34	74.24	66.67	Fresh petals are put into the hot water and leave for 10–15 min then strain it with the help of strainer to obtain extract of flower petals which is taken as an eye drop two times in a day, it is also used orally to reduce effects of ulceration	1●, 2♦, 3♦, 4●, 5♦, 6♦, 7●, 8●, 9●, 10♦, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Rubiaceae *Gardenia jasminoides* J.Ellis ISL-667	Chameli	Shrub	Flower, Fruit	Extract	Rheumatoid arthritis (MS/I), **Depression** (NS/I), Insomnia (NS/I), Wound healing (MS/E)	51	0.08	0.26	72.55	38.89	Flower petals are put into the hot water and leave for 10 min, the obtained extract is used orally after straining two times a day with milk to treat insomnia and depression	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8♦, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%..	R.I[f]	Herbal recipes	Comparative previous studies[g]
Rutaceae *Citrus aurantium* L. ISL-125	Malta	Tree	Fruit	Juice, Raw	**Jaundice** (GS/I), Obesity (MS/I), Skin problems (MS/I), Diabetes (GS/I), **Liver diseases** (GS/I)	61	0.08	0.31	100	44.44	Fruit pulp is grinded with cup of water and half teaspoon black salt to make juice which is taken three times a day to treat diabetes and liver disorders Fruit is eaten in a raw form to treat jaundice	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
***Citrus limon* (L.)** Osbeck ISL-224	Nimboo	Tree	Fruit	Raw, Juice	**Obesity** (MS/I), Malaria (CS/I), Nausea (DS/I), **Skin problems** (MS/E), Jaundice (GS/I)	66	0.08	0.34	90.91	61.11	The juice is obtained by pressing fruit pulp with hands which is consumed thrice a day to cure malaria and jaundice, juice is also applied on infected parts of skin to treat different skin problem One fruit is eaten by obese patient at morning before breakfast to control obesity	1●, 2●, 3●, 4■, 5●, 6●, 7●, 8●, 9■, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25♦
Solanaceae *Capsicum annuum* L. ISL-325	Shimla mirch	Shrub	Fruit	Paste, Cooked	**Dyspepsia** (DS/I), Asthma (RT/I), Diarrhea (DS/I), Whooping cough (RT/I), Common cold (RT/I)	55	0.09	0.28	87.27	44.44	Fruit is cut into small pieces and cooked in soybean oil with bulb paste of *Allium sativum*, root paste of *Zingiber officinale* and salt which is eaten twice a day to cure dyspepsia and cough The fruit is crushed to make paste which is used orally with water twice a day to cure asthma	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11■, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Cestrum nocturnum L. ISL-374	Rat ki rani	Shrub	Leaf, Flower	Extract, Infusion	Epilepsy (NS/I), Headache (NS/I), **Skin diseases** (MS/E), Motions (DS/I)	36	0.11	0.18	83.33	47.22	The Leaves are cut into small pieces and soaked into hot not boiling water to obtain extract of leaves which is applied on infected parts of skin Flowers extract is taken twice a day to cure motions	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Datura innoxia Mill. ISL-375	Datura	Herb	Seed, Leaf	Extract	Earache (SO/I), Hydrophobia (NS/I), **Epilepsy** (NS/I), Toothache (DS/E)	55	0.07	0.28	100	47.22	Leaves are crushed and placed in strainer, pour hot water over it to obtain extract which is consumed once in a day for epilepsy	1●, 2●, 3♦, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12■, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Solanum lycopersicum L. ISL-113	Tamatar	Herb	Fruit	Raw, Paste	Eyesight (SO/I), **Blood purification** (CS/I), Skin disorders (MS/I), Diabetes (GS/I), **Heart diseases** (CS/I), Liver diseases (GS/I)	64	0.09	0.33	79.69	66.67	Fruit is grinded in blender to make paste which is prescribed to used orally for blood purification, liver problems and diabetes The fruit is eaten in a raw form to treat heart diseases	1●, 2●, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%)	R.I[f]	Herbal recipes	Comparative previous studies[g]
Solanum melongena L. ISL-460	Baingan	Herb	Leaf, Fruit	Cooked, Extract	**Lower cholesterol level** (CS/I), Abscesses (MS/E), Hemorrhoids (DS/I), Toothache (DS/E)	49	0.08	0.25	71.43	47.22	Fruit and leaves are cut into pieces and soaked overnight in water to obtain extract of them which is taken two times daily for one week to relieve hemorrhoids Fruit paste is cooked with wet semolina and sugar in canola oil for 10–15 min, it is taken twice a day for lowering cholesterol level	1●, 2■, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Solanum nigrum L. ISL-313	Kaach maach	Herb	Fruit, Leaf	Decoction, Raw, Cooked, Paste	Flue (RT/I), **Cough** (RT/I), Fever (CS/I), **Stomach disorders** (DS/I), Skin Inflammation (MS/E), Wounds (MS/E), Dropsy (MS/I), Phthisis (RT/I), Digestive problems (DS/I)	56	0.16	0.29	100	83.33	Fresh fruit is used orally in raw form with water for stomach disorders Leaves are boiled in water for 15 min which is taken after straining three times in a day for one week to treat fever and cough	1■, 2♦, 3♦, 4●, 5♦, 6■, 7♦, 8●, 9●, 10♦, 11■, 12■, 13♦, 14■, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Solanum virginianum L. ISL-371	Kandiari	Herb	Fruit, Flower, Leaf	Extract	Chronic cough (RT/I), Toothache (DS/E), Chronic pain (MS/I), **Gonorrhea**(RS/I)	39	0.1	0.2	100	55.56	Flowers paste is mixed in hot water for 10 min then strain it to obtain extract which is eaten with milk to relieve pain and treat gonorrhea	1■, 2■, 3♦, 4♦, 5●, 6●, 7●, 8●, 9●, 10■, 11●, 12■, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Withania somnifera (L.) Dunal ISL-85	Asgand	Shrub	Root	Paste, Powder	Rheumatism (MS/I), Painful swellings (MS/I), Ulcers (DS/I), Bleeding wounds (MS/E), **Asthma** (RT/I), **Cough** (RT/I), Uterine diseases (US/I), Debility in old age (RS/I)	68	0.12	0.35	67.65	86.11	The root paste is prepared by crushing and mixing it with canola oil and applied topically for rheumatism and swellings Dried root powder is used orally twice a day for various types of ulcer	1■, 2■, 3♦, 4■, 5●, 6●, 7●, 8●, 9●, 10♦, 11■, 12♦, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Vitaceae *Vitis vinifera* L. ISL-293	Angoor	Climber	Fruit	Juice, Raw	Obesity (MS/I), **Jaundice** (GS/I), Liver diseases (GS/I)	46	0.07	0.23	100	33.33	Fresh fruit is pressed to obtain juice which is prescribed to take three times a day for jaundice Fresh fruit is eaten in a raw form to control appetite and obesity	1■, 2●, 3●, 4●, 5■, 6■, 7●, 8●, 9●, 10●, 11●, 12●, 13♦, 14●, 15●, 16●, 17●, 18●, 19■, 20■, 21●, 22■, 23●, 24●, 25♦
Xanthorrhoeaceae *Aloe vera* (L.) Burm.f. ISL-141	Kanwar gandal	Shrub	Leaf	Extract	Healing agent (MS/I), Cathartic(US/I), **Blood purifier** (CS/I), Constipation (DS/I), Poultice for tumors (MS/E)	54	0.09	0.28	88.89	61.11	Leaves are crushed and mixed with little water then pressed with batis cloth to obtain extract of leaves, it is applied on wounds for healing and also used as poultice for tumors Leaf extract with lemon is used orally twice a day for constipation and blood purification	1♦, 2●, 3●, 4■, 5●, 6●, 7●, 8●, 9●, 10■, 11●, 12●, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●

Table 2 (*Continued*)

Family Plant names/voucher specimen no	Common names	Habit	Part used	Preparation methods	Disease treated[a]	FC[b]	UV[c]	RFC[d]	FL[e] (%_	R.I[f]	Herbal recipes	Comparative previous studies[g]
Asphodelus tenuifolius Cav. ISL-183	Piazi	Herb	Whole plant	Cooked	Stomach acidity (DS/I), Obesity (MS/I), **Digestive problems** (DS/I)	47	0.06	0.24	97.87	33.33	The whole plant is cooked in sunflower oil with *Piper longum*, *Trachyspermum ammi* and *Foeniculum* vulgare seeds powder, it is taken twice a day for digestive problems	1●, 2■, 3●, 4●, 5●, 6●, 7●, 8●, 9●, 10●, 11●, 12■, 13●, 14●, 15●, 16●, 17●, 18●, 19●, 20●, 21●, 22●, 23●, 24●, 25●
Zygophyllaceae *Tribulus terrestris* L. ISL-171	Bhakra	Herb	Leaf, Fruit	Powder	Urinary disorders (US/I), Impotency (RS/I), **Gynecological problems** (RS/I)	33	0.09	0.17	84.85	33.33	Dried fruit powder is orally used along with water, also prescribed to eat twice a day for renal disorders and gynecological problems	1●, 2●, 3●, 4♦, 5■, 6●, 7♦, 8●, 9●, 10■, 11●, 12■, 13■, 14●, 15●, 16♦, 17●, 18●, 19♦, 20♦, 21♦, 22●, 23●, 24■, 25●

[a] DS, digestive system; RT, respiratory tract; MS, musculo-skeletal system; US, urinary system; RS, reproductive system; GS, glandular system; CS, circulatory system; SO, sense organs; NS, nervous system; I, internal use; E, external use.

[b] FC, frequency of citation.

[c] UV, use value.

[d] RFC, relative frequency citation.

[e] FL, fidelity level.

[f] R.I, relative importance.

[g] ●, plant not reported in mentioned study; ♦, Plants with similar uses with mentioned study; ■, Plants with dissimilar uses with mentioned study.

[h] Bold Plant Names, Plants which are more valuable to local People.

[i] Bold Ailments treated, Main use of Plant (I□) on which FL% is based.

1, (Adnan et al., 2014); 2, (Ahmed et al., 2015); 3, (Mahmood et al., 2013); 4, (Ullah et al., 2014); 5, (Bibi et al., 2014); 6, (Ishtiaq et al., 2015); 7, (Kumar et al., 2015); 8, (Hong et al., 2015); 9, (Choudhury et al., 2015); 10, (Sultana et al., 2006); 11, (Akhtar et al., 2013); 12, (Barkatullah et al., 2015); 13, (Dolatkhahi et al., 2014); 14, (Uddin et al., 2006); 15, (Patale et al., 2015); 16, (Cakilcioglu et al., 2011); 17, (Çakılcıoğlu et al., 2010); 18, (Cakilcioglu and Turkoglu, 2010); 19, (Tetik et al., 2013); 20, (Polat et al., 2013); 21, (Kaval et al., 2014); 22, (Polat et al., 2015); 23, (Mükemre et al., 2015); 24, (Polat et al., 2011); 25, (Çakılcıoğlu and Türkoğlu, 2007).

Table 3
ICF value of medicinal plants used against various diseases.

Category of diseases	Number of use reports	Percentage of use reports	No. of taxa used	Percentage of taxa	ICF
GIT diseases	105	25.8	64	21.62	0.65
Respiratory diseases	35	8.6	23	7.77	0.55
Sexual disorders	13	3.19	10	3.38	0.33
Urinary disorders	18	4.42	15	5.07	0.21
Muscle and skeletal disorders	36	8.85	26	8.78	0.4
Nervous disorders	18	4.42	14	4.73	0.31
Glandular disorders	54	13.27	38	12.84	0.43
Cardiovascular disorders	35	8.6	31	10.47	0.13
Ear, nose and eye disorders	17	4.18	17	5.74	0
Nail, skin and hair disorders	66	16.22	49	16.55	0.35
Body energizers	5	1.23	5	1.69	0
Antidote	5	1.23	4	1.35	0.33

ICF, informant consensus factor.

tendency of ethnomedicinal treatment of ailments among informants although they had access to synthetic pharmaceuticals and government health care system.

Comparison with previous studies

The currently documented data was compared with other previously established studies within Pakistan and in other countries across the region such as India, Bangladesh, Iran, China and Turkey. A total of 25 published research articles were taken into consideration. A total of 189 similar uses were given for 66 plant species, while 71 plants were new for the treatment of various diseases in Pakistan (Table 2). During this comparative analysis, the percentage of similar uses of plant species with other studies was 7.48%. *Punica granatum* shows maximum similarity with other preceding studies in its ethnomedicinal usage (Ahmed et al., 2015; Bibi et al., 2014; Dolatkhahi et al., 2014; Ishtiaq et al., 2015; Kumar et al., 2015; Mahmood et al., 2013; Ullah et al., 2014). It is noteworthy that 83.97% of the documented medicinal plant species were not reported in the previous studies used for comparative analysis which was calculated by dividing plants not reported in mentioned study with all given use reports for plant species (Table 2) multiply by 100. Various novel uses are reported for some medicinal plant species and the percentage of novel traditional medicinal usage (8.15%) with respect to compared studies was calculated by dividing dissimilar use reports with all given use reports for plant species multiply by 100.

The comparison with neighboring areas studies showed higher similarities due to the exchange of culture, indigenous knowledge and lower similarities with farther study areas due to the difference in cultures. The comparative analysis between the ethnomedicinal uses of plants authenticates the documented data. In the current exploration, medicinal plants not reported in previous studies should be assessed further for essential phytochemicals and pharmacological activities which may help in the discovery of new drugs.

Conclusion

The ethnobotanical findings of this current survey demonstrate that the indigenous knowledge about medicinal plant species in the study area is mainly inherited by elders. The frequently used plant species belong to Brassicaceae followed by Fabaceae and Solanaceae. The major plant parts used by local people against ailments were in the raw form. Quantitative analyses (ICF, RFC, UV, FL, RI) of documented data revealed the traditional medicinal practices of local people for the cure of various disorders in the study area. The comparative analysis and pharmacological evidence of plants strengthen these ethnobotanical findings. The documented plant species with high quantitative ethnobotanical index need to be evaluated for further phytochemical and pharmacological studies to explore the potential of these plants in the development of herbal drugs. Further research on the effectiveness and conservation strategies should be conducted which could supplement the socio-economic conditions of the local people and contribute to the sustainable development of herbal medicines in Talagang, Chakwal, Pakistan.

Author's contribution

MNR created the project and contributed in collecting plant material, designing study methods, and analyzing the results critically. MA supervised the project and assisted in collecting the plant material and its identification. SS and MZ contributed in writing the manuscript. SE performed the revision of research paper thoroughly for English proofreading. All the authors have read the final manuscript and approved the submission.

Conflicts of interest

The authors declare no conflicts of interest.

Ethical disclosures

Protection of human and animal subjects. The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki).

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

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