



## Ethnopharmacological studies of medicinal plants in central Zagros, Lorestan Province, Iran

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### ABSTRACT

**Ethnopharmacological relevance:** Lorestan Province (Iran) has a great diversity of habitats and plant diversity and the people living in this province have a good knowledge of herbal therapies.

**Aim of the study:** In this study, the authors aimed to identify and report the medicinal plants used in the folk medicine of Lorestan.

**Material and methods:** The indigenous medicinal information was collected with a semi-structured open-ended questionnaire, interviews, and personal observations. The relative importance of the species were estimated through frequency of citations (FC).

**Results: and discussion:** A total of 555 plants belonging to 91 families were identified. The plants belong to Asteraceae with 62 species followed by Lamiaceae (56), Apiaceae (44), Fabaceae (41), and Brassicaceae (31). The plants were mostly used as a decoction or eaten raw (32%). Leaves (22%) were the most utilized plant parts followed by shoots (16%), and seeds (13%). *Thymus daenensis*, *Thymus eriocalyx*, *Mentha longifolia*, *Mentha spicata*, *Mentha piperitha*, *Alium sativum*, *Quercus infectoria*, *Quercus persica*, *Ziziphora clinopodioides*, and *Malus domestica* had the highest FC values. Most of the plants were used for gastrointestinal, respiratory, and skin problems.

**Conclusion:** Lorestan is a region rich in medicinal plants. The local knowledge of herbal therapies can be used as complementary medicine, particularly by people in remote areas and as a guide for the future pharmacological and phytochemical studies. While the known medicinal plants can be harvested or cultivated for medical and pharmaceutical purposes, the less known plants with high FC scores can be investigated phytochemically and pharmacologically in the future studies.

### 1. Introduction

Plants form the basis of folk medicine and advanced systems of traditional medicine which have provided humans with new drugs for thousands of years (Leaman et al., 1995; Gurib-Fakim, 2006; Salehi et al., 2018a; Sharifi-Rad et al., 2018; Imran et al., 2019). The outlook for the use of medicinal herbs has been on the rise again particularly as a complementary therapy as well as for drug discovery purposes (Harvey et al., 2015; Newman et al., 2016; Gertsch, 2011; Heinrich, 2000; Heinrich and Anagnostou, 2017; Wagner and Ulrich-Merzenich, 2009; Vlietinck and Vanden Berghe, 1991; Yuan et al., 2016; Salehi et al., 2018b). In Iran, the history of medicine and using medicinal plants can

be divided into two distinct time intervals: before and after Islam.

Like other societies and civilizations around the world, we cannot provide an exact beginning for using herbs in Iran since the use of medicinal plants dates back to ancient times, but the history of medicine in Iran began about the 4th century BC (Larijani and Zahedi, 2006; Nayernouri, 2015). Inscriptions document the application of herbal medicine in the civilization of ancient Iran, the "Great Persian Empire". This traditional medicine, transmitted orally, is still alive in Iran, particularly in rural areas (Nayernouri, 2015).

The history of post-Islamic Iranian civilization dates back to the founding of the Taherian dynasty in 821 AD and continues to this day. Islamic traditional medicine (ITM) refers to a special medical school that developed in the lands under the territory of Islamic civilization

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### List of abbreviations

FC	Frequency of Citations
ITM	Islamic Traditional Medicine

(Tayarani-Najaran, 2014). Some of the famous scientists of the mentioned school were not Muslims at all, but considering that they lived in the realm of Islamic civilization and wrote their scientific works under the support of Muslim rulers, the mentioned school is called Islamic medicine (Tayarani-Najaran et al., 2014). Islamic territory can be divided into eastern and western parts. The eastern part includes the Middle East and adjacent areas, and the western part includes the Andalusian region which is today Spain and Portugal, as well as Northern Africa including Morocco, Algeria, and Tunisia (Tayarani-Najaran et al., 2014). However, it should be noted that some parts of the Far East, such as Indonesia and Malaysia, joined Islam later (Najmabadi, 1995; Mozaffarian, 2012, 2013; Emami et al., 2011; Sadeghi et al., 2018).

Accordingly, two medical systems are common in Iran. First, the system of traditional Islamic medicine that is a rational and ancient school with written sources and a very clear history. There are detailed principles for health and disease in the traditional medicine (Ibn Sina, 1981; Jorjani, 1977). Second, the system of folk medicine in which each of the ethnic groups living in Iran, such as Turks, Lors, Kurdish, Arabic, Balouchi, Turkish, Turkoman, Lori, etc., have their own medical beliefs, knowledge, and principles of using medicinal plants (Sadeghi et al., 2014; Sadat-Hosseini et al., 2017; Ghorbani et al., 2005; Hadjiakhoondi and Baligh, 2002; Afshar Sistani, 1999). The definition of health and disease is different between the above-mentioned ethnic groups in Persian folk medicine. On one hand, the humours are the cornerstone of ITM. In this documented system of medicine, like the Greek and Roman world, health and disease are based on attributing temperaments hot, cold, dampness, and dryness to human nature. The combination of these elements makes four humours in the body, respectively named black bile, phlegm, yellow bile, and blood. The excess or deficiency in any of them is recognized as a disease (Bone and Mills, 2012). On the other hand, the Persian folkloric medicine is not a documented system of medicine and its definitions on health and disease might be different among various ethnicities in Iran. Taken together, one of the main challenges in this regard is to document the valuable folkloric Persian knowledge of medicine.

Lorestan is one of the relatively humid provinces in the West of Iran, located in the central regions of the Zagros Mountains, with large natural areas and a long-term heritage of herbal knowledge (Mehrnia and Jamzad, 2015; Delfan, 2001). Zagros is a mountain range located in the west of the Iranian plateau from Kurdistan to the borders of Khuzestan and Fars. The name of the mountain range has existed in the same way since 1330 BC (Barthold, 1984). The Flora of Iran reports 95 families, 547 genera, and 1805 species for the Lorestan province (Mehrnia and Jamzad, 2015), showing that this region of the country has a rich biodiversity. There are 8500–9500 vascular plant species in Iran, of which 2324 are endemic to the country (Ghahraman, 1983). Of all recognized endemic plants to Iran, 29 species exclusively grow in Lorestan (Mehrnia and Jamzad, 2015).

In Lorestan, the quality of healthcare centers and hospitals varies from place to place. In large settlements and the capital city, Khorramabad, there are international-standard hospitals and well-trained doctors. However, medical care is not always readily available outside major cities, particularly in villages in remote areas (Borzouee and Valian, 2010). While there is no doctor in the majority of the villages, there is at least one traditional healer per village. Medicinal plants are available for people who cannot afford expensive drugs or they do not have access to modern medicine. In these situations, people can

self-medicate with medicinal plants for chronic and minor acute conditions. Even in the large cities of Lorestan, the medical facilities are not accessible for all people equally (Borzouee and Valian, 2010).

Also, in recent decades, the use of botanicals and herbal drugs has increased significantly even in the large cities. The number of herbal stores, known as Attari, is comparable to the number of pharmacies and drugstores. However, some fraudulent and profiteering herbal sellers take advantage of this opportunity and prescribe medicinal plants without having enough experience and knowledge. So, attention should be paid to this medical knowledge to 1) be used as complementary medicine, and 2) prevent the fraudsters. Moreover, plants are a great source of natural drugs in the field of phytotherapy and can be used for drug discovery so that identification of the plants as well as documentation of the traditional and folkloric knowledge in the region is an essential and valuable task. Identifying the potential medicinal plants will facilitate future research on the cultivation of herbs, experiments related to the extraction of these plants, identification of their active components, and production of raw materials for the pharmaceutical industry. In this study, we aimed to collect and identify the traditional medicinal plants of the region, and to evaluate their relative importance.

## 2. Methods

### 2.1. Study area

Lorestan, a province of western Iran, is located in the Zagros Mountains and covers an area of 28,392 km<sup>2</sup> between 66°51'–50°3' E and 32°37'–34°22' N (Fig. 1). Lorestan is adjacent to Hamedan and Markazi provinces in the north, Isfahan in the east, Khuzestan in the south, and Ilam and Kermanshah in the west. Lorestan means the lands in which the people of Lor ethnicity have settled and live. From a historical standpoint, Lorestan has been inhabited by Lor people since approximately 1000 BC (Porada, 1964; Edwards et al., 1971; Mostawfi, 2000). The region has a long history of human settlements (Potts, 1999). The Lor people were agriculturally advanced and worked with metals (De Waele, 1983). The main language spoken is Lori. The population of Lorestan is 1,760,000 according to the Iranian Bureau of Statistics (Borzouee and Valian, 2010). Lorestan consists chiefly of mountains, with numerous ranges. Iran's most important rivers, such as the Zayanderud, Jarahi, Karun, Diz, Abi, and Karkheh are fed by the Zagros Mountains. Many fertile plains and low hilly, well-watered districts lie between the higher ranges of Zagros. Oshtoran Kuh at 4700 m is the highest point and the Zal Bridge at 330 m is the lowest point of the province. The outer slopes are covered with oak forests together with walnut, maple, elm, and almond trees (Sagheb-Talebi et al., 2005). Lorestan province is the third most water-rich province in Iran and has 12% of the country's waters (Fig. 2).

The province can be divided into three parts, climatically: 1. The mountainous regions, such as Doroud, Boroujerd, Nourabad, Azna, and Alishtar with cold winters and moderate summers; 2. the central region, including Khorramabad in this realm, with a long spring season, beginning in mid-February and lasting till mid-May; and 3. southern regions such as Pol-e-Dokhtar and Papi with hot summers and relatively moderate winters due to the influence of the warm air currents of Khuzestan (Barthold, 1984).

In Lorestan, the temperate climate of the mountains, the extensive grasslands, and the mild weather of the southern and high plains in winter have favored nomadic ways of life. Biranvand, Hassanvand, Zalqi, Pai, Mir, Sadat, Mamivand, Segvand, and Torkashvand are among the most important tribes migrating between winter and summer camps in the province. The tribes and nomads in Lorestan spend their summers in Oshtoran Kuh, Qeliankuh, Aligudarz, Zagheh, Chaghlundi, Aleshtar, Delfan, Kakasharaf, and Kuhdasht districts. The wintering areas are Sartarhan, Tarhan, Jaidar, Hosseinieh, Simareh, Chaghlondi, Lali section, Sartakht, and Dezful. Lorestan nomads are from the old Lor tribes of Iran and speak the Lori dialect. These people are highly dependent on

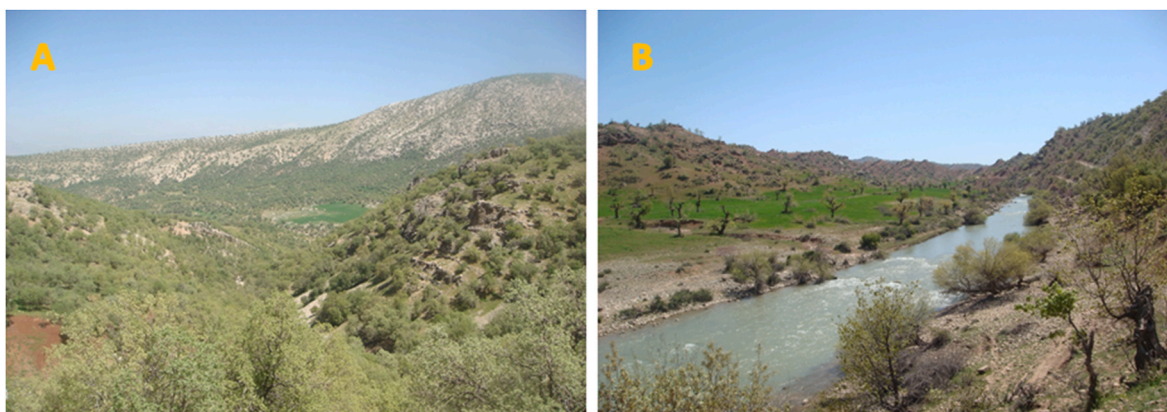
A



B



Fig. 1. Geographical map of A: Iran and B: Lorestan Province (study area) (Saghaei, 2018).



**Fig. 2.** Some pictures of Lorestan landscapes. A: oak forests; B: Kashkan River, the most flood-prone river in Lorestan Province and the main source of the Karkheh River; The photos are taken by Dr. Mehrnia.



**Fig. 3.** Some pictures of the local markets in which the wild plants growing in Lorestan are sold.

medicinal plants and local traditional healers to cover their primary healthcare needs (Figs. 2 and 3).

## 2.2. Collection of ethnopharmacological data

### 2.2.1. Participants

Two-hundred and twenty traditional healers, 101 females (45.9%) and 119 males (54.1%), participated in this study (Table 2). All participants lived in Lorestan (the villages), of whom, 212 traditional healers were from Lor ethnic group while the rest were not originally Lor. The interviewees were selected according to their medical reputation among the people living in their villages and the interviews were conducted in their homes. Although the age of the informants ranged from 20 to over 70 years old, the majority were older than 40. Most of the informants

were literate and only 44 persons had graduated from university.

### 2.2.2. Study design

Data were collected during 2015–2019 from the districts of Lorestan. Ethnomedicinal information was collected from traditional healers and native people of the study area adopting an appraisal approach with an open-ended interview and questionnaire technique. The questionnaires were specifically designed to collect in-depth data on each species, including, its uses, local name, parts used, and methods of preparation.

Our research group had previous experience with in ethnopharmacological fieldwork in the west of Iran. Prior to the field research, the survey and the questionnaires were designed according to the established recommendations (Heinrich et al., 2009; Weckerle et al., 2018). The questionnaires were designed to:

**Table 1**

The medicinal plants from the study area, with additional information on documentation, use and preparation. Family, scientific names and synonym(s) are according to The Plant List (2013), [The Plant List, 2013. Version 1.1. Published on the Internet; <<http://www.theplantlist.org/>> (accessed 1st January)].

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher num ber <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Astragalus</i> sp.	Fabaceae	Kom (1)	6482	Fractures (external use)			Whole plant	Cataplasm	Topical
<i>Eremurus</i> sp.	Asphodelaceae	Serish (2)	571	Skin infections, Hyperlipidemia			Root	Food, Cataplasm	Oral, topical
<i>Phagnalon persicum</i> Boiss.*	Asteraceae	Sang sey (2)	11088	Kidney stones (8), Analgesic (5), Rectal prolapse (7)	14	20	Whole plant	Infusion	Oral
<i>Delphinium lanigerum</i> Boiss.*	Ranunculaceae	Zabān pas qafā (2)	13597	Because of toxicity, it is used only externally (18)	18	18	Aerial parts	Cataplasm	Topical
<i>Phagnalon rupestre</i> (L.) DC. Basion. <i>Conyza rupestris</i> L.	Asteraceae	Sang sey (2)	12742	Kidneystones (8), Analgesic (5), Rectal prolapse (7)	18	20	Whole plant	Infusion	Oral
<i>Consolida ajacis</i> (L.) Schur Basion. <i>Delphinium ajacis</i> L.	Ranunculaceae	Zabān dar qafā (2)	11790	Sedative (12), Diuretic (15), Anthelmintics (17), Anti-inflammatory (used for swelling externally) (14)	19	58	Leaves, Flower	Infusion, Cataplasm	Oral, topical
<i>Onopordum acanthium</i> L.	Asteraceae	Khār panbe (2)	11037	Febrifuge (8), Diuretic (10), Astringent (9), Liver and stomach tonic (10), Appetizer (7)	19	44	Stem, Seed, Root, Flower	Food	Oral
<i>Picnemon acarna</i> (L.) Cass. Basion. <i>Carduus acarna</i> L.	Asteraceae	Zard Khār (2)	1565	Indigestion (5), Gastric disorders (7), Stomachache (5)	20	17	Leaves	Decoction	Oral
<i>Conium maculatum</i> L.	Apiaceae	Showcarāne kabir (2)	2812	Toxic (17), Analgesic (12), Antispasmodics (15), Reduce libido (10), Epilepsy (8), Dementia (5), Pertussis (7), Atherosclerosis (8), Prostate problems (12)	21	94	Leaves, Fruit	Infusion	Oral
<i>Helichrysum oligocephalum</i> DC.*	Asteraceae	Gol-e-bi marg (2)	13949	Astringent (12), Expectorant (14), Anthelmintics (9), Increase bile production (7), Stomach tonic (10), Skin conditioner (14), Anti-inflammatory (10), Detoxifying agent (8)	21	84	Flowering tops	Infusion	Oral, topical
<i>Arum giganteum</i>	Araceae	Shypoori sabz (2)	13360	Constipation (15), Wound healing (18), Respiratory problems (15), Asthma (12), Blisters (8), Reduce bile production (10)	22	78	Root	Infusion, Cataplasm	Oral, topical
<i>Consolida lorestanica</i> Iranshahr*	Ranunculaceae	Zabān dar qafā (2)	8176	Diuretic (16), Analgesic (12), Spleen problems (10), Wound healing (15)	22	53	Leaves, Flower	Infusion, Cataplasm	Oral, topical
<i>Gagea gageoides</i> (Zucc.) Vved. Basion. <i>Bulbillaria gageoides</i> Zucc.	Liliaceae	Najmeh talāie (2)	1481	Blood purifier (10), Rheumatism (15), Stomach tonic (15), Diuretic (18)	22	58	Bulb	Decoction, Cataplasm	Oral, topical
<i>Nonea caspica</i> G. Don	Boraginaceae	Cheshm Gorbei (2)	3096	Food (22) (in combination with other plants)	22	22	Flower	Food	Oral
<i>Bellevalia glauca</i> (Lindl.) Kunth Basion. <i>Muscari glaucum</i> Lindl.	Asparagaceae	Tameshkin (2)	10554	Food (23)	23	23	Leaves, Bulb	Food	Oral
<i>Arenaria serpyllifolia</i> subsp. <i>leptoclados</i> (Rchb.) Nyman Basion. <i>Arenaria serpyllifolia</i> var. <i>leptoclados</i> Rchb. Syn. <i>Arenaria leptoclados</i> (Rchb.) Guss.	Caryophyllaceae	Marjāni (2)	612	Kidney stones (12), Acute and chronic cystitis (10), Bladder problems (8), Diuretic (18)	24	48	Aerial parts	Infusion	Oral

(continued on next page)

Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher num ber <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Bupleurum aleppicum</i> Boiss.	Apiaceae	Chatr e gandomi (2)	9583	Febrifuge (15), Astringent (12), Wound healing (18)	24	45	Leaves, Seed	Infusion	Oral, topical
<i>Leopoldia comosa</i> (L.) Parl. Basion. <i>Hyacinthus comosus</i> L. Syn. <i>Muscari comosum</i> (L.) Mill.	Asparagaceae	Kalāghak pari (2)	8908	Emetic (12), Diuretic (15)	24	27	Bulb	Decoction	Oral
<i>Plumbago europaea</i> L.	Plumbaginaceae	Alaf sorbi (2)	2336	Wound healing (external use) (18), Rheumatism (15), Chronic headache (10), Scabies (13)	24	43	Whole plant	Infusion, Cataplasm	Oral, topical
<i>Poa annua</i> L.	Poaceae	Chaman (2)	11280	Appetizer (24)	24	24	Whole plant	Food	Oral
<i>Scandix iberica</i> M. Bieb.	Apiaceae	Shāneh venus (2)	8385	Anxiolytic (15), Reduce menopausal symptoms (10), Analgesic (12), Nervous system tonic (18)	24	55	Leaves, Flower	Infusion	Oral
<i>Acantholimon aspadanum</i> Bunge*	Plumbaginaceae	Kolāhe mirhasan (2)	2490	Skin allergies (18), Chronic wound healing (20), Tonic (12), Carminative (15), Astringent (18), Anthelmintics (13)	26	96	Aerial parts, Root	Infusion, Cataplasm	Oral, topical
<i>Bupleurum falcatum</i> subsp. <i>cernuum</i> (Ten.) Arcang. Basion. <i>Bupleurum cernuum</i> Ten.	Apiaceae	Chatr e gandomi (2)	2148	Astringent (12), Wound healing (20), Febrifuge (25), Liver tonic (18)	26	75	Leaves, Seed	Infusion, Ointment	Oral, topical
<i>Gentiana olivieri</i> Griseb.	Gentianaceae	Gol-e-sepās (2)	2832	Febrifuge (15), Rabies (17), Anthelmintics (10), Digestive tonic (18), Appetizer (10)	26	70	Root	Decoction	Oral
<i>Thalictrum minus</i> L.	Ranunculaceae	Barg-e-sodābi (2)	1895	Febrifuge (28)	28	28	Leaves, Root	Infusion	Oral
<i>Adonis aestivalis</i> L.	Ranunculaceae	Gol sora haroma (1), Gol khorousak (2)	9541	Cardiotonic (15), Diuretic (25), Laxative (22), Kidney stones (18), Toxic for animals (15), Limited uses due to toxicity (20)	29	115	Whole plant	Decoction	Oral
<i>Arenaria lessertiana</i> Fenzl Syn. <i>Arenaria persica</i> Boiss.	Caryophyllaceae	Marjāni (2)	7460	Diuretic (20), Kidney stones (13), Acute and chronic cystitis (12), Bladder problems (10)	29	55	Aerial parts	Infusion	Oral
<i>Centaurium erythraea</i> Rafn Syn. <i>Centaurium minus</i> Moench	Gentianaceae	Ghanturion (2)	7492	Tonic (20), Appetizer (17), Febrifuge (12), Increase bile production (22), Anthelmintics (15), Digestive (16), Sedative (17)	29	119	Flowering tops	Decoction	Oral
<i>Inula britannica</i> L.	Asteraceae	Mosaffā (2)	43	Mild expectorant (12), decrease phlegm production (8), Bronchitis (10), Wheeziness (7), Chronic coughing (8), Stop vomiting (5)	29	50	Flowers, Aerial parts	Infusion	Oral
<i>Malcolmia africana</i> (L.) R.Br. Basion. <i>Hesperis africana</i> L.	Brassicaceae	Shabbou (2)	2220	Antioxidant (15), Antibacterial (21), Infectious diseases (18), Cancer (8)	29	62	Seeds, Aerial parts	Cataplasm	Topical
<i>Serratula cerinthifolia</i> (Sm.) Boiss. Basion. <i>Centaurea cerinthifolia</i> Sm.	Asteraceae	Gol-e-gandomi (2)	10829	Wound healing (15), Astringent (11)	29	26	Flowering tops	Decoction, cataplasm	Oral, topical
<i>Sinapis arvensis</i> L.	Brassicaceae	Khardal-e-biābāni (2)	6255	Allergen (12), Diaphoretic (10), Asthma (12), Detoxifying agent (14),	29	85	Seed	Food	Oral

(continued on next page)

Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Pulicaria arabica</i> (L.) Cass. Basion. <i>Inula arabica</i> L.	Asteraceae	Kak kosh (2)	13823	Febrifuge (20), Hypnotic (17) Dysentery (30)	30	30	Root, Flower	Infusion	Oral
<i>Bidens tripartita</i> L.	Asteraceae	Du Dandān (2)	7276	Astringent (12), Diuretic (14), Bladder and kidney problems (8), Hematuria (12), Digestive disorders (13)	31	59	Aerial parts	Infusion	Oral
<i>Bifora testiculata</i> (L.) Roth Basion. <i>Coriandrum testiculatum</i> L.	Apiaceae	Keshnizak (2)	10846	Spice (25), Stomach tonic (22), Diabetes (18)	31	65	Leaves, Fruit	Flavoring	Oral
<i>Bupleurum haussknechtii</i> Boiss.	Apiaceae	Chatr e gandomi (2)	6057	Astringent (14), Wound healing (25), Febrifuge (23), Liver tonic (19)	31	81	Leaves, Seed	Infusion, Ointment	Oral, topical
<i>Epilobium hirsutum</i> L.	Onagraceae	Alaf Khar (2)	1973	Anti-bacterial (20), Warts (the latex of the plant) (24)	31	44	Leaves, Resin	Infusion, Cataplasm	Oral, topical
<i>Gentiana septemfida</i> Pall.	Gentianaceae	Gol-e-sepās (2)	7713	Diabetes (12), Anemia (14), Sedative (15), Digestive (18), Diarrhea (20), Colds (24), Stomachache (21), Pain killer (17), Anti-inflammatory (22), Antihepatotoxic (23), Antiulcerogenic Hepatoprotective (14)	31	200	Root	Decoction	Oral
<i>Lactuca serriola</i> L.	Asteraceae	Kāhū Khārdār (2)	4618	Laxative (15), Diuretic (18), Diaphoretic (8), Spasmolytic (10), Febrifuge (12), Coughing (caused by Tuberculosis) (8), Analgesic (10), Sedative (7), Bronchitis (10)	31	98	Resin, Seed, Oil	Food	Oral
<i>Muscari neglectum</i> Guss. ex Ten.	Asparagaceae	Sorme kalāgh (2), Kalāghak (2)	10558	Emetic (14), Diuretic (17)	31	31	Bulb	Decoction	Oral
<i>Scandix pecten-veneris</i> L.	Apiaceae	Shāneh vash (2), Tolla sora (1)	11566	Mouth freshener (18), Stomachache (15)	31	33	Leaves	Food	Oral
<i>Scutellaria pinnatifida</i> A.Ham.	Lamiaceae	Boshqābi (2)	13007	Nervous system tonic (25), Insomnia (15), Insects and reptiles bites (24)	31	–	Leaves, Flower, Root	Infusion	Oral, topical
<i>Thalictrum sultanabadense</i> Stapf.	Ranunculaceae	Barg-e-sodābi (2)	7294	Because of the toxicity, the root should be administered carefully	31	–	Root	Infusion	Oral
<i>Lathyrus aphaca</i> L.	Fabaceae	Kholar-e-bi barg (2)	839	Narcotic (32)	32	32	Seed	Food	Oral
<i>Acantholimon bromifolium</i> Boiss. ex Bunge	Plumbaginaceae	Kolāhe mirhasan (2)	5687	Immune system tonic (20), Cholesterolemia (12), Anemia (18)	33	50	Fruit, Root	Decoction	Oral
<i>Adonis flammea</i> Jacq.	Ranunculaceae	Cheshm khorous (2)	5628	Diuretic (30), Cardiotonic (15), Laxative (24), Kidney stone (20)	33	89	Whole plant	Decoction	Oral
<i>Aristolochia olivieri</i> Colleg. ex Boiss.*	Aristolochiaceae	Chopoqak zāgrosi (2)	13390	Hyperlipidemia (33)	33	33	Root, fruit, seed	Decoction	Oral
<i>Ballota nigra</i> L.	Lamiaceae	Ferāsion (2)	7494	Vomit (18), Analgesic (22), Stomach pain (20), Diuretic (31), Depression (16)	33	107	Aerial parts	Decoction	Oral
<i>Clematis orientalis</i> L.	Ranunculaceae	Kelemātis (2)	2548	Induce skin allergies (28), Diuretic and purgative (18), Infectious wounds (30)	33	76	Leaves, Bud	Cataplasm	Topical
	Colchicaceae	Gol-e-hasrat (2)	4695		33	112	Seed, Bulb	Cataplasm	Topical

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Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Colchicum wendelboi</i> K. Perss.*				Gout (34), Rheumatism (18), Joint pain killer (12), Laxative (17), Carminative and anti- flatulence (15), Prostatic hyperplasia (16)					
<i>Dipsacus laciniatus</i> L.	Caprifoliaceae	Khāje bāshi (2)	5247	Diaphoretic (24), Diuretic (22), Appetizer (15)	33	61	Aerial parts	Food	Oral
<i>Dryopteris filix-mas</i> (L.) Schott Basion. <i>Polypodium</i> <i>filix-mas</i> L.	Dryopteridaceae	Sarakhs nar (2), Rishe panjeh khers (2)	7463	Anthelmintics (18), Carminative and anti- flatulence (16), Chronic stomachache (15), Rash, wounds, and scars (28)	33	77	Root, leaves	Cataplasm, Infusion	Oral, topical
<i>Echinops mosulensis</i> Rech.f.	Asteraceae	Shekar tighāl (2), Qan shakarook (1)	6805	Expectorant (15), Constipation (14), Hypertension (12), Frequent urination (18), Laxative (10), Febrifuge (14)	33	83	Fruit	Decoction	Oral
<i>Fessia bisotunensis</i> (Speta) Speta Basion. <i>Scilla</i> <i>bisotunensis</i> Speta	Asparagaceae	Najme ābi (2)	6457	Blood purifier (7), Skin rashes (15), Digestive problems (18)	33	40	Leaves, Bulb	Infusion	Oral
<i>Ficaria fascicularis</i> K. Koch Syn. <i>Ficaria kochii</i> (Ledeb.) Iranshahr & Rech.f.	Ranunculaceae	Ālālleh (2)	13622	Hemorrhoids (33)	33	33	Aerial parts	Cataplasm	Topical
<i>Hypocoum pendulum</i> L.	Papaveraceae	Zarde shātarei (2)	12250	Arrhythmias (18), Diuretic (22)	33	40	Leaves, Resin, Extract	Infusion	Oral, topical
<i>Imperata cylindrica</i> (L.) Raeusch. Basion. <i>Lagurus</i> <i>cylindricus</i> L.	Poaceae	Zolfe Sheytān (2), Halfeh (2)	11098	Softening (30), Anti-inflammation (17), Hemorrhoids (14), Febrifuge (17), Colds (22), Hiccups (15)	33	115	Root	Infusion	Oral
<i>Inula helenium</i> L.	Asteraceae	Mosaffā	2332	Expectorant (12), Cough (8), Diaphoresis (10), Mild bitter tonic (9), Antiseptic (10)	33	49	Root	Infusion	Oral
<i>Linaria vulgaris</i> Mill.	Scrophulariaceae	Katānii (2)	10214	Kidney problems (17), Diarrhea (20), Carminative (23)	33	60	Shoot	Food	Oral
<i>Lithospermum</i> <i>officinale</i> L.	Boraginaceae	Sangdāne (2)	7458	Diuretic (18), Kidney tonic (15), Kidney stone (17), Rheumatism (12), Analgesic (8), Gout (10)	33	80	Whole plant	Infusion	Oral, topical
<i>Onobrychis altissima</i> Grossh.	Fabaceae	Speres (2)	12826	Honey production (30), Diaphoretic (18)	33	48	Flower, Seed	Infusion	Oral
<i>Ophrys schulzei</i> Bornm. & Fleischm.	Orchidaceae	Abruie (2)	5526		33		Corm	Powder	Topical
<i>Persicaria bistorta</i> (L.) Samp. Basion. <i>Polygonum</i> <i>bistorta</i> L.	Polygonaceae	Enjebār (2), Haftband (2)	1791	Astringent (30), Tonic (17), Diarrhea (22), Hemorrhoids (20), Wound healing (23), Sore throats (12)	33	124	Root, Leaves, Rhizome	Infusion,	Oral, topical
<i>Persicaria maculosa</i> Gray Syn. <i>Polygonum</i> <i>persicaria</i> L.	Polygonaceae	Haftband (2)	8404	Astringent (30), Tonic (15), Wound healing (22), Gout (10)	33	67	Leaves, Resin	Infusion	Oral, topical
<i>Pinus sylvestris</i> L.	Pinaceae	Kāj-e-jangali ( )	7853	Tonic (18), Cough (15), Diuretic (23)	33	56	Essance, Leaves	Decoction	Oral
<i>Platanus orientalis</i> L.	Platanaceae	Chenār (2)	7883	Severe eye inflammation (15), Dysentery (17), Toothache (12),	33	84	Bark, Leaves, Fruit	Infusion, Cataplasm	Oral, topical

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Table 1 (continued)

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<i>Scutellaria multicaulis</i> Boiss. *	Lamiaceae	Boshqābi (2)	6630	Peeling skin (22), Snakebite (18), Insomnia (18), Nervous system tonic (24), Tranquilizer (15)	33	57	Leaves, Flower, Root	Infusion	Oral
<i>Sonchus asper</i> (L.) Hill Basion. <i>Sonchus oleraceus</i> var. <i>asper</i> L.	Asteraceae	Shirtighak (2)	189	Wound healing (17), Laxative (12), Abscess (10)	33	39	Whole plant	Decoction, cataplasm	Oral, topical
<i>Varthemia persica</i> DC.	Asteraceae	Atr-e-sang (2)	1717	Fragrant (15), Digestive tonic (20)	33	35	young Leaves	Infusion	Oral
<i>Vicia narbonensis</i> L.	Fabaceae	Māshak (2)	3012	Nourishing (30), Digestive problems (25), Reflux (24), Sore throats (15), Fractures and bruises (28)	33	122	Seed	Food, Cataplasm	Oral, topical
<i>Capparis parviflora</i> Boiss.	Capparaceae	Kavar-e-Golriz (2)	12449	Expectorant (14), Diuretic (18), Stomach tonic (20), Infectious wounds (22), Neurasthenia (15), Edema (13), Scorpion and snake bites (fruits) (25), Hair darkening agent (17)	35	144	Flower, Leaves	Food, Cataplasm	Oral, topical
<i>Centaurea behen</i> L.	Asteraceae	Bahman Sefid (2), Gol-e-ganem talāei (1)	3585	Anti-lithiasis (25), Aphrodisiac (12)	35	37	Root	Decoction	Oral
<i>Colchicum persicum</i> Baker	Colchicaceae	Solenjo (2)	7147	Gout (33), Joint pain killer (13), Prostatic hyperplasia (15), Carminative and anti-flatulence (15), Rheumatism pain killer (in combination with saffron and egg) (20)	35	96	Seed, Bulb	Cataplasm	Topical
<i>Cynara scolymus</i> L.	Asteraceae	Kangar farangi (2)	7382	Food (20), Antioxidant (17), Bitter tonic (18), Digestive tonic (21), Cholesterolemia (12), Liver and kidney tonic (10)	35	98	Leaves, Flower	Food	Oral
<i>Iris sibiricum</i> L.	Iridaceae	Zanbagh (2)	7810	Arthrodynea (14), Diuretic (28), Body detoxification (23), Tonic (21)	35	86	Rhizome, Leaves	Infusion, Powder	Oral
<i>Lathyrus sativus</i> L.	Fabaceae	Kholar (2)	1170	Strong laxative (35)	35	35	Seed	Food	Oral
<i>Melilotus albus</i> Medik.	Fabaceae	Yunjeh (2)	9299	Hypnotic (15), Diuretic (19), Spasmolytic (32), Carminative (24), Astringent (30)	35	120	Flowering tops	Food	Oral
<i>Phleum boissieri</i> Bornm.	Poaceae	Dom gorbei (2)	6223	Inhibit the growth of Sarcoma and other tumor types (35)	35	35	Flowering tops	Infusion	Oral
<i>Prunella vulgaris</i> L.	Lamiaceae	Na' nā Chamani (2)	2037	Astringent (25), Diabetes (8), Wound healing (28), Sore throats (17), Angina (12)	35	90	Whole plant	Infusion	Oral, topical
<i>Saccharum ravennae</i> (L.) L. Basion. <i>Andropogon ravennae</i> L.	Poaceae	Tabāshir e hendi (2)	7288	Laxative (29), Increase libido (10), Increase bile production (22)	35	61	Whole plant	Infusion	Oral
<i>Vicia koeieana</i> Rech.f.	Fabaceae	Māshak (2)	2740	Nourishing (32), Digestive problems (28), Reflux (25), Sore throats (18), Fractures and bruises (30)	35	133	Seed	Food, Cataplasm	Oral, topical
<i>Adonis microcarpa</i> DC.	Ranunculaceae	Cheshm khorous (2)	1114	Diuretic (30), Cardiotonic (14), Laxative (25), Kidney stone (21)	37	90	Whole plant	Decoction	Oral
	Asteraceae	Golrang zard (2)	591		37	39	Seed		

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Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Carthamus oxyacantha</i> M.Bieb.				Wound healing (external use of the oil) (21), Itching (18)				Decoction, Powder	Topical, oral
<i>Hymenocarpus circinnatus</i> (L.) Savi Basion. <i>Medicago circinnata</i> L.	Fabaceae	Yunjeh (2)	4196	Weight gain (34), Diuretic (28), Astringent (30)	37	92	Seed	Food	Oral
<i>Inula salicina</i> L.	Asteraceae	Mosaffā	7441	Intestine and stomach tonic (32), Bowel obstruction (10)	37	22	Root	Infusion	Oral
<i>Lythrum hyssopifolia</i> L.	Lythraceae	Khunfām (2)	8971	Astringent (28), Anti-ascorbate (12), Appetizer (18), Anti-biotic (20)	37	78	Flowering tops	Infusion	Oral
<i>Sisymbrium altissimum</i> L.	Brassicaceae	Khākshir (2)	10768	Astringent (25), Anti-ascorbate (17)	37	42	Flower, Leaves	Food	Oral
<i>Sonchus oleraceus</i> (L.) L. Basion. <i>Sonchus oleraceus</i> var. <i>asper</i> L.	Asteraceae	Shirtighak (2)	10669	Tonic (10), Febrifuge (12), Analgesic (8), Laxative (14), Diuretic (15), Anti-infective (7), Wound healing (17)	37	83	Whole plant	Decoction, Cataplasm	Oral, topical
<i>Amaranthus</i> sp.	Amaranthaceae	Tāj Khorus (2)	8447	Antitussive (28), Antidiarrhea (25), Laxative (22), Disinfectant (20)	40	95	Aerial parts	Infusion	Oral
<i>Centaurea virgata</i> Lam.	Asteraceae	Gol-e-ganem (1)	2416	Bitter tonic (22), Mild laxative for children (14), Rheumatism (17), Digestive tonic (20)	40	73	Flower, Leaves	Infusion	Oral, topical
<i>Elymus repens</i> (L.) Gould Basion. <i>Triticum repens</i> L. Syn. <i>Agropyron repens</i> (L.) P.Beauv.	Poaceae	Ghiāgh (2), Bid giāh (2)	10948	Diuretic (21), Sedative (19), Hepatitis (10), Gallbladder stones (12), Urinary tract infections (15), Digestive system inflammations (24), Stomach cramps (27), Bronchitis (18), Colds (24)	40	170	Seed, Rhizome, Stem	Infusion	Oral
<i>Geranium rotundifolium</i> L.	Geraniaceae	Souzan chupān (2)	1998	Astringent (37), Skin rashes (32), Diarrhea (38), Peptic ulcer (18)	40	125	Leaves	Infusion, Cataplasm	Oral, topical
<i>Ixiolirion tataricum</i> (Pall.) Schult. & Schult.f. Basion. <i>Amaryllis tatarica</i> Pall.	Ixioliriaceae	Khiārak (2)	8254	Skin conditioner (40)	40	40	Flower	Cataplasm	Topical
<i>Ononis spinosa</i> L.	Fabaceae	Khār khar (2)	12829	Diuretic (34), Analgesic (16), Diaphoretic (24), Astringent (22), Kidney stone (25), Gallbladder (18)	40	139	Leaves, Flower, Root	Infusion	Oral
<i>Scutellaria velenoski</i> Rech.f.	Lamiaceae	Boshqābi (2)	8524	Spasmolytic (25), Bitter tonic (18), Nervous system tonic (13), Sedative (28)	40	84	Aerial parts	Infusion	Oral
<i>Carthamus lanatus</i> L.	Asteraceae	Golrang	6808	Diaphoretic, Diuretic, Febrifuge, Anthelmintics, Wound healing	42	-	Flower, Seed	Food, Cataplasm	Oral, topical
<i>Centaurea solstitialis</i> L.	Asteraceae	Gol-e-ganem (1)	2909	Febrifuge (15), Stomach tonic (19), Bitter tonic (23)	42	57	Root, Flower	Infusion	Oral
<i>Elymus transhyrcanus</i> (Nevski) Tzvelev Basion. <i>Roegneria transhyrcana</i> Nevski Syn. <i>Agropyron</i>	Poaceae	Chaman gandomi (2)	5777	Nourishing (12), Anti-cancer (9), Immune system tonic (14), Hepatoprotective (15), Spleen disorders (10),	42	80	Seed, Rhizome, Stem	Infusion	Oral

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Table 1 (continued)

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<i>leptourum</i> (Nevski) Grossh.				Hypertension (8), Kidney tonic (12)					
<i>Equisetum arvense</i> L.	Equisetaceae	Dom Asb (2)	13977	Joint pain killer (25), Stop internal bleeding (15), Diuretic (30)	42	70	Leaves	Decoction	Oral
<i>Erodium cicutarium</i> (L.) L'Hér.	Geraniaceae	Nok laklaki (2)	8623	Astringent (34), Edema (20), Dysentery (23)	42	77	Whole plant	Infusion, Essential oil	Oral
<i>Geranium tuberosum</i> L.	Geraniaceae	Suzan chupān (2)	10868	Febrifuge (20), Rabies (17), Anthelmintics (22)	42	59	Root	Infusion, Cataplasm	Oral, topical
<i>Haplophyllum perforatum</i> Kar. & Kir.	Rutaceae	Sodābi (2), Mourd-e-Kāzeb (2)	3937	Rheumatism (30), Abortion (16), Constipation (28), Stomachache (24)	42	98	Leaves, Oil	Infusion	Oral
<i>Lamium album</i> L.	Lamiaceae	Gazenesā (2)	7333	Astringent (20), Demulcent (18), Uterotonic (15), Abnormal vaginal discharge (10), Menorrhagia (15), Diarrhea (22), Hemorrhoids and varicose veins (17)	42	117	Leaves, Flower	Infusion, Cataplasm	Oral, topical
<i>Lamium amplexicaule</i> L.	Lamiaceae	Gazehā (1)	9431	Rheumatism (19), Diaphoretic (24), Febrifuge (20), Laxative (23), Analgesic (17)	42	103	Leaves, Flower	Decoction	Oral
<i>Lycopus europaeus</i> L.	Lamiaceae	Ferāsion (2)	5113	Infectious wounds (external use) (42)	42	42	Leaves	Cataplasm	Topical
<i>Ornithogalum cuspidatum</i> Bertol.	Liliaceae	Shir morgh (2)	5648	Respiratory problems (18), Anti-inflammatory (15), Anti-cancer (8), Induce dermatitis (10), Toxic (the root contains some toxic alkaloids) (13)	42	64	Leaves, Stem	Infusion, Cataplasm	Oral, topical
<i>Orobanche hirtiflora</i> (Reut.) Tzvelev	Orobanchaceae	Golkoooh-e-pishoki (2)	757	Appetizer (15), Tonic (18), Carminative (32), Intestinal colic (24)	42	89	Flower, Stem	Infusion	Oral
<i>Plantago major</i> L.	Plantaginaceae	Bārhang (2), Kharchang (2)	3492	Laxative (32), Antipyretic (15), Antitussive (24), Antidiarrhea (20), Toothache (12), Gastric ulcers (27)	42	130	Leaves, Seed	Infusion	Oral
<i>Reseda luteola</i> L.	Resedaceae	Vers (2), Zardnamā (2)	12330	Diuretic (30), Diaphoretic (28), Purgative (18), Appetizer (12), Stomach tonic (20), Dyeing and painting (30)	42	138	Flowering tops, Root, Seed	Infusion, Intinction	Oral, topical
<i>Robinia pseudoacacia</i> L.	Fabaceae	Aqaqyā (2)	7705	Spasmodic (42)	42	42	Flower	Infusion	Oral
<i>Vicia villosa</i> Roth.	Fabaceae	Mashak (2)	11867	Nourishing (28), Skin care (18), Insect bites (22), Dandruff (25), Mild laxative (32)	42	100	Stem, Seed	Food, Cataplasm	Oral, topical
<i>Abutilon abutiloides</i> (Jacq.) Garcke ex Hochr.	Malvaceae	Gāwpanbe (2)	176	Diuretic (23), Febrifuge (15), Hemorrhoids (18), Cough (20), Laxative (17), Analgesic (respiratory problems) (21), Hematuria (12)	44	126	Leaves, Bark, Seed	Infusion	Oral, topical
<i>Agrimonia eupatoria</i> L.	Rosaceae	Ghāfes	5121	Astringent (24), Kidney stone (12), Diabetes (10), Weight loss (14), Skin problems (20),	44	117	Aerial parts	Decoction, Cataplasm	Oral, topical

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Table 1 (continued)

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<i>Anagyris foetida</i> L.	Fabaceae	Ghare taj (2)	2098	Infectious wounds (22), Angina (15) Anti-inflammatory (20), Emetic (18), Laxative (15), Headache (22), Anti-infective (25)	44	100	Leaves, Seed, Root	Infusion	Oral
<i>Apium nodiflorum</i> (L.) Lag. Basion. <i>Sium nodiflorum</i> L.	Apiaceae	Karafs batlaghi (2)	10763	Stomach tonic (30), Tranquillizer (25), Swelling (topical use) (23)	44	78	Leaves, Seed, Stem	Infusion	Oral, topical
<i>Asplenium scolopendrium</i> L. Syn. <i>Phyllitis scolopendrium</i> (L.) Newman	Aspleniaceae	Sarakhs zangi daru (2)	5778	Liver and bladder problems (18), Diarrhea (15), Cough and colds (22), Mild astringent (20), Menorrhagia (10), Lung problems (15), Laxative (20)	44	120	Leaves	Infusion	Oral
<i>Astragalus tribuloides</i> Delile.	Fabaceae	Gowen (1)	6277	Laxative (30), Sedative (24)	44	54	Whole plant	Infusion	Oral
<i>Bellis perennis</i> L.	Asteraceae	Minā chamani (2)	12390	Diuretic (18), Expectorant (23), Febrifuge (22), Laxative (25), Tonic (15), Sedative (12), Rheumatism (10), Bronchitis (15)	44	140	Leaves, Flower	Decoction	Oral
<i>Cenchrus pennisetiformis</i> Steud.	Poaceae	Chaman tashi (2), Rishbozi (2)	10983	Pain killer (23), Inflammation (20), Skin (34), Intestines, and liver disorders (22), Gallbladder disorders (18), Urinary disorders (21)	44	138	Whole plant	Infusion	Oral
<i>Centaurea bruguierana</i> (DC.) Hand.-Mazz. Basion. <i>Tetramorphaea bruguierana</i> DC.	Asteraceae	Gol-e-ganem (1)	4334	Remedy for the eyes (eyewash) (10), Bitter tonic (21), Hepatoprotective (18), Improving resistance to infection (24), Digestion tonic (25)	44	98	Flower	Infusion	Topical, oral
<i>Cirsium sorocephalum</i> Fisch. & C.A.Mey. Syn. <i>Cirsium congestum</i> Fisch. & C.A.Mey. ex DC.	Asteraceae	Kenger (1)	13434	Cholesterolemia (42), Diuretic (40), Liver detoxifying agent (24), Anti-inflammatory (18), Hypertension (25), Weight loss (22), Digestion tonic (35), Liver tonic (34)	44	240	Whole plant	Food	Oral
<i>Cuscuta monogyra</i> Vahl	Convolvulaceae	Delimah (2), Gol-e-jaliz (2)	5691	Tonic (8), Laxative (25), Anti-ascorbate (10), Increase bile production (14), Carminative and anti-flatulence (22), Tuberculosis (12)	44	91	Whole plant	Infusion	Oral
<i>Erysimum sisymbrioides</i> C.A. Mey.	Brassicaceae	Khakshir Talkh (2)	3774	Anthelmintics (14), Toothache (15), Rheumatism (ointment) (21)	44	50	Seed	Infusion, Cataplasm	Oral, topical
<i>Iris hymenospatha</i> B. Mathew & Wendelbo	Iridaceae	Zanbagh (2)	5606	Detoxifying agent (32), Diuretic (24), Hepatitis (14), Weight loss (24), Skin problems (ointment) (35), Rheumatism (30), Fatigue (15)	44	174	Rhizome, Leaves	Infusion, Powder	Oral, topical
<i>Leontice leontopetalum</i> L.	Berberidaceae	Torb e shir (2), Cheshm-e-shir (2)	7456	Epilepsy (10), Tonic (12), Burns (external use) (18), Itchy skin (20)	44	60	Root, Leaves	Food, Cataplasm	Oral, topical
	Brassicaceae	Ozma (2)	1020		44	55	Aerial parts	Food	Oral

(continued on next page)

Table 1 (continued)

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<i>Lepidium draba</i> L. Syn. <i>Cardaria draba</i> (L.) Desv.				Food (20), Carminative and anti-flatulence (17), Constipation (18)					
<i>Micromeria macrosiphon</i> Coss. Syn. <i>Satureja macrosiphon</i> (Coss.) Maire	Lamiaceae	Jatenah (1)	4740	Colds (25), Anti-infective (20), Kidney stones (15), Anthelmintics (18), Diarrhea (28), Tonic (children) (14), Stomach tonic (35)	44	155	Flowering tops	Infusion	Oral
<i>Ornithogalum persicum</i> Haussk. ex Bornm.	Liliaceae	Shir morgh (2)	6114	Food (44) (boiled aerial parts including leaves and stems)	44	44	Leaves, Stem	Food	Oral
<i>Persicaria lapathifolia</i> (L.) Delarbre Basion. <i>Polygonum lapathifolium</i> L.	Polygonaceae	Haftband (2)	2863	Astringent (32), Diaphoretic (20), Diuretic (25), Kidney stone (18), Wound healing (24)	44	119	Whole plant	Infusion	Oral, topical
<i>Polygonum aviculare</i> L.	Polygonaceae	Alaf-e-Haftband (2)	12773	Astringent (28), Diuretic (24), Anthelmintics (16), Stop bleeding (10), Respiratory pains (15)	44	93	Aerial parts	Infusion	Oral
<i>Senecio vulgaris</i> L.	Asteraceae	Pir giäh (2)	5575	Emmenagogue (22), Uterus pain (18), Stop bleeding (15), Gout (12), Pustule (14)	44	81	Whole plant	Infusion	Oral, topical
<i>Sonchus maritimus</i> L.	Asteraceae	Shirtighak (2)	13894	Induce cough (15), Bronchitis (10), Asthma (9), Pertussis (12)	44	46	Whole plant	Decoction	Oral
<i>Sorghum halepense</i> (L.) Pers. Basion. <i>Holcus halepensis</i> L.	Poaceae	Chäir (2), Sorgom (2)	13808	Diuretic (32), Sedative (17), Antioxidant (14), Anti-bioatic (22), Skin inflammations (34), Skin softening (40)	44	119	Seed	Food	Oral, topical
<i>Stellaria media</i> (L.) Vill. Basion. <i>Alsine media</i> L.	Caryophyllaceae	Dänehan ghanäri (2), Gandomak (2)	5782	Rheumatism (18), Sedative (15), Eczema (12), Fractures (28)	44	73	Whole plant	Cataplasm	Topical
<i>Tussilago farfara</i> L.	Asteraceae	Päyekhar (2)	2014	Cough (18), Sedative (12), Expectorant (20)	44	50	Leaves	Infusion	Oral
<i>Verbascum kochii</i> Boiss. & Hausskn.*	Scrophulariaceae	Goosh-e-khrgoosh (2)	7525	Diuretic (38), Epilepsy (12), Expectorant (34)	44	84	Leaves, Flower Resin, Root	Infusion	Oral
<i>Veronica anagallis-aquatica</i> L.	Scrophulariaceae	Sizäb äbi (2)	11300	Astringent (25), Tonic (15), Diuretic (21), Sedative (23), Appetizer (12), Burns (28), Infectious wounds (20)	44	144	Aerial parts, Extract	Infusion, Cataplasm	Oral, topical
<i>Ziziphora capitata</i> L.	Lamiaceae	Käküti (2)	649	Spice (42), Stomach stimulant (18), Spasmolytic (22), Diuretic (32), Anti-infective (25), Chronic bronchitis (20), Insomnia (17)	44	176	Leaves, Fruit	Infusion, Flavoring	Oral
<i>Scorzonera pseudolanata</i> Grossh.	Asteraceae	Hapeluk (1), Sheng espi (2)	2660	Insects and animals bite (45)	45	45	Tuber	Cataplasm	topical
<i>Alliaria petiolata</i> (M. Bieb.) Cavara & Grande Basion. <i>Arabis petiolata</i> M. Bieb.	Brassicaceae	Gandnäei (2), Alaf-e-sir (2)	7440	Diuretic (20), Diaphoretic (24), Eczema (17), Infectious wounds (12), Anthelmintics (15)	46	88	Whole plant	Decoction, Cataplasm	Oral, topical
<i>Chaerophyllum macropodium</i> Boiss.	Apiaceae	Jafari (2)	11053	Food (42), Hiccups (18), Diuretic (27), Stomach tonic (25),	46	189	Leaves, Flowering tops	Infusion, Ointment	Oral, topical

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Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Cyanus depressus</i> (M. Bieb.) Soják Basion. <i>Centaurea depressa</i> M. Bieb.	Asteraceae	Gol e ganem (1)	2974	Appetizer (27), Hypertension (35), Wound healing (ointment) (15) Neurasthenia (46)	46	46	Flower, Leaves	Infusion	Oral
<i>Eruca vesicaria</i> (L.) Cav. Basion. <i>Brassica eruca</i> L. Syn. <i>Eruca sativa</i> Mill.	Brassicaceae	Mandāb (2)	215	Diuretic (21), Nourishing (12), Stomach tonic (14), Hair tonic (external use) (17)	46	64	Whole plant	Decoction	Oral, topical
<i>Hedera helix</i> L.	Araliaceae	Dārdos (2)	5783	Increase bile production (12), Expectorant (15), Skin inflammation (17), Burns (14), Wound healing (18)	46	76	Whole plant	Infusion, Cataplasm	Oral, topical
<i>Lotus corniculatus</i> L.	Fabaceae	Ahu māsh zard (2), Yunjeh zard (2)	8365	Epilepsy (15), Insomnia (18), Anxiety (17), Tachycardia (10), Vitiligo (8)	46	68	Whole plant	Food	Oral
<i>Lythrum salicaria</i> L.	Lythraceae	Khunfām (2)	2289	Diarrhea and dysentery (32), Menorrhagia (18), Wound healing (28), Ulcers and eczema (22)	46	100	Aerial parts	Infusion, Cataplasm	Oral, topical
<i>Orobanche alba</i> Stephan ex Willd.	Orobancheaceae	Gol-e-jālīz (2)	12139	Nervous system problems (24), Intestinal disorders (32)	46	56	Stem	Infusion	Oral, topical
<i>Oxalis corniculata</i> L.	Oxalidaceae	Shabdar Torshak (2)	7482	Warts (28), Astringent (22), Anthelmintics (15), Digestive (20), Hemorrhoids (17), Stomach pain (22)	46	124	Whole plant, Resin	Food, Cataplasm	Oral, topical
<i>Rumex pulcher</i> L.	Polygonaceae	Torshak (2)	5666	Food (32), Detoxifying agent (22), Skin problems like eczema (15)	46	69	Leaves, Root	Food, Cataplasm	Oral, topical
<i>Sophora alopecuroides</i> L.	Fabaceae	Talkh bayān (2)	10694	Laxative (30), Anthelmintics (21), Febrifuge (23), Hypertension (15), Astringent (useful to stop bleeding of intestinal wounds and hemorrhoids) (24), Toothache (14)	46	127	Leaves, Flower Root	Food, topical	Oral, topical
<i>Syringa vulgaris</i> L.	Oleaceae	Yās-e-sefid (2)	7481	Diuretic (25), Emmenagogue (14), Febrifuge (15), Anthelmintics (18), Nervous system tonic and pain killer (25), Diarrhea (23), Rheumatism (15)	46	135	Fruit, Flower, Leaves, Bulb	Infusion	Oral, topical
<i>Alisma lanceolatum</i> With.	Alismataceae	Qāshoq Vāsh (2)	9861	Urinary tract diseases (22), Sudatory (28), Tetanus (18), Diabetes (15), Hypertension (20), Cholesterolemia (23), Rabies and snakebite (30)	48	156	Leaves, Root	Decoction	Oral, topical
<i>Cuscuta epithimum</i> Murr.	Convolvulaceae	Ses-e-avishani (2)	5679	Laxative (28), Increase bile production (10), Carminative (22), Anti-flatulence (25), Diaphoretic (30), Mild sedative (25), Liver tonic (18), Urinary problems (15)	48	173	Whole plant	Infusion	Oral

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Table 1 (continued)

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<i>Ferula assa-foetida</i> L.*	Apiaceae	Bezih (2), Anghuza (2)	10582	Allergic (25), Pain killer (30), Anti-fungal (22), Anti-spasm (28), Severe cough (20), Constipation (18), Diaphoretic (30), Epilepsy (15), Hypertension (24)	48	212	Resin, Root, Stem	Decoction	Oral
<i>Fumaria bracteosa</i> Pomel	Papaveraceae	Shātarrā (2)	2201	Atherosclerosis (24), Sedative (15), Anti-allergy (20), Herpes (14)	48	73	Leaves, Flowering tops, Fruit	Food	Oral
<i>Gladiolus kotschyanus</i> Boiss.	Iridaceae	Gelāyoul (2)	12496	Hemorrhoids (30), Gain weight (24)	48	54	Bulb, Leaves	Infusion	Oral
<i>Hyoscyamus niger</i> L.	Solanaceae	Bangelilah (2), Geeh hilah (1)	8307	Rheumatism pains (an ointment prepared from the seed oil) (53), Hysteria (40), Migraine (38)	48	131	Leaves, Seed	Ointment	Topical
<i>Marrubium vulgare</i> L.	Lamiaceae	Ferāsion (2)	5346	Wheeziness (30), Bronchitis (28), Bronchial asthma (32)	48	90	Leaves	Decoction	Oral
<i>Nigella arvensis</i> L.	Ranunculaceae	Seidona (1)	2510	Anthelmintics (25), Purgative (28), Galactagogue (34), Anti flatulence (18), Respiratory system problems (42), Anti-microbial (18), Spasmolytic (22), Anthelmintics (for children) (20)	48	207	Seed	Food	Oral
<i>Primula gaubaeana</i> Bornm.	Primulaceae	Gol-e-Pāmchal (2)	12987	Expectorant (43), Chronic cough (32), Rheumatism (24), Spasmolytic (20), Asthma (18), Allergies (12)	48	149	Leaves, Flower Root	Food, Cataplasm	Oral, topical
<i>Rumex acetosella</i> L.	Polygonaceae	Torshak (2)	13067	Food (25), Diurteic (32), Mild laxative (38), Chronic gastrointestinal disorders (30)	48	125	Aerial parts	Food	Oral
<i>Scutellaria nepetifolia</i> Benth.*	Lamiaceae	Boshqābi (2)	12391	Insomnia (16), Nervous system tonic (25), Tranquilizer (15)	48	56	Leaves, Flower, Root	Infusion	Oral
<i>Solanum nigrum</i> L.	Solanaceae	Salmonah (1), Rarazak (2), Razelah (1), Goja melicha (1)	13769	Expectorant (55), Hypnotic (30), Sedative (41), Gastritis (20), Osteoarthritis (15)	48	161	Flowering tops, Leaves, Seed	Food, Cataplasm	Oral, topical
<i>Tanacetum balsamita</i> L.	Asteraceae	Minā (2)	11683	Stomach tonic (18), Carminative and anti-flatulence (15), Epilepsy (8), Anthelmintics (7), Cough (12), Decrease bile production (5)	48	65	Leaves, Flower	Infusion	Oral
<i>Veronica beccabunga</i> L.	Scrophulariaceae	Makiz (2)	11379	Burns (28), Diuretic (31), Sedative (30), Appetizer (15), Hair tonic (24), Diarrhea (20)	48	148	Aerial parts, Flowering tops, Extract	Infusion	Oral, topical
<i>Ziziphus nummularia</i> (Burm.f.) Wight & Arn. Basion. <i>Rhamnus nummularia</i> Burm. f.	Rhamnaceae	Remliq	1777	Appetizer (10), Stomach tonic (32), Astringent (35), Toothache (12), Colds (25), Induce hypertension (18), Asthma (14), Skin hives (15)	48	161	Flower, Leaves, Stem	Infusion, Cataplasm	Oral, topical
<i>Acanthophyllum crassifolium</i> Boiss.*	Caryophyllaceae	Choubak (2)	7782	Bladder problems (18), Supplementary material for	49	56	Root	Decoction	Oral, topical

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Table 1 (continued)

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<i>Centaurea luristanica</i> Rech.f.	Asteraceae	Gol-e-ganem (1)	12582	the production of Halva Ardeh (an Iranian traditional dessert) (38) Febrifuge (25), Diuretic (28), Laxative (30), Decrease bile production (18), Kidney and liver problems (15), Digestive tonic (22), Conjunctivitis (24), Stye (20)	51	182	Flower, Leaves	Infusion	Oral
<i>Lepidium perfoliatum</i> L.	Brassicaceae	Taretizak (2)	7432	Tonic and nourishing (32), Anti-ascorbate (12), Digestive tonic (28)	51	72	Aerial parts	Food	Oral
<i>Linum mucronatum</i> Bertol.	Linaceae	Katān-e-zard (2)	12754	Intestinal and chest problems (25), Anti swelling (28), Laxative (rich in mucilage and unsaturated fats) (32), Wound healing (22), Chronic cough (18), Bronchitis (25)	51	150	Seed, Seed oil	Food, Oil	Oral, topical
<i>Lonicera nummulariifolia</i> Jaub. & Spach	Caprifoliaceae	Derakht-e-shan (2), Pelākhor (2)	1949	Diuretic (23), Kidney stones (36), Liver problems (12), Mouth wounds (55), Appetizer (50), Tonic (47), Osteomalacia (20), Anti hemorrhage (32)	51	126	Leaves Flower, Bark	Decoction, Cataplasm	Oral, topical
<i>Medicago sativa</i> L.	Fabaceae	Yunjeh (2)	8751	Insecticidal (25), Reduce itching (28), Scabies (15), Tinea (14), Cutaneous abscess (18)	51	150	Aerial parts, Buds	Food	Oral
<i>Nerium oleander</i> L.	Apocynaceae	Zela (1)	13604	Diuretic (42), Expectorant (25), Kidney problems (23), Diabetes (12)	51	100	Leaves, Stem	Cataplasm	Topical
<i>Parietaria judaica</i> L.	Urticaceae	Goosh moosh (2)	2158	Diuretic (35), Diaphoretic (30), Stomachache in children (22), Infectious wounds: the ash (external use) (20), Stop bleeding (15), Gum inflammation (19), Rheumatism (18), Gout (10)	51	102	Flowering tops	Infusion	Oral
<i>Phragmites australis</i> (Cav.) Trin. ex Steud. Basion. <i>Arundo australis</i> Cav.	Poaceae	Nei (2)	3584	Hair tonic and conditioner (52), Dandruff (45) Laxative (23), Gain weight and nourishing (18), Gum infections (30), Tooth infections (32), Used for the production of glue (43)	51	169	Leaves, stem, Root	Decoction	Oral, topical
<i>Astragalus microphysa</i> Boiss.*	Fabaceae	Gowen (1)	8878	Hypertension (15), Stomach problems (the aerial parts) (20), Respiratory infections (14), Rheumatism (18)	53	243	Resin, Root	Decoction, Cataplasm	Oral, topical
<i>Biebersteinia multifida</i> DC.	Biebersteiniaceae	Ādamak (2), Chelle Dāgh (1)	12203	Antimicrobial (25), Antifungal (22), Antioxidant (17)	53	67	Root, Essence	Infusion, Cataplasm	Oral, topical
<i>Cephalaria setosa</i> Boiss. & Hohen.	Caprifoliaceae	Sardār-e-shāhui (2)	4120	Febrifuge (18), Hepatitis (15), Decrease bile production (12), Eczema (28), Sedative (14)	53	64	Leaves, Young stems	Decoction	Oral
<i>Fumaria asepalā</i> Boiss.	Papaveraceae	Shātarra (2)	2448		53	87	Leaves, Flowering tops, Fruit	Food	Oral

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<i>Phlomis anisodonta</i> Boiss.	Lamiaceae	Goush barreh (2)	9512	Diabetes (18), Peptic ulcer (15), Anti microbial (23), Anti-allergy (20), Antioxidant (25)	53	101	Aerial parts	Infusion, Cataplasm	Oral, topical
<i>Rumex patientia</i> L.	Polygonaceae	Torshak (2)	4876	Food (30), Laxative (34), Diarrhea (20), Gum tonic (15), Digestive tonic (28), Eczema (12)	53	139	Leaves, Root	Food, Cataplasm	Oral, topical
<i>Salix aegyptiaca</i> L.	Salicaceae	Bid Meshk (2), Golbidak (2)	4409	Aromatizing drinks (52) Hysterical headaches (33), Sedative (43), Cardiotonic (38), Diabetes (18), Febrifuge (25), Anti-flatulence (23), Appetizer (36)	53	268	Flowering tops	Food, Infusion	Oral
<i>Arctium minus</i> (Hill) Bernh. Basion. <i>Lappa minor</i> Hill	Asteraceae	Babā adam (2)	5780	Diaphoretic (32), Skin burns and allergies (external use) (24)	55	56	Root, Seed	Infusion, Decoction	Oral, topical
<i>Bolboschoenus maritimus</i> (L.) Palla Basion. <i>Scirpus maritimus</i> L.	Cyperaceae	Tazk (2), Boriā (2)	2464	Astringent (32), Diuretic (27)	55	59	Root	Decoction	Oral
<i>Centaurea benedicta</i> (L.) L. Basion. <i>Cnicus benedictus</i> L.	Asteraceae	Khār moghadas (2)	772	Stomach tonic (21), Diaphoretic (24), Febrifuge (20), Appetizer (12), Digestive tonic (18), Hyperuricemia (10), Spasmolytic (15), Herpes zoster (external use) (12)	55	132	Flowering tops, Seed	Decoction	Oral, topical
<i>Ceterach officinarum</i> Willd.	Aspleniaceae	Sarakhs panjei (2)	5059	Spleen problems (15), Kidney stones (20), Hiccups (12), Epilepsy (10), Diuretic (18), Astringent (15), Hepatitis (14)	55	104	Root	Infusion	Oral
<i>Crocus pallasii</i> subsp. <i>haussknechtii</i> (Boiss. & Reut. ex Maw) B.Mathew Basion. <i>Crocus haussknechtii</i> (Boiss. & Reut. ex Maw) Boiss.	Iridaceae	Pishouk (1), Jo ghāsem (2)	13174	Food (32), Anthelmintics (20), Hair tonic (25), Heart problems (15)	55	92	Bulb· Flower	Food	Oral
<i>Euphrasia pectinata</i> Ten.	Orobanchaceae	Cheshmak (2)	1259	Anti-infective (35), Anti-inflammatory (31), Astringent (28)	55	94	Whole plant	Infusion	Oral, topical
<i>Fumaria vaillantii</i> Loisel.	Papaveraceae	Shātarra	217	Diaphoretic (34), Blood purifier (25)	55	59	Whole plant	Food	Oral
<i>Lantana camara</i> L.	Verbenaceae	Shāhpasand (2)	9860	Nervous system problems (30), Febrifuge (33), Mouth swelling (12)	55	75	Whole plant	Decoction, Cataplasm	Oral, topical
<i>Lepidium latifolium</i> L.	Brassicaceae	Moche (2), Taretizak (2)	2099	Blood purifier (18), Anti-ascorbate (23), Skin problems (20)	55	61	Aerial parts	Decoction	Oral
<i>Malva neglecta</i> Wallr.	Malvaceae	Tūlah (1), Panirak (2)	10691	Colds (42), Kidney and bladder infections (20), Anti-tussive (35), Antipyretic (18)	55	115	Flower, Fruit, Leaves	Food	Oral, topical
<i>Malva sylvestris</i> L.	Malvaceae	Tūlah (1)	1865	Laxative (42), Diuretic (35), Cough (17), Mouth and throats inflammations (15), Anti-inflammatory (18)	55	127	Leaves, Flower	Food	Oral
<i>Nepeta humilis</i> Benth.	Lamiaceae	Pounehsā (2)	1797		55	136		Infusion	Oral

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Table 1 (continued)

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<i>Paliurus spina-christi</i> Mill.	Rhamnaceae	Āhan-derah	13128	Diaphoretic (28), Carminative (48), Febrifuge (25), Colds (35) Astringent (45), Tonic (22), Colds (28), Cholesterolemia (10), Hypertension (18)	55	101	Flowering tops Leaves, Fruit, Root	Infusion, Decoction	Oral
<i>Parietaria officinalis</i> L.	Urticaceae	Goosh moosh (2)	9754	Diuretic (44), Softening (38), Kidney and urinary tract problems (25), Skin problems (46)	55	153	Whole plant	Infusion	Oral
<i>Peganum harmala</i> L.	Zygophyllaceae	Sābre zārd (2)	13141	Anthelmintics (30), Eye problems like cataracts and severe eye inflammation (38)	55	68	Leaves, Seed	Infusion	Oral, topical
<i>Pennisetum glaucum</i> (L.) R.Br. Basion. <i>Panicum glaucum</i> L. Syn. <i>Setaria glauca</i> (L.) P.Beauv.	Poaceae	Arzani (2)	12145	Diuretic (45), Astringent (50), Uterus pains in pregnancy (15), Rheumatism (40)	55	150	Seed	Food	Oral, topical
<i>Phlomis laevigata</i> (Bunge) Kamelin & Makhm. Basion. <i>Eremostachys laevigata</i> Bunge	Lamiaceae	Sonbol-e-biābāni (2)	4388	Rheumatism (28), Joint pains (32), Insect repellent (42), Cattle fevers (35)	55	137	Root, Rhizome	Infusion, Cataplasm	Topical
<i>Plantago lanceolata</i> L.	Plantaginaceae	Kārdi (2)	3781	Demulcent (24), Laxative (37), Antidarrhoeal (38), Hemorrhoids (24), Digestive problems (32)	55	155	Leaves, Seed, Root, Husks	Infusion	Oral
<i>Prangos uloptera</i> DC.	Apiaceae	Jāshir (2), Vāyeh (1), Khākul (1)	11248	Anti-flatulence (35), Fractures (external use) (32), Kidney and bladder stones (30), Detoxifying agent (34)	55	131	Leaves, Resin	Infusion	Oral, topical
<i>Rumex chalepensis</i> Mill.	Polygonaceae	Torshak (2)	2742	Food (25), Hematopoietic (18), Digestive tonic (28), Digestive (32), Appetizer (35), Abscess (external use) (20), Joint pain killer (15)	55	173	Leaves, Seed	Food, Cataplasm	Oral, topical
<i>Scabiosa sicula</i> L.	Caprifoliaceae	Jāroo pishi (1)	9493	Diarrhea (22), Anti-inflammatory (25), Febrifuge (17), Pain killer (14), Stomach tonic (12)	55	70	Fruit	Decoction	Oral
<i>Silene conoidea</i> L.	Caryophyllaceae	Kuze ghelyāni (2)	4250	Laxative (38), Hepatitis (18), Rashes (25)	55	81	Root, Rhizome	—	Oral
<i>Stachys luresstanica</i> Jamzad*	Lamiaceae	Sonbolei (2)	12728	Diuretic (32), Colic (22), Urinary tract and gallbladder stones (18), Colds (17), Anthelmintics (12), Headaches such as migraine (10)	55	111	Aerial parts	Infusion	Oral
<i>Tamarix gallica</i> L.	Tamaricaceae	Gaz (2)	11135	Astringent (38), Diuretic (40), Tonic (45), Stop bleeding (the latex) (24)	55	147	Fruit, Root, Bark	Food, Cataplasm	Oral, topical
<i>Taraxacum syriacum</i> Boiss.	Asteraceae	Gol-e-qāsed (2)	12125	Diuretic (21), Laxative (20), Galactagogue (15), Kidney stone (12), Hepatitis (17), Cholesterolemia (8), Diabetes (10), Eczema (14),	55	156	Leaves, Root, Resin	Decoction	Oral, topical

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Table 1 (continued)

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<i>Teucrium chamaedrys</i> L.	Lamiaceae	Maryam nokhodi (2)	2935	Rheumatism (12), Anemia (15), Weight loss (7), Gout (5) Stomach problems (32), Fever and catarrh (28), Weight loss (30), Mouthwash (41), Gout (12), Wound healing (as lotion) (38)	55	181	Aerial parts	Infusion	Oral, topical
<i>Tripleurospermum disciforme</i> (C.A. Mey.) Sch.Bip. Basion. <i>Chrysanthemum disciforme</i> C.A.Mey.	Asteraceae	Bābuneh Dashti (2)	2986	Cold (35), Antipyretic (23)	55	58	Flower	Decoction	Oral
<i>Xanthium strumarium</i> L.	Asteraceae	Zardina (2), Tugh (2)	7392	Diaphoretic (25), Analgesic (20), Increase saliva secretion (8), Sedative (15), Astringent (17), Anti-herpes (10)	55	95	Root, Fruit	Infusion	Oral, topical
<i>Aloe vera</i> (L.) Burm.f. Basion. <i>Aloe perfoliata</i> var. <i>vera</i> L.	Xanthorrhoeaceae	Sabr-e- zard	9755	Anti-inflammatory (32), Immune system tonic (30), Wound healing (55), Burns (54)	57	171	Leaves	Food, Cataplasm	Oral, topical
<i>Amaranthus paniculatus</i> L.	Amaranthaceae	Tāj Khorus (2)	8721	Peptic ulcer (15), Diarrhea (18), Chest cramps (15)	57	48	Leaves, Flower	Infusion	Oral
<i>Asperula glomerata</i> (M.Bieb.) Griseb. Basion. <i>Crucianella glomerata</i> M.Bieb.	Rubiaceae	Zebrineh (2)	1477	Tonic (35), Diuretic (42), Anti-inflammatory (30), Antispasmodic (25)	57	132	Aerial parts	Infusion	Oral
<i>Astragalus gossypinus</i> Fisch.	Fabaceae	Gowen (1)	4617	Used for the production of Katira (55), Cough (28), Laxative (25), Dysphonia and violent sound (10)	57	118	Resin	Decoction	Oral, topical
<i>Brassica aucheri</i> Boiss. Syn. <i>Sinapis aucheri</i> O.E. Schulz	Brassicaceae	Terpoka (1), Khardal (2)	6284	Diuretic (32), Expectorant (24), Respiratory infections (34)	57	90	Leaves, Root	Food	Oral
<i>Capsella bursa-pastoris</i> (L.) Medik. Basion. <i>Thlaspi bursa-pastoris</i> L.	Brassicaceae	Tarra kiue (1)	7936	Irregular periods (22), Anti-hemorrhage (18), Diarrhea (25)	57	65	Seed	Food	Oral
<i>Carum carvi</i> L.	Apiaceae	Zire siā (2)	2976	Cough (45), Flatus (34), Anti-spasm (40)	57	119	Essential oil	Infusion	Oral
<i>Cerastium fragillimum</i> Boiss.	Caryophyllaceae	Dāne melichak (1)	285	Pain killer (24), Astringent (35)	57	59	Leaves, Fruit	Decoction	Oral, topical
<i>Erysimum repandum</i> L.	Brassicaceae	Khākshir Talkh (2)	2097	Anti-ascorbate (13), Febrifuge (25), Stomachache (external use) (18)	57	56	Aerial parts	Infusion, Cataplasm	Oral, topical
<i>Juniperus communis</i> L.	Cupressaceae	Ūrs (2), Sarv-e-koohi (2)	11139	Tonic (25), Diuretic (33), Antiseptic (20), Cystitis (31), Relieve fluid retention (14), Chronic arthritis (12), Gout and rheumatism (18), Emmenagogue (15)	57	168	Fruit, Essential oil, Flowering tops	Decoction	Oral
<i>Lagoecia cuminoides</i> L.	Apiaceae	Zireh vahshi (2)	12131	Abdominal pain killer (57)	57	57	Flowering tops	Flavoring, Food	Oral
<i>Linum strictum</i> L.	Linaceae	Katān (2)	2981	Laxative (40), Constipation (25), Peptic ulcer (18), Kidney stone (15), Bladder inflammation (14), Anti-inflammatory (27)	57	139	Seed	Food, Oil	Oral, cataplasm-
<i>Myrtus communis</i> L.	Myrtaceae	Mūrt (2)	1709	Colds (32), Dandruff (45), Hair tonic (55),	57	197	Leaves, Seed	Decoction, Cataplasm	Oral, topical

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Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Phlomis olivieri</i> Benth.	Lamiaceae	Bala qousheh (1)	10766	Stomach tonic (15), Astringent (18), Sedative (17), Herpes (15) Colds (32), Anti allergy (23), Diabetes (15), Peptic ulcer (17), Hemorrhoids (20), Wounds (25), Stomach cramps (27)	57	159	Flowering tops	Infusion, Cataplasm	Oral, topical
<i>Pisum sativum</i> L.	Fabaceae	Hulerah (1)	1588	Laxative (38), Poisoning (20), Paralysis (15), Muscle Weakness (22), it is not used anymore	57	95	Seed	Food	Oral
<i>Plantago coronopus</i> L.	Plantaginaceae	Bārhang-e-pakalāghi (2)	3424	Chronic constipation (52), Duodenal ulcer (34)	57	86	Leaves, Root	Infusion	Oral
<i>Ranunculus asiaticus</i> L.	Ranunculaceae	Alālleh Irāni (2)	13829	Hemorrhoids (ointment or suppository) (35), Toxic and irritant (24), Catarrh and nasal congestion (23)	57	82	Aerial parts	Infusion	Oral, topical
<i>Rumex crispus</i> L.	Polygonaceae	Torshak (2)	1200	Food (30), Mild laxative (48), Stimulates bile flow (32), Cleansing (15)	57	125	Leaves, Root	Food	Oral
<i>Stipa capensis</i> Thunb.	Poaceae	Gol koo (2), Bahmah giah (2)	6222	Nerve system problems (20), Gastric discords (48)	57	68	Flower	Infusion	Oral
<i>Taraxacum campylodes</i> G.E. Haglund Syn. <i>Taraxacum officinale</i> (L.) Weber ex F.H. Wigg.	Asteraceae	Kālkhizo (2)	11784	Stomach tonic (25), Diuretic (30), Liver cleansing (20), Snack and scorpion bites (35)	57	110	Flower, Leaves, Root	Infusion, cataplasm	Oral, topical
<i>Teucrium scordium</i> L.	Lamiaceae	Maryam nokhodi (2), Miram nokha (1),	13319	Diuretic (32), Astringent (34), Anti-fungal (25), Skin care (18), Diaphoretic (17), Tonic (20)	57	146	Aerial parts	Infusion	Oral, topical
<i>Trifolium purpureum</i> Loisel.	Fabaceae	Shodar (1)	11579	Cough (27), Wound healing (28), Peptic ulcer (17), Stomach cramps (25)	57	97	Flower, Seed	Food	Oral
<i>Verbena officinalis</i> L.	Verbenaceae	Shāhpasand (2)	2558	Depression (32), Mild tonic (45), Sedative (42), Nervous system tonic (33)	57	152	Aerial parts	Decoction, Cataplasm	Oral, topical
<i>Vicia sativa</i> L.	Fabaceae	Karsena (2), Māshak (2), Gayena (1)	10937	Digestive problems (35), Reflux (22), Sore throats (18), Cough and respiratory problems (in combination with honey) (42), Asthma (15), Breast tumors (the boiled plant in combination with honey) (12), Anti-inflammatory: the flour of the plant (external use) (24), Skin wounds (40)	57	208	Seed	Food, Cataplasm	Oral, topical
<i>Xanthium spinosum</i> L.	Asteraceae	Zardina (2)	7433	Dermal discords (37), Diuretic (22)	57	59	Leaves, Fruits	Infusion	Oral, topical
<i>Anagallis arvensis</i> L.	Primulaceae	Ānāghālis (2)	12278	Expectorant (42), Diuretic (35), Hepatitis (17), Itching (21), Insect bites (35), Chronic infectious wounds (27)	59	177	Whole plant	Food, Cataplasm	Oral, topical
<i>Prangos ferulacea</i> (L.) Lindl.	Apiaceae	Jāshir (2)	11658		59	102	Flowering tops, leaves	Infusion	Oral

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Table 1 (continued)

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<i>Basion. Laserpitium ferulaceum</i> L.				Stomach cramps (30), Anti-flatulence (32), Carminative (40)					
<i>Teucrium orientale</i> subsp. <i>taylorii</i> (Boiss.) Rech.f. Basion. <i>Teucrium taylorii</i> Boiss.	Lamiaceae	Maryam nokhodi (2), Miram nokha (1)	13398	Febrifuge (34), Nervous system problems (27), Decrease bile (20), Anthelmintics (30), Headache (25), Memory improvement (18)	60	154	Aerial parts	Infusion	Oral
<i>Calystegia sepium</i> (L.) R.Br. Basion. <i>Convolvulus sepium</i> L.	Convolvulaceae	Pichak-e-jangali (2)	5784	Strong laxative (35), Febrifuge (30), Increase bile production (17), Liver Failure (15), Sedative (20)	62	117	Leaves, Root, Resin	Infusion	Oral
<i>Trifolium pratense</i> L.	Fabaceae	Shodar (1)	11560	Spasmolytic (24), Blood purifier (34), Expectorant (25), Phytoestrogen (31), Pertussis (18), Bronchitis (20)	62	152	Flower	Food	Oral
<i>Valerianella dactylophylla</i> Boiss. & Hohen.	Caprifoliaceae	Shirinak (2)	13938	Food (32), Analgesic (22), Colon and stomach cleanser (25), Hypnotic (20), Stop stomach bleeding (18), Detoxifying (26), Warts (external use) (38), Rheumatism (27), Burns (35)	62	243	Leaves, Flower, Root	Infusion, Cataplasm	Oral, topical
<i>Apium graveolens</i> L.	Apiaceae	Kelos (1), Karafs koochi (2)	10811	Food (45), Detoxification (27), Anti-inflammatory (40), Diuretic (32), Topical analgesic (42), Arthritis (30), Rheumatism (35)	64	251	Leaves, Seed, Stem	Food	Oral, topical
<i>Arctium lappa</i> L.	Asteraceae	Bābā ādam (2), Telā, Filqoush (2)	2333	Anti-infective (15), Detoxifying agent (17), Diuretic (22), Tonic (20), Measles (17), Smallpox (18)	64	109	Root, Seed	Infusion, Decoction	Oral
<i>Echinops endotrichus</i> Rech.f.*	Asteraceae	Qan shakarook (1)	8399	Anti-tussive (22), Anti-asthmatic (18), Antipyretic (24)	64	64	Sap (Manna)	Decoction	Oral
<i>Hyoscyamus kotschyanus</i> Pojark.	Solanaceae	Bang Dāneh (2)	9855	Sedative (43), Pain killer (36), Spasmolytic (38)	64	117	Leaves, seed	Cataplasm	Topical
<i>Nepeta persica</i> Boiss.	Lamiaceae	Pounehsā (2)	3171	Stomach tonic (43), Anti-flatulence (45), Food (22), Mouth freshener (45)	64	155	Leaves, Stem	Food, Infusion	Oral
<i>Polypodium vulgare</i> L.	Polypodiaceae	Sarakhs Basfāyej (2)	7293	Expectorant (45), Laxative (35), Decrease bile production (16), Chronic cough (22), Hepatitis (14), Chronic liver and spleen problems (28), Bronchitis (17)	64	177	Rhizome	Infusion	Oral
<i>Ranunculus arvensis</i> L.	Ranunculaceae	Ālālleh (2)	13600	Hemorrhoids (ointment or suppository) (35), Toxic and irritant (22), Catarrh and nasal congestion (20)	64	77	Aerial parts	Infusion	Oral, topical
<i>Rumex elbrusensis</i> Boiss.*	Polygonaceae	Torshkah (2), Azeka (2)	1667	Food (27), Laxative (32), Abscess (20), Skeletal and muscular pains (18), Anti-inflammatory (25)	64	122	Leaves, Root	Food, Cataplasm	Oral, topical

(continued on next page)

Table 1 (continued)

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<i>Setaria italica</i> (L.) P. Beauv. Basion. <i>Panicum italicum</i> L.	Poaceae	Arzani (2), G Chāwdār wros (2)	12198	Weight gain (55), Diuretic (50), Astringent (52), Fractures (25), Rheumatism (external use) (32)	64	214	Seed	Food	Oral, topical
<i>Stachys inflata</i> Benth.	Lamiaceae	Goush barreh (2)	10892	Infectious problems (32), Appetizer (15), Stomach tonic (28)	64	75	Flowering tops	Infusion	Oral
<i>Vaccaria grandiflora</i> Jaub. & Spach	Caryophyllaceae	Sigelinag (1)	1677	Sedative (28), Anthelmintics (22), Facilitate childbirth (15)	64	65	Flowering tops, Flower, Fruit, Seed	Food	Oral, topical
<i>Acer monspessulanum</i> L.	Sapindaceae	Keykem (2)	12214	Rashes (44), Smoking: stem and bark of the tree, known as Zep, Hair tonic and cleaning property (the extract in combination with eggs is used for hair washing) (55)	66	99	Leaves	Powder	Topical
<i>Amygdalus haussknechtii</i> (C.K. Schneid.) Bornm.* Basion. <i>Prunus haussknechtii</i> C. K. Schneid.	Rosaceae	Latah (1), Bayem (1)	12409	Food (65), Hypertension (20)	66	85	Fruit	Food	Oral
<i>Anchusa azurea</i> Mill. Syn. <i>Anchusa italica</i> Retz.	Boraginaceae	Gāwzo (1)	4364	Cardiotonic (45), Respiratory problems (32), Exhilarating (12)	66	89	Flower, Leaves, Flowering tops	Infusion	Oral
<i>Arnebia euchroma</i> (Royle) I.M.Johnst. Basion. <i>Lithospermum euchromon</i> Royle	Boraginaceae	Hoechoe (1)	7445	Febrifuge (18), Laxative (24), Measles (15), Anti-tumor (8), Anti-bacterial (24), Dyeing (30)	66	119	Root	Decoction	Oral, topical
<i>Camphorosma monspeliacum</i> L.	Amaranthaceae	Kāfuri (2)	10245	Diuretic (45), Diaphoretic (32), Expectorant (24), Tonic (18), Edema (12), Respiratory problems: asthma and pertussis (10) Chronic skin problems (23), Expectorant (28), Asthma (18)	66	141	Aerial parts	Infusion	Oral
<i>Cardamine hirsuta</i> L.	Brassicaceae	Taretizak (2)	1023	Memory improving (32), Sedative (45), Atherosclerosis (16), Anti-infective (20), Digestive problems (35), Migraine (12), Vitiligo (10), Rheumatism (30), Hirsutism (11), Gum tonic (35), Impaired hearing (8)	66	69	Aerial parts	Food	Oral
<i>Cyperus rotundus</i> L.	Cyperaceae	Oyār salām (2)	12099	Expectorant (32), Nervous system tonic (18), Epilepsy (14), Astringent (28), Used for the production of sweets and ice cream (55)	66	254	Rhizome, Corm	Decoction	Oral, topical
<i>Dactylorhiza maculata</i> (L.) Basion. <i>Orchis maculata</i> L.	Orchidaceae	Thalham (1)	2912	Immunostimulant (15), Anti-inflammatory (10), Antibiotic (12), Detoxifying (16), Anti-allergenic (17), Diaphoretic (14)	66	147	Root, Sap (Manna)	Decoction	Oral
<i>Echinops kotschyi</i> Boiss.*	Asteraceae	Qan shakarook (1)	4315	Appetizer (12), Febrifuge (23), Hepatitis (in combination with chicory) (32), Decrease bile production (22), Hyperlipidemia (14),	66	84	Leaves, Flowering tops, Fruit	Food	Oral
<i>Fumaria parviflora</i> Lam.	Papaveraceae	Shātarra (2)	223		66	234			

(continued on next page)

Table 1 (continued)

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<i>Glycine max</i> (L.) Merr. Basion. <i>Phaseolus max</i> L.	Fabaceae	Soyā (2), Lobiā roghani (2)	4195	Diaphoretic (25), Laxative (28), Sedative (10), Insect bites (ointment) (14), Eczema (34), Herpes (20) Food (62), Tonic (57), Carminative (32), Febrifuge (28), Diuretic (30), Cholesterolemia (43), Diabetes (27)	66	279	Seed	Food	Oral
<i>Hypericum asperulum</i> Jaub & Spach.	Hypericaceae	Gol-e-raie (2)	20	Depression (32), Anti-virus (57), Kidney and bladder problems (35), Wound healing (23), Insomnia (55), Anxiety (65), Laxative (32), Skin care (24)	66	323	Flowering tops	Infusion, Food	Oral
<i>Hypericum scabrum</i> L.	Hypericaceae	Hufāriḡhun (2)	4192	Gastric ulcer (50), Antimigraine (35), Hemorrhage (32), Headache (37)	66	154	Flower	Infusion, Food	Oral
<i>Lallemantia iberica</i> (M.Bieb.) Fisch. & C.A.Mey. Basion. <i>Dracocephalum ibericum</i> M.Bieb.	Lamiaceae	Tokhm Sharbati (2), Bālangu (2)	3631	Gastric ulcer (37), Anti-tussive (60), Hoarseness (55), Anti-thirst (63)	66	215	Seed	Food	Oral
<i>Linum album</i> Kotschy ex Boiss.*	Linaceae	Katān sefid (2)	1301	Food (20), Antioxidant (24), Phytoestrogen (30), Laxative (45), Anti-bacterial (28)	66	147	Seed	Food	Oral
<i>Lotium temulentum</i> L.	Poaceae	Chacham (2)	3909	Leprosy (22), Freckles (24), Narcotic (15), Toxic (17), Gangrene (14)	66	92	Seed	Infusion, Cataplasm	Oral, topical
<i>Loranthus grewinkii</i> Boiss. & Buhse	Loranthaceae	Cheshbolboli (2), Keshmesh Koli (2)	12996	Nervous pain (35), Epilepsy (34)	66	69	Seed	Food	Oral
<i>Melilotus officinalis</i> (L.) Pall. Basion. <i>Trifolium melilotus officinalis</i> L.	Fabaceae	Yunjeh zard (2)	10693	Flatulence (24), Indigestion (38), Bronchitis (17), Menopause and rheumatic pains (22), Varisco veins and hemorrhoids (20), Phlebitis and thrombosis (23), Sedative and antispasmodic (35)	66	179	Aerial parts	Food	Oral
<i>Onosma kotschy</i> Boiss. *	Boraginaceae	Zangulei (2)	2406	Pain killer (24), Cough (28), Anti-inflammatory (30), Analgesic (15)	66	97	Flower	Infusion	Oral, topical
<i>Phlomis tuberosa</i> (L.) Moench Basion. <i>Phlomis tuberosa</i> L.	Lamiaceae	Goush barreh (2)	11027	Diabetes (12), Peptic ulcer (28), Hemorrhoids (23), Nervous system tonic (15), Anti-allergy (14), Anti-microbial (28), Antioxidant (21)	66	141	Flowering tops	Infusion, Cataplasm	Oral, topical
<i>Populus euphratica</i> Oliv.	Salicaceae	Padeh (2), Beplak (2)	4018	Diuretic (36), Diaphoretic (30), Digestive tonic (23), Astringent (41), Mild anti-infective (20), Urinary problems (16), Febrifuge (17)	66	183	Leaves, Bark, Bud	Decoction, Cataplasm	Oral, topical
	Fabaceae		7488		66	153	Root, Fruit	Food	Oral

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Table 1 (continued)

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<i>Prosopis farcta</i> (Banks & Sol.) J.F. Macbr. Basion. <i>Mimosa farcta</i> Banks & Sol.		Belavero (2), jeghjegah (2)		Stress induced muscle cramps (32), Hypertension (24), Diabetes (12), Chest pain (15), Cardiotonic (14), Cholesterolemia (14)					
<i>Sanguisorba minor</i> Scop.	Rosaceae	Tout Robāhi (2)	1812	Carminative (25), Antigalactagogue (22), Diarrhea (35), Appetizer (12), Kidney stone (15), Wound healing (28), Digestive problems (38), Uterine bleeding (15)	66	190	Whole plant	Infusion, Cataplasm	Oral, topical
<i>Scrophularia striata</i> Boiss.	Scrophulariaceae	Teshnadāri (1)	2607	Anti-cancer (28), Wound healing (55)	66	167	Flower, Leaves	Food	Oral
<i>Sisymbrium orientale</i> L.	Brassicaceae	Khākshir (2)	7558	Tonic (27), Expectorant (30), Anti-ascorbate (15)	66	72	Seed	Food	Oral
<i>Stachys kurdica</i> Boiss. & Hohen.	Lamiaceae	Sonbolei (2), Shātarah (1)	13019	Astringent (35), Mild bitter tonic (35), Sedative (28), Nervous system tonic (25)	66	123	Aerial parts	Infusion	Oral
<i>Teucrium polium</i> L.	Lamiaceae	Miram nokha (1), Kalpoura (2)	555	Expectorant (28), Astringent (30), Decrease bile production (21), Tonic (25), Sedative (34), Appetizer (38), Carminative (35), Hypertension (24), Cough (27), Infectious wounds (43), Diabetes (15)	66	320	Aerial parts	Infusion	Oral, topical
<i>Tribulus terrestris</i> L.	Zygophyllaceae	Esfan (1)	11653	Febrifuge (28), Astringent (30), Carminative (42), Immune system disorders like skin allergies and eczema (27), Joint pain killer (30), Backache (28)	66	185	Flower, Fruit, Root, Seed	Infusion, Ointment	Oral, topical
<i>Typha latifolia</i> L.	Typhaceae	Karepi (1), Karepo (2)	9859	Stop bleeding (14), Skin wounds (35), Diuretic (40), Febrifuge (24)	66	113	Pollinia, Rhizome, Fibers around the seeds	Cataplasm	Topical
<i>Ulmus carpiniifolia</i> Gled.	Ulmaceae	Nārvan (2)	10731	Antioxidant (18), Pain killer (22), Nourishing (25), Softening (33)	66	98	Root, Bark	Infusion, Cataplasm	Oral, topical
<i>Urtica pilulifera</i> L.	Urticaceae	Gazenah toopi (2)	9083	Hypertension (20), Diuretic (34), Rheumatism (38), Dandruff (12), Anti-inflammatory (28), Arthritis (25)	66	157	Leaves, Seed	Infusion, Decoction	Oral, topical
<i>Vaccaria hispanica</i> (Mill.) Rauschert Basion. <i>Saponaria hispanica</i> Mill. Syn. <i>Vaccaria pyramidata</i> var. <i>grandiflora</i> Cullen	Caryophyllaceae	Sigelinah (1)	10617	Diuretic (18), Sedative (30), Stop breeding (15), Anthelmintics (17), Febrifuge (20), Spice (23)	66	123	Flowering tops, Leaves, Seed, Fruit	Food	Oral, topical
<i>Verbascum speciosum</i> Schrad.	Scrophulariaceae	Dom Gāv (2)	9436	Digestive (27), Antidiarrhea (34), Expectorant (39), Antiacid (30), Stomach tonic (48)	66	178	Shoot	Infusion	Oral
<i>Viola odorata</i> L.	Violaceae	Benafshah (1)	6107	Expectorant (65), Demulcent (35), Diaphoretic (28), Cough (58), Chest pain and colds (55)	66	241	Leaves, Flower, Root	Infusion	Oral

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Table 1 (continued)

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<i>Ziziphus spina-christi</i> (L.) Desf. Basion. <i>Rhamnus spina-christi</i> L.	Rhamnaceae	Sedr, Konār	2255	Hair tonic (55), Astringent (42), Stomach tonic (24), Hypertension (15), Cough (18)	66	154	Leaves, Flower, Fruit	Food, Cataplasm	Oral, topical
<i>Ajuga chamaecistus</i> Ging. ex Benth.*	Lamiaceae	Labdisi (2)	828	Astringent (32), Digestive ulcers (25), Laxative (28), Febrifuge (18), Diuretic (30)	68	133	Aerial parts	Infusion	Oral
<i>Avena sativa</i> L.	Poaceae	Jo dosar (2)	11843	Food (42), Depression (30), Nourishing (38), Tonic (54)	68	164	Seed	Food	Oral
<i>Calendula arvensis</i> (Vaill.) L. Basion. <i>Caltha arvensis</i> Vaill. Syn. <i>Calendula persica</i> C.A.Mey.	Asteraceae	Hamisha behār (1)	13838	Psoriasis (10), Anti-fungal (32), Anti-inflammatory (40), Diaphoretic (28), Increase bile production (15), Diuretic (35)	68	160	Leaves, Flower	Infusion, Cataplasm	Oral, topical
<i>Convolvulus arvensis</i> L.	Convolvulaceae	Pichak-e-sahrāi (2)	9312	Strong toxin (60), Strong laxative (37), Induce mucosa of digestive system (20), Induce skin rashes (18)	68	101	Seed, Fruit, Flower	Infusion, Cataplasm	Oral, topical
<i>Datura stramonium</i> L.	Solanaceae	Tātilah (1)	13771	Asthma (22), Pertussis (40), Muscle spasm (30), Muscle relaxant (the muscles of gastrointestinal, bronchial and urinary system) (48), Reduction in digestive mucous secretions (33), Rheumatic pains and neuralgia (40)	68	213	Leaves, Seed	Decoction, Cataplasm	Oral, topical
<i>Glaucium corniculatum</i> (L.) Curtis Basion. <i>Chelidonium corniculatum</i> L.	Papaveraceae	Shaghāyegh-e-shākh-dār (2)	13918	Hypnotic (37), Narcotic (32), Diabetes (18)	68	87	Aerial parts	Decoction	Oral, topical
<i>Hypericum perforatum</i> L.	Hypericaceae	Gol-e-rāie (2), Alaf-e-chāie (2)	13874	Antidepressant (65), Antispasmodic (50), Increase bile production (25), Astringent (25), Sedative (60), Pain killer (45), Antiviral (52)	68	322	Fresh and dried Flowering tops	Infusion, Food	Oral
<i>Linum catharticum</i> L.	Linaceae	Katān (2)	11983	Mild laxative (45), Anthelmintics (22), Emetic (15), Diuretic (32), Bronchitis (23), Hemorrhoids (25)	68	162	Flower, Leaves	Food, Oil	Oral, topical
<i>Nepeta cataria</i> L.	Lamiaceae	Na'nā gorbeie (2)	775	Stomach tonic (50), Spasmolytic (32), Carminative (54), Anti-infective (45), Cough (30), Astringent (49), Diaphoretic (34), Colds (52), Digestive (58), Rheumatism (28), Joint inflammations (22)	68	454	Flowering tops	Food, Infusion	Oral
<i>Olea europaea</i> L.	Oleaceae	Kalcām (2), Zeytoun (2)	7703	Food (52), Anti-infective (25), Astringent (45), Febrifuge (20), Memory improvement (22), Cholesterolemia (35), Hypertension (27),	68	289	Seed, Leaves, Bark	Food	Oral, topical

(continued on next page)

Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Plantago indica</i> L. Syn. <i>Plantago psyllium</i> L.	Plantaginaceae	Tokhm espi (1), Esfarze (2)	4213	Diabetes (18), Hyperuricemia (45) Laxative (45), Expectorant (30), Kidney problems (18), Hemorrhoids (20), Colic (24)	68	137	Leaves, Seed, Bark	Infusion	Oral, topical
<i>Salix acmophylla</i> Boiss.	Salicaceae	Zard bid (2)	7711	Febrifuge (18), Anti-microbial (28), Digestive tonic (33), Sedative (41), Anthelmintics (30), Dandruff (21), Migraine (17)	68	188	Flowering tops	Decoction	Oral, topical
<i>Securigera varia</i> (L.) Lassen Basion. <i>Coronilla varia</i> L.	Fabaceae	Yunjeh bāghi (2)	11257	Appetizer (66), Anemia (58), Digestive (45)	68	169	Seed	Food	Oral
<i>Typha australis</i> K. Schum. & Thonner	Typhaceae	Louie (2)	13891	Stop bleeding (17), Wound healing (36), Galactagogue (12), Breast swelling (18), Itching (30)	68	113	Pollinia, Rhizome, Fibers around the seeds	Cataplasm	Topical
<i>Calendula officinalis</i> L.	Asteraceae	Hamisha behār (1), Gol-e-zard (1)	6200	Anti-fungal (34), Anti-inflammatory (42), Diaphoretic (30), Diuretic (38), Increase bile production (23), Hyperlipidemia (43), Hypertension (38), Analgesic (47), Peptic ulcer (28), Intestinal ulcer (27), Asthma (25), Cough (43), Anemia (21), Wound healing (external use) (50), Skin moisturizing (48), Rash and pustule (55), Nipple dryness of breastfeeding mothers (30)	70	622	Leaves, Flower	Infusion	Oral, topical
<i>Eryngium billardieri</i> Delile	Apiaceae	Zool (2), Chochāq (2)	7081	Rheumatic pain (35), Sedative (37), Carminative (40), Anti-fungal (22), Diuretic (35), Cystitis and urethritis, kidney stones (30), Prostatitis and prostatic hyperplasia (22)	70	221	Aerial parts	Decoction	Oral
<i>Fritillaria imperialis</i> L.	Liliaceae	Lāleh Sarnegūn (2)	954	Tumors and swellings of the throat, neck, and chest (22), Thyroid problems (18), Dysentery and galactagogue (32)	70	72	Flower, Bulb	Infusion	Oral
<i>Hesperis persica</i> subsp. <i>kurdica</i> (F. Dvořák & Hadač) F.Dvořák Basion. <i>Hesperis kurdica</i> F. Dvořák & Hadač	Brassicaceae	Shabbou (2)	6658	Diaphoretic (31), Diuretic (24), Chronic bronchitis (18)	70	73	Leaves, Resin	Infusion	Oral
<i>Carthamus tinctorius</i> L.	Asteraceae	Derek zarda (1), Golrang (2), Kājira (2)	2378	Dyeing and staining (45), Food color (50), Cholesterolemia (32), Atherosclerosis (20), Diaphoretic (32), Analgesic (24), Febrifuge (21), Expectorant (32), Tonic (25), Cough (34), Wound healing (38)	73	353	Flower, Seed	Food, Cataplasm	Oral

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Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher num ber <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Convolvulus koieanus</i> Bornm.*	Convolvulaceae	Pichak-e-sahraï (2)	9545	Powerful cathartic (45), A moderate dose eliminates profuse watery stool (42), Larger dose causes vomiting (38)	73	125	Seed, Fruit, Flower, Root	Infusion	Oral
<i>Cuminum cyminum</i> L.	Apiaceae	Zireh sabz (2)	10105	Astringent (55), Epilepsy (25), Bronchial problems (45), Appetizer (57), Flatus (60)	73	182	Seed, Essence oil	Food	Oral
<i>Fraxinus angustifolia</i> Vahl Syn. <i>Fraxinus rotundifolia</i> Mill.	Oleaceae	Van (2), Venow (1)	3227	Diuretic (32), Febrifuge (42), Rheumatism (22), Stomach tonic (27)	73	123	Leaves, Flower, Bark, Fruit	Infusion	Oral, topical
<i>Hypericum helianthemoides</i> (Spach) Boiss. Basion. <i>Drosanthe helianthemoides</i> Spach	Hypericaceae	Gol-e-raïe (2)	12292	Antiviral (57), Antidepressant (70), Antispasmodic (53), Astringent (24), Sedative (62)	73	266	Flowering tops	Infusion, Food	Oral
<i>Trigonella uncata</i> Boiss. & NOE	Fabaceae	Shemelia (1)	11605	Food (52), Cough (38), Stomach cramps (40), Wound healing (34)	73	164	Leaves, Flower	Food	Oral, topical
<i>Artemisia annua</i> L.	Asteraceae	Khers dâri (1), Dermane (2)	5945	Appetizer (17), Diuretic (32), Anti-flatulence (34), Anthelmintics (22), Astringent (42), Bruises (25)	75	172	Whole plant	Decoction	Oral, tropical
<i>Astragalus brachycalyx</i> Fisch. ex Boiss.*	Fabaceae	Gowen (1)	4046	Used for the production of Katira (65), Hair tonic and conditioner (58), Laxative (34), Sedative (25), Respiratory problems (32), Conjunctivitis (24), Antidote (15)	75	253	Stem	Decoction	Topical
<i>Cercis siliquastrum</i> L.	Fabaceae	Arghevu (1)	13928	Astringent (45), Expectorant (32), Kidney stones (20), Scorpion bites (35)	75	132	Flower, Root, Bark	Decoction, Cataplasm, Food	Oral, topical
<i>Chenopodium foliosum</i> Sm.	Amaranthaceae	Salmak (2)	4097	Anthelmintics (especially for roundworms and hookworms) (22), Digestive (35), Colic and stomach pains (30), Antispasmodic (24), Muscle-relaxant (25), Hemorrhoids (externally) (18), Wound healing (22)	75	176	Aerial parts	Food, Cataplasm	Oral, topical
<i>Dianthus macranthoides</i> Hausskn. ex Bornm.*	Caryophyllaceae	Mikhak-e-goldorosht (2)	982	Spice (55), Digestive (38), Toothache (40), Anxiety (18), Liver and kidney tonic (32), Cough (28), Appetizer (17)	75	228	Aerial parts	Flavoring	Oral, topical
<i>Dorema aucheri</i> Boiss.*	Apiaceae	Bilhar (2), Kandal-e-koohi (2)	8082	Spice (52), Nourishing (45), Expectorant (48), Kidney stone (40), Visceral pain killer (35), Respiratory diseases (30), Hepatoprotective (25), Hypertension (30), Cholesterolemia (37), Antioxidant (45)	75	75	Leaves, Stem, Resin	Infusion	Oral
<i>Galium aparine</i> L.	Rubiaceae	Bi ti Râkh (2)	6287	Diuretic (34), Anti-cancer (15), Skin problems (35), Eczema (22), Anti-infective (26),	75	189	Aerial parts	Infusion, Cataplasm	Oral

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Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Malva pusilla</i> Sm. Syn. <i>Malva rotundifolia</i> L.	Malvaceae	Panirak (1)	12177	Hypertension (17), Hepatitis (10), Prostate problems (12), Kidney stone (18) Laxative (43), Sedative (24), Cough and bronchitis (45), Kidney inflammation (22), Softening (25)	75	159	Leaves, Seed	Food	Oral, topical
<i>Smyrniopsis aucheri</i> Boiss.	Apiaceae	Peakāl (2)	9524	Food: used in cheese production (75)	75	75	Root	Food	Oral
<i>Sorbus luristanica</i> (Bornm.) Schönb.-Tem.* Basion. <i>S. aria</i> (L.) Crantz subsp. <i>luristanica</i> Bornm.	Rosaceae	Bārānāk (2)	12063	Astringent (35), Diarrhea (20), Hemorrhoids (18), Sore throats (33)	75	106	Fruit	Infusion	Oral, topical
<i>Vicia ervilia</i> (L.) Willd. Basion. <i>Ervum ervilia</i> L.	Fabaceae	Gāyena (1)	835	Anti-inflammatory (32), Expectorant (28), Wound healing (ointment) (45)	75	105	Leaves, Seed	Food	Oral
<i>Bunium luristanicum</i> Rech.f.*	Apiaceae	Zirra (2), Zireh Iorestāni (2)	3948	Anti flatus (57), Diuretic (45), Sudatory (30), Emmenagogue (52), Kidney and bladder stones (32), Prevents kids to eat soil (18), Galactagogue (48)	77	282	Leaves, Seed, Root, Flower	Food, Infusion	Oral
<i>Cichorium intybus</i> L.	Asteraceae	Chaqchaqa (1)	8074	Blood cleanser, Furuncles, Icterus, Antipyretic, Dermal allergies	77	-	Root, Flowering tops	Decoction	Oral, topical
<i>Citrullus colocynthis</i> (L.) Schrad. Basion. <i>Cucumis colocynthis</i> L.	Cucurbitaceae	Shūmishetoni (1)	6496	Nervous system tonic (25), Waist pain killer (52), Headache (32), Epilepsy (18), Alzheimer's disease (23)	77	150	Fruit, Seed, Root		
<i>Cyperus longus</i> L.	Cyperaceae	Oyār salām (2)	7070	Stomach tonic (34), Appetizer (12), Emmenagogue (15), Anti spasmolytic (35), Colds (28)	77	124	Root, Corm	Decoction	Oral
<i>Digitaria sanguinalis</i> (L.) Scop. Basion. <i>Panicum sanguinale</i> L.	Poaceae	Panje kalāgh (2), Angoshtane (2)	5783	Cardiotonic (18), Diuretic (38), Astringent (37), Pneumonia (20)	77	113	Leaves, Stem	Food	Oral
<i>Echinops haussknechtii</i> Boiss.*	Asteraceae	Shekar tighāl (2), Qan shakarook (1)	3268	Chest pain (25), Cough (27), Weight loss (20), Depression (17), Hypertension (22), Digestive and respiratory systems tonic (30)	77	141	Fruit	Decoction	Oral
<i>Glycyrrhiza glabra</i> L.	Fabaceae	Malim (1), Bala shirina (1)	10753	Anti-inflammatory (45), Anti-virus (48), Sedative (52), Expectorant (65), Digestive system tonic (67)	77	277	Leaves, Root	Food, Decoction	Oral
<i>Heliotropium denticulatum</i> Boiss. & Hausskn.*	Boraginaceae	Rezq-e-merij (1)	2280	Laxative (32), Increase bile production (18), Kidney stone (20), Warts (15)	77	85	Flowering tops	Infusion, Cataplasm	Oral, topical
<i>Lavandula angustifolia</i> subsp. <i>pyrenaica</i> (DC.) Guinea Basion. <i>Lavandula pyrenaica</i> DC. Syn. <i>Lavandula vera</i> DC.	Lamiaceae	Ostokhodos (2)	7336	Sedative (65), Pain killer (45), Depression (57), Anti-infective (30), Spasmolytic (35), Carminative (23)	77	255	Essential oil, Leaves, Flower	Decoction	Oral
<i>Physalis alkekengi</i> L.	Solanaceae	Aroosak-e-Poshte Pardeh (2)	13732	Stomachache (32), Diuretic (45), Anthelmintics (41)	77	118	Fruit, Leaves	Food, Cataplasm	Oral, topical

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Table 1 (continued)

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<i>Portulaca oleracea</i> L.	Portulacaceae	Perpelik (1), Denontijkar (1)	6216	Stomach problems (45), Kidney stone (20), Stop bleeding (18), Breast inflammations in breastfeeding mothers (25), Thirst (32), Diabetes (15)	77	155	Leaves, Seed	Food	Oral
<i>Rosa orientalis</i> A. Dupont ex Ser.	Rosaceae	Rose Sharghi	548	Increase blood circulation (30), Diarrhea (52), Antioxidant (58), Sore throats (47), Anti infective (32), Wrinkle (27)	77	246	Hips, Flower	Infusion	Oral, topical
<i>Tanacetum kotschy</i> Boiss.	Asteraceae	Mokhallesa (1), Babone gāwi (2)	13534	Anti-inflammatory (18), Bitter tonic (30), Headache (17), Migraine (15)	77	80	Leaves, Flower	Infusion	Oral
<i>Tulipa biflora</i> Pall.	Liliaceae	Lāleh haft rang (2)	8449	Anthelmintics (15), Hypnotic (8), Asthma (12), Bronchitis (18), Chronic cough (14), Skin moisturizing (28), Skin rash (3), Wrinkle (24), Infectious wounds (20), Toxic: the roots	77	150	Flower	Infusion, Cataplasm	Oral, topical
<i>Ulmus glabra</i> Huds.	Ulmaceae	Vezm (1), Oja (2), Van (2)	2876	Diuretic (40), Diarrhea (48), Rheumatism (31), Warts (19), Fractures (58)	77	138	Bark, twigs	Cataplasm	Topical
<i>Verbascum pseudonobile</i> Stoj. & Stef.	Scrophulariaceae	Gole Māhoor (2)	8634	Expectorant (30), Itching (45), Wound healing (48)	77	123	Flower	Infusion, Cataplasm	Oral, topical
<i>Viola modesta</i> House	Violaceae	Benafshah	12396	Expectorant (57), Laxative (42), Diaphoretic (38), Sedative (40), Colds (60), Febrifuge (45)	77		Aerial parts	Infusion	Oral
<i>Dianthus orientalis</i> Adams	Caryophyllaceae	Mikhak (2)	2168	Bitter tonic (35), Kidney stones (22), Urinary tract infections (24), Hematuria (15), Emmenagogue (14), Constipation (18), Eczema (21)	79	149	Aerial parts	Flavoring	Oral, topical
<i>Euphorbia petiolata</i> Banks & Sol.	Euphorbiaceae	Farfion (2)	3109	Laxative (32), Nerve pain (18), Rheumatism (44), Warts (75), Bone pain (the oil, externally) (62), Rashes and pustule: the infusion prepared from the aerial parts (38)	79	269	Whole plant	Infusion, Cataplasm	Oral, topical
<i>Tamarix ramosissima</i> Ledeb.	Tamaricaceae	Gaz (2)	9153	Appetizer (38), Wound healing (48), Expectorant (45)	79	131	Resin, Bark	Food, Cataplasm	Oral, topical
<i>Vicia faba</i> L. Syn. <i>Faba vulgaris</i> Moench	Fabaceae	Baghela (1)	834	Diarrhea (38), Epilepsy (22), Kidney stone (29)	80	89	Leaves, Seed, Flower	Food	Oral
<i>Coriandrum sativum</i> L.	Apiaceae	Keshneiz (2), Hildonah (1)	10104	Food (70), Digestive tonic (45), Diabetes (42), Anthelmintics (40), Toothache (chewing the seeds) (30), Typhoid problems(25), Rheumatism (35), Anti-inflammatory (42)	81	329	Leaves, Fruit (seed)	Food	Oral
<i>Eucalyptus globulus</i> Labill.	Myrtaceae	Ocālyptus (2)	7480	Anti-infective (58), Sinusitis (65),	81	210	Essence, Leaves	Vapor	Topical

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Table 1 (continued)

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<i>Pimpinella pseudotragium</i> DC.	Apiaceae	Jafari koohi (2)	11249	Expectorant (45), Bronchitis (42) Anti-microbial (38), Increase bronchial mucus (47)	81	85	Aerial parts	Food	Oral
<i>Salix alba</i> L.	Salicaceae	Bid āwey (1)	5608	Anti-inflammatory (40), Analgesic (38), Anti-fever (20), Antirheumatic (31), Astringent (42)	81	171	Leaves, Bark	Decoction	Oral
<i>Allium akaka</i> S.G. Gmel. ex Schult. & Schult.f.	Amaryllidaceae	Vālak (2), Sir-e-kūhi (2)	967	Blood purifier (55), Digestive problems (47), Hypertension (45), Headache (32), Liver problems (62), Diarrhea (45), Arthritis (30), Strong anti-microbial (75), Flu (45), Bronchitis (35)	84	471	Leaves, Bulb	Food	Oral
<i>Origanum vulgare</i> L.	Lamiaceae	Marzanjoush (2)	8685	Anti-fungal (42), Antioxidant (35), Anti-infective (55), Expectorant (57)	84	189	Aerial parts, Essential oil	Infusion	Oral
<i>Tanacetum polycephalum</i> Sch. Bip.	Asteraceae	Khersdāri (1)	13014	Anthelmintics (28), Diuretic (44), Decrease bile production (15)	84	87	Flowering top	Infusion	Oral
<i>Viscum album</i> L.	Santalaceae	Chakam (2), Dārvāsh nokah (2)	12036	Hypertension (35), Sedative (47), Toxic (external use), Remove extra hair, Baldness: in combination with henna (32), Nail repair: in combination with grapes juice and lime (25)	84	139	Leaves, Stem	Cataplasm	Topical
<i>Allium tripedale</i> Trautv.	Amaryllidaceae	Enashk (1)	6640	Laxative (75), Expectorant (50), Kidney stone (62), Anthelmintics (45), Appetizer (64), Hypertension (42), Hyperlipidemia (60), Anti-infective (57)	85	455	Leaves, Bulb	Food	Oral
<i>Adiantum capillus-veneris</i> L.	Pteridaceae	Kama Rozh (1)	679	Colds and bronchial discomfort (45), Sore throat and nasal disorders (46), Urolithiasis (34), Hair loss (47), Dandruff (32)	86	204	Aerial parts	Infusion, powder	Oral, topical
<i>Amygdalus lycioides</i> Spach	Rosaceae	Arjan (1), Tangras (2)	12302	Diabetes (32), Cough (43), Vomit (18), Anthelmintics (28), Toothache (6), Infectious wounds (45)	86	172	Fruit, Resin	Food, Cataplasm	Oral
<i>Arrhenatherum kotschyi</i> Boiss.	Poaceae	Ulāfak	5781	Treat colds (38), Allergenic (35)	86	73	Husks, Seed	Food, Infusion	Oral
<i>Astragalus adscendens</i> Boss. & Hausskn.	Fabaceae	Gowen gazi (1), Gaz angabin (2)	824	Food (72): the main ingredient of the traditional sweet in Isfahan, Iran (known as Gaz) Laxative (45), Expectorant (33), Febrifuge (25), Visceral pain killer (35)	86	210	Sap (Manna)	Food	Oral
<i>Astragalus hamosus</i> L.	Fabaceae	Chang-gorva (1), Nākhunak (2)	4770	Tonic (20), Sedative (23), Kidney and bladder stones (18), Febrifuge (26), Visceral pain (23), Expectorant (25), Carminative (30),	86	204	Fruit, Leaves	Food	Oral

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Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Eryngium bungei</i> Boiss.	Apiaceae	Zool khorāsāni (2), Chochāq Khorāsāni (2), Anārījeh (2)	12262	Astringent (24), Stomach tonic (35), Rheumatic pain (37), Anti-bacterial (32), Carminative (47), Appetizer (25), Hematopoietic (20), Laxative (40), Diuretic (38), Cystitis and urethritis (30), Kidney stones (27), Prostatitis (25), Chest problems (30)	86	351	Aerial parts	Decoction	Oral
<i>Fritillaria persica</i> L.	Liliaceae	Lāleh vāzhgūn (2)	1330	Irritability in the respiratory system (24), Bronchitis (18), Tonsillitis (15), Fever and respiratory symptoms (28), Dysentery and galactagogue (35)	86	120	Flower, Bulb	Food, Cataplasm	Oral, topical
<i>Hyoscyamus tenuicaulis</i> Schönb.-Tem.*	Solanaceae	Bang Dāneh (2)	6140	Pain killer (48), Anesthetic (30), Lead poisoning (46), Spasmolytic (28), Astringent (34), Carminative (26), Hypnotic (40), Muscle relaxant (45), Narcotic (50), Analgesic (28), Nervous system tonic (72), Epilepsy (35), Hypnotic (65), Spasmolytic (38), Wound healing (20), Anthelmintics (children) (25)	86	375	Leaves, seed	Infusion	Oral, topical
<i>Lavandula sublepidota</i> Rech.f.*	Lamiaceae	Ostokhodos (2)	7337	Nervous system tonic (72), Epilepsy (35), Hypnotic (65), Spasmolytic (38), Wound healing (20), Anthelmintics (children) (25)	86	255	Flowering tops	Decoction	Oral
<i>Nardostachys jatamansi</i> (D.Don) DC. Basion. <i>Patrinia jatamansi</i> D.Don	Caprifoliaceae	Sonbolotib (2)	4455	Spasmolytic (48), Pain killer (55), Bitter tonic (35), Sedative (83)	86	221	Root	Infusion	Oral
<i>Petroselinum crispum</i> (Mill.) Fuss Basion. <i>Apium crispum</i> Mill.	Apiaceae	Jafari (2)	10207	Food (80), Anemia (68), Kidney stone (35), Appetizer (50), Carminative (52), Anti-flatulence (52), Relieve breast pain due to milk accumulation in breastfeeding mothers (50)	86	387	Flowering tops, Root, Seed	Food	Oral
<i>Rosa elymaitica</i> Boiss. & Hausskn. ex Boiss.	Rosaceae	Nastaran Koohi (2), Rose Ilāmi (2)	4113	Sedative (78), Diarrhea (48), Kidney stone (35), Hypnotic (58), Astringent (50), Skin care (55), Stomach tonic (47), Fractures (ointment) (10), Diaphoretic (24)	86	405	Hips, Flower	Infusion, Cataplasm	Oral, topical
<i>Salvia macrosiphon</i> Boiss.	Lamiaceae	Maryam goli (2)	3869	Decrease menopausal symptoms (57), Gangrene (ointment) (31)	86	88	Whole plant	Cataplasm	Topical
<i>Secale ciliatiglume</i> (Boiss.) Grossh. Basion. <i>Secale montanum</i> var. <i>ciliatiglume</i> Boiss.	Poaceae	Chāwdār (2)	8290	Laxative (78), Chronic constipation (65), Abscess (40)	86	183	Seed	Food, Cataplasm	Oral, topical
<i>Trigonella foenum-graecum</i> L.	Fabaceae	Shemelia (1)	7489	Food (58), Expectorant (28), Analgesic (20), Febrifuge (25), Laxative (32), Galactagogue (18),	86	280	Aerial parts, Seed	Food	Oral

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Table 1 (continued)

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<i>Tulipa stylosa</i> Stapf	Liliaceae	Shāwel kül (1)	9377	Diabetes (30), Cholesterolemia (17), Rachitis (24), Hair loss (28) Laxative (54), Gout (24), Rheumatism (35)	86	113	Fruit, Bulb	Infusion, Cataplasm	Oral, topical
<i>Ziziphora tenuior</i> L.	Lamiaceae	Kākūti (2)	594	Digestive (75), Spice (50), Antiseptic (22), Expectorant (45), Anti-flatulence (20), Stomach tonic (52)	86	264	Leaves, Seed	Flavoring, Infusion	Oral
<i>Alhagi maurorum</i> Medik. Syn. <i>Alhagi persarum</i> Boiss. & Buhse	Fabaceae	Taranjabin (2), Shotor khār (2)	5209	Kidney stones (75), Cough and chest pain (42), Expectorant (45), Increase libido (18), Febrifuge (35), Decrease bile production (25)	88	240	Whole plant, Sap (Manna)	Food, Cataplasm	Oral
<i>Allium iranikum</i> (Wendelbo) Wendelbo Basion. <i>Allium ampeloprasum</i> subsp. <i>iranikum</i> Wendelbo	Amaryllidaceae	Tara gāw Koy (1), Simūkah (1)	49	Diuretic (72), Expectorant in acute bronchitis (61), Digestive (58), Overweight (45), Joint pain killer (32), Atherosclerosis (30), Gout (42), Hemorrhoids (55), Abscess (35)	88	430	Leaves, Bulb	Food	Oral
<i>Allium stipitatum</i> Regel Syn. <i>Allium hirtifolium</i> Boiss.	Amaryllidaceae	Liz, Pishuk (1)	12355	Food (45), Diuretic(42), Diaphoretic (32), Expectorant (57), Spice (42), Appetizer (32), Joint pain killer (45), Hypertension (35)	88	330	Leaves, Rhizome	Food	Oral
<i>Alyssum meniocoides</i> Boiss.	Brassicaceae	Qodume (2)	5380	Expectorant (70), Appetizer (23), Gout (47), Anti-inflammatory (18)	88	158	Seed	Food, Cataplasm	Oral, topical
<i>Beta vulgaris</i> L.	Amaranthaceae	Chunar (1)	10696	Stomach tonic (45), Laxative (42), Diaphoretic (30), Diuretic (32), Anemia (55), Dysentery (25), Tremble (12), Vertigo (8), Hypotension (32)	88	281	Leaves, Bulb	Food	Oral
<i>Cannabis sativa</i> L.	Cannabaceae	Shāyna (1), Shaynak (1)	11977	Eye inflammation (12), Pain killer (47), Hypertension (24), Asthma (30), Analgesic (65), Decrease labor and menstruation pains (44), Depression (48), Rheumatism (27), Arthritis (18)	88	315	Flowering tops	Food	Oral
<i>Cucurbita maxima</i> Duchesne	Cucurbitaceae	Kodi (1), Kadou (2)	10213	Sedative (28), Anthelmintics (85), Diuretic (38)	88	151	Seed, oil	Food	Oral
<i>Daphne mucronata</i> Royle	Thymelaeaceae	Toeilek (1), Alf (2), Dāfne (2)	11142	Toxic (22), Warts (25), Painting (38), Kohl (60), Due to toxicity, it is used only externally	88	145	Fruit, Bark, Flowering top	Cataplasm	Topical
<i>Euphorbia granulata</i> Forssk.	Euphorbiaceae	Sofra Morche (2)	2212	Febrifuge (30), Anthelmintics (35), Laxative (42)	88	107	Whole plant	Infusion	Oral
<i>Fibigia macrocarpa</i> (Boiss.) Boiss.	Brassicaceae	Poulak (2)	3786	Migraine (32), Sinusitis (65)	88	97	Flowering tops	Infusion	Oral

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Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Basion. Farsetia macrocarpa</i> Boiss. <i>Fraxinus excelsior</i> L.	Oleaceae	Van (2), Venow (1)	2551	Rheumatism (24), Gout (20), Expectorant (32), Febrifuge (45), Laxative (35), Sunburns (gum or turpentine as fumigation) (55), Sore throats (28), Diuretic (30)	88	269	Leaves, Flower, Bark, Fruit	Infusion, Vapor	Oral, topical
<i>Helianthus annuus</i> L.	Asteraceae	Aftābgardān (2)	10209	Nourishing (30), Febrifuge (42), Malaria (10), Lung problems (25), Bronchitis and cough (28), Diuretic (32), Expectorant (25), Diabetes (15)	88	207	Leaves, Flower, Seed	Powder, Decoction	Oral
<i>Heracleum persicum</i> Desf. ex Fisch., C.A. Mey. & Avé-Lall.	Apiaceae	Qolpar (2)	3349	Fragrant (82), Anti-microbial (42), Carminative (50), Anti flatulence (65), Diuretic (45), Anthelmintics (47), Memory improving (32), Rash (35), Abscess and pustule (30)	88	428	Seed, Leaves, Root	Flavoring, Food	Oral
<i>Hordeum bulbosum</i> L.	Poaceae	Jo piāzdār (2)	130	Diabetes (58), Cholesterolemia (32), Immune system tonic (65), Gallbladder stones (52), Skin care (55)	88	262	Seed, Stem	Food	Oral
<i>Nasturtium officinale</i> R.Br.	Brassicaceae	Balmak (1), Kolshek (1)	4117	Stomach tonic (32), Expectorant (21), Appetizer (28), Febrifuge (18), Kidney problems (18), Anemia (24), Diabetes (10), Internal infections (15), Kidney stones (15)	88	181	Whole plant	Food	Oral
<i>Nigella sativa</i> L.	Ranunculaceae	Seidona (1)	1333	Galactagogue (35), Analgesic (16), Cough (38), Diabetes (15), Rheumatism (17), Spice (in bread, cookies, and appetizers) (35)	88	156	Seed	Food	Oral
<i>Papaver dubium</i> L.	Papaveraceae	Shaghāyegh (2)	12425	Sedative (42), Expectorant (28), Asthma (18), Hypnotic in children (22), Tooth abscesses (external use) (24), Eyelid swelling (12)	88	146	Fruit, Seed	Infusion, Cataplasm	Oral, topical
<i>Ricinus communis</i> L.	Euphorbiaceae	Karchek (2), Bid anjir (2)	7487	Laxative (82), Skin injuries (external use) (45), Burns and cuts (32), Dandruff (30), Varicose veins (28)	88	217	Seed	Food, Cataplasm	Oral, topical
<i>Rosmarinus officinalis</i> L.	Lamiaceae	Roz māry (2), Aklil-e-koohi (2)	10787	Hear tonic (65), Anti-bacterial (45), Spasmodic (32), Strong antioxidant (72), Increase blood pressure (34), Diaphoretic (25), Respiratory infections (30), Cough (44), Diarrhea (38), Carminative (45)	88	430	Flowering tops	Flavoring	Oral
<i>Secale cereale</i> L.	Poaceae	Chāwdār (2)	7289	Laxative (78), Chronic constipation (65), Abscess (45)	88	188	Seed	Food, Cataplasm	Oral, topical

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Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Solanum persicum</i> Roem. & Schult.	Solanaceae	Tāj rizi (2)	9857	Febrifuge (45), Analgesic (32), Diaphoretic (50), Rheumatism (30), Cough (28), Asthma (21), Narcotic (15), Hemorrhoids (29), Burns (18)	88	268	Fruit, Leaves, Flowering tops	Food, Cataplasm	Oral, topical
<i>Urtica urens</i> L.	Urticaceae	Gazenah sag (2)	9122	Anti-allergies (28), Anti-inflammatory (22), Spasmolytic (30), Diuretic (42), Tonic (the leaves) (40)	88	162	Aerial parts, Root	Infusion	Oral
<i>Vitex agnus-castus</i> L. Syn. <i>Vitex pseudonegundo</i> (Hauskn.) Hand.- Mazz.	Lamiaceae	Kerf (1), Panjangosht (2)	2896	Bruises (25), Appetizer (20), Carminative (35), Diuretic (28), Hormonal imbalances (58)	88	166	Fruit, Leaves	Infusion, Cataplasm	Oral, topical
<i>Ziziphus jujuba</i> Mill.	Rhamnaceae	Eno	8907	Laxative (57), Expectorant (75), Diaphoretic (24), Febrifuge (32), Itching (12), Hypertension (15), Skin hives (20)	88	235	Fruit, Leaves	Food, Cataplasm	Oral, topical
<i>Avena clauda</i> Durieu	Poaceae	Ulāf	6116	Reduce blood sugar levels (43), Hypercholesterolemia (22), Prevent heart disease (24), Reduce symptoms of dry skins (45)	90	134	Husks, Seed	Food, Infusion	Oral
<i>Brassica napus</i> L.	Brassicaceae	Colzā (2)	10210	Kidney colic (24), Diuretic (32), Renal stones (17), Anti-ascorbate (12), Joint pain (22), Skin scratches (28), Hyperuricemia (15)	90	150	Seed	Infusion	Oral, topical
<i>Daucus carota</i> L.	Apiaceae	Kezer (1)	10106	Diuretic (65), Flatus (45)	90	497	Leaves, Root Seed	Food	Oral
<i>Noaea mucronata</i> (Forssk.) Asch. & Schweinf. Basion. <i>Salsola mucronata</i> Forssk.	Amaranthaceae	Nākhon-e-aroos (2), Khargo (2)	13919	Anti-calculus (90)	90	90	Leaves, Flower	Food	Oral
<i>Stachys lavandulifolia</i> Vahl	Lamiaceae	Chāy Koohi (2), Kolkenah (1), Pashmināh (2)	10911	Cold (85), Nerve tonic (42), Cardiac tonic (18), Colic (25)	90	170	Flower	Infusion	Oral
<i>Valeriana sismbrifolia</i> Vahl	Caprifoliaceae	Sonbolotib (2)	12105	Analgesic (57), Hypnotic (71), Sedative (82), Spasmolytic (55), Hypertension (32)	90	297	Root, Rhizome	Infusion	Oral
<i>Vicia faba</i> L.	Fabaceae	Bāghela (1)	78490	Food (85), Gout (22), Rheumatism (34), Joint pains (20), Chronic diarrhea (32), Diuretic (28), Toothache: in combination with Zhevy gum (58)	90	279	Flowering tops, Seed, Fruit	Food	Oral, topical
<i>Cynodon dactylon</i> (L.) Pers. Basion. <i>Panicum dactylon</i> L.	Poaceae	Heriz (2), Margh (2)	12101	Anti-infective (20), Wound healing (35), Hypnotic (12), Analgesic (24), Diuretic (30), Diaphoretic (24), Kidney stones (18), Diabetes (10), Digestive and respiratory inflammations (27)	92	200	Root	Food, Infusion	Oral
<i>Dysphania botrys</i> (L.) Mosyakin &	Amaranthaceae	Salmak, Salmon tarra (2)	11052	Hyperlipidemia (62), Strong anthelmintics (45)	92	107	Leaves, Stem	Food	Oral

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Table 1 (continued)

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Clematis Basin. <i>Chenopodium botrys</i> L.									
<i>Euphorbia helioscopia</i> L.	Euphorbiaceae	Shirshirak (2)	2473	Skin warts (82), Herpes (78), Rashes (55)	92	215	Whole plant, Resin	Cataplasm	Topical
<i>Pimpinella barbata</i> Boiss.	Apiaceae	Jafari (2)	13545	Peptic ulcer (30), Diabetes (38), Cough (33), Sedative (55), Kidney stone (37), Insect bites (22)	92	215	Leaves, Root	Food	Oral
<i>Salvia officinalis</i> subsp. <i>lavandulifolia</i> (Vahl) Gams Basion. <i>Salvia</i> <i>lavandulifolia</i> Vahl	Lamiaceae	Maryam goli (2)	11099	Anti microbial (45), Antioxidant (32), Digestive system tonic (68), Phytoestrogen (75), Decrease sweating (55), Exhilarating (57), Removing menopausal symptoms such as sweating, hot flashes and headaches (48)	92	380	Leaves	Infusion	Oral
<i>Urtica dioica</i> L.	Urticaceae	Gazehah (2)	3696	Hypoglycemic (15), Anemia (18), Anti-inflammatory (32), Digestive (45)	92	110	Leaves, Root	Infusion, Decoction	Oral
<i>Cruciata taurica</i> (Pall. ex Willd.) Ehrend. Basion. <i>Valantia</i> <i>taurica</i> Pall. ex Willd.	Rubiaceae	Salibi (2)	2060	Astringent (45), Hair loss (35), Appetizer (17), Rheumatism (18), Anti-infective (38), Dyeing (42)	95	195	Flowering tops	Infusion	Oral, topical
<i>Hyssopus officinalis</i> L. Syn. <i>Hyssopus</i> <i>angustifolius</i> M. Bieb.	Lamiaceae	Zofā (2)	7495	Diuretic (53), Appetizer (28), Astringent (54), Carminative (48), Spasmolytic (45), Hair tonic (75), Anti-virus (65), Spice (68)	95	436	Flowering tops, Leaves	Food, Flavoring	Oral
<i>Isatis kotschyana</i> Boiss. & Hohen. ex Boiss.	Brassicaceae	Vasmeh (2)	5517	Anti-virus (40), Anti-bacterial (42), Astringent (28)	95	110	Leaves	Cataplasm	Topical
<i>Pimpinella affinis</i> Ledeb.	Apiaceae	Taretizak bāghi (2)	6254	Carminative (55), Anti-flatulence (58), Digestive (60), Antispasmodic (40), Menstruatinon pain killer (35), Asthma (25), Whooping cough (32), Bronchitis (34), Expectorant (40), Lice and scabies (22),	95	401	Aerial parts Essential oil	Food	Oral
<i>Vigna radiata</i> (L.) R. Wilczek Basion. <i>Phaseolus</i> <i>radiatus</i> L.	Fabaceae	Māsh (2)	7491	Food (95), Tonic (58), Hematopoietic (52), Improve eyesight (25), Skin inflammations (34)	95	264	Seed, Root	Food, Cataplasm	Oral, topical
<i>Alyssum</i> <i>szovitsianum</i> Fisch. & C.A.Mey. Syn. <i>Alyssum</i> <i>marginatum</i> Steud.	Brassicaceae	Qodume (2)	5373	Expectorant (72), Decrease thirst (30), Anti-inflammatory (as an ointment) (18), Gout (44)	97	164	Seed	Food, Cataplasm	Oral, topical
<i>Euphorbia chamaesyce</i> L.	Euphorbiaceae	Farfion (2)	14093	Scorpion bites (62), Warts (78), Tinea (45), Syphilis (20)	97	205	Aerial parts	Cataplasm	Topical
<i>Ferula ovina</i> (Boiss.) Boiss. Basion. <i>Peucedanum ovinum</i> Boiss.	Apiaceae	Komā (2)	10828	Digestive stimulant (57), Antispasmodic (45), Reducing flatulence (72), Gripping pains and colic (47), Expectorant (65),	97	346	Olea, Gum, Resin	Decoction	Oral, topical

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<i>Prunus dulcis</i> (Mill.) D.A.Webb Syn. <i>Amygdalus communis</i> L.	Rosaceae	Bāyem (1)	12410	Wound healing (ointment) (60) Children Diarrhea (42), Laxative (57), Purgative (50), Dry cough (52), Kidney and intestine colics (25)	97	226	Flower, Leaves, Fruit, Bark, Pith	Food	Oral
<i>Celtis tournefortii</i> Lam.	Cannabaceae	Taeylah (1)	861	Stomachache (38), Cough (30), Stomach tonic (27), Decrease swelling (ointment) (42)	99	137	Fruit, Oil	Cataplasm	Topical
<i>Chenopodium murale</i> L.	Amaranthaceae	Salmak (2)	1748	Anthelmintics	99	-	Leaves	Food	Oral
<i>Ammi majus</i> L.	Apiaceae	Ymi (2)	12500	Patchy skin (40), Pigmentation in Vitiligo (22), Diuretic (65), Psoriasis (31)	101	158	Seed	Infusion	Oral
<i>Galium verum</i> L.	Rubiaceae	Khāye melichak (2)	7667	Renal- and hepato-protective (29), Spasmolytic (25), Galactagogue (18), Skin problems (40), Kidney and bladder stones (32), Diuretic (45)	101	189	Aerial parts	Infusion, Cataplasm	Topical, oral
<i>Prunus arabica</i> (Olivier) Meikle Basion. <i>Amygdalus arabica</i> Olivier	Rosaceae	Bāyem (1)	12397	Kidney problems (32), Backache (15), Asthma (18), Cough (55), Smelly feet (48)	101	168	Fruit, Leaves	Food, Cataplasm	Oral, topical
<i>Zataria multiflora</i> Boiss.	Lamiaceae	Āvishan Shirāzi (2), Azkand (2)	7499	Stomach (42), Anti-infective (58), Expectorant (84)	101	184	Aerial parts	Flavoring, Infusion	Oral
<i>Chenopodium album</i> L.	Amaranthaceae	Salmak (2), Salme tarra (2), Salona (1)	13606	Food (85), Blood purifier (42), Anthelmintics (48), Constipation (62), Tonic (28), Diuretic (52), Aphrodisiac (32), Liver and spleen problems (44)	103	393	Leaves, Seed, Flower, Seed Oil	Food	Oral
<i>Ferulago angulata</i> (Schltdl.) Boiss. Basion. <i>Ferula angulata</i> Schltdl.	Apiaceae	Chovir (1)	11238	Antioxidant and anti-infections (traditionally used to prevent meat spoiled) (50), Labor pain killer (25), Mouth freshener (48), Spice (75), Stomachache (65), Headache (38), Rheumatism (45), Anti-cancer (22), Anti-microbial (45), Cosmetics (20)	103	433	Aerial parts	Food, Infusion	Oral, topical
<i>Phlomis pulvinaris</i> (Jaub. & Spach) Kamelin & Makhm. Basion. <i>Eremostachys pulvinaris</i> Jaub. & Spach	Lamiaceae	Ganal (1)	928	Insect and reptiles bites, anti-infective and pain killer (the infusion prepared from the leaves) (65), Dyeing (102)	103	167	Whole plant	Decoction, Intinction	Topical
<i>Rosa × damascena</i> Mill.	Rosaceae	Gol-e-sorkh (2), Gol-e-Mohammadi (2)	10751	Exhilarating (95), Cardiotonic (75), Sedative (102), Depression (90), Astringent (57), Anemia (45), Fatigue (34), Fragrance and cosmetics (83)	103	581	Flower + Essential oil	Infusion	Oral, topical
<i>Salvia syriaca</i> L.	Lamiaceae	Maryam goli (2)	52390		103	252		Infusion	Oral

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Table 1 (continued)

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<i>Euphorbia denticulata</i> Lam.	Euphorbiaceae	Shirsag (2), Khoshil (1)	14028	Spasmodic (57), Carminative (65), Digestive (58), Menopausal symptoms (72)	106	163	Resin	Food	Oral
<i>Lens culinaris</i> subsp. <i>orientalis</i> (Boiss.) Ponert	Fabaceae	Nouji (1)	6108	Corns <sup>d</sup> and warts (98), Strong laxative (65)	107	337	Seed	Food, Oil	Oral, topical
<i>Celtis australis</i> subsp. <i>caucasica</i> (Willd.) C.C.Towns.	Cannabaceae	Dāghdāghān (2)	439	Astringent (35), Digestive ulcers (25), Dysentery (24)	108	84	Fruit, Leaves, Seed	Cataplasm	Topical
<i>Papaver rhoeas</i> L.	Papaveraceae	kāsa-eske (1), Gol sora (1)	12645	Mild analgesic and sedative (45), Mild pain killer (32), Irritable coughs (25), Nervous overactivity (18), Insomnia (30), Asthma (10)	108	160	Capsule, Flower, Seed	Infusion	Oral, topical
<i>Ferulago stellata</i> Boiss.	Apiaceae	Choeil (1)	10763	Spice (75), Food (70), Digestive problems (65), A strong preservative for dairy products (40)	110	250	Leaves, Stem, Fruit	Flavoring, Food	Oral
<i>Celtis caucasica</i> Willd.	Cannabaceae	Tak (1), Taey (1)	2943	Diarrhea (37), Pain killer (30), Abscess (45)	111	112	Leaves, Seed, Root, Flower, Bark	Cataplasm	Topical
<i>Diospyros kaki</i> L.f.	Ebenaceae	Khormalou (2)	7486	Carminative (45), Astringent (50), Diuretic (34), Kidney stones (20), Hiccups in children (14), Inflammation of the mouth and throats (30)	112	193	Flower, Fruit	Food	Oral
<i>Rhus coriaria</i> L.	Anacardiaceae	Somāq (2)	9547	Spice (92), Astringent (65), Bleeding (45), Hypertension (35), Stomach tonic (47)	112	284	Fruit, Leaves	Food	
<i>Zea mays</i> L.	Poaceae	Khayāteh-e-zorat (2)	7291	Bread production (53), Analgesic (32), Urinary tract infections (98), Wound healing (43), Kidney stone (80)	112	306	Seed, Tassel	Food, Decoction	Oral, topical
<i>Allium atroviolaceum</i> Boiss.	Amaryllidaceae	Verkevās (1)	11315	Decrease bile production (75), Diuretic (62), Anti-infective (51), Hypertension (43), Digestive (55), Weight loss (40), Joint pain killer (45), Severe colds (50), Food (71)	114	492	Whole plant	Food	Oral
<i>Lens culinaris</i> Medik.	Fabaceae	Nouji deim (1)	1434	Food (114), Anemia (112), Diuretic (58), Decrease bile production (43), Febrifuge (37), Diarrhea (57), Skin problems (40)	114	461	Seed	Food	Oral
<i>Lepidium sativum</i> L.	Brassicaceae	Bālena (1), Shāhi (2), Taretizak (2)	7438	Appetizer (42), Expectorant (32), Emmenagogue (16), Diuretic (27), Galactagogue (24), Anti-ascorbate (12), Kidney stones (17)	114	170	Leaves, Seed	Food	Oral

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Table 1 (continued)

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<i>Salvia officinalis</i> L.	Lamiaceae	Maryam goli (2)	4129	Anti-microbial (32), Decrease sweating (75), Carminative (54), Antioxidant (22), Digestive tonic (57), Phytoestrogen (48), Nervous system tonic (55)	114	343	Leaves	Infusion	Oral
<i>Salvia sclarea</i> L.	Lamiaceae	Meramgoli (1), Bala qushah (1)	4046	Antispasmodic (32), Aromatic (58), Digestive problems (60), Tonic (45), Period pain and premenstrual problems (most effective when levels of estrogen hormone are low) (62), Antibacterial (44)	114	301	Flowering tops	Infusion	Oral
<i>Eremurus spectabilis</i> M.Bieb.	Asphodelaceae	Serish (2)	1601	Food (105), Laxative (52), Anthelmintics (45), Stomach problems (50), Atherosclerosis (24), Rashes (external use) (34), Snake and scorpion bites (28), Chronic eczema (25), Rheumatism (30), Fractures (roots) (60)	116	453	Root, Leaves, Fruit	Food, Cataplasm	Oral, topical
<i>Alyssum dasycarpum</i> Stephan ex Willd.	Brassicaceae	Qodume (2)	5140	Expectorant (87), Decrease thirst (32)	117	119	Seed	Food	Oral
<i>Capparis spinosa</i> L.	Capparaceae	Kabar (2), Kavar (2), Alaf mār (2)	13758	Laxative (32), Bitter and diuretic (35), Appetizer (18), Blood purifier and stops internal bleeding (24), Cosmetics (15)	117	124	Root bark, Bark Flower buds	Food, Cataplasm	Oral, topical
<i>Rubus sanctus</i> Schreb.	Rosaceae	Toyrek (1), Tiyarah (1)	1811	Facilitate delivery (35), Anti infective (40), Astringent (57), Herpes (34)	117	166	Fruit, Leaves	Food	Oral, topical
<i>Hibiscus trionum</i> L.	Malvaceae	Khatmi (2)	1729	Diabetes (34), Wound healing (52), Laxative (22)	119	108	Leaves, Seed, Flower	Infusion, Cataplasm	Oral, topical
<i>Ocimum basilicum</i> L.	Lamiaceae	Reho (1), Reyhān (2)	7822	Food (105), Anti-bacterial (68), Insecticidal (24), Sedative (52), Carminative (88), Stomach tonic (75), Laxative (45), Diaphoretic (43)	119	500	Flowering tops, Essential oil	Food, Flavouring	Oral
<i>Archihyoscyamus leptocalyx</i> (Stapf) A.M.Lu Basion. <i>Hyoscyamus leptocalyx</i> Stapf	Solanaceae	Bazrolbang (2)	2911	Analgesic (105), Sedative (87)	121	192	Leaves, Seed	Infusion	Oral, topical
<i>Echinophora platyloba</i> DC. *	Apiaceae	Khosāroza (1)	13508	Febrifuge (62), Quenching thirst (45), Carminative (65), Skin problems (wounds, eczema, tinea, scabies) (68)	121	240	Whole plant	Food	Oral, topical
<i>Silybum marianum</i> (L.) Gaertn. Basion. <i>Carduus marianus</i> L.	Asteraceae	Khār Mariam (2), Māry Tighāl (2)	9218	Increase secretion of bile (45), Antidepressant (57), Antioxidant (34), Hepatoprotective (85), Galactagogue (35), Hypertension (40), Hyperlipidemia (65), Detoxifying agent (25)	121	386	Seed, Fruit, Root, Flowerhead,	Infusion	Oral
<i>Anethum graveolens</i> L.	Apiaceae	Shevit (2)	10103	Food (102), Hyperlipidemia (87), Flatus (75), Analgesic (45), Stomach tonic (65),	123	441	Fruit, Leaves	Food	Oral

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Table 1 (continued)

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<i>Matricaria chamomilla</i> L. Syn. <i>Matricaria recutita</i> L.	Asteraceae	Gol bawina (1), Bäeina (1)	13516	Hiccups (32), Vomit (35), Anti-allergy (35), Anti-inflammatory (45), Spasmolytic (22), Digestive (50), Wound healing (48), Skin and hair tonic (75), Stomachache (As infusion) (30), Febrifuge (52)	123	357	Seed, Flower	Infusion	Oral, topical
<i>Sesamum indicum</i> L.	Pedaliaceae	Konji (1), Samsam (2)	7484	Nourishing (120), Laxative and purgative (45), Asthma (18), Dry cough (25), Hypertension (32), Galactagogue (45), Hair tonic (the leaves) (50)	123	335	Leaves, Seed	Food	Oral, topical
<i>Vitis vinifera</i> L.	Vitaceae	Anyr (1), Angyr (1)	2154	Food (123), Antioxidant (35), Tonic (107), Astringent (78)	123	343	Fruit, Leaves, Seed, Seed Oil	Food	Oral
<i>Cotoneaster luristanicus</i> G.Klotz	Rosaceae	Shirkhesht-e-Lorestāni (2)	12412	Newborn babies jaundice (75), Respiratory problems (78), Aphthous ulcer (52)	125	205	Whole plant	Food, Infusion	Oral
<i>Crataegus</i> sp.	Rosaceae	Zälzälak (2)	7297	Antioxidant (45), Cardiotonic (120), Hypertension (50)	125	215	Flower, Fruit, Leaves	Food	Oral
<i>Morus alba</i> L.	Moraceae	Ty (1), Tout (2)	9298	Diabetes (65), Expectorant (58), Febrifuge (42), Eye wounds and inflammations (15), Sore throats (32), Headache (20), Vitiligo (8)	125	240	Leaves, Fruit, Root, Bark	Food	Oral
<i>Prunus microcarpa</i> C. A.Mey. Syn. <i>Cerasus microcarpa</i> (C.A. Mey.) Boiss.	Rosaceae	Halonah (1), Berālik (2)	12416	Urinary tract stones (45), Sedative (65), Cardiotonic (31), Rheumatism (34), Stomachache (40)	125	215	Fruit, Flower, Wood, Stem	Food, Infusion	Oral, topical
<i>Rubia pauciflora</i> Boiss. *	Rubiaceae	Ronās-e-Denāiy (2)	10854	Astringent (48), Laxative (25), Purgative (30), Gout (15), Anti-inflammatory (38), Liver, gallbladder, and spleen cleansing (42), Wrinkles (17), Skin problems (external use) (24), Fractures (37)	125	276	Root, Leaves	Infusion, Cataplasm, Intinction	Topical, oral
<i>Alcea koelzii</i> Riedl*	Malvaceae	Golhiru (1), Khatmi (2)	7809	Cough and cold (105), Hair tonic (112)	128	217	Flower	Infusion, Cataplasm	Oral, topical
<i>Alyssum campestre</i> L.	Brassicaceae	Qodume (2)	1031	Expectorant (74), Cough (75), Bronchial spasms (50)	128	199	Fruit	Food	Oral
<i>Hordeum distichon</i> L.	Poaceae	Jo (2)	11011	Nourishing for recovery (115), Facilitate food absorption (57), Sore throats (52), Analgesic (85), Diabetes (45), Cholesterolemia (32), Wound healing (78)	130	464	Seed, Stem	Food, Cataplasm	Oral, topical
<i>Morus nigra</i> L.	Moraceae	Shāhtout, Tout-e-siah	2916	Laxative (55), Kidney and bladder stones (34), Sore throats (32), Anthelmintics (22), Aphthous ulcer (17)	132	160	Fruit	Food	Oral
<i>Prunus brachypetala</i> (Boiss.) Walp.	Rosaceae	Ālbālou koohestāni (2)	7295	Analgesic for skeletal pains (132)	132	132	Wood, Bark, Fruit	Food	Oral

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Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
Basion. <i>Cerasus brachypetala</i> Boiss. <i>Spinacia oleracea</i> L.	Amaranthaceae	Esfenāj (2)	10101	Spice (43), Anemia (84), Stomach, intestine, and pancreas tonic (44), Increase bile production (105)	132	276	Leaves	Food	Oral
<i>Althaea officinalis</i> L.	Malvaceae	Golhiru (1), Khatmi (2)	2389	Cough (102), Peptic ulcer (45), Kidney and bladder stones (32), Laxative (45), Purgative (30)	134	254	Leaves, Seed, Root, Flower	Infusion, Cataplasm	Oral, topical
<i>Artemisia dracunculus</i> L.	Asteraceae	Tarkho (1)	10208	Spice (125), Anti-microbial (34), Anti-flatulence (65), Carminative (75), Febrifuge (47), Appetizer (55), Hiccups (12), Stomach tonic (45), Spasmolytic (25)	134	483	Aerial parts, Root	Food	Oral
<i>Ferula behboudiana</i> (Rech.f. & Esfand.) D.F.Chamb.* Basion. <i>Smyrniopsis behboudiana</i> Rech.f. & Esfand.	Apiaceae	Fyallah (1)	10826	Anti-itching (45), Anti skin allergies (55), Euphoric effect (38),	134	138	Leaves	Decoction	Oral, topical
<i>Melissa officinalis</i> L.	Lamiaceae	Bādranjboye (2)	7496	Cardio and nervous system tonic (125), Carminative (75), Diaphoretic (54), Sedative (108), Joint pain killer (78), Insect bites (42)	134	482	Flowering tops, Leaves	Infusion	Oral
<i>Rheum ribes</i> L.	Polygonaceae	Revās (2), Rivand (2)	1636	Food (135), Anti bacterial (40), Exhilarating (32)	134	207	Rhizome, Root, Petiolule	Food	Oral
<i>Crocus sativus</i> L.	Iridaceae	Zafero (1)	12194	Tonic (110), Appetizer (102), Expectorant (57), Emmenagogue (75), Toothache (32), Nerve stimulator (55)	136	431	Stigma, Styles	Food, Infusion	Oral
<i>Satureja hortensis</i> L.	Lamiaceae	Marzah (1)	11860	Food (134), Spice (75), Anti-bacterial (59), Anti-cancer (25), Herpes (34), Anthelmintics (44), Spasmolytic (68), Stomach tonic (102), Diaphoretic (38)	136	445	Leaves, Flower	Food, Flavoring	Oral
<i>Tragopogon caricifolius</i> Boiss.*	Asteraceae	Sheng (2)	12200	Food (95), Hyperlipidemia (65), Hypertension (52), Kidney stone (32), Astringent (58), Blood coagulation (18), Improve bowel movements (20), Wart (57)	136	397	Leaves, Flower, Fruit	Food, Cataplasm	Oral, topical
<i>Anthemis cotula</i> L.	Asteraceae	Gol bawina (1)	2256	Anti-infective (65), Wound healing (57), Eye and throats swelling (40), Stomach cramps in children (32)	139	194	Flower	Infusion	Oral, topical
<i>Anthemis lorestanica</i> Iranshahr*	Asteraceae	Bawina (1)	2775	Antispasmodic (43), Emmenagogue (62), Uterotonic (30)	139	139	Flower, Leaves	Infusion	Oral
<i>Ferula gumosa</i> Boiss.	Apiaceae	Bej- Bogana (1), Barije (1)	2100	Anthelmintic (42), Digest disorders (65), Appetizer (45),	139	219	Oleo, Gum, Resin	Food, Infusion	Oral

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Table 1 (continued)

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<i>Ficus carica</i> L.	Moraceae	Anjir koohi (2)	10746	Emmenagogue (27), Antispasmodic (40) Stomach tonic (50), Warts (95)	139	145	Fruit, Resin	Food, Cataplasm	Oral, topical
<i>Gundelia tournefortii</i> L.	Asteraceae	Kenger (1)	12726	Food (135), Anthelmintics (45), Hyperlipidemia (48), Kidney stone (50), Digestive (47), Infected burns (24), Febrifuge (30)	139	379	Rhizome, Seed, Leaves	Food	Oral, topical
<i>Juglans regia</i> L.	Juglandaceae	Gerdeko (1), Gerdekon (1)	7493	Body skin conditioner (65), Wound healing (60), Anti-infective (56), Anthelmintics (62), Diabetes (58), Skin problems (53), Itching (47), Hair loss (105), Toothache (35)	139	541	Dry leaflet, Fresh peel	Food, Decoction, Cataplasm	Oral, topical
<i>Papaver somniferum</i> L.	Papaveraceae	Khashkhāsh (2), Taryāk (2)	7483	Pain killer (57), Spasmolytic (32), Cough (21), Diarrhea (35), Nourishing (14), Astringent (30), Narcotic (56), Diaphoretic (43)	139	288	Seed, Resin	Food, Infusion	Oral, topical
<i>Raphanus raphanistrum</i> L.	Brassicaceae	Terpoka (1), Terp-e-vahshi (1)	5381	Constipation (45), Colds (72), Diuretic (32)	139	149	Leaves, Root, Resin	Food	Oral
<i>Tragopogon graminifolius</i> DC.	Asteraceae	Sheng (2)	12422	Food (97), Burns (35), Stomach tonic (60), Appetizer (47), Remove infections and extra mucosa of the ears (15)	139	254	Leaves, Root	Food	Oral
<i>Viola tricolor</i> L.	Violaceae	Golbenowshāh (1)	2594	Expectorant (118), Bronchitis and cough (78), Eczema (25), Itchiness (35), Rheumatism (30)	139	286	Flower, Leaves, Root	Infusion, Cataplasm	Oral, topical
<i>Prunus mahaleb</i> L. Syn. <i>Cerasus mahaleb</i> (L.) Mill.	Rosaceae	Malhow (1)	387	Nervous system tonic (57), Stomach tonic (78), Kidney stones (54), Rheumatism (45), Appetizer (75), Astringent (58), Febrifuge (30), Diuretic (37)	141	434	Leaves, Wood, Bark, Fruit, Petiolule	Food, Infusion	Oral, topical
<i>Alcea fasciculiflora</i> Zohary	Malvaceae	Golhiru (1), Khatmi (2)	3672	Colds (108), Vomit (35), Cough (125), Sore throats (130), Hair tonic (128)	143	526	Flower, Root	Infusion	Oral, topical
<i>Citrus limon</i> (L.) Osbeck Basion. <i>Citrus medica</i> var. <i>limon</i> L.	Rutaceae	Limoo Torsh (2)	9845	Food (130), Antioxidant (68), Anti-infective (56), Detoxifying agent (44), Nourishing (108)	143	406	Fruit and peel, Pith, Essential oil	Food	Oral
<i>Descurainia sophia</i> (L.) Webb ex Prantl Basion. <i>Sisymbrium sophia</i> L.	Brassicaceae	Khākshir (2)	4884	Blood and liver Cleanser (102), Antipyretic (32), Furuncles (25), Anti-thirst (125), Laxative (42)	143	326	Seed	Food	Oral
<i>Falcaria vulgaris</i> Bernh.	Apiaceae	Ghāziyaghi (2), Pākghāzeh (1)	12492	Food (135), Kidney stone (62), Waist pain killer (57), Constipation (65), Sedative (55), Colds (45), Vitiligo (18)	143	437	Aerial parts	Food	Oral, topical
<i>Foeniculum vulgare</i> Mill.	Apiaceae	Rāzona (1)	10105	Carminative (95), Appetizer (60), Cough (42),	143	397	Root, Seed, Leaves, Essential oil	Flavoring, Food	Oral

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Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Prunus cerasifera</i> Ehrh. Syn. <i>Prunus divaricata</i> Ledeb.	Rosaceae	Āluchah Vahshi (2)	9752	Galactagogue (110), Digestive (90) Laxative (125), Purgative (105), Dysentery (45), Sore throats (Gargle) (45), Stop nose bleeding (35)	143	355	Bark, flowers and fruit.	Food, Decoction	Oral, topical
<i>Prunus cerasus</i> L.	Rosaceae	Alivali (1)	7296	Food (140), Diuretic (102), Urinary tract stones (55), Weight loss (32), Atherosclerosis (15), Sedative (75), Cardiotonic (58)	143	477	Fruit, Kernel,	Food, Infusion	Oral
<i>Allium cepa</i> L.	Amaryllidaceae	Piāz-e-khorāki (2)	10102	Respiratory problems particularly cough (82), Catarrh and bronchitis (78), Constipation (57), Carminative (35), Stomachache (38), Hyperlipidemia (45), Hypertension (65), Diabetes (32)	145	432	Rhizome, Bulb	Food	Oral
<i>Elaeagnus angustifolia</i> L.	Elaeagnaceae	Serenja (1), Serenjak (1)	13025	Colds and catarrh (57), Respiratory infections (48), Astringent (75), Vomiting (40), Gum inflammation (62)	145	282	Seed, Wood	Food	Oral
<i>Ferula macrocolea</i> (Boiss.) Boiss. * Basion. <i>Peucedanum macrocoleum</i> Boiss.	Apiaceae	Chovir (1)	13726	Reflux (57), Nausea (45), Fragrant (78)	145	180	Leaves, Stem	Food, Infusion	Oral
<i>Ficus carica</i> subsp. <i>rupestris</i> (Hauskn.) Browicz Basion. <i>Ficus carica</i> var. <i>rupestris</i> Hauskn.	Moraceae	Jerit (2), Anjir (2), Karrah (2)	13498	Laxative (125), Pain killer (38), Eczema (35), Burns and abscess (30), Expectorant (58), Warts (105)	145	391	Fruit, Resin	Food, Cataplasm	Oral, topical
<i>Mentha × piperita</i> L.	Lamiaceae	Na' nā felfeli (1)	7497	Spice (140), Stomach tonic (127), Carminative (132), Diuretic (65), Diaphoretic (59), Increase bile production (52), Anti-infective (50), Diarrhea (74), Nasal bleeding (35), Nervous headaches (45), Migraine (34), Digestive pains (125), Hiccups (12)	145	950	Leaves, Flowering tops, Essential Oil	Food Infusion	Oral
<i>Prunus persica</i> (L.) Batsch Basion. <i>Amygdalus persica</i> L. Syn. <i>Persica vulgaris</i> Mill.	Rosaceae	Hello (1)	9751	Food (145), Diuretic (45), Purgative (57), Sedative (75), Febrifuge (32), Colic and pinworm (20)	145	374	Fruit, Flower, Leaves	Food	Oral, topical
<i>Quercus brantii</i> Lindl.	Fagaceae	Bali (1), Balout (2)	10812	Diarrhea (115), Astringent (95), Anti-hemorrhage (70)	145	280	Fruit	Food	Oral
<i>Quercus infectoria</i> G. Olivier	Fagaceae	Gāzoolah bali (1), Mān bali (1)	10813	Astringent (155), Anti-bacterial and anti-virus (78), Expectorant (54), Tonic (55), Tuberculosis (37), Stop bleeding (52), Diarrhea (132), Digestive (88), Stomachache (73), Anemia (68), Diabetes (35), Rachitis (34)	145	861	Leaves, Fruit, Bark, Wood	Food	Oral

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<i>Eremurus persicus</i> (Jaub. & Spach) Boiss. Basion. <i>Asphodelus persicus</i> Jaub. & Spach	Asphodelaceae	Serish (2), Zereskh (1)	7272	Food (135), Diuretic (55), Visceral pains (60), Appetizer (50), Tonic (38), Emmenagogue (22), Anthelmintics (40), Atherosclerosis (15), Fractures (external use) (32), Anti-inflammatory (28), Chronic skin wounds (42)	147	517	Flower, Leaves, Stem, Root	Food, Cataplasm	Oral, topical
<i>Satureja khuzistanica</i> Jamzad*	Lamiaceae	Marzah (1), Jatārāh (1), Marze khuzestāni (2)	4602	Diuretic (65), Carminative (105), Appetizer (57), Analgesic (37), Toothache (32), Stomach tonic (124), Expectorant (55), Kidney and urinary tract stones (21), Spasmodic (30), Astringent (65), Cough (48), Anthelmintics (25)	147	664	Aerial parts	Food, Flavoring	Oral
<i>Capsicum annuum</i> L.	Solanaceae	Ālat frani (1), Felfel (2)	9853	Topical pain killer (58), Anti-infective (70), Carminative (78), Spasmodic (69), Tonic (30)	150	305	Seed	Food, Cataplasm	Oral, topical
<i>Cicer arietinum</i> L.	Fabaceae	Nokha (1), Nokhod (2)	8057	Food (150), Diuretic (65), Galactagogue (42), Anthelmintics (40), Appetizer (32), Constipation (35), Hematopoietic (58), Kidney stones (45), Hair tonic (78), Abscess: Chickpea flour in combination with honey (ointment) (54), Toothache and gum inflammation (35)	150	634	Leaves, Seed	Food, Ointment	Oral, topical
<i>Lactuca sativa</i> L.	Asteraceae	Kāhū (2)	6808	Diuretic (58), Decrease bile production (40), Hyperlipidemia (32), Cholesterolemia (28), Tonic (45), Laxative (55), Insomnia (18), High heart beating (15), Urinary incontinence (22), Anxiety (17)	150	330	Leaves, Stem, Seed	Food	Oral
<i>Lycopersicon esculentum</i> Mill.	Solanaceae	Gojah (1), Tamāta (2)	9856	Food (150), Toothache (15), Laxative (58), Eye swelling (32)	150	255	Flower, Fruit, Seed	Food	Oral
<i>Sisymbrium officinale</i> (L.) Scop. Basion. <i>Erysimum officinale</i> L.	Brassicaceae	Khākshir (2)	8228	Diuretic (45), Stomach tonic (42), Cardiotonic (22), Expectorant (28), Cough and asthma (32)	150	169	Whole plant	Food	Oral
<i>Crataegus microphylla</i> K.Koch Syn. <i>Crataegus monogyna</i> var. <i>dolichocarpa</i> Sommier & Levier	Rosaceae	Gyrch (1)	12299	Epilepsy (20), Cardiotonic (125), Hypertension (85), Astringent (58), Increase blood circulation (42), Sedative (87), Anxiolytic (55), Spasmodic (40)	154	512	Fruit, Bark	Food	Oral
<i>Peganum harmala</i> L.	Nitrariaceae	Didi (1), Esfan (1)	1982	Carminative (35), Sedative (24), Anthelmintics (15),	154	250	Leaves, Flower, Seed	Infusion	Oral, topical

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Table 1 (continued)

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<i>Rosa canina</i> L.	Rosaceae	Me darah (1)	4112	Diabetes (12), Toothache (22), Disinfect the environment (142) Tonic (65), Diarrhea (78), Anti-diuretic (45), Reduce thirst (52), Gastric inflammation (40), A nourishing drink for young children (37), Antihypertensive (135)	154	452	Flower, Fruit, Hips	Food, Infusion	Oral, topical
<i>Rubia tinctorum</i> L.	Rubiaceae	Ronās (2)	12667	Hair color (127), Hair loss (115), Kidney and bladder stones (58), Sciatica and paralysis (25) Flu and colds (122)	154	325	Root	Infusion, Intinction	Topical, oral
<i>Thymbra spicata</i> L.	Lamiaceae	Jātaneh(1) Zoofāii(2)	10458	Strong antimicrobial (70) Antiseptic (52) Anti-Fungal (60)	154	304	Leaves, Flowering tops	Flavoring, Infusion	Oral, topical
<i>Bryonia multiflora</i> Boiss. & Heldr.	Cucurbitaceae	Fāshrā(2)	13302	Strong laxative (75), Diuretic (40), Increase bile production (17), Rheumatism (37), Diabetes (21), Liver and spleen problems (35)	156	225	Whole plant, Resin	Food, Cataplasm	Oral, topical
<i>Punica granatum</i> L.	Lythraceae	Enār (1)	9324	Antioxidant (45), Anti-virus (34), Cardiotonic and the circulatory system tonic (55), Astringent (145), Anthelmintics (85)	156	364	Leaves, Fruit, Flower, Root and Fruit bark	Infusion	Oral, topical
<i>Rheum persicum</i> Losinsk.*	Polygonaceae	Rivās (2)	13307	Food (155), Anti bacterial (42), Blood purifier (55), Laxative (65)	156	317	Root	Food	Oral
<i>Smyrniium cordifolium</i> Boiss.	Apiaceae	Penomeh (1)	12704	Food (135), Febrifuge and pain killer (65), Kidney and bladder pain killer (50), Tooth decay (45)	158	295	Stem, Root	Food	Oral
<i>Echinophora cinerea</i> (Boiss.) Hedge & Lamond* Basion. <i>Ferulago cinerea</i> Boiss.	Apiaceae	Fedale (2), Khooshārizeh (2)	13536	Spice (105), Anti-bacterial (57), Diarrhea (65), Skin fungal disease (68), Anti-spasm (55), Digestive tonic (97), Diuretic (58)	161	505	Flowering tops	Food	Oral
<i>Pistacia atlantica</i> Desf.	Anacardiaceae	Qoleng (1), Baneh (2)	13139	Analgesic (72), Astringent (95), Fractures (65), Gastritis (78), Duodenal ulcer (45), Infections (40), Colds (70)	161	465	Fruit, Resin	Food, Chewing gum	Oral
<i>Tetrataenium lasiopetalum</i> (Boiss.) Manden. Basion. <i>Heracleum lasiopetalum</i> Boiss.	Apiaceae	Golpar koohestāni (2), Kāleh (1)	13124	Fragrant (125), Anti-infective (55), Carminative (75), Anti-flatulence (60), Stomach reflux (65), Nausea (40), Vomit and digestive problems (58), Respiratory and lung problems (the roots) (35), Anthelmintics (45), Bronchial infections (50), Improve memory (30), Appetizer (42), Abscess and pustule (28)	161	678	Leaves, root, stem, buds	Food	Oral

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Table 1 (continued)

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<i>Pistacia khinjuk</i> Stocks	Anacardiaceae	Qoleng Narma (1), Khinjuk (2)	3686	Food: the nuts are used as a snack; its oil is used in cooking; in combination with vinegar is used as an appetizer (75), Skin lightning, Eye pain (55), Eyelashes tonic Astringent (67), Stomachache (58), Cough (85), Flavoring agent (40), Perfume (65)	163	445	Fruit, Resin, Leaves, Root	Chewing gum, Food	Oral
<i>Achillea millefolium</i> L.	Asteraceae	Boumadrān (2), Berenj Dās (1)	1066	Bitter tonic (75), High blood pressure (78), Increase sweating (40), Antispasmodic (32), Astringent (35)	165	260	Aerial parts	Infusion	Oral
<i>Artemisia persica</i> Boiss.	Asteraceae	Ġoshan (1)	13515	Spice (95), Anti-infective (42), Cough (55), Anti-flatulence (68), Carminative (67), Anti-malaria (24), Headache (35), Tonic (32), Febrifuge (38), Anthelmintics (45)	165	501	Flowering tops	Flavoring, Decoction, powder	Oral
<i>Bryonia cretica</i> subsp. <i>dioica</i> (Jacq.) Tutin Basion. <i>Bryonia dioica</i> Jacq.	Cucurbitaceae	Shallem shetoni (1), Fāshrā (2)	3116	Laxative (55), Diuretic (48), Diaphoretic (52), Rheumatism (35), Bruises (65), Mucosa inflammation (40), Warts (45), Bronchitis (24), Asthma (14)	165	378	Whole plant (Tuber)	Food, Cataplasm	Oral, topical
<i>Dracocephalum kotschyi</i> Boiss.*	Lamiaceae	Semsā (1), Zaringiāh (2)	12435	Food (85), Spice (138), Febrifuge (55), Sedative (67)	165	345	Leaves	Flavoring, Infusion	Oral
<i>Ephedra major</i> subsp. <i>procera</i> (C.A.Mey.) Bornm. Basion. <i>Ephedra procera</i> C.A.Mey.	Ephedraceae	Hamishah Soz (1), Rish boz (2)	3058	Increases sweating (24), Bronchitis (32), Diuretic (28), Stimulant (24), Increase blood pressure (42), Asthma (40), Rheumatism (57), Open pupil (54), Narrow blood vessels (20)	165	321	Stem	Decoction	Oral
<i>Falcaria falcarioides</i> (Bornm. & H. Wolff) H. Wolff Basion. <i>Pimpinella falcarioides</i> Bornm. & H. Wolff	Apiaceae	Pāghāzo (1), Panjeh ghāzi (1)	13143	Food (155), Kidney stone (65), Waist pain killer (55), Hypertension (40), Diabetes (57), Hyperlipidemia (60)	165	432	Aerial parts	Food	Oral
<i>Hordeum vulgare</i> L.	Poaceae	Jo (2)	11028	Food (162), Anti-inflammation (45), Diabetes (27), Febrifuge (45), Anemia (52), Diuretic (40), Hyperlipidemia (56), Diarrhea (75)	165	502	Seed, Stem	Food	Oral
<i>Oryza sativa</i> L.	Poaceae	Berenj (2)	7277	Food (165), Diarrhea (78), Digestive (128), Hypertension (52), Nourishing (135), Memory improvement (45), Digestive cancers (rice bran) (55)	165	658	Seed, Root, Stem	Food	Oral
<i>Raphanus raphanistrum</i> subsp. <i>sativus</i> (L.) Domin	Brassicaceae	Terp (1), Terpche (1)	7458	Diuretic (52), Laxative (48), Digestive (65),	165	302	Leaves, Root, Seed	Food	Oral

(continued on next page)

Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Basion. Raphanus sativus</i> L.				Anti-flatulence (60), Headache (42), Insomnia (35)					
<i>Brassica oleracea</i> L.	Brassicaceae	Kelam (1)	10211	Food (165), Sedative (25), Tonic (33), Expectorant (40), Diuretic (48), Kidney stones (32), Appetizer (52), Anemia (55), Asthma (25), Gout (32), Rheumatism (20), Hypnotic (15), Anthelmintics (34)	167	576	Aerial parts	Food	Oral
<i>Cydonia oblonga</i> Mill.	Rosaceae	Byd (1), Beh (2)	7840	Stomach tonic (86), Diuretic (65), Astringent (107), Analgesic (45), Expectorant (102), Colds (78), Burns (external use) (25), Hemorrhoids (51), Cracked nipple (15), Acne (28)	167	602	Leaves, Fruit, Seed	Food, Cataplasm	Oral, topical
<i>Quercus persica</i> Jaub & Spach	Fagaceae	Bali (1)	10747	Astringent (112), Goiter (45), Eczema (58), Gum tonic (75), Stomach tonic (57), Diarrhea (115), Stomachache (75), Anemia (65), Cough (32), Tanning (76)	167	710	Fruit, Fruit bark, Leaves, Resin, Sap (Manna)	Food	Oral
<i>Rhabdosciadium aucheri</i> Boiss.*	Apiaceae	Shalil (2)	5779	Skin rejuvenation (55), Skin moisturizing (57), Wound healing (40)	167	167	Fruit	Food	Oral
<i>Solanum tuberosum</i> L.	Solanaceae	Sib zamini (2)	9858	Food (165), Burns (84), Eye swelling (50)	167	299	Tuber	Food, Cataplasm	Oral, topical
<i>Triticum aestivum</i> L.	Poaceae	Ganem (1)	652	Food (165), Constipation (95), Varicose veins (45), Intestinal cancers (82), Eczema in children (external use) (40), Wrinkle (50)	167	477	Seed, Leaves, Stem, Bud	Food, Cataplasm	Oral, topical
<i>Allium jesdianum</i> Boiss. & Buhse	Amaryllidaceae	Ben sor (1), Sor pā (1)	11729	Kidney stones (145), Pains in the digestive system (85), Rheumatism (75)	169	305	Leaves, Bulb	Food, Infusion	Oral
<i>Onosma ambigens</i> Lacaíta	Boraginaceae	Sordāri (1), Merkorkorom (1)	1263	Mild to severe burns (169)	169	169	Root	Cataplasm	topical
<i>Achillea santolinoides</i> subsp. <i>wilhelmsii</i> (K.Koch) Greuter Basion. <i>Achillea wilhelmsii</i> K.Koch	Asteraceae	Beranj Dās (1)	642	Reduce blood flooding (75), Antidiarrhea (68), Antiacetic (45), Hypoglycemic (58), Anthelmintic (40), Dyspepsia (45), Nerve tonic (38), Osteoarthritis (35), Antihemorrhoids (45), Appetizer (30), Antipyretic (47)	172	526	Flowering tops, Leaves, Root	Infusion	Oral
<i>Crataegus azarolus</i> var. <i>aronia</i> L.	Rosaceae	Kiālāk (2), Zālālāk-e-Zard (2)	12297	Antioxidant (55), Cardiotonic (125), Atherosclerosis (60), Relaxant (34)	174	274	Berries, Leaves	Food	Oral
<i>Crataegus azarolus</i> var. <i>pontica</i> (K. Koch) K.I.Chr.	Rosaceae	Gyrch (1)	2178	Cardiotonic (112), Anxiety (42), Spasmolytic (65),	174	343	Fruit, Leaves, Flower, Bark	Food	Oral

(continued on next page)

Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
Basion. <i>Crataegus pontica</i> K.Koch				Febrifuge (57), Increase blood circulation (67)					
<i>Raphanus raphanistrum</i> subsp. <i>landra</i> (Moretti ex DC.) Bonnier & Layens Basion. <i>Raphanus landra</i> Moretti ex DC. Syn. <i>Raphanus maritimus</i> Sm.	Brassicaceae	Terp-e-siā (1)	7455	Diuretic (65), Laxative (50), Galactagogue (35), Appetizer (52), Carminative and anti-flatulence (32), Hepatitis (18), Febrifuge (37), Rachitis (15)	174	304	Leaves, Tuber	Food	Oral
<i>Cucumis sativus</i> L.	Cucurbitaceae	Kheīār (2)	7462	Food (175), Skin allergies (70)	176	245	Fruit	Food	Oral
<i>Heliotropium europaeum</i> L.	Boraginaceae	Gol-e-gāvzabān (2)	13883	Cardiotonic (80), Decrease bile production (32), Emetic (22), Snake and scorpion bites (30), Warts (external use) (15)	176	179	Whole plant	Infusion, Cataplasm	Oral, topical
<i>Pyrus glabra</i> Boiss.*	Rosaceae	Marou (1), (Anchuchak) (2)	2509	Food (145), Headache (25), Astringent (45), Hyperuricemia (32), General body strengthening (90)	176	337	Fruit, Leaves, Seed, Bark	Food, Infusion	Oral
<i>Thymus kotschyanus</i> Boiss. & Hohen.	Lamiaceae	Āvishan (2), Azbüah (1), Azgovah(1)	13448	Spice (125), Colds (155), Anti bacterial (75), Anti fungal (56), Antioxidant (32), Expectorant (132), Hypnotic (95), Exhilarating (32)	176	702	Aerial parts	Flavoring, Infusion	Oral
<i>Allium sativum</i> L.	Amaryllidaceae	Sir (2)	11315	Diabetes (85), Hyperlipidemia (92), Carminative (75), Anthelmintics (55), Appetizer (45), Corn <sup>d</sup> (64), Frequent colds (75), Scorpion bites (50), Toothache (82), Warts (78), Prevent hair to get white (127), Urinary incontinence (58)	178	886	Leaves, Bulb	Food, Cataplasm	Oral, topical
<i>Brassica rapa</i> L.	Brassicaceae	Shalem (1)	10212	Cough and expectorant (125), Dyspnea (57), Severe respiratory problems (55), Carminative and anti-flatus (42)	178	279	Leaves, Root	Food	Oral
<i>Nepeta crispa</i> Willd.*	Lamiaceae	Mofarrah (1)	13138	Spice (77) Stomach tonic (158), Diaphoretic (57), Carminative (148), Hiccups (18), Pertussis (24), Pain killer (50), Laxative (78), Colds (65)	178	675	Flowering tops	Flavoring, Infusion	Oral
<i>Pyrus syriaca</i> Boiss.	Rosaceae	Marou (1), Golabi Koohi (2)	2820	Food (180), Expectorant (145), Sedative (55), Diuretic (65), General body strengthening (45), Laxative (57), Cardiotonic (48), Hypertension (25)	180	620	Fruit, Leaves, Seed, Bark	Food	Oral
	Lamiaceae		13939		183	897	Aerial parts		Oral

(continued on next page)

Table 1 (continued)

Plant name	Family	Vernacular name (s) <sup>a</sup>	Voucher number <sup>b</sup>	Uses (FC <sub>event</sub> ) <sup>c</sup>	FC	FC <sub>total</sub>	Drug	Preparation	Mode of application
<i>Thymus eriocalyx</i> (Ronniger) J alas Basion. <i>Thymus kotschyanus</i> var. <i>eriocalyx</i> Ronniger		Azbūah (1), Azgovah(1), Avishan (2)		Strongly antiseptic (118), Anti-fungal (87), Flu and cold (182), Sore throats (110), Whooping cough (120), Chest infection and bronchitis (125), Stuffy nose (45), Sinusitis (75), Ear congestion (35)				Flavoring, Infusion	
<i>Ziziphora clinopodioides</i> Lam.	Lamiaceae	Pinah koei (1), Kākūti kūhi (2)	225	Cold (135), Antiacetic (105), Carminative (165), Anthelmintic (45), Anti-tussive (50), Antidiarrhea (87), Digestive (167), Fragrant (152), Tea (80), Anti-bacterial (45), Expectorant (155), Cough (78), Sedative (42)	185	856	Aerial parts, Essence	Flavoring, Infusion	Oral
<i>Prunus domestica</i> L.	Rosaceae	Aligoja (1), Āluchah (2)	9753	Food (185), Diuretic (125), Laxative (108), Gout (22), Rheumatism (25), Atherosclerosis (12), Anemia (75)	187	552	Flower, Fruit	Food	Oral
<i>Thymus persicus</i> (Ronniger ex Rech. f.) J alas Basion. <i>Thymus hirsutus</i> M. Bieb. var. <i>persicus</i> Ronniger ex Rech. f.	Lamiaceae	Azbūah (1), Azgovah(1)	14052	Expectorant (157), Anti-infective (85), Exhilarating (35), Spasmolytic (58), Anthelmintics (32)	187	367	Flowering tops, Leaves	Flavoring, Infusion	Oral
<i>Malus domestica</i> Borkh.	Rosaceae	Syf (1)	7292	Food (186), Diarrhea (children) (80), Cough (65), Eyewash and relieve eye pain (42)	189	373	Fruit	Food	Oral, topical
<i>Mentha spicata</i> L.	Lamiaceae	Na'nā (1)	7498	Carminative (180), Digestive tonic (165), Sedative (87), Colds (78), Toothache (55)	189	565	Flower, Leaves, Stem	Food, Infusion	Oral
<i>Mentha longifolia</i> (L.) L. Basion. <i>Mentha spicata</i> var. <i>longifolia</i> L.	Lamiaceae	Pinah (1)	9313	Spice (185), Sedative (88), Carminative (145), Stomach tonic (128), Fevers in children (keeping children in the leaves of the plant) (25)	191	571	Flowering tops, Leaves	Food Infusion	Oral
<i>Thymus daenensis</i> Celak.*	Lamiaceae	Azbūah (1), Azgovah (1)	13964	Anti-infective (127), Exhilarating (55), Spasmolytic (58), Expectorant (178), Anthelmintics (31), Anti-fungal (85), Wounds (43), Rheumatism (21)	191	598	Flowering tops, Leaves	Flavoring, Infusion	Oral

<sup>a</sup> The plant specimens are deposited in the herbarium of Lorestan Agricultural Research and Education Center.

<sup>b</sup> Vernacular name in the primary language is indicated as "(1)" and the vernacular name in the official language in the country is indicated as "(2)".

<sup>c</sup> Frequency of Citation; \* = Endemic; Abbreviations: Basion. = Basionym, Syn. = Synonym, Sp. = Species, P. = page number of the book "Les Phanerogames Endemiques de la Flora d' Iran".

<sup>d</sup> A corn is a thick layer of skin that develops from constant friction and pressure.

- I) Gather the ethnopharmacological data on the medicinal plants used by healers and the ethnic people of Lorestan for the treatment of all kinds of diseases. This will guide us towards further selection and prioritization of medicinal plants for future pharmacological studies through the ethnobotanical approach. Our team is searching for the plants with neuroprotective and cytotoxic activities and the plants that have beneficial effects against different components of metabolic disorders like hyperlipidemia and diabetes.
- II) To collect data regarding other applications of the medicinal plants, including their use as food or condiment.
- III) To identify the reported plants and link the local names with collected plant samples.
- IV) To identify the strategic medicinal plants which can help the native people economically.
- V) Identify the native people's needs and their future expectations of our research endeavor and collaboration.

All traditional healers participating in the study were informed of the aim of the study and they were asked to sign a written consent before starting the survey. The questionnaires were in the Persian. The local languages of the study area were Lori and Persian so that the interviews were conducted in the Lori and Persian languages. The first author, as a native of this region, was completely familiar with the local language of the study area which enabled accurate data collection. A list of medicinal plants used in Lorestan province was prepared. This list includes detailed information on vernacular names, medicinal applications, medicinal plant parts, and mode of administration (Table 1). The distribution of plant species in different parts of the Zagros and Lorestan was determined based on floristic studies (Mehrnia and Ramak, 2014; Asri and Mehrnia, 2002; Mehrnia, 2017).

### 2.3. Collection of plant material and identification of specimens

The plant species were collected from their habitats in 2015–2019 with representative morphological features under the guidance of the traditional healers. The method for plant identification and assignment of scientific names was adapted from Weckerle et al. (2018). The geographical location, elevation, botanical field information, and the morphology of the plants were all recorded. To link scientific plant names with collected plant samples, different floral sources, including Flora Iranica (Rechinger, 1963–2012), Flora of Iran (Assadi, 1988–2013), Flora of Turkey (Davis, 1965–1988), and the book “The

Genus *Astragalus* in Iran” (Maassoumi, 1986–2005) were used (Shafizadeh, 2002; Zargari, 1989–1992). Scientific names were cross-checked with <http://www.theplantlist.org> on January 1st, 2013 and family assignments follow The Angiosperm Phylogeny Group IV guidance (The Angiosperm Phylogeny, 2016). Voucher specimens of all species collected were deposited in the Herbarium of Lorestan Agricultural Research and Education Center in Lorestan, Iran.

### 2.4. Data analysis

After completion of fieldwork, the questionnaires were processed to analyze all data. As suggested by Weckerle et al. (2018), only primary data are reported. The following approach, FC, was used to analyze the data in the present study.

#### 2.4.1. Frequency of citations

The FC (Frequency of Citations), defined as the absolute number of informants interviewed that use a certain plant species, is an important primary datum that can be used to have a reliable assessment of the cultural importance of a plant species and to compare the study with other studies (Heinrich et al., 2009). For this purpose, the healers and local people were asked about the medicinal applications of the herbs. In addition, the use of medicinal plants as food, spice, insecticide, and herbicide was included. The possible toxicity of plants to humans and livestock was also questioned. In this study, we report three types of FCs: FC, FC<sub>event</sub>, and FC<sub>total</sub>. FC is obtained by reporting the number of participants citing a plant for different applications. Thus, it varies from 0 (none of the informants uses this plant species in different events) to 220 (maximum number of informants use this plant species in different uses; n = 220). The FC<sub>event</sub> shows the number of participants using a plant for a specified event. The FC<sub>total</sub> represents the total sum of all use reports for the treatment of all medical conditions combined. FC can help to prioritize a plant species for further pharmacological studies. Accordingly, it should be noticed that FC<sub>event</sub> refers to the frequency of citation only for one disease while FC<sub>total</sub> refers to all uses. So, these two different words “event” and “total” are applied to distinguish between these two different FCs.

### 3. Results

The characteristics of the 555 plant species documented in this study, including their common, local, and scientific names, the parts used and their medicinal applications are listed in Table 1.

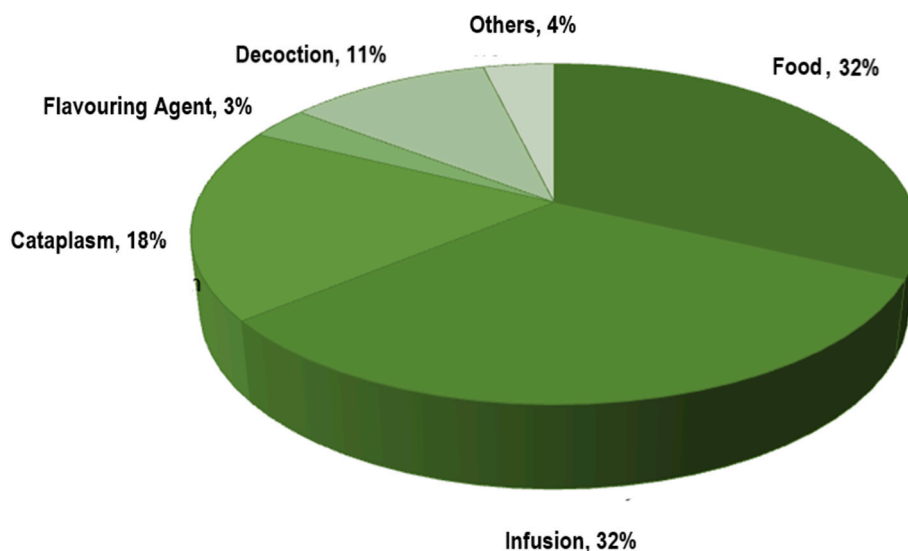


Fig. 4. Different methods of preparation in the study area.

### 3.1. Diversity of medicinal plants

The 555 identified species belonged to 91 families, mostly to Asteraceae (62 species), Lamiaceae (56 species), Apiaceae (44 species), Fabaceae (41 species), and Brassicaceae (31 species). These families comprised about 42% of all the plants reported in the present study. The number of collected species at the beginning of the study had been more than the plants reported in the current paper (555), but since there was no reliable research on them and due to the lack of traditional knowledge about their properties, they were excluded.

### 3.2. Plant parts used as therapeutic agents

Almost all different parts of plants were reported to be used as a drug by the traditional healers and local people of Lorestan, but leaves were the most common (22%), followed by shoots (16%), seeds (13%), roots (12%), flowers (10%), fruits (9%), and whole plants (5%). Use of other components such as resins, barks, oleo-gum-resins (the naturally occurring mixture of resin, gum, volatile oil, and small quantities of other substances like oleo-gum-resin from *Ferula* spp.), sap (manna), and galls were also reported (13%).

### 3.3. Preparation and mode of application

Most of the plants were used as mono-specific preparations, but di- or tri-specific preparations were also reported commonly. A large proportion of the plants were used without any further preparation (32%). In the study area, methods of preparation fell into six main categories (Fig. 4). Infusions, cataplasm, and decoctions were the most common, mostly as oral and topical administrations.

### 3.4. The importance of medicinal plants (FC)

FC was estimated to assess the most commonly used medicinal plants against various ailments in the region (Fig. 5). *Thymus daenensis* (191),

*Mentha longifolia* (191), *Mentha spicata* (189), and *Malus domestica* (189) had the highest FC values indicating the popularity of these plants in the study area for medicinal uses. Fig. 6 shows the plants with the highest FC<sub>total</sub>. *Mentha piperita*, *Thymus eriocalyx*, *Allium sativum*, *Quercus infec-toria*, and *Ziziphora clinopodioides* had the highest FC<sub>total</sub> values.

### 3.5. Herbal therapies

Our observations showed that health facilities were distributed unequally through the province (Nezami et al., 2018; Poorshenow et al., 2012). In general, in the rural and remote areas, the access of the local people and nomads to physicians and drugs was limited, so medicinal plants were their first healthcare option. Also, even in large cities where people had access to health services, they preferred to be treated by medicinal plants and to be examined by a traditional healer before seeing a doctor. The reported herbs in the study area (Table 1) were mostly used for the treatment of gastrointestinal disorders followed by respiratory and skin problems (Fig. 7). Medicinal plants were frequently used for common disorders such as constipation, indigestion, diarrhea, vomit, and flatulence.

The species such as *Heracleum persicum* (Golpar) and *Echinophora cinerea* (Fedale) were mainly used as spices and flavoring agents. According to our field study, *Calendula officinalis* (Hamisheh bahar), *Anthemis cotula* (Gol bāwina), *Carthamus* spp. (Golrang), *Centaurea benedicta* (L.) L. (Khār moghadas), and *Silybum marianum* (L.), Gaertn. (Māri tighāl) were used mostly for the treatment of fever and infections. Medicinal species, including *Raphanus raphanistrum* subsp. *landra* (Terpe-siā), *Sisymbrium officinale*, *Brassica rapa* (Shalem) had expectorant properties. The species belonging to Lamiaceae family had a wide range of applications as medicinal herbs throughout the province. The most important medicinal species of this family were *Thymus* spp. (Āvishan), *Ziziphora tenuior* L. (Kākooti), *Mentha longifolia* L. Hudson (Pina), and *Ziziphora clinopodioides* Lam. (Pinah koei). Among the most widely used herbal remedies were cedar (*Ziziphus* spp.), licorice (*Glycyrrhiza glabra*), and opium poppy (*Papaver somniferum*).

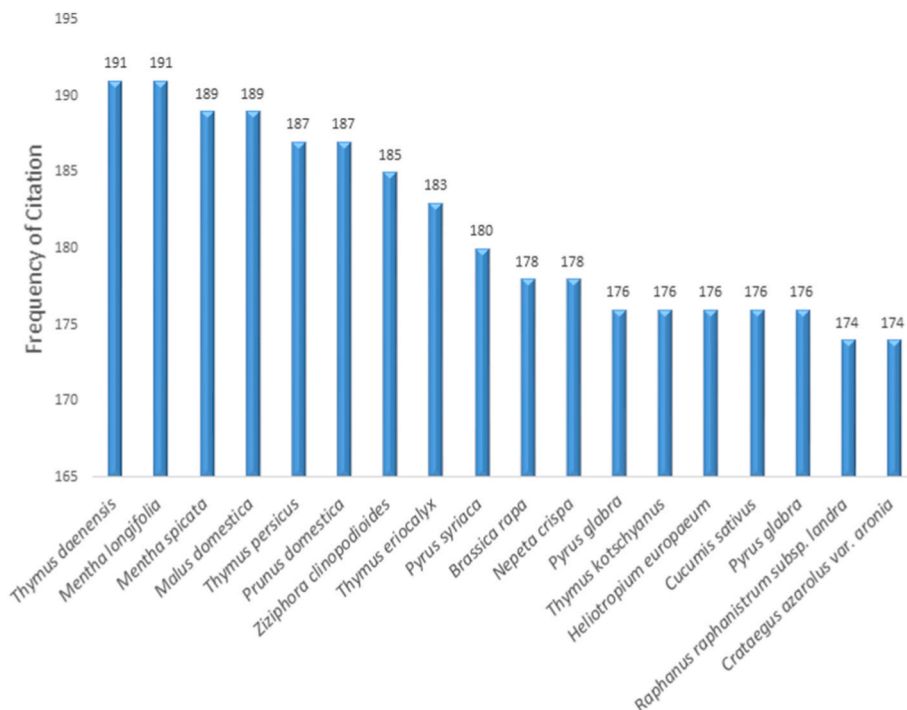


Fig. 5. The most commonly cited medicinal plants of the study area (FC).

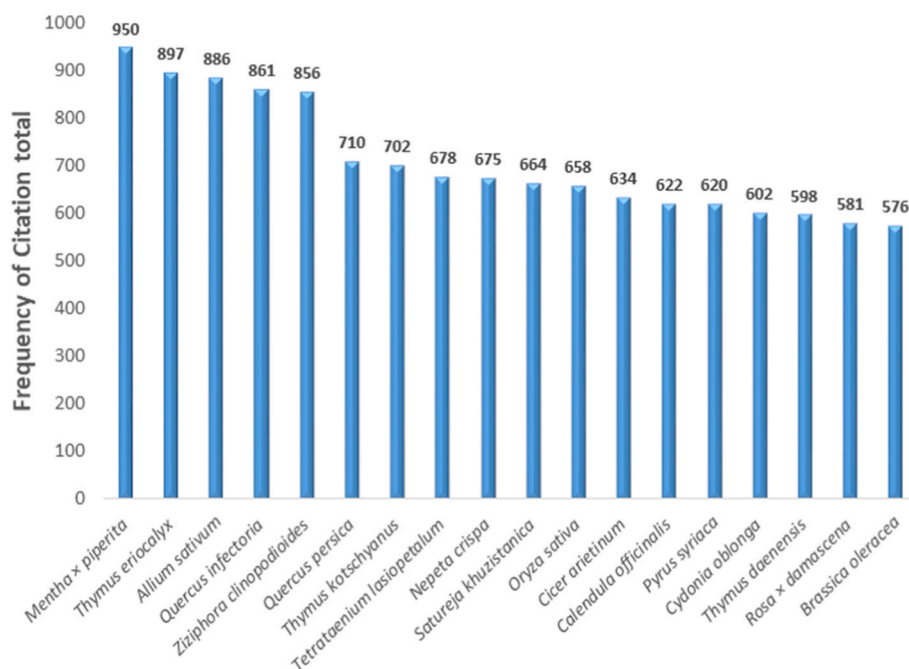


Fig. 6. The most commonly cited medicinal plants of the study area ( $FC_{total}$ ).

## 4. Discussion

### 4.1. Diversity of medicinal plants

According to the Flora of Iran, many plant species found in Lorestan are reported to be endemic to Iran. About 172 species of all recognized plants in Lorestan are endemic to the country, among which 29 species exclusively grow in Lorestan. *Bunium lurestanicum* (Lori cumin), *Echinops endotrichus* (Shekartighal), *Echinophora cinerea* (Boiss.) Hoblge & Lamond (Fedale), *Anthemis lorestanica* Iranshahr. (Bawina), *Tragopogon caricifolius* Boiss. (Sheng), *Ferula macrocolea* (Boiss.) Boiss. (Chavier, Barijeh), *Onosma kotschy* Boiss. (Zangulei), *Onosma ambigens* Lacaita (Sordari, Merkorokorom), *Ajuga chamaecistus* Ging. ex Benth. (Sefid moshkac), and *Nepeta crispa* Willd. (Mofarra) are some of the endemic plants (Table 3) (Ghahraman, 1983; Mehrnia and Jamzad, 2015).

Previous ethnopharmacological and ethnobotanical studies in Lorestan and neighboring regions and provinces support our results. For instance, Delfan et al. (2018), investigated the medicinal plants of some parts of Lorestan. In a study investigating the ethnopharmacological knowledge of Zagheh and Biranshahr regions in Lorestan, they identified 218 medicinal species from 55 families. Of all the identified species, Asteraceae (35), Fabaceae (21), Lamiaceae (19), Liliaceae (15), Rosaceae (11), Brassicaceae (10), Apiaceae (9), Poaceae (7) were the most used families (Delfan et al., 2018). In 2005, Dehshiri and Mahdavar identified the plant species in two peaks of Oshtorankuh, Mount Zagros (Lorestan). These species belonged to 27 families and 63 genera. The important families were Asteraceae, Lamiaceae and Fabaceae with 17.07%, 13.4% and 10.9%, respectively (Dehshiri and Mahdavar, 2005). And finally, our data also confirmed the data from previous studies showing Apiaceae, Lamiaceae, and Fabaceae as the major families.

According to Dehshiri and Mahdavar (2016), the Lorestan highlands have a considerable number of medicinal plants growing mostly in the Subalpine or Alpine regions (about one-third) (Dehshiri and Mahdavar, 2016). The results from the current study and those from similar investigations (Delfan et al., 2018) showed that the number and the variety of reported medicinal plants in this province were comparable with neighboring cities and provinces, such as Kermanshah (208 species) (Nemati Paykani and Jalilian, 2012), Kordestan (144 species)

(Hoshidari, 2009), Hamadan (315 species) (Kalvandi et al., 2003), Qazvin (250 species) (Akbarinia and Babakhanlou, 2002), Khuzestan (174 species) (Khodayari et al., 2015), and Zanjan (212 species) (Musavi, 2004; Mirdavoodi and Babakhanloo, 2008). Since these studies might not cover all the ethnopharmacological knowledge and all plant species in the above mentioned provinces, it is difficult to have an exact comparative insight. Thus, to have a better insight and compare the results from these studies, we suggest a systematic study.

### 4.2. The importance of medicinal plants (FC)

*Thymus daenensis*, *Mentha longifolia*, and *Mentha spicata* had the highest  $FC_{event}$  values while *Thymus eriocalyx*, *Mentha pipertha*, *Allium sativum*, *Quercus infectoria*, *Quercus persica*, *Ziziphora clinopodioides* showed the highest  $FC_{total}$  values. Most of these species were aromatic plants belonging to Lamiaceae family. A search through scientific journals confirmed some reported medicinal uses of the plants with the highest FC scores. Some of the plant species in this study were reported to be used medicinally in Iran, or different parts of the worlds, and were studied phytochemically. For instance, *Allium stipitatum*, known as Persian Shallot (local name: Liz, Pishuk) is one of the valuable plants

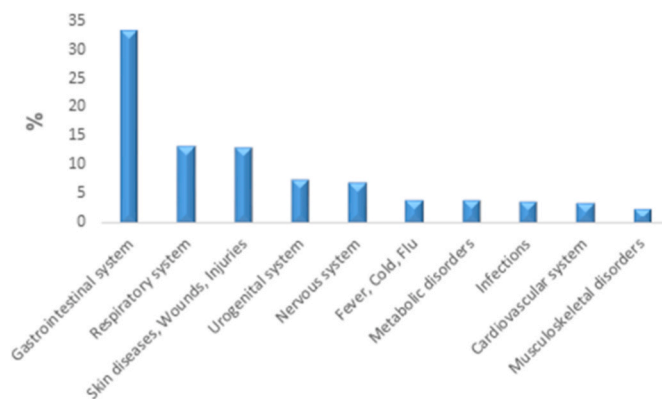


Fig. 7. The most cited health problems treated by the species of the study area.

**Table 2**  
Demographic and socio-cultural variables of our interviewees.

Variables	Items	n	%
Gender	Male	119	54.09
	Female	101	45.9
Age	20–30	7	3.18
	30–40	39	17.73
	40–50	67	30.45
	50–60	62	28.18
	60–70	34	15.45
	Older than 70	11	5
Ethnic groups	Lor	212	96.36
	Others	8	6.64
Education	Illiterate	21	9.54
	Elementary	66	30
	Secondary	85	38.6
	University	48	21.82
Origin of traditional knowledge	Others	–	–
	Parents	62	28.18
	Grandparents	24	10.91
	Other traditional healer	19	8.64
	Association	77	35
	Combination of above	38	17.27

growing in Lorestan (Fig. 8A). This plant has sulfur-containing pyridine N-oxides with anti-inflammatory activities (Krejčová et al., 2014). Another example is *Astragalus* species (Fig. 8B). Plants belonging to *Astragalus* genus are well known for the people of the region and have a long reputation in Iran (Maassoumi, 1986–2005). Our survey showed that in Lorestan, there were several *Astragalus* spp. with different applications and many recent papers confirmed some of their activities (Chen et al., 2020; Sarikurku et al., 2020; Wu et al., 2020). The sap obtained from *Astragalus adscendens* was used for the production of a traditional sweet known as Gaz (Tavassoli et al., 2020). The resins from *A. brachycalyx* and *A. gossypinus* were used for the production of Katira which is mainly applied as a hair tonic.

However, many of the listed plants were only used in Persian folk medicine (Table 3). For example, *Amygdalus lycioides* is a species of almond that grows only in Iran and was used by Lor people for the treatment of diabetes, cough, nausea, intestinal worms, toothache, and infectious wounds (Fig. 8D) (Mozaffarian, 2005). *Thymus daenensis* is another example; it is an endemic popular medicinal plant and condiment, containing a wide range of phytochemicals including terpenoids, phenolics, and flavonoids. Our results showed that this plant was widely used as an anti-infective (FC<sub>event</sub>, 127), exhilarating (55), spasmolytic (58), expectorant (178), anthelmintics (31), and anti-fungal agent (85), consistent with some results from a few pharmacological studies indicating the antimicrobial, antioxidant, insecticidal and cytotoxic effects of this plant (Emami Bistgani and Sefidkon, 2019). Another example is *Helichrysum oligocephalum*, an endemic Iranian medicinal plant, used as an astringent, expectorant, anthelmintics, stomach tonic, skin conditioner, anti-inflammatory, and detoxifying agent. Our literature survey showed that *Helichrysum* spp. had promising pharmacological activities such as anti-inflammatory (Antunes Viegas et al., 2014), anti-protozoal (Akaberi et al., 2019a), anti-microbial (Babotă et al., 2018), skin protective, and anti-oxidant (Babotă et al., 2018) effects which were mostly attributed to its high phenolic contents, volatile oils, pyrone, and phloroglucinol derivatives (Akaberi et al., 2019b).

Some of the reported plants in this paper were well-known in ITM, showing the possible influence of this dominant traditional medicine in different ethnic and folk medicine in Iran or vice versa. For example, *Quercus infectoria* bearing galls have been traditionally used for centuries by the local people of Lorestan medicinally (Fig. 9). In Iran, the regions of these mountains, including Lorestan, are the main producer of the oak galls. The galls are even smuggled out of the country illegally because of their high economic value.

Many of the medicinal plants of the region were of pharmaceutical

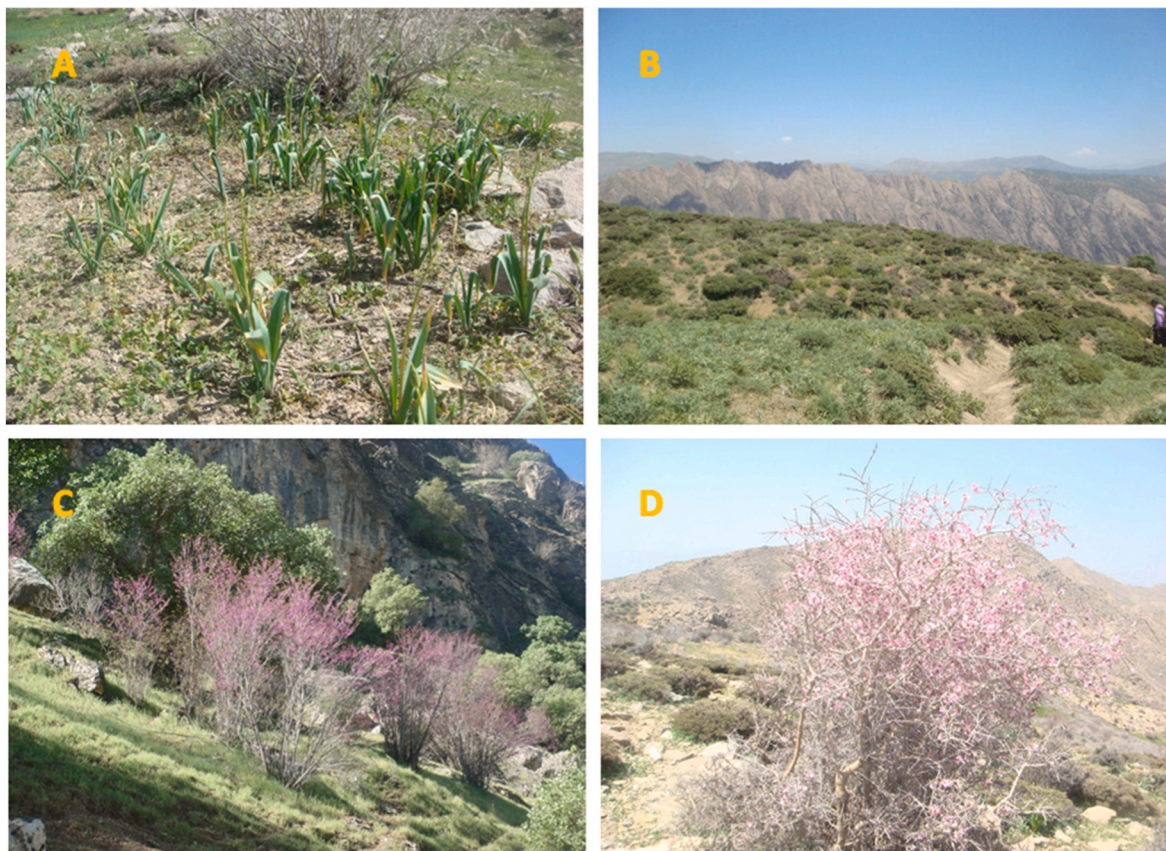
industrial value. One of the most important plants growing in Lorestan was licorice (*Glycyrrhiza glabra*) which has been used in the treatment of a variety of diseases. For example, a mixture of boiled licorice and egg yolk, known as Robesuz, was made by healers who believed to be useful for fractures. Licorice has a wide range of applications in the pharmaceutical industry particularly as an excipient to eliminate the bitter taste of some medicines and as a cover for drugs such as aspirin (El-Saber Batiha et al., 2020; Jiang et al., 2020; Pastorino et al., 2018; Yang et al., 2017; Ahuja and Ahuja, 2019; Selyutina et al., 2019). *Silybum marianum* is a well-known plant worldwide with hepatoprotective activities. This plant with FC 121 and FC<sub>total</sub> 386 was another pharmaceutically important medicinal plant growing in the region. It was used by the healers as an antidepressant (57), hepatoprotective (85), galactagogue (35), and detoxifying agent as well as for reducing hypertension (40), and hyperlipidemia (65). *Ammi majus* was another herb used by the indigenous people of Lorestan province for many problems. It's highly aromatic seeds, either infused or as a tincture, were used as a sedative and digestive agents as well as for the treatment of asthma, angina, vitiligo and for the removal of color spots and psoriasis. Table 3 shows some of the most important medicinal plants in the area.

#### 4.3. Herbal therapies

People reported using medicinal plants, mostly for the treatment of gastrointestinal problems such as constipation, indigestion, diarrhea, vomit, and flatulence. This pattern can be seen in similar ethnopharmacological studies around the world. In a survey in one of the regions of Lorestan established by Delfan et al. (2018), a similar result was also observed. In this study, the medicinal plants were used to

**Table 3**  
The endemic plants growing in Lorestan.

Plant Name	FC	FC total
<i>Delphinium lanigerum</i>	18	18
<i>Aristolochia olivieri</i>	33	33
<i>Consolida lorestanica</i>	22	53
<i>Acanthophyllum crassifolium</i>	49	56
<i>Scutellaria nepetifolia</i>	48	56
<i>Scutellaria multicaulis</i>	33	57
<i>Echinops endotrichus</i>	64	64
<i>Dorema aucheri</i>	75	75
<i>Echinops kotschyi</i>	66	84
<i>Helichrysum oligocephalum</i>	21	84
<i>Verbascum kochiiiforme</i>	44	84
<i>Amygdalus haussknechtii</i>	66	85
<i>Heliotropium denticulatum</i>	77	85
<i>Acantholimon aspadanum</i>	26	96
<i>Onosma kotschyi</i>	66	97
<i>Sorbus luristanica</i>	75	106
<i>Colchicum wendelboi</i>	33	112
<i>Rumex elbrusensis</i>	64	122
<i>Convolvulus koieanus</i>	73	125
<i>Anthemis lorestanica</i>	139	139
<i>Echinops haussknechtii</i>	77	141
<i>Rhabdosciadium aucheri</i>	167	167
<i>Ferula macrocolea</i>	145	180
<i>Ferula behboudiana</i>	134	203
<i>Ferula assa-foetida</i>	48	212
<i>Alcea koelzii</i>	128	217
<i>Dianthus macranthoides</i>	75	228
<i>Echinophora platyloba</i>	121	240
<i>Astragalus microphysa</i>	53	243
<i>Lavandula sublepidota</i>	86	255
<i>Bunium luristanicum</i>	77	282
<i>Rheum persicum</i>	156	317
<i>Pyrus glabra</i>	176	337
<i>Dracocephalum</i>	165	345
<i>Hyoscyamus tenuicaulis</i>	86	375
<i>Tragopogon caricifolius</i>	136	397
<i>Thymus daenensis</i>	191	598
<i>Nepeta crispa</i>	178	675



**Fig. 8.** The pictures of some important plant species of Lorestan in their habitats. A: *Allium stipitatum*; B: *Astragalus* spp.; C: *Cercis siliquastrum*; D: *Amygdalus lycioides*. Photos: M. Mehrnia.

relieve digestive problems, mostly (36%), followed by respiratory (16%), metabolic disorders (10%), urinary tract diseases (8%), skin diseases (5%), oral and dental problems (5%), and ocular diseases (2%) (Delfan et al., 2018). In another study, Delfan et al. (2015), identified the plants used in Lorestan for gastrointestinal problems, including gastritis, peptic ulcer, and stomachache (Delfan et al., 2015). They found 15 species were used for these problems, of which five including some *Thymus* spp. and *Ziziphus* spp. were also reported in our survey for the same problems (Delfan et al., 2015). In a similar study, this research group identified 13 anti-flatulence herbs according to ethnopharmacological knowledge of the people living in Lorestan (Delfan et al., 2015). In comparison to the mentioned previous studies, the current study investigated a much larger region of the province with larger plant list, so that it was more comprehensive. Although for gastrointestinal disorders, the pattern was similar to the previous studies, for other diseases the pattern was different.

## 5. Conclusion

The current survey showed that about 555 species are being used medicinally by the indigenous people of the studied areas in Lorestan. Lorestan has a high plant biodiversity with many valuable plants that can be harvested or cultivated for producing plant material and lead compounds on a large scale. Some of the plants reported in this study were well known phytochemically, pharmacologically, and clinically. Thus, they can be used for the medical or pharmaceutical purposes. Additionally, the traditional and folkloric knowledge for using medicinal plants in this area can help to discover the potential plants for specific health problems. Analysis of the data in terms of  $FC_{event}$  and  $FC_{total}$

suggested a number of plants with potential pharmacologic properties, such as *Thymus daenensis*, *T. eriocalyx*, *Mentha longifolia*, *M. spicata*, *M. piperitha*, *Alium sativum*, *Quercus infectoria*, *Q. persica*, and *Ziziphora clinopodioides*. Among the reported species were some endemic plants such as *Ferula macrocolea*, *Nepeta crispa*, *Amygdalus lycioides*, *Thymus daenensis*, *Helichrysum oligocephalum*, *Anthemis lorestanica*, *Echinops endotrichus*, *Tragopogon carcifolius*, *Bonium lurestanicum*, *Onosma kotschyi*, *Onosma ambigens*, and *Echinophora cinerea* with high FC values. More comprehensive pharmacological and clinical studies as well as phytochemical investigations of Lorestan indigenous medicinal plants are recommended.

## Author contributions

M.M performed the field works and collected the data. M.A analyzed the data, and wrote the manuscript. M.S.A checked and revised the scientific names of the plants. M.N analyzed the data and drew figures. S. A.E conceived the ideas and designed the methodology. All authors reviewed the manuscript.

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## Declaration of competing interest

This study was performed according to the international, national and institutional rules considering the Convention on Biodiversity and

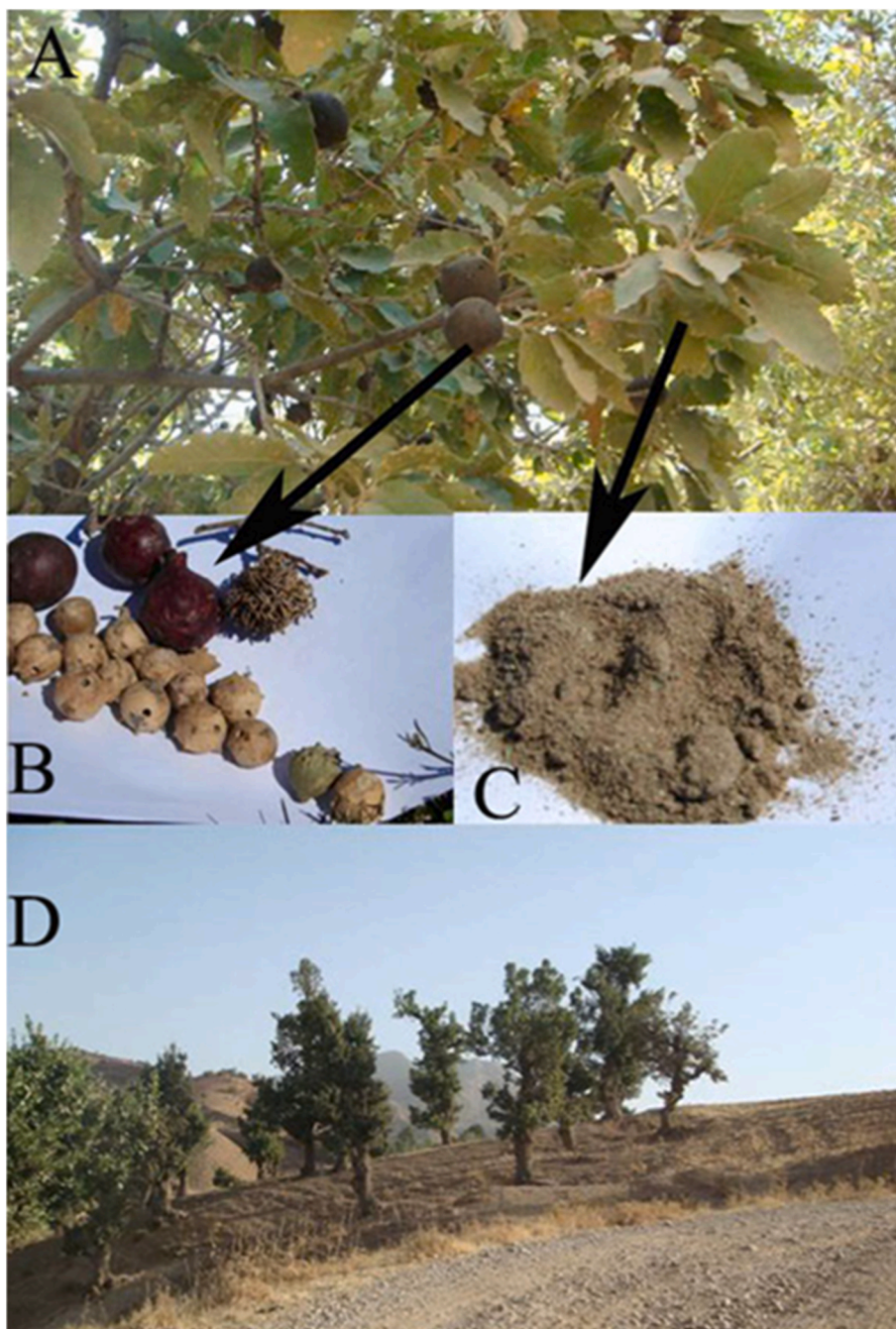


Fig. 9. *Quercus infectoria* bearing galls that have been used medicinally for centuries in Lorestan.

the Nagoya Protocol. Informed consent was requested and obtained from all participants of the ethnobotanical survey. All results from future lab work on mentioned plants will be transferred back to traditional healers and survey participants through workshops. The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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