

STUDIES ON TRADITIONAL PHYTOMEDICINES IN THE TORGHABEH-SHANDIZ BIOSPHERE RESERVE (BINALOOD MOUNTAIN, IRAN). QUANTITATIVE ASPECTS AND PHARMACEUTICAL USES OF WILD HERBS

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Abstract

In the current study, we address the following questions: (i) What are the diversity of species in Torghabeh-Shandiz district? (ii) What categories of plant score high quantitative indexes such as RI, FL, Fic and UV? (iii) What are usage patterns in traditional treatment of diseases among the informants in Torghabeh-Shandiz district of Binalood mountain? Hence, the field-work was permitted via interviews with 90 informants about traditional uses of medicinal plants (MPs). The informants were average 55 years old in average (minimum 27, maximum 85) and 57% of them were women. This research showed that the frequently used parts of the reported plants was flower (21%), followed by leaves (20%), aerial part (20%), seed (12%) and fruit (10%), respectively. The most common mode of administration was oral ingestion and topical application. Informants introduced some new traditional uses of MPs, which have not been reported up to now. In addition, our study reports 112 species of plants belonging to 40 families were recognized for the treatment of more than 22 types of ailment category. The highest number of the reported species was effective for gastro-intestinal complaints, infectious diseases and nervous system, respectively. Moreover, we recommend the local plants of Torghabeh-Shandiz district that possess the highest “informant consensus factor” (Fic), “Fidelity Level” (FL), “Use Value” (UV) and “Relative Importance” (RI) values. *Cichorium intybus* L. and *Teucrium polium* L. have the highest RI value of 1.75 and RI 1.57, respectively. In addition, *Nepeta binaludensis* Jamzad and *Perovskia abrotanoides* karel possess highest FL values in nervous system ailment and gastro-intestinal complaints, respectively. *Bunium persicum* had the highest UV. High quantitative indexes in Torghabeh-Shandiz district may potentially lead to future investigations of global interest. Eventually, ethnobotanical studies of this district could make a dual relationship between patients who use MPs for self-treatment and medical societies.

Keywords: *Ethnobotanical aspects, medicinal plants, native and traditional survey*

Introduction

The foundation of civilization was laid down when our ancestors started studying the plants around them for the fulfillment of their basic requirements. Thus, the relation between human and the plant world is as old as the demand of food, cloth and shelter came into existence [1]. Traditional knowledge (TK) is the collective system of particular indigenous people or local community. Traditional medical knowledge (TMK) as a kind of TK has social, cultural, and scientific value in the maintenance of health, and in the prevention, diagnosis, and improvement or treatment of physical and mental illnesses, which preserved over many generations by the local and indigenous communities [2,3]. Medicinal plants have been used for centuries in traditional health care systems, as the sources of medicine for human being around the world still rely on plants for their primary health care [4]. Flora of Iran comprises a rich area with approximately 8500-9500 plant species belonging to 190 families of vascular plants [5] of which, 2324 species are endemic to Iran [6]. The Binalood mountain is located in Khorasan province of Iran, which contains about 31% of the country's flora [7]. Documentation of indigenous knowledge about herbal medicine used by Iranian tribes is vital for the future development of herbal drugs. Ethnopharmacological studies of Iranian folk medicine with quantitative analytical techniques are warranted to find drug candidates, and also to preserve the precious knowledge of the Iranian folk medicine [8]. Although it is well-known that this mountain is characterized by high levels of the country's flora, no quantitative assessment of ethnobotany of Torghabeh-Shandiz, located in Binalood Mountain, has been conducted. The region is rich in indigenous ethnobotanical knowledge, particularly regarding wild foods and medicine. It returns to the Assyrian-Babylonian era [9]. Up to now, several literatures have reported the nutraceutical uses as well as traditional pharmacopoeia in various districts of Iran [9-11]. However, the current study has been conducted to help efficiently documenting and conserving this knowledge of the county for the first time. Here, we undertake a study based on the diversity of traditional knowledge, uses and practices of plants

in Torghabeh-Shandiz district of Binalood mountain. In particular, we address the following questions: (i) What are the diversity of species in Torghabeh-Shandiz district? (ii) What categories of plants score high quantitative indexes such as RI, FL, Fic and UV? (iii) What are the usage patterns in traditional treatment of diseases among the informants in Torghabeh-Shandiz district of Binalood mountain?

Methods

Study area

The study area in Torghabeh-Shandiz of Binalood peak isolated in north east Iran. The Torghabeh-Shandiz County (between longitudes of 59°21'59.36" N and longitudes of 36°32'36.50"E) is spread in Mashhad alluvial plain (minimum height of 1150 m) up to Binalood Mountain (maximum height of 3420 m with Alpine habitats). The Binalood mountain range stretches about 125 km with a linear trend east of the Alborz mountain range. Torghabeh-shandiz County with an area of 1200 km² is bounded with the Mashhad city from east and north east, Chenaran County of Khorasan from north, Neyshabor County from the west and south west. In according to census of 2012, the total population of Torghabeh-shandiz is 58483 persons with urban and rural proportions of 31.6% and 68.4%, respectively [12].

Climate

Relative humidity of the district ranges between 40% to 68. The average annual precipitation is 234 mm (for 2015) and the maximum monthly rain-fall is in late March until late April. Due to low rain-fall, there is not any large permanent river, except some seasonal streams such as Azghad, Dehbar, Jaghargh, Kang and Zoshk. The average maximum and minimum temperature ranges between 25 °C and -4 °C, respectively, and the cold season starts in December and lasts until March [13]. Based on Emberger's method, the region is located in a cold and semi-arid area. (Fig 1).

Sampling of informants

The ethnopharmacological survey was conducted on July 2015 to June 2016. The interviewees included both traditional health practitioners (THPs) and indigenous people, which had empirical knowledge in the field of MPs. It should be mentioned that

selection of informants was carried out with regard to several factors such as gender, age, educational background and experience in MPs usage. Ethnobotanical data was collected through freelist interviews with randomly selected informants and semi-structured and field interviews with key informants selected after freelist or by snowball sampling [14].

Data collection and questionnaires formulation

90 interviewees were selected based on i) their residence in the region for more than 5 years, ii) their experience in the use of MPs. Before starting the face-to-face interviews, we expressed our goals to the interviewees and a consent was obtained from them [15]. The survey was carried out at the Torghabeh city center and its 14 villages including Golestan, Hesar, Mayanat, Azghad, Jaghargh, Naghondar, Kang, Dehbar, Kalate ahan, Taraghdar, Vila shahr, Zoshk and Abardeh. The contributing THPs, were identified with the help of local people familiar with traditional healers and who could communicate with local communities of the villages. All interviews were performed individually due to confidentiality issue and in Persian language. We asked detailed questions about the MPs from interviewees and in the second interview, all the used MPs were collected and showed to the interviewees. The MPs recorded in this study were only reported if they possess two criteria, i) they are handed down to the interviewee in respect of therapeutical or nutraceutical uses and ii) they have directly been used by the interviewee. Record questionnaires used included two sections. The first criterion dealt with personal information including age, sex, educational background and experiences of the THPs related to MPs. The second criterion contains some information such as local name of the MPs, the parts of MPs being used, the amount of consumption, the method of preparation, the nature of plant material, mode of application, and the medicinal uses of particular plant. Medicinal plants were collected and labeled and preserved at the herbarium for identification in the University of Tabriz for future studies.

Data analysis

The species were listed in alphabetical order by their scientific name, family, local name, general

name, plants part/s being used, the mode of preparation, nature, the used solvent, mode of application and frequency of citation (FC). The FC of the used MPs was measured based on the formula: $FC = (\text{number of times of citation for a species} / \text{total number of times that all species were aforesaid}) \times 100$. Frequency distribution was calculated by using the IBM SPSS Statistics 19. The UV value (indicating species of MPs with most frequently use) for treating an ailment was calculated based on $UV = \sum U/n$ according to literatures [16].

In this equation, 'U' stands for the number of usage reports cited by each informant for picked plant species and 'n' stands for the total number of informants interviewed for a given plant.

The second approach used in our study is the cultural importance index (CI). This index is calculated by the sum of the proportion of informants mentioning each species use (i.e. the sum of the number of participants who have mentioned the usage of each species divided to the total number of informants (N)). This index is defined by the following formula:

$$CI = UR/N$$

The CI index takes into account the extent of the use (number of informants) for each species, in addition to the variety of usages.

The Fic was evaluated based on the following relation [17].

$Fic = (Nur - Nt) / (Nur - 1)$, in which 'Nur' stands for the number of usage of an ailment class and 'N' stands for the number of taxa exploited for an ailment class by all interviewees. In order to apply this factor, we classified the illnesses into broad ailment categories (several diseases based on the similarity in one category) (Table 2). Fic was applied to highlight the homogeneity of the information about a specific plant use in treating a particular type of ailment. The values of Fic range from 0 to 1. An ailment class with high Fic value (close to 1) means that relatively a few taxa are utilized by a large group of the interviewees. A low value expresses that informants disagree on the taxa to be used for treating within a group of illness. RI was calculated according to $RI = PP + AC$ [18].

PP = (the amount of therapeutic applications ascribed to a species) / (the maximum amount of therapeutic applications attributed to the most resourceful species)

AC = (the amount of ailment categories treated by a given species) / (the maximal amount of ailment classes treated by the most resourceful species)

The highest value of RI is 2.0, which shows the highest variety of medicinal uses of a plant. FL was calculate using the formula: $FL = Ip/Iu \times 100$ [19], Where Ip and Iu refer to the number of informants who independently mentioned the application of a species for the same major ailment and the total number of interviewees who referred the plant for any major ailment, respectively. High FL value represents a high frequency use of the MPs species for treating a particular class of ailment by the informants.

Results

Informants

Among the 90 interviewees, 8 people are traditional health practitioners (THPs) and the rest are indigenous people. The regarding practical experience or empirical knowledge, majority of the THPs had 10–20 years of experience (35.55%) (Table 1). The high percentage of interviewees was illiterate or only completed five years of school education. Most of the informants were female (63.34%). In the current study, 41.12% and 23.33% of interviewees were more than 60 and 40–50 years old, respectively.

MPs recorded

In the present study a total of 112 plant species belonging to 40 plant families were identified as having medicinal significance and being used by THPs in Torghabeh-Shandiz. The Lamiaceae & Asteraceae family (15 species) represents the highest number of species, followed by Apiaceae (10 species), Rosaceae (8 species) and Fabaceae (7 species). (Fig. 2). In Table 2, 112 traditionally used plants in Torghabeh-Shandiz county are presented along with their local name, Persian name, scientific name, used part, mode of preparation, medical uses, harvest time, abundance and number of interviewees.

Information regarding the preparation

In general, whole plant or various parts of the plant including leaf, root, bark, fruit, flower, seed, stem, resin and bulb are utilized in self-treatment, medical and nutraceutical uses. Typically, different parts are blended together to prepare the material which is served as medicine. Flower is the most frequently used plant part (21%), followed by leave (20%), aerial part (20%), seed (12%) and fruit (10%). Different preparation methods are used for administering herbal MPs including decoction, juice, powder, maceration, raw, salve, distill plant, fumigation, cream, tablet, bath plant and infusion. The major mode of preparation is decoction (29%) followed by herbal tea (20%) and distillation (19%) (Fig 3&4).

It is important to say that interviewees, usually, prepare distillates from various plants in summer due to the lack of access to fresh plant in cold seasons. For example "Chehelgiyah" is a mixture of forty different distillates of the taxa. Powder, also, is also acquired by finely grinding the desired plant sections to be used, after drying them. With regard to the rule of Islamic culture in the region water are used as solvent instead of alcohol for preparing the formulations. Honey, sap and milk are, also, utilized in making preparations. In addition, butter and animal oil are used for preparing paste and ointment. It should be mentioned that most common modes of usage for interior use and topical use are oral ingestion (73%) and direct application of paste, respectively.

Frequency of citation of the plants

The most cited plants are *Nepeta binaludensis* Jamzad, *Perovskia abrotanoides* karel, *Cichorium intybus* L., *Alhagi maurorum* Medicos, *Urtica dioica* L. var. *dioica*, *Stachys lavandulifolia* vahl, *Artemisia sieberi* Besser subus., *Thymus Transcaspicus* Klovov and *Teucrium polium* L.

Other relevant information of the recorded MPs

As depicted in Table 3, most of MPs listed in current study have been used for more than one type of disease. Treatment of gastro-intestinal problems possess the maximum number of the used plants (62 species) and then, plants used to treat infectious diseases (38 species) and complaints of

nervous system (38 species) have the highest quantities (Table 3). The ailments classes are gastro-intestinal complaints (78 usage-reports, 62 species), nervous system (59 usage-reports, 38 species), hematological diseases (45 usage-reports, 29 species) and infectious diseases (45 usage-reports, 39 species). The Fic data in our study ranged from 0 to 1.

In our study the highest Fic value (0.58) was cited for urinary tract problems, followed by oral and dental disorder (0.52) (Table 4).

The highest proportions of medical properties belong to *cichorium intybus* L. (14 properties) and *Urtica dioica* L. var. *dioica* (14 properties); so, it had a normalized ailment categories (AC) value of 1.00 (14/14). *Teucrium polium* L. is employed to treat eight pharmacological properties in gastro-intestinal complaints and has a normalized pharmacological properties (PP) value of 1.00 (8/8). *Cichorium intybus* L. and *Teucrium polium* L. have the highest Relative Importance (RI) value of 1.75, followed by RI of 1.57 possessed by *Tanacetum parthenium* (L.) Schultz-Bip., *Urtica dioica* L. var. *dioica*, and *Achillea bieberesteini* Afan. (Table 5).

Furthermore, twenty MPs were cited by ten or more informants for treatment versus a given ailment category. FL was evaluated for these MPs in which, 9 taxa from 20 taxa were placed in the class of gastro-intestinal complaints (Table 6).

Two plants including *Nepeta binaludensis* Jamzad (Nervous system) and *Perovskia abrotanoides* karel (gastro-intestinal complaints) showed the highest FL of 100%. The result of popularity ranking by "preference ranking assessments" reveals that *Bunium persicum* (Boiss.) and *Thymus Transcaspicus* Klokov as the most popular plants. The plant with highest UV is *Bunium persicum* (2.3). Other important plants with high UV are *Thymus Transcaspicus* Klokov. (1.9), *Mentha longifolia* (L.) Hudson var (1.75), *Achillea bieberesteini* Afan. (1.4), *Perovskia abrotanoides* karel (1.38), *Chenopodium botrys* L. (1.37). On the other hand, the plant with the lowest UV is *Ephedra intermedia* Schrank et C. A. Mey. (Table 7).

Discussion

Evaluation of the obtained data

During our survey, we found that illiterate people have more knowledge about uses of MPs than literate people, which could be ascribed to negligence of traditional treatment by literate people and their tendencies towards modern therapy. Based on our study, a kind of incuriosity was observed among younger generations. It could lead to rapid loss of valuable knowledge of MPs in Torghabeh-Shandiz district. It appears that the process of urbanization and societal changes in developing countries like Iran, can be the main reason of the question that why learning traditional knowledge of MPs from older people is stopped? (Table1). Most inkling MPs of Torghabeh-Shandiz in this study belonged to the Lamiaceae & Asteraceae (13%) family, Followed by the Apiaceae (9%), Rosaceae (7%), Fabaceae (6%) in (Fig 2). Indigenous people in the region mostly use MPs to cure gastro-intestinal complaints and infectious diseases which can be attributed to the high frequency of these disorders in Torghabeh-Shandiz district. Some of these species are used so frequently that every interviewee remembered those (*Nepeta binaludensis* Jamzad, *Thymus Transcaspicus* Klokov, *Tanacetum parthenium* (L.) Schultz-Bip., *Perovskia abrotanoides* karel, *Fumaria vaillantii* Loisel.). Others are known and used only by "bazaar sellers" who sell medicinal plants in local markets including *Sambucus ebulus* L., *Hyoscyamus niger* L. and *Turgenia latifolia* (L.) Hoffn. Some traditional uses of MPs which used by the interviewees of the Torghabeh-Shandiz are reported in the present survey for the first time. For instance, *Nepeta binaludensis* Jamzad is one of the endemic species of Binalood montain, for which we reported a medicinal use for Gout (a form of inflammatory arthritis). The above-mentioned usage-report of *Nepeta binaludensis* Jamzad was not reported by other research teams who have worked on flora of middle-east countries [20-22]. In addition, the medical use of *Malva neglecta* Wallr in treating women's sexual infections is reported for the first time. These THPs have retained certain rules for collecting the plants in specific times, the order of mixing of different plants, the time of taking the herbal drug and adjuvant for traditional usage. The main used parts of the plants for treatment against ailments and nutraceutical uses are flowers, aerial parts and leaves. These parts can be used solely or mixed with other parts of the same plant. Some

similar observations, have, also, been reported by researchers in other regions [23-26]. In some cases they, also, take distillates from various plants, mix them together and finally put them up for sale in bazaar (for example Chehelgiah distillate). It can be due to the synergetic effect of two or more mixed distillate, which is an important issue from pharmacological point of view [27]. Leaves are the principal photosynthetic organs which may be responsible for medicinal values and have an important role in the plant's life [28,29]. Another reason for using leaves can be due to preserving of plants, as their eradication can lead to their death and put the the species in a perilous condition [30-33]. Furthermore, decoction and herbal tea are the frequently used remedies in nutaceuticaluses, which are prepared by patients as a method of shelf-treatment. As it is well-known, the reason for superiority of oral route is due to the ease of administration [34-38] In addition, as mentioned above, THPs use more than one plant part for the preparation of medicine in the treatment of single disease. However, there are a few mixtures widely known and used, such as the 'salve mixture' (seeds of *Alyssum mulleri* Boiss & Buhse, *Malva neglecta* Wallr., *Salvia chloroleuca* Rech. f. and resin of *Astragalus* sect. *platonychium verus*), which are useful for treating skin and subcutaneous tissue infections. In some cases powders are blended then are used. Based on the obtained results, the main MPs in the region are used for treating gastro-intestinal complaints. So, it seems that their life style has had a remarkable effect on the kind of diseases in the study area. For example, digestive complaints have high importance both in the past and today. For this reason, interviewees listed many plants with gastric reflux, carminative and food digestive properties such as *Artemisia sieberi* Besser subus., *Chenopodium botrys* L., *Teucrium polium* L., *Verbascum songaricum* subsp. *Songaricum*, *Perovskia abrotanoides* karel, etc. In terms of richness of diversity, 112 taxa were recorded in Torghabeh-Shandiz areas of Binalood Mountain for the first time. Some categories of plant usage scored high quantitative indexes such as RI, FL, Fic and UV. Therefore, our study demonstrates that some of the studied plants in the current work can potentially be an important source for phytochemical analysis and

consequently, a source of pharmaceutical agents in future.

Conclusions

The data obtained in this study demonstrate that MPs still possess considerable place among inhabitants of Torghabeh-Shandiz district. It seems that the most cited species in terms of RI, FL, Fic and UV are significance enough to be analysed in laboratories in order to assay their pharmaceutical aspects. Therefore, high quantitative indexes in this area may potentially lead to future investigations of global interest. Eventually, ethnobotanical studies of Torghabeh-Shandiz district could make a dual relationship between patients who exploit MPs for self-treatment and medical societies.

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Table 1 Demographic data of the informants

Variable	Categories	No. of person	Percent
Informants category	Traditional health Practitioners	8	8.88
	Indigenous people	82	91.12
Gender	Female	57	63.34
	Male	33	36.66
Age	Less than 20 years	0	0
	20–30 years	2	2.22
	30–40 years	12	13.33
	40–50 years	21	23.33
	50–60 years	18	20
	More than 60 years	37	41.12
Educational background	Illiterate	28	31.11
	Completed five years education	32	35.55
	Completed eight years education	7	7.77
	Completed 10 years education	6	6.68
	Completed 12 years education	5	5.56
	Some undergrad degree (16 years education)	8	8.88
	Graduate (higher education)	4	4.45
Experience of the traditional health practitioners	Less than 2 years	3	3.34
	2–5 years	20	22.22
	5–10 years	13	14.45
	10–20 years	32	35.55
	More than 20 years	22	24.44

Table 2 List of plants used in Khorasan razavi, Torghabeh-Shandiz County.

Local name	Persian name	Scientific Name	Used part	Mode of preparation	Medicinal uses	Harvest time	Abundance	No. of person
Ostakhodos	Ostakhodos	<i>Nepeta binaludensis</i> Jamzad	Aerial part	Decoction, Herbal Tea, Distillation	stomach Antispasmodic, Gastric reflux & Carminative, gastric sedative, Anodyne & sedative, Anti-migraine, Treat nervous diseases, Nerves tonic, Depression Treatment, Prostatic problems Antitussive & Lung antispasmodic, Antiseptic Lung, throat & nasal passages, Vasodilator & current blood stimulus, Relieve symptoms Sinusitis & head cold, Aphrodisiac, Stimulant & resolver exhaustion, Antihyperlipidemia, Febrifuge, Diuretic, Obviation pain joint & rheumatism, Healer inner & superficial, sores, Gout, Antiasetic & bellyache	Spring	Rare	27
Anokh	Avishan	<i>Thymus Transcaspicus</i> Klovov	Aerial part	Decoction, Herbal Tea, Distillation	stomach Antispasmodic, gastric sedative, Stomach tonic, Gastric reflux & Carminative, Indigestion, expectorant, Antitussive & Lung antispasmodic, current blood stimulus, Depression Treatment, Anti-Convulsions, Repulse renal calculi, Relieve symptoms Sinusitis & head cold, Antiseptic Gums & Oral Abscess, Eyesight tonic	Spring	Abundant ^c	16
Arzano	Arzan vahshi	<i>Setaria viridis</i> (L.) P.Beauv.	Seed	Powder	Antidiarrheal, Aphrodisiac, Vasodilator & current blood stimulus, Skeletal disorders & Vitamins Shortage, Obviation pain joint & rheumatism, Oral Abscess	Spring	Abundant ^a	3
Espand	Espand	<i>Peganum harmala</i> L.	Aerial part, Seed	Distillation, Salve	Gastric reflux & Carminative, Antidiarrheal, Anthelmintic & parasite, Blood purifier, Nerves tonic, Sliming, Obviation pain joint & rheumatism, Hypoallergenic & itching Skin	Spring,	Abundant ^c	8
Aghti	Aghti siyah	<i>Sambucus ebulus</i> L.	Fruit	Decoction	Treat nervous diseases, Diuretic, Purgative, Hair tonic	summer	Abundant ^a	9
Anison	Anison	<i>Astrodaucus persicus</i>	Seed	Decoction	Gastric reflux & Carminative, Digest food, Antitussive & Lung antispasmodic, Anodyne & sedative, Anti-migraine, Galactagogue, Febrifuge	Spring	Rare	5
Khargosh	Efsentin	<i>Helichrysum graveolens</i> (M. B.)	Flower	Herbal Tea	stomach Antispasmodic, gastric sedative, Stomach tonic, treat hemorrhoids	summer	Abundant ^c	10
Rish boz	Ephedra	<i>Ephedra intermedia</i> Schrank et C. A. Mey	Flower	Decoction	Stimulant & resolver exhaustion, chronic bronchitis asthma	summer	Abundant ^a	7

Borani	Esfenaj vahshi	<i>Chenopodium murale</i> L.	Leaf, Stem	Decoction	Purgative, anti-gastroenteritis, Digest food, Anemia Treatment	Spring	Abundant ^a	10
Sedagh	Bomadaran	<i>Achillea biebersteini</i> Afan.	Aerial part	Distillation, Decoction	Antiasetic & bellyache, Gastric reflux & Carminative, Anthelmintic & parasite, Antidiarrheal, treat hemorrhoids, Anti-hemorrhage, Blood purifier, Heart tonic, Anodyne & sedative, Cystitis & Urinary tract obviation, Menorrhagia & emmenagogue, skin succulence & tonic, Stimulant, Eyesight tonic, head cold	Spring	Abundant ^a	19
Babone	Babone	<i>Tanacetum parthenium</i> (L.) Schultz-Bip.	Aerial part, Flower	Distillation, Salve Decoction, Fumigation	anti-gastroenteritis, Carminative, Indigestion, Appetizer, Anthelmintic & parasite, Digest food, expectorant, Regulation of heartbeat, Anodyne & sedative, Nerves tonic, Treat nervous diseases, Obviation urinary infections, Diuretic, Relieve menopausal symptoms, Anti-Dysmenorrhea, Menorrhagia & emmenagogue, Bilious, Obviation pain joint & rheumatism, Muscle pain & Muscle damage, Obviation Freckle & Acne & Skin discoloration, Healing Surface sores & effects skin burns, Strengthening of the scalp & anti-dandruff, skin succulence & tonic, Anti-alopecia, Hair tonic, Stimulant & resolver exhaustion, Febrifuge, Relieve symptoms Sinusitis & head cold, resolver Vertigo & pate tonic	Spring	Abundant ^a	31
Banafshe	Banafshe vahshi	<i>Viola odorata</i> L.	Flower	Decoction, Herbal Tea	Antidiarrheal, treat hemorrhoids, asthma, chronic bronchitis, Anodyne & sedative, Obviation pain joint & rheumatism, Muscle pain & Muscle damage, Febrifuge, Hoarseness and nasal congestion	Spring	Abundant ^a	13
Badam talkh	Badam vahshi	<i>Amygdalus spinosissim</i> Bge	Seed	Decoction, Maceration	Antispasmodic & sedative Gastric, anti-colic, Obviation urinary infections, treat Infection& Pain renal, Hyperglycemic, Healing Surface sores & effects skin burns, Anti-alopecia, Hair tonic	summer	Abundant ^a	9
Barhang	Barhang	<i>Plantago major</i> L.	Seed	Maceration	Antidiarrheal, Increased gastricjuice, Antitussive & Lung antispasmodic, Asthma, chronic bronchitis, expectorant, Repulse renal calculi, Healer inner & superficial, sores, Relieve symptoms Sinusitis & head cold	summer	Abundant ^a	8
Badranj	Chasbak	<i>Asperugo procumbens</i> L.	Aerial part	Herbal Tea	Antispasmodic & sedative Gastric, anti-colic, Nerves tonic, Heart tonic	Spring	Abundant ^a	5

Khane kogi	Badranjboye	<i>Hymenocrater platystegius</i> Rech.f.	Branches, Flower	Distillation, Herbal Tea	Gastric reflux & Carminative, Antitussive & Lung antispasmodic, hypertension, Anemia Treatment, Vasodilator & current blood stimulus, Regulation of heartbeat, Anodyne & sedative, Anti-Convulsions, Treat nervous diseases, Menorrhagia & emmenagogue, Biliious, Hypoallergenic & itching Skin, Strengthening of Memory, resolver Vertigo & pate tonic	Spring	Abundant ^a	13
Alaf cheshme	Bolagh oti	<i>Nastartium officinale</i> (L.) R. Br.	Aerial part	Unprepared	Treat nervous diseases, Diabetes, Impact on the thyroid gland, Immune system tonic	Spring	Medium	3
Bid	Bid	<i>Salix Alba</i> L.	Branches, Leaf	Distillation	Stomach tonic, Antihyperlipidemia, Vasodilator & current blood stimulus, Nerves tonic, Anti-Dysmenorrhea, jaundice treat, Sliming, Hyperglycemic, Hypoallergenic & itching Skin, Strengthening of the scalp & anti-dandruff, Febrifuge, anti- sunstroke	summer	Abundant ^a	11
Bidmeshk	Bidmeshk	<i>Salix aegyptiaica</i> L.	Flower	Distillation	Stomach tonic, Antihypertensive, Heart tonic, Anodyne & sedative, Nerves tonic, Immune system tonic, Febrifuge, anti- sunstroke	Spring	Abundant ^a	16
Beh	Beh	<i>Cydonia oblonga</i> Mill	Leaf, Seed	Herbal Tea	Antidiarrheal, Antiasetic & bellyache, Antitussive & Lung antispasmodic, Febrifuge, anti- sunstroke	Spring, Autumn	Abundant ^a	6
Belghast	Shahi vahshi	<i>Cardaria draba</i> (L.) Desv.	Aerial part	Decoction	Nerves tonic, Treat nervous diseases	Spring	Abundant ^a	11
Ghasni	Barije	<i>Ferula szowitsiana</i> DC.	Leaf, Flower	Herbal Tea	Nerves tonic, Respiratory allergy	Spring	Abundant ^c	5
Boghnagh	Boghnagh	<i>Eryngium bungei</i> Boiss.	Flower	Herbal Tea	Diabetes, Asthma, Heart tonic	summer	Abundant ^a	3
Bang dane	Bazrolbanj	<i>Hyoscyamus niger</i> L.	Flower	Herbal Tea	Antitussive & Lung antispasmodic, Stimulant & resolver exhaustion	Spring	Abundant ^a	4
Barhang sar neyzeei Pichak	Barhang sar neyzeei Pichak sahraei	<i>Plantago lanceolata</i> L.	Seed	Herbal Tea	anti-gastroenteritis	summer	Abundant ^a	3
		<i>Convolvulus arvensis</i> L.	Leaf	Decoction	Antiasetic & bellyache, Digest food, Antihyperlipidemia, Antiseptic Inner & outer body	Spring, summer	Abundant ^a	7
Kolche kalagh	Panirak	<i>Malva neglecta</i> Wallr.	Aerial part	Decoction, Salve	Antitussive & Lung antispasmodic, Antiseptic Lung, throat & nasal passages, expectorant, Anodyne & sedative, Antiseptic & treat Female diseases, resolver sub skin & bygone Infections, Relieve symptoms Sinusitis & head cold	Spring, summer	Abundant ^a	9

Panj angosht	Panj angosht	<i>Vitex pseudo-negundo</i> (Hauskn.) Hand-Mzt.	Flower	Herbal Tea	Anti-aphrodisiac, Menorrhagia & emmenagogue, Relieve menopausal symptoms, Antiseptic & treat Female diseases	Spring	Rare	6
Pone baghi	Pone	<i>Mentha longifolia</i> (L.) Hudson var	Aerial part, Root	Decoction, Herbal Tea, Distillation	Antiasetic & bellyache, Gastric reflux & Carminative, Antidiarrheal, Indigestion, Appetizer, anti-gastroenteritis, stomach Antispasmodic, gastric sedative, Antitussive & Lung antispasmodic, Asthma, Antiseptic Lung, throat & nasal passages, Antihyperlipidemia, Antiseptic & treat Female diseases, Biliious, Relieve symptoms Sinusitis & head cold	Spring, summer	Abundant ^a	21
Ponkevod	Yas kabod	<i>Perovskia abrotanoides</i> karel	Flower, Branches	Distillation, Powder	Gastric reflux & Carminative, Stomach tonic, Antiasetic & bellyache, Anodyne & sedative, Heart tonic, Obviation pain joint & rheumatism, Muscle pain & Muscle damage, Strengthening of the scalp & anti-dandruff, Obviation Freckle & Acne & Skin discoloration, Hair tonic, resolver Vertigo & pate tonic	Spring, summer	Abundant ^a	16
Pone kofi	Pone kofi	<i>Nepeta</i> sp.	Aerial part	Distillation, Herbal Tea	Anodyne & sedative, Gastric reflux & Carminative, Antiseptic & treat Female diseases, Diabetes	Spring	Medium	7
Parsiyavoshan	Parsiyavoshan	<i>Adiantum capillus-veneris</i> L.	Leaf	Distillation	Antitussive & Lung antispasmodic, expectorant, Respiratory allergy, Hypoallergenic & itching Skin, skin succulence & tonic, Febrifuge, Gastric reflux & Carminative	Spring, summer	Abundant ^a	5
Terekh	Dermane dashti	<i>Artemisia sieberi</i> Besser subus.	Aerial part	Distillation, Decoction	Antiasetic & bellyache, Gastric reflux & Carminative, Anthelmintic & parasite, Antidiarrheal (child), Muscle pain & Muscle damage	summer	Abundant ^a	10
Tameshk	Tameshk	<i>Rubus hyrcanus</i> Juz.	Leaf, Fruit	Unprepared, Herbal Tea	Diabetes, Relieve symptoms Sinusitis & head cold, Antitussive & Lung antispasmodic	Spring, summer	Abundant ^a	6
Taj khoros	Taj khoros	<i>Amaranthus chlorostachys</i> Willd.	Leaf, Flower	Powder, Herbal Tea	Relieve symptoms Sinusitis & head cold, Hoarseness and nasal congestion	Spring	Abundant ^a	5
Seke angor Jo do sar	Taj rizi Jo do sar	<i>Solanum nigrum</i> L. <i>Avena sativa</i> L.	Fruit Aerial part	Salve Decoction	Toothache & anodyne Hyperglycemic, Diuretic, Anodyne & sedative, Antihyperlipidemia	summer Spring	Abundant ^a Abundant ^a	9 3
Jaro sepid	Jaro sepid	<i>Scariola orintalis</i> (Boiss.) Sojak.	Flower	Herbal Tea	Skeletal disorders & Vitamins Shortage, Stimulant & resolver exhaustion	Spring, summer	Abundant ^a	2

Dome gorbe	Chay kohl	<i>Stachys lavandulifolia</i> vahl.	Aerial part, Flower	Herbal Tea, Decoction	Antispasmodic, gastric sedative, Indigestion, Appetizer, Antidiarrheal, Stomach tonic, Anodyne & sedative, Nerves tonic, Depression Treatment, hypertension, Heart tonic, Hyperglycemic, Strengthening of Memory	Spring	Medium	22
Chenar	Chenar	<i>Platanus acerifolia</i> L.	Leaf	Distillation	Antitussive & Lung antispasmodic, Menorrhagia & emmenagogue, Prostatic problems, Obviation pain joint & rheumatism, skin succulence & tonic, Obviation Freckle & Acne & Skin discoloration, Febrifuge, Hoarseness and nasal congestion	Spring, summer	Abundant ^a	6
Khar shotori	Khar shotori	<i>Alhagi maurorum</i> Medicos	Aerial part	Distillation	Repulse renal calculi, Repulse Bladder calculi, Obviation urinary infections , Heart tonic, Antihypertensive, Stomach tonic, Antidiarrheal	summer	Abundant ^a	16
Khar khasak	Khar khasak	<i>Tribulus terrestris</i> L.	Fruit, Branches	Distillation, Decoction	Repulse renal calculi, Repulse Bladder calculi, Obviation Cystitis & Urinary tract, treat Infection& Pain renal, Diuretic, Gonorrhea, Prostatic problems, Aphrodisiac, Immune system tonic, Increased gastric juice	summer	Abundant ^c	11
Khatmi	Khatmi	<i>Alcea rhyticarpa</i> (Trautv.) Iljin.	Flower	Decoction, Herbal Tea	Purgative, Antiseptic Lung, throat & nasal passages, expectorant, Antitussive & Lung antispasmodic, Treat nervous diseases, Anodyne & sedative, Hypoallergenic & itching Skin, Relieve symptoms Sinusitis & head cold, resolver Vertigo & pate tonic, Febrifuge	Spring	Abundant ^a	14
Khatmi khabazi	Khatmi khabazi	<i>Malva sylvestris</i> L.	Flower	Decoction	Purgative, Diuretic, Anodyne & sedative, Febrifuge, anti- sunstroke	Spring	Abundant ^c	10
Khar maryam	Khar maryam	<i>Cirsium vulgare</i> (Savi) Ten.	Flower	Decoction	Prostatic problems, Hyperglycemic	Summer, Autumn	Abundant ^a	7
Khorfe	Khorfe	<i>Portulaca oleracea</i> L.	Leaf, Stem	Unprepared	Hyperglycemic, Gastric reflux & Carminative	Spring, summer	Abundant ^a	8
Khakshir	Khakshir	<i>Descurainia Sophia</i> (L.) Schur	Seed	Maceration	Febrifuge, anti- sunstroke, Increased gastric juice	summer	Abundant ^a	11
Kharije	Varak	<i>Rosa persica</i> Michx. Ex Juss	Root	Decoction	Obviation urinary infections , Repulse renal calculi, Repulse Bladder calculi, Obviation pain joint & rheumatism	Spring, summer	Abundant ^a	4
Dome asb	Dome asb	<i>Equistum arvense</i> L.	Aerial part	Distillation	Prostatic problems, Repulse renal calculi, Obviation cystitis & Urinary tract, Anti-hemorrhage	Spring	Medium	7
Dermane torki	Dermane	<i>Chenopodium botrys</i> L.	Aerial part	Distillation, Salve	Anthelmintic & parasite, Gastric reflux & Carminative, Antiasetic & bellyache, Antidiarrheal, Increased gastric juice, Muscle pain & Muscle damage	summer	Abundant ^a	13

Daghdaghak	Daghdaghak	<i>Colutea persica</i> Boiss.	Leaf	Decoction	Purgative	Spring, summer	Abundant ^c	3
Taghot	Daghdaghan	<i>Celtis australis</i> L.	Leaf, Fruit	Decoction	Antidiarrheal, Stomach tonic	Spring, summer	Abundant ^c	6
Laterre	Rishe baba adam	<i>Arctium lappa</i> L.	Leaf, Root	Distillation, Salve	Anthelmintic & parasite, Purgative, Antitussive & Lung antispasmodic, Antihypertensive, Antihyperlipidemia, Diabetes, Hyperglycemic, Obviation Freckle & Acne & Skin discoloration, Obviation Freckle & Acne & Skin discoloration, Anti-alopecia, Obviation pain joint & rheumatism, Antiseptic Inner & outer body, Diuretic	Spring	Abundant ^a	8
Razyane	Razyane	<i>Prangos latiloba</i> Korov.	Branches, Flower	Distillation	Gastric reflux & Carminative, Anti-Dysmenorrhea	Spring	Abundant ^c	5
Rivas	Rivas	<i>Rheum ribes</i> L.	Root, Seed	Decoction, Salve	Anthelmintic & parasite, Stomach tonic, Indigestion, Appetizer, Purgative, Gastric reflux & Carminative, Antidiarrheal, treat hemorrhoids, liver tonic, Hyperglycemic, resolver Vertigo & pate tonic, Eyesight tonic	Spring, Autumn	Medium	7
Zire kohi	Zire kohi	<i>Bunium persicum</i> (Boiss.)	Seed	Distillation, Powder	Gastric reflux & Carminative, Stomach tonic, Digest food, Antiasetic & bellyache, Anemia Treatment, Antihyperlipidemia, Blood purifier, Anodyne & sedative, Menorrhagia & emmenagogue, Galactagogue, Prostatic problems, Impact on the thyroid gland, Sliming, Stimulant & resolver exhaustion	Spring	Medium	13
Zalzalak	Zalzalak	<i>Crataegus pontica</i> C.Koch	Leaf, Fruit	Unprepared, Herbal Tea	Antihypertensive, Antihyperlipidemia, Regulation of heartbeat, Heart tonic, Hyperglycemic	Spring, Autumn	Abundant ^a	4
Ar ar	Zalzalak vahshi	<i>Crataegus atosanguinea</i> A.Pojark.	Fruit	Decoction	Antihypertensive, Antihyperlipidemia, Regulation of heartbeat, Heart tonic	Autumn	Abundant ^b	2
Zereshk vahshi	Zereshk kohi	<i>Berberis integerrima</i> Bunge	Fruit	Decoction, Herbal Tea	Indigestion, Appetizer, Heart tonic, Gout, Hyperglycemic	Autumn	Abundant ^c	5
Zaban gav	Zaban gav	<i>Verbascum</i> sp.	Leaf	Decoction, Herbal Tea	Gastric reflux & Carminative, Antiasetic & bellyache	Spring	Abundant ^a	10
Zaban gonjeshk	Zaban gonjeshk	<i>Fraxinus excelsior</i> L. subsp.	Leaf, Fruit	Distillation	Antitussive & Lung antispasmodic, expectorant, Anodyne & sedative, Immune system tonic, Febrifuge	Spring, summer	Abundant ^a	3
Zegharche	Zegharche	<i>Bunium chaerophylloides</i> (Regel. & Schmalh.)	Aerial part	Salve	Obviation pain joint & rheumatism	Spring	Abundant ^b	3

Sagh torshak	Sagh torosho	<i>Rumex acetosa</i> L.	Leaf, Root	Salve, Decoction	Indigestion, Appetizer, Antidiarrheal, Antiasetic & bellyache (child), Blood purifier, Repulse renal calculi, Treat Jaundice, Skeletal disorders & Vitamins Shortage, Obviation pain joint, Stimulant	Spring, summer	Abundant ^a	8
Somagh	Somagh	<i>Rhus coriaria</i> L.	Seed	Powder	Anti-hemorrhage, Antihyperlipidemia, Diabetes	Autumn	Abundant ^a	5
Sereshk	Sereshk	<i>Eremurus spectabilis</i> M.B.	Root	Powder	Toothache & anodyne, Antiseptic Gums & Oral Abscess	Spring, summer	Abundant ^a	4
Sonbol tib	Sonbol tib	<i>Eupatorium cannabinum</i> L.	Root	Decoction	Anthelmintic & parasite, Heart tonic, Anodyne & sedative, Depression Treatment, Anti-migraine	Autumn	Medium	7
Shahtare	Shahtare	<i>Fumaria vaillantii</i> Loisel.	Aerial part	Distillation, Plant bath	Stomach tonic, Anthelmintic & parasite, Increased gastric juice, Antiasetic & bellyache, Indigestion, Appetizer, Antihyperlipidemia, Hyperglycemic, Bilious, Hypoallergenic & itching Skin, Obviation Freckle & Acne & Skin discoloration, Prostatic problems, Toothache & anodyne, Anti-hemorrhage (gingiva), Febrifuge	Spring	Abundant ^a	23
Rishe mikh	Shrin bayan	<i>Glycyrrhiza glabra</i> L. var. <i>glabra</i>	Root	Decoction, Salve	Gastric reflux & Carminative, Stomach tonic, treat gastric and duodenal ulcers, Antitussive & Lung antispasmodic, expectorant, hypertension, Anodyne & sedative, Repulse renal calculi, Obviation pain joint & rheumatism, Rapid healing of fracture, Muscle pain & Muscle damage, Healer inner & superficial, sores, Hoarseness and nasal congestion	Spring, summer	Abundant ^c	8
Shahtot	Shahtot	<i>Morus nigra</i> L.	Root, Leaf	Decoction	Abortion (Root), Diabetes (Leaf)	Autumn	Abundant ^a	3
Shekar tighal	Shekar tighal	<i>Echinops chorassanicus</i> Bunge	Seed, Flower	Powder	Antiseptic Lung, throat & nasal passages, Obviation pain joint & rheumatism, Relieve symptoms Sinusitis & head cold	summer	Abundant ^a	5
Shahdane	Shahdane	<i>Cannabis sativa</i> L.	Seed	Powder	Purgative, Anthelmintic & parasite, Menorrhagia & emmenagogue, Muscle antispasmodic	summer	Abundant ^c	2
Lale sorkh	Shaghaygh	<i>Papaver rhoeas</i> L.	Flower	Herbal Tea	Antitussive & Lung antispasmodic, Antiseptic Lung, throat & nasal passages	Spring	Abundant ^a	3
Shevid	Shevid	<i>Anethum graveolens</i> L.	Branches	Powder, Distillation	Gastric reflux & Carminative, Stomach tonic, Anti-Convulsions, Diuretic, Galactagogue	Spring, summer	Abundant ^a	7
Alaf sim kesh	Alaf sim kesh	<i>Reseda lutea</i> L.	Leaf	Salve	resolver sub skin & bygone Infections, Toothache & anodyne	Spring, summer	Abundant ^a	3

Alaf bive	Alaf bive	<i>Zygophyllum fabago</i> L.	Leaf	Salve	Increased gastric juice, Antiasetic & bellyache, Antispasmodic & sedative Gastric, anti-colic, anti-gastroenteritis	Spring, summer	Abundant ^a	2
Arosak poshte parde	Arosak poshte parde	<i>Physalis alkekengi</i> L.	Flower, Fruit	Herbal Tea	Anthelmintic & parasite, Asthma, chronic bronchitis, Impact on the a variety of hormones	Spring	Medium	3
Alaf josh	Alaf josh	<i>Euphorbia</i> sp.	Leaf	Powder	Anti-hemorrhage, Rapid healing of wound	Spring	Abundant ^c	2
Hezarbando	Haft band	<i>Polygonum ayiculara</i> L.	Leaf, Stem	Salve, Decoction	Antiseptic Lung, throat & nasal passages, Obviation pain joint & rheumatism, resolver sub skin & bygone Infections, Antiseptic Inner & outer body	Spring, summer	Abundant ^a	6
Ghazyaghi	Pakalagh	<i>Falcaria vulgaris</i> Bernh.	Leaf	Unprepared	Indigestion, Appetizer, Purgative, Treat Jaundice, Antiseptic & treat Female diseases	Spring	Abundant ^a	3
Shang	Shang	<i>Tragopogon graminifolius</i> DC.	Aerial part	Herbal Tea	Bilious, rheumatism, Gout, Immune system tonic, Stimulant & resolver exhaustion	Spring	Abundant ^a	5
Gheyaran	Gheyaran	<i>Erodium cicutarium</i> (L.) L'Her.	Aerial part	Decoction, Plant bath	Antiseptic & treat Female diseases, Menorrhagia & emmenagogue, Anti-fungi, Antiseptic Inner & outer body	Spring	Abundant ^a	3
Ghodome	Ghodome	<i>Alyssum mulleri</i> Boiss & Buhse	Seed	Powder	Antitussive & Lung antispasmodic, resolver sub skin & bygone Infections, Relieve symptoms Sinusitis & head cold	summer	Abundant ^a	4

Kalpore	Kalpore	<i>Teucrium polium</i> L.	Flower, Branches,	Distillation, Powder	Antiasetic & bellyache, Antidiarrheal, Gastric reflux & Carminative, Stomach tonic, anti-gastroenteritis, Increased gastric juice, Anthelmintic & parasite, Indigestion, Appetizer, Asthma, chronic bronchitis, Antihyperlipidemia, Treat nervous diseases, Menorrhagia & emmenagogue, Diabetes, Hyperglycemic, Immune system tonic, Stimulant & resolver exhaustion, Anti-Alzheimer	Spring	Abundant	27
Hooshe	Kakoti	<i>Ziziphora clinopodioides</i> Lam			anti-gastroenteritis, Gastric reflux & Carminative, Appetizer, Antiasetic & bellyache, Purgative, Stomach tonic, Anthelmintic & parasite, stomach Antispasmodic, Antitussive & Lung antispasmodic, Blood purifier, Antihyperlipidemia, Heart tonic, Anodyne & sedative, Relieve symptoms Sinusitis & head cold	Spring	Medium ^a	23
Kangar vahshi	Kangar farangi	<i>Cousinia microcarpa</i> Boiss.	Aerial part	Powder, Distillation, Decoction	Antihyperlipidemia, Repulse renal calculi, Hyperglycemic, Biliou, Obviation pain joint & rheumatism	Spring, summer	Abundant ^a	4
Kangar khoreshhti	Kangar	<i>Gundtia tournefortii</i> L.	Leaf, Stem	Decoction	Digest food, Indigestion, Appetizer, Stomach tonic, Heart tonic, Diuretic	summer	Abundant ^c	7
			Leaf, Flower	Decoction				
Komay	Koma	<i>Turgenia latifolia</i> (L.) Hoffn	Resin, Root	Decoction, Tablet	Anthelmintic & parasite, stomach Antispasmodic, gastric sedative, Gastric reflux & Carminative, Stomach tonic, Digest food, Antiasetic & bellyache, Antidiarrheal, Aphrodisiac, Obviation pain joint	Autumn	Rare	4
Konoche	Konoche	<i>Salvia chloroleuca</i> Rech.f.	Fruit	Maceration	Anthelmintic & parasite, Purgative expectorant, Febrifuge (child)	summer	Abundant ^a	3
Kasni	Kasni	<i>Cichorium intybus</i> L.	Aerial part	Distillation, Decoction	Antiasetic & bellyache, Gastric reflux & Carminative, Appetizer, Stomach tonic, Purgative, treat gastric and duodenal ulcers, Antihyperlipidemia, Blood purifier, Anemia Treatment, Vasodilator & current blood stimulus, Treat nervous diseases, Anodyne & sedative, treat Infection& Pain renal, Repulse renal calculi, Relieve menopausal symptoms, Anti-Dysmenorrhea, Aphrodisiac, Diabetes, Hyperglycemic, Biliou, Treat Jaundice, liver tonic, Fatty Liver treat, Muscle pain & Muscle damage, Obviation Freckle & Acne & Skin discoloration, Anti-fungi, Hypoallergenic & itching Skin, skin succulence & tonic, anti- sunstroke, Antiseptic Gums & Oral Abscess, Eyesight tonic	Spring	Abundant ^c	22

Konjed	Konjed	<i>Sesamum indicum</i>	Seed	Powder	Aphrodisiac, Treatment of premature Ejaculation, Strengthening of Memory	summer	Abundant ^a	3
Goveshti	Goveshti	<i>Anchusa italica</i> Retz.	Leaf	Salve, Powder	Toothache & anodyne, Antiseptic Gums & Oral Abscess, Treat nervous diseases (Salve), Digest food	Spring, summer	Abundant ^a	3
Gav zaban	Gav zaban	<i>Echium italicum</i> L.	Flower	Decoction, Herbal Tea	Anodyne & sedative, Nerves tonic, Antihypertensive, Blood purifier, Stimulant & resolver exhaustion	Spring	Abundant ^c	4
Ab gazi	Gazane	<i>Urtica dioica</i> L. var. <i>dioica</i>	Aerial part, Root	Decoction, Herbal Tea, Salve, Distillation	anti-gastroenteritis, Stomach tonic, treat hemorrhoids, Asthma, Anemia Treatment, Antihyperlipidemia, Anti-hemorrhage, Blood purifier, Vasodilator & current blood stimulus, Anti-migraine, Diuretic, Repulse renal calculi, Prostatic problems, Menorrhagia & emmenagogue, Antiseptic & treat Female diseases, Diabetes, Hyperglycemic, Muscle antispasmodic, Obviation pain joint, Hypoallergenic & itching Skin, Anti-alopecia, Stimulant & resolver exhaustion, MS Treatment, Antiseptic Gums & Oral Abscess	Spring, summer	Abundant ^b	30
Golpar	Golpar	<i>Heracleum persicum</i> L.	Fruit, Aerial part	Powder	Gastric reflux & Carminative, Digest food, Stomach tonic, Indigestion, Appetizer, Increased gastric juice	Summer	Abundant ^b	8
Gavan	Gavan	<i>Astragalus</i> sect. <i>platonychium</i> <i>verus</i>	Resin	Salve	Toothache & anodyne, Anti-alopecia, Hair tonic, Strengthening of the scalp & anti-dandruff, resolver sub skin & bygone Infections	Autumn	Abundant ^a	3
Gosh bare	Gosh bare	<i>Centaurea behen</i> L.	Leaf, Flower	Distillation	Gastric reflux & Carminative	Spring, summer	Abundant ^a	4
Gosh kob	Gosh kob	<i>Ephedra intermedia</i> Schrenk & C.A.Mey.	Leaf	Salve	Toothache & anodyne, Rapid healing of fracture	Spring, summer	Abundant ^a	3
Gerdo	Gerdo	<i>Jaglans tegia</i> L.	Leaf	Salve, Distillation	Purgative, Anemia Treatment, Antihyperlipidemia, Galactagogue, Hyperglycemic, Insects sting, Obviation pain joint, Muscle pain & Muscle damage, Gout, Skeletal disorders & Vitamins Shortage, Muscle antispasmodic	Spring, summer	Abundant ^a	9
Gilas	Gilas	<i>Prunus avium</i> L.	Leaf	Salve	resolver sub skin & bygone Infections	Spring, summer	Abundant ^a	2
Gol ghahre	Shabdar	<i>Trifolium pretense</i> L.	Flower	Herbal Tea, Distillation	Anodyne & sedative, Nerves tonic, Heart tonic	Spring	Abundant ^a	5
Dome gav	Mahor	<i>Verbascum songaricum</i> subsp. <i>Songaricum</i>	Leaf, Flower, Root	Distillation, Decoction	Indigestion, Appetizer, anti-gastroenteritis, Antispasmodic & sedative Gastric, anti-colic, Antidiarrheal, Antiasetic & bellyache, Increased gastric juice, Obviation urinary infections, Gonorrhea, Fatty Liver treat, Relieve symptoms Sinusitis & head cold	Spring	Abundant ^c	17
Mikhak	Gole gandom	<i>Centaurea depressa</i> M. B.	Leaf	Salve, Maceration	Toothache & anodyne, Gastric reflux & Carminative	Spring	Abundant ^a	3

Gol sepid	Gol sepid	<i>Astragalus</i> Sect. <i>Astragalus sieversianus</i> Pall	Flower	Distillation, Decoction	treat Infection& Pain renal, Diuretic	Spring	Abundant ^c	4
Papok	Gand na kohi	<i>Marrubium anisodon</i> C. Koch.	Flower, Stem	Decoction	Antiasetic & bellyache	Spring, summer	Abundant ^c	5
Mokhalese	Mokhalese	<i>Scrophularia deserti</i> Del.	Aerial part	Distillation, Decoction	Antiasetic & bellyache, Gastric reflux & Carminative, Antidiarrheal, Treat nervous diseases, Heart tonic, Relieve symptoms Sinusitis & head cold, Febrifuge	Spring	Abundant ^a	17
Maryam goli Nana	Maryam goli Nana	<i>Salvia virgata</i> Jacq. <i>Mentha piperita</i> L.	Leaf, Flower Root, Aerial part	Herbal Tea Distillation	Anodyne & sedative, Nerves tonic Gastric reflux & Carminative, Antiasetic & bellyache, Antidiarrheal, Stomach tonic, Obviation urinary infections , Antiseptic & treat Female diseases	Spring Spring, summer	Rare Abundant ^a	2 15
Nakhonak	Nakhonak	<i>Astragalus</i> (Sect. <i>Ankylotus</i>) <i>commixtus</i> Bge.	Stem, Fruit	Decoction	Relieve symptoms Sinusitis & head cold	summer	Abundant ^b	3
Kavar	Hendevane kohi	<i>Capparis spinosa</i> L.	Fruit	Salve, Powder	treat hemorrhoids, Treat nervous diseases, Hyperglycemic, Obviation pain joint & rheumatism	summer	Abundant ^b	6
Nastaran vahshi	Nastaran vahshi	<i>Rosa canina</i> L.	Fruit, Flower	Decoction, Herbal Tea	Blood purifier, Heart tonic, Nerves tonic, Repulse renal calculi, Hair tonic, skin succulence & tonic	Spring, Autumn	Abundant ^a	5
Alaf chay	Gol raei	<i>Hypericum perforatum</i> L.	Leaf, Flower	Herbal Tea, Fumigation	Anodyne & sedative, Treat nervous diseases, Anti-migraine, resolver Vertigo & pate tonic, Relieve symptoms Sinusitis & head cold	Spring	Abundant ^c	4
Hava chobe	Hava chobe	<i>Arnebia decumbens</i> (Vevt.) Coss. & Kral	Root	Salve	resolver sub skin & bygone Infections, Rapid healing of fracture, Skeletal disorders & Vitamins Shortage	summer	Abundant ^c	3

a, b and c: relative abundance of species at the area, they are found up to 80-90%, 60-70% and 40-50%, respectively.

Local name	Persian name	Scientific Name	Used part	Mode of preparation	Medicinal uses	Harvest time	Abundance	No. of person
Ostakhodos	Ostakhodos	<i>Nepeta binaludensis</i> Jamzad	Aerial part	Decoction, Herbal Tea, Distillation	stomach Antispasmodic, Gastric reflux & Carminative, gastric sedative, Anodyne & sedative, Anti-migraine, Treat nervous diseases, Nerves tonic, Depression Treatment, Prostatic problems Antitussive & Lung antispasmodic, Antiseptic Lung, throat & nasal passages, Vasodilator & current blood stimulus, Relieve symptoms Sinusitis & head cold, Aphrodisiac, Stimulant & resolver exhaustion, Antihyperlipidemia, Febrifuge, Diuretic, Obviation pain joint & rheumatism, Healer inner & superficial, sores, Gout, Antiasetic & bellyache	Spring	Rare	27
Anokh	Avishan	<i>Thymus Transcaspicus</i> Klovov	Aerial part	Decoction, Herbal Tea, Distillation	stomach Antispasmodic, gastric sedative, Stomach tonic, Gastric reflux & Carminative, Indigestion, expectorant, Antitussive & Lung antispasmodic, current blood stimulus, Depression Treatment, Anti-Convulsions, Repulse renal calculi, Relieve symptoms Sinusitis & head cold, Antiseptic Gums & Oral Abscess, Eyesight tonic	Spring	Abundant ^c	16
Arzano	Arzan vahshi	<i>Setaria viridis</i> (L.) P.Beauv.	Seed	Powder	Antidiarrheal, Aphrodisiac, Vasodilator & current blood stimulus, Skeletal disorders & Vitamins Shortage, Obviation pain joint & rheumatism, Oral Abscess	Spring	Abundant ^a	3
Espand	Espand	<i>Peganum harmala</i> L.	Aerial part, Seed	Distillation, Salve	Gastric reflux & Carminative, Antidiarrheal, Anthelmintic & parasite, Blood purifier, Nerves tonic, Sliming, Obviation pain joint & rheumatism, Hypoallergenic & itching Skin	Spring,	Abundant ^c	8
Aghti	Aghti siyah	<i>Sambucus ebulus</i> L.	Fruit	Decoction	Treat nervous diseases, Diuretic, Purgative, Hair tonic	summer	Abundant ^a	9
Anison	Anison	<i>Astrodaucus persicus</i>	Seed	Decoction	Gastric reflux & Carminative, Digest food, Antitussive & Lung antispasmodic, Anodyne & sedative, Anti-migraine, Galactagogue, Febrifuge	Spring	Rare	5
Khargosh	Efsentin	<i>Helichrysum graveolens</i> (M. B.)	Flower	Herbal Tea	stomach Antispasmodic, gastric sedative, Stomach tonic, treat hemorrhoids	summer	Abundant ^c	10
Rish boz	Ephedra	<i>Ephedra intermedia</i> Schrank et C. A. Mey	Flower	Decoction	Stimulant & resolver exhaustion, chronic bronchitis asthma	summer	Abundant ^a	7

Borani	Esfenaj vahshi	<i>Chenopodium murale</i> L.	Leaf, Stem	Decoction	Purgative, anti-gastroenteritis, Digest food, Anemia Treatment	Spring	Abundant ^a	10
Sedagh	Bomadaran	<i>Achillea biebersteini</i> Afan.	Aerial part	Distillation, Decoction	Antiasetic & bellyache, Gastric reflux & Carminative, Anthelmintic & parasite, Antidiarrheal, treat hemorrhoids, Anti-hemorrhage, Blood purifier, Heart tonic, Anodyne & sedative, Cystitis & Urinary tract obviation, Menorrhagia & emmenagogue, skin succulence & tonic, Stimulant, Eyesight tonic, head cold	Spring	Abundant ^a	19
Babone	Babone	<i>Tanacetum parthenium</i> (L.) Schultz-Bip.	Aerial part, Flower	Distillation, Salve Decoction, Fumigation	anti-gastroenteritis, Carminative, Indigestion, Appetizer, Anthelmintic & parasite, Digest food, expectorant, Regulation of heartbeat, Anodyne & sedative, Nerves tonic, Treat nervous diseases, Obviation urinary infections, Diuretic, Relieve menopausal symptoms, Anti-Dysmenorrhea, Menorrhagia & emmenagogue, Bilious, Obviation pain joint & rheumatism, Muscle pain & Muscle damage, Obviation Freckle & Acne & Skin discoloration, Healing Surface sores & effects skin burns, Strengthening of the scalp & anti-dandruff, skin succulence & tonic, Anti-alopecia, Hair tonic, Stimulant & resolver exhaustion, Febrifuge, Relieve symptoms Sinusitis & head cold, resolver Vertigo & pate tonic	Spring	Abundant ^a	31
Banafshe	Banafshe vahshi	<i>Viola odorata</i> L.	Flower	Decoction, Herbal Tea	Antidiarrheal, treat hemorrhoids, asthma, chronic bronchitis, Anodyne & sedative, Obviation pain joint & rheumatism, Muscle pain & Muscle damage, Febrifuge, Hoarseness and nasal congestion	Spring	Abundant ^a	13
Badam talkh	Badam vahshi	<i>Amygdalus spinosissim</i> Bge	Seed	Decoction, Maceration	Antispasmodic & sedative Gastric, anti-colic, Obviation urinary infections, treat Infection& Pain renal, Hyperglycemic, Healing Surface sores & effects skin burns, Anti-alopecia, Hair tonic	summer	Abundant ^a	9
Barhang	Barhang	<i>Plantago major</i> L.	Seed	Maceration	Antidiarrheal, Increased gastricjuice, Antitussive & Lung antispasmodic, Asthma, chronic bronchitis, expectorant, Repulse renal calculi, Healer inner & superficial, sores, Relieve symptoms Sinusitis & head cold	summer	Abundant ^a	8
Badranj	Chasbak	<i>Asperugo procumbens</i> L.	Aerial part	Herbal Tea	Antispasmodic & sedative Gastric, anti-colic, Nerves tonic, Heart tonic	Spring	Abundant ^a	5

Khane kogi	Badranjboye	<i>Hymenocrater platystegius</i> Rech.f.	Branches, Flower	Distillation, Herbal Tea	Gastric reflux & Carminative, Antitussive & Lung antispasmodic, hypertension, Anemia Treatment, Vasodilator & current blood stimulus, Regulation of heartbeat, Anodyne & sedative, Anti-Convulsions, Treat nervous diseases, Menorrhagia & emmenagogue, Biliious, Hypoallergenic & itching Skin, Strengthening of Memory, resolver Vertigo & pate tonic	Spring	Abundant ^a	13
Alaf cheshme	Bolagh oti	<i>Nastartium officinale</i> (L.) R. Br.	Aerial part	Unprepared	Treat nervous diseases, Diabetes, Impact on the thyroid gland, Immune system tonic	Spring	Medium	3
Bid	Bid	<i>Salix Alba</i> L.	Branches, Leaf	Distillation	Stomach tonic, Antihyperlipidemia, Vasodilator & current blood stimulus, Nerves tonic, Anti-Dysmenorrhea, jaundice treat, Sliming, Hyperglycemic, Hypoallergenic & itching Skin, Strengthening of the scalp & anti-dandruff, Febrifuge, anti- sunstroke	summer	Abundant ^a	11
Bidmeshk	Bidmeshk	<i>Salix aegyptiaca</i> L.	Flower	Distillation	Stomach tonic, Antihypertensive, Heart tonic, Anodyne & sedative, Nerves tonic, Immune system tonic, Febrifuge, anti- sunstroke	Spring	Abundant ^a	16
Beh	Beh	<i>Cydonia oblonga</i> Mill	Leaf, Seed	Herbal Tea	Antidiarrheal, Antiasetic & bellyache, Antitussive & Lung antispasmodic, Febrifuge, anti- sunstroke	Spring, Autumn	Abundant ^a	6
Belghast	Shahi vahshi	<i>Cardaria draba</i> (L.) Desv.	Aerial part	Decoction	Nerves tonic, Treat nervous diseases	Spring	Abundant ^a	11
Ghasni	Barije	<i>Ferula szowitsiana</i> DC.	Leaf, Flower	Herbal Tea	Nerves tonic, Respiratory allergy	Spring	Abundant ^c	5
Boghnagh	Boghnagh	<i>Eryngium bungei</i> Boiss.	Flower	Herbal Tea	Diabetes, Asthma, Heart tonic	summer	Abundant ^a	3
Bang dane	Bazrolbanj	<i>Hyoscyamus niger</i> L.	Flower	Herbal Tea	Antitussive & Lung antispasmodic, Stimulant & resolver exhaustion	Spring	Abundant ^a	4
Barhang sar neyzeei Pichak	Barhang sar neyzeei Pichak sahraei	<i>Plantago lanceolata</i> L.	Seed	Herbal Tea	anti-gastroenteritis	summer	Abundant ^a	3
		<i>Convolvulus arvensis</i> L.	Leaf	Decoction	Antiasetic & bellyache, Digest food, Antihyperlipidemia, Antiseptic Inner & outer body	Spring, summer	Abundant ^a	7
Kolche kalagh	Panirak	<i>Malva neglecta</i> Wallr.	Aerial part	Decoction, Salve	Antitussive & Lung antispasmodic, Antiseptic Lung, throat & nasal passages, expectorant, Anodyne & sedative, Antiseptic & treat Female diseases, resolver sub skin & bygone Infections, Relieve symptoms Sinusitis & head cold	Spring, summer	Abundant ^a	9

Panj angosht	Panj angosht	<i>Vitex pseudo-negundo</i> (Hauskn.) Hand-Mzt.	Flower	Herbal Tea	Anti-aphrodisiac, Menorrhagia & emmenagogue, Relieve menopausal symptoms, Antiseptic & treat Female diseases	Spring	Rare	6
Pone baghi	Pone	<i>Mentha longifolia</i> (L.) Hudson var	Aerial part, Root	Decoction, Herbal Tea, Distillation	Antiasetic & bellyache, Gastric reflux & Carminative, Antidiarrheal, Indigestion, Appetizer, anti-gastroenteritis, stomach Antispasmodic, gastric sedative, Antitussive & Lung antispasmodic, Asthma, Antiseptic Lung, throat & nasal passages, Antihyperlipidemia, Antiseptic & treat Female diseases, Biliious, Relieve symptoms Sinusitis & head cold	Spring, summer	Abundant ^a	21
Ponkevod	Yas kabod	<i>Perovskia abrotanoides</i> karel	Flower, Branches	Distillation, Powder	Gastric reflux & Carminative, Stomach tonic, Antiasetic & bellyache, Anodyne & sedative, Heart tonic, Obviation pain joint & rheumatism, Muscle pain & Muscle damage, Strengthening of the scalp & anti-dandruff, Obviation Freckle & Acne & Skin discoloration, Hair tonic, resolver Vertigo & pate tonic	Spring, summer	Abundant ^a	16
Pone kofi	Pone kofi	<i>Nepeta</i> sp.	Aerial part	Distillation, Herbal Tea	Anodyne & sedative, Gastric reflux & Carminative, Antiseptic & treat Female diseases, Diabetes	Spring	Medium	7
Parsiyavoshan	Parsiyavoshan	<i>Adiantum capillus-veneris</i> L.	Leaf	Distillation	Antitussive & Lung antispasmodic, expectorant, Respiratory allergy, Hypoallergenic & itching Skin, skin succulence & tonic, Febrifuge, Gastric reflux & Carminative	Spring, summer	Abundant ^a	5
Terekh	Dermane dashti	<i>Artemisia sieberi</i> Besser subus.	Aerial part	Distillation, Decoction	Antiasetic & bellyache, Gastric reflux & Carminative, Anthelmintic & parasite, Antidiarrheal (child), Muscle pain & Muscle damage	summer	Abundant ^a	10
Tameshk	Tameshk	<i>Rubus hyrcanus</i> Juz.	Leaf, Fruit	Unprepared, Herbal Tea	Diabetes, Relieve symptoms Sinusitis & head cold, Antitussive & Lung antispasmodic	Spring, summer	Abundant ^a	6
Taj khoros	Taj khoros	<i>Amaranthus chlorostachys</i> Willd.	Leaf, Flower	Powder, Herbal Tea	Relieve symptoms Sinusitis & head cold, Hoarseness and nasal congestion	Spring	Abundant ^a	5
Seke angor Jo do sar	Taj rizi Jo do sar	<i>Solanum nigrum</i> L. <i>Avena sativa</i> L.	Fruit Aerial part	Salve Decoction	Toothache & anodyne Hyperglycemic, Diuretic, Anodyne & sedative, Antihyperlipidemia	summer Spring	Abundant ^a Abundant ^a	9 3
Jaro sepid	Jaro sepid	<i>Scariola orintalis</i> (Boiss.) Sojak.	Flower	Herbal Tea	Skeletal disorders & Vitamins Shortage, Stimulant & resolver exhaustion	Spring, summer	Abundant ^a	2

Dome gorbe	Chay kohl	<i>Stachys lavandulifolia</i> vahl.	Aerial part, Flower	Herbal Tea, Decoction	Antispasmodic, gastric sedative, Indigestion, Appetizer, Antidiarrheal, Stomach tonic, Anodyne & sedative, Nerves tonic, Depression Treatment, hypertension, Heart tonic, Hyperglycemic, Strengthening of Memory	Spring	Medium	22
Chenar	Chenar	<i>Platanus acerifolia</i> L.	Leaf	Distillation	Antitussive & Lung antispasmodic, Menorrhagia & emmenagogue, Prostatic problems, Obviation pain joint & rheumatism, skin succulence & tonic, Obviation Freckle & Acne & Skin discoloration, Febrifuge, Hoarseness and nasal congestion	Spring, summer	Abundant ^a	6
Khar shotori	Khar shotori	<i>Alhagi maurorum</i> Medicos	Aerial part	Distillation	Repulse renal calculi, Repulse Bladder calculi, Obviation urinary infections , Heart tonic, Antihypertensive, Stomach tonic, Antidiarrheal	summer	Abundant ^a	16
Khar khasak	Khar khasak	<i>Tribulus terrestris</i> L.	Fruit, Branches	Distillation, Decoction	Repulse renal calculi, Repulse Bladder calculi, Obviation Cystitis & Urinary tract, treat Infection& Pain renal, Diuretic, Gonorrhea, Prostatic problems, Aphrodisiac, Immune system tonic, Increased gastric juice	summer	Abundant ^c	11
Khatmi	Khatmi	<i>Alcea rhyticarpa</i> (Trautv.) Iljin.	Flower	Decoction, Herbal Tea	Purgative, Antiseptic Lung, throat & nasal passages, expectorant, Antitussive & Lung antispasmodic, Treat nervous diseases, Anodyne & sedative, Hypoallergenic & itching Skin, Relieve symptoms Sinusitis & head cold, resolver Vertigo & pate tonic, Febrifuge	Spring	Abundant ^a	14
Khatmi khabazi	Khatmi khabazi	<i>Malva sylvestris</i> L.	Flower	Decoction	Purgative, Diuretic, Anodyne & sedative, Febrifuge, anti- sunstroke	Spring	Abundant ^c	10
Khar maryam	Khar maryam	<i>Cirsium vulgare</i> (Savi) Ten.	Flower	Decoction	Prostatic problems, Hyperglycemic	Summer, Autumn	Abundant ^a	7
Khorfe	Khorfe	<i>Portulaca oleracea</i> L.	Leaf, Stem	Unprepared	Hyperglycemic, Gastric reflux & Carminative	Spring, summer	Abundant ^a	8
Khakshir	Khakshir	<i>Descurainia Sophia</i> (L.) Schur	Seed	Maceration	Febrifuge, anti- sunstroke, Increased gastric juice	summer	Abundant ^a	11
Kharije	Varak	<i>Rosa persica</i> Michx. Ex Juss	Root	Decoction	Obviation urinary infections , Repulse renal calculi, Repulse Bladder calculi, Obviation pain joint & rheumatism	Spring, summer	Abundant ^a	4
Dome asb	Dome asb	<i>Equistum arvense</i> L.	Aerial part	Distillation	Prostatic problems, Repulse renal calculi, Obviation cystitis & Urinary tract, Anti-hemorrhage	Spring	Medium	7
Dermane torki	Dermane	<i>Chenopodium botrys</i> L.	Aerial part	Distillation, Salve	Anthelmintic & parasite, Gastric reflux & Carminative, Antiasetic & bellyache, Antidiarrheal, Increased gastric juice, Muscle pain & Muscle damage	summer	Abundant ^a	13

Daghdaghak	Daghdaghak	<i>Colutea persica</i> Boiss.	Leaf	Decoction	Purgative	Spring, summer	Abundant ^c	3
Taghot	Daghdaghan	<i>Celtis australis</i> L.	Leaf, Fruit	Decoction	Antidiarrheal, Stomach tonic	Spring, summer	Abundant ^c	6
Laterre	Rishe baba adam	<i>Arctium lappa</i> L.	Leaf, Root	Distillation, Salve	Anthelmintic & parasite, Purgative, Antitussive & Lung antispasmodic, Antihypertensive, Antihyperlipidemia, Diabetes, Hyperglycemic, Obviation Freckle & Acne & Skin discoloration, Obviation Freckle & Acne & Skin discoloration, Anti-alopecia, Obviation pain joint & rheumatism, Antiseptic Inner & outer body, Diuretic	Spring	Abundant ^a	8
Razyane	Razyane	<i>Prangos latiloba</i> Korov.	Branches, Flower	Distillation	Gastric reflux & Carminative, Anti-Dysmenorrhea	Spring	Abundant ^c	5
Rivas	Rivas	<i>Rheum ribes</i> L.	Root, Seed	Decoction, Salve	Anthelmintic & parasite, Stomach tonic, Indigestion, Appetizer, Purgative, Gastric reflux & Carminative, Antidiarrheal, treat hemorrhoids, liver tonic, Hyperglycemic, resolver Vertigo & pate tonic, Eyesight tonic	Spring, Autumn	Medium	7
Zire kohi	Zire kohi	<i>Bunium persicum</i> (Boiss.)	Seed	Distillation, Powder	Gastric reflux & Carminative, Stomach tonic, Digest food, Antiasetic & bellyache, Anemia Treatment, Antihyperlipidemia, Blood purifier, Anodyne & sedative, Menorrhagia & emmenagogue, Galactagogue, Prostatic problems, Impact on the thyroid gland, Sliming, Stimulant & resolver exhaustion	Spring	Medium	13
Zalzalak	Zalzalak	<i>Crataegus pontica</i> C.Koch	Leaf, Fruit	Unprepared, Herbal Tea	Antihypertensive, Antihyperlipidemia, Regulation of heartbeat, Heart tonic, Hyperglycemic	Spring, Autumn	Abundant ^a	4
Ar ar	Zalzalak vahshi	<i>Crataegus atosanguinea</i> A.Pojark.	Fruit	Decoction	Antihypertensive, Antihyperlipidemia, Regulation of heartbeat, Heart tonic	Autumn	Abundant ^b	2
Zereshk vahshi	Zereshk kohi	<i>Berberis integerrima</i> Bunge	Fruit	Decoction, Herbal Tea	Indigestion, Appetizer, Heart tonic, Gout, Hyperglycemic	Autumn	Abundant ^c	5
Zaban gav	Zaban gav	<i>Verbascum</i> sp.	Leaf	Decoction, Herbal Tea	Gastric reflux & Carminative, Antiasetic & bellyache	Spring	Abundant ^a	10
Zaban gonjeshk	Zaban gonjeshk	<i>Fraxinus excelsior</i> L. subsp.	Leaf, Fruit	Distillation	Antitussive & Lung antispasmodic, expectorant, Anodyne & sedative, Immune system tonic, Febrifuge	Spring, summer	Abundant ^a	3
Zegharche	Zegharche	<i>Bunium chaerophylloides</i> (Regel. & Schmalh.)	Aerial part	Salve	Obviation pain joint & rheumatism	Spring	Abundant ^b	3

Sagh torshak	Sagh torosho	<i>Rumex acetosa</i> L.	Leaf, Root	Salve, Decoction	Indigestion, Appetizer, Antidiarrheal, Antiasetic & bellyache (child), Blood purifier, Repulse renal calculi, Treat Jaundice, Skeletal disorders & Vitamins Shortage, Obviation pain joint, Stimulant	Spring, summer	Abundant ^a	8
Somagh	Somagh	<i>Rhus coriaria</i> L.	Seed	Powder	Anti-hemorrhage, Antihyperlipidemia, Diabetes	Autumn	Abundant ^a	5
Sereshk	Sereshk	<i>Eremurus spectabilis</i> M.B.	Root	Powder	Toothache & anodyne, Antiseptic Gums & Oral Abscess	Spring, summer	Abundant ^a	4
Sonbol tib	Sonbol tib	<i>Eupatorium cannabinum</i> L.	Root	Decoction	Anthelmintic & parasite, Heart tonic, Anodyne & sedative, Depression Treatment, Anti-migraine	Autumn	Medium	7
Shahtare	Shahtare	<i>Fumaria vaillantii</i> Loisel.	Aerial part	Distillation, Plant bath	Stomach tonic, Anthelmintic & parasite, Increased gastric juice, Antiasetic & bellyache, Indigestion, Appetizer, Antihyperlipidemia, Hyperglycemic, Bilious, Hypoallergenic & itching Skin, Obviation Freckle & Acne & Skin discoloration, Prostatic problems, Toothache & anodyne, Anti-hemorrhage (gingiva), Febrifuge	Spring	Abundant ^a	23
Rishe mikh	Shrin bayan	<i>Glycyrrhiza glabra</i> L. var. <i>glabra</i>	Root	Decoction, Salve	Gastric reflux & Carminative, Stomach tonic, treat gastric and duodenal ulcers, Antitussive & Lung antispasmodic, expectorant, hypertension, Anodyne & sedative, Repulse renal calculi, Obviation pain joint & rheumatism, Rapid healing of fracture, Muscle pain & Muscle damage, Healer inner & superficial, sores, Hoarseness and nasal congestion	Spring, summer	Abundant ^c	8
Shahtot	Shahtot	<i>Morus nigra</i> L.	Root, Leaf	Decoction	Abortion (Root), Diabetes (Leaf)	Autumn	Abundant ^a	3
Shekar tighal	Shekar tighal	<i>Echinops chorassanicus</i> Bunge	Seed, Flower	Powder	Antiseptic Lung, throat & nasal passages, Obviation pain joint & rheumatism, Relieve symptoms Sinusitis & head cold	summer	Abundant ^a	5
Shahdane	Shahdane	<i>Cannabis sativa</i> L.	Seed	Powder	Purgative, Anthelmintic & parasite, Menorrhagia & emmenagogue, Muscle antispasmodic	summer	Abundant ^c	2
Lale sorkh	Shaghaygh	<i>Papaver rhoeas</i> L.	Flower	Herbal Tea	Antitussive & Lung antispasmodic, Antiseptic Lung, throat & nasal passages	Spring	Abundant ^a	3
Shevid	Shevid	<i>Anethum graveolens</i> L.	Branches	Powder, Distillation	Gastric reflux & Carminative, Stomach tonic, Anti-Convulsions, Diuretic, Galactagogue	Spring, summer	Abundant ^a	7
Alaf sim kesh	Alaf sim kesh	<i>Reseda lutea</i> L.	Leaf	Salve	resolver sub skin & bygone Infections, Toothache & anodyne	Spring, summer	Abundant ^a	3

Alaf bive	Alaf bive	<i>Zygophyllum fabago</i> L.	Leaf	Salve	Increased gastric juice, Antiasetic & bellyache, Antispasmodic & sedative Gastric, anti-colic, anti-gastroenteritis	Spring, summer	Abundant ^a	2
Arosak poshte parde	Arosak poshte parde	<i>Physalis alkekengi</i> L.	Flower, Fruit	Herbal Tea	Anthelmintic & parasite, Asthma, chronic bronchitis, Impact on the a variety of hormones	Spring	Medium	3
Alaf josh	Alaf josh	<i>Euphorbia</i> sp.	Leaf	Powder	Anti-hemorrhage, Rapid healing of wound	Spring	Abundant ^c	2
Hezarbando	Haft band	<i>Polygonum ayiculara</i> L.	Leaf, Stem	Salve, Decoction	Antiseptic Lung, throat & nasal passages, Obviation pain joint & rheumatism, resolver sub skin & bygone Infections, Antiseptic Inner & outer body	Spring, summer	Abundant ^a	6
Ghazyaghi	Pakalagh	<i>Falcaria vulgaris</i> Bernh.	Leaf	Unprepared	Indigestion, Appetizer, Purgative, Treat Jaundice, Antiseptic & treat Female diseases	Spring	Abundant ^a	3
Shang	Shang	<i>Tragopogon graminifolius</i> DC.	Aerial part	Herbal Tea	Bilious, rheumatism, Gout, Immune system tonic, Stimulant & resolver exhaustion	Spring	Abundant ^a	5
Gheytdaran	Gheytdaran	<i>Erodium cicutarium</i> (L.) L'Her.	Aerial part	Decoction, Plant bath	Antiseptic & treat Female diseases, Menorrhagia & emmenagogue, Anti-fungi, Antiseptic Inner & outer body	Spring	Abundant ^a	3
Ghodome	Ghodome	<i>Alyssum mulleri</i> Boiss & Buhse	Seed	Powder	Antitussive & Lung antispasmodic, resolver sub skin & bygone Infections, Relieve symptoms Sinusitis & head cold	summer	Abundant ^a	4

Kalpore	Kalpore	<i>Teucrium polium</i> L.	Flower, Branches,	Distillation, Powder	Antiasetic & bellyache, Antidiarrheal, Gastric reflux & Carminative, Stomach tonic, anti-gastroenteritis, Increased gastric juice, Anthelmintic & parasite, Indigestion, Appetizer, Asthma, chronic bronchitis, Antihyperlipidemia, Treat nervous diseases, Menorrhagia & emmenagogue, Diabetes, Hyperglycemic, Immune system tonic, Stimulant & resolver exhaustion, Anti-Alzheimer	Spring	Abundant	27
Hooshe	Kakoti	<i>Ziziphora clinopodioides</i> Lam			anti-gastroenteritis, Gastric reflux & Carminative, Appetizer, Antiasetic & bellyache, Purgative, Stomach tonic, Anthelmintic & parasite, stomach Antispasmodic, Antitussive & Lung antispasmodic, Blood purifier, Antihyperlipidemia, Heart tonic, Anodyne & sedative, Relieve symptoms Sinusitis & head cold	Spring	Medium ^a	23
Kangar vahshi	Kangar farangi	<i>Cousinia microcarpa</i> Boiss.	Aerial part	Powder, Distillation, Decoction	Anti-gastroenteritis, Gastric reflux & Carminative, Appetizer, Antiasetic & bellyache, Purgative, Stomach tonic, Anthelmintic & parasite, stomach Antispasmodic, Antitussive & Lung antispasmodic, Blood purifier, Antihyperlipidemia, Heart tonic, Anodyne & sedative, Relieve symptoms Sinusitis & head cold	Spring, summer	Abundant ^a	4
Kangar khoreshi	Kangar	<i>Gundtia tournefortii</i> L.	Leaf, Stem	Decoction	Antihyperlipidemia, Repulse renal calculi, Hyperglycemic, Bilius, Obviation pain joint & rheumatism	summer	Abundant ^c	7
			Leaf, Flower	Decoction	Digest food, Indigestion, Appetizer, Stomach tonic, Heart tonic, Diuretic			
Komay	Koma	<i>Turgenia latifolia</i> (L.) Hoffn	Resin, Root	Decoction, Tablet	Anthelmintic & parasite, stomach Antispasmodic, gastric sedative, Gastric reflux & Carminative, Stomach tonic, Digest food, Antiasetic & bellyache, Antidiarrheal, Aphrodisiac, Obviation pain joint	Autumn	Rare	4
Konoche	Konoche	<i>Salvia chloroleuca</i> Rech.f.	Fruit	Maceration	Anthelmintic & parasite, Purgative expectorant, Febrifuge (child)	summer	Abundant ^a	3
Kasni	Kasni	<i>Cichorium intybus</i> L.	Aerial part	Distillation, Decoction	Antiasetic & bellyache, Gastric reflux & Carminative, Appetizer, Stomach tonic, Purgative, treat gastric and duodenal ulcers, Antihyperlipidemia, Blood purifier, Anemia Treatment, Vasodilator & current blood stimulus, Treat nervous diseases, Anodyne & sedative, treat Infection& Pain renal, Repulse renal calculi, Relieve menopausal symptoms, Anti-Dysmenorrhea, Aphrodisiac, Diabetes, Hyperglycemic, Bilius, Treat Jaundice, liver tonic, Fatty Liver treat, Muscle pain & Muscle damage, Obviation Freckle & Acne & Skin discoloration, Anti-fungi, Hypoallergenic & itching Skin, skin succulence & tonic, anti- sunstroke, Antiseptic Gums & Oral Abscess, Eyesight tonic	Spring	Abundant ^c	22

Konjed	Konjed	<i>Sesamum indicum</i>	Seed	Powder	Aphrodisiac, Treatment of premature Ejaculation, Strengthening of Memory	summer	Abundant ^a	3
Goveshti	Goveshti	<i>Anchusa italica</i> Retz.	Leaf	Salve, Powder	Toothache & anodyne, Antiseptic Gums & Oral Abscess, Treat nervous diseases (Salve), Digest food	Spring, summer	Abundant ^a	3
Gav zaban	Gav zaban	<i>Echium italicum</i> L.	Flower	Decoction, Herbal Tea	Anodyne & sedative, Nerves tonic, Antihypertensive, Blood purifier, Stimulant & resolver exhaustion	Spring	Abundant ^c	4
Ab gazi	Gazane	<i>Urtica dioica</i> L. var. <i>dioica</i>	Aerial part, Root	Decoction, Herbal Tea, Salve, Distillation	anti-gastroenteritis, Stomach tonic, treat hemorrhoids, Asthma, Anemia Treatment, Antihyperlipidemia, Anti-hemorrhage, Blood purifier, Vasodilator & current blood stimulus, Anti-migraine, Diuretic, Repulse renal calculi, Prostatic problems, Menorrhagia & emmenagogue, Antiseptic & treat Female diseases, Diabetes, Hyperglycemic, Muscle antispasmodic, Obviation pain joint, Hypoallergenic & itching Skin, Anti-alopelia, Stimulant & resolver exhaustion, MS Treatment, Antiseptic Gums & Oral Abscess	Spring, summer	Abundant ^b	30
Golpar	Golpar	<i>Heracleum persicum</i> L.	Fruit, Aerial part	Powder	Gastric reflux & Carminative, Digest food, Stomach tonic, Indigestion, Appetizer, Increased gastric juice	Summer	Abundant ^b	8
Gavan	Gavan	<i>Astragalus</i> sect. <i>platonychium</i> <i>verus</i>	Resin	Salve	Toothache & anodyne, Anti-alopelia, Hair tonic, Strengthening of the scalp & anti-dandruff, resolver sub skin & bygone Infections	Autumn	Abundant ^a	3
Gosh bare	Gosh bare	<i>Centaurea behen</i> L.	Leaf, Flower	Distillation	Gastric reflux & Carminative	Spring, summer	Abundant ^a	4
Gosh kob	Gosh kob	<i>Ephedra intermedia</i> Schrenk & C.A.Mey.	Leaf	Salve	Toothache & anodyne, Rapid healing of fracture	Spring, summer	Abundant ^a	3
Gerdo	Gerdo	<i>Jaglans tegia</i> L.	Leaf	Salve, Distillation	Purgative, Anemia Treatment, Antihyperlipidemia, Galactagogue, Hyperglycemic, Insects sting, Obviation pain joint, Muscle pain & Muscle damage, Gout, Skeletal disorders & Vitamins Shortage, Muscle antispasmodic	Spring, summer	Abundant ^a	9
Gilas	Gilas	<i>Prunus avium</i> L.	Leaf	Salve	resolver sub skin & bygone Infections	Spring, summer	Abundant ^a	2
Gol ghahre	Shabdar	<i>Trifolium pretense</i> L.	Flower	Herbal Tea, Distillation	Anodyne & sedative, Nerves tonic, Heart tonic	Spring	Abundant ^a	5
Dome gav	Mahor	<i>Verbascum songaricum</i> subsp. <i>Songaricum</i>	Leaf, Flower, Root	Distillation, Decoction	Indigestion, Appetizer, anti-gastroenteritis, Antispasmodic & sedative Gastric, anti-colic, Antidiarrheal, Antiasetic & bellyache, Increased gastric juice, Obviation urinary infections, Gonorrhea, Fatty Liver treat, Relieve symptoms Sinusitis & head cold	Spring	Abundant ^c	17
Mikhak	Gole gandom	<i>Centaurea depressa</i> M. B.	Leaf	Salve, Maceration	Toothache & anodyne, Gastric reflux & Carminative	Spring	Abundant ^a	3

Gol sepid	Gol sepid	<i>Astragalus</i> Sect. <i>Astragalus sieversianus</i> Pall	Flower	Distillation, Decoction	treat Infection& Pain renal, Diuretic	Spring	Abundant ^c	4
Papok	Gand na kohi	<i>Marrubium anisodon</i> C. Koch.	Flower, Stem	Decoction	Antiasetic & bellyache	Spring, summer	Abundant ^c	5
Mokhalese	Mokhalese	<i>Scrophularia deserti</i> Del.	Aerial part	Distillation, Decoction	Antiasetic & bellyache, Gastric reflux & Carminative, Antidiarrheal, Treat nervous diseases, Heart tonic, Relieve symptoms Sinusitis & head cold, Febrifuge	Spring	Abundant ^a	17
Maryam goli Nana	Maryam goli Nana	<i>Salvia virgata</i> Jacq. <i>Mentha piperita</i> L.	Leaf, Flower Root, Aerial part	Herbal Tea Distillation	Anodyne & sedative, Nerves tonic Gastric reflux & Carminative, Antiasetic & bellyache, Antidiarrheal, Stomach tonic, Obviation urinary infections , Antiseptic & treat Female diseases	Spring Spring, summer	Rare Abundant ^a	2 15
Nakhonak	Nakhonak	<i>Astragalus</i> (Sect. <i>Ankylotus</i>) <i>commixtus</i> Bge.	Stem, Fruit	Decoction	Relieve symptoms Sinusitis & head cold	summer	Abundant ^b	3
Kavar	Hendevane kohi	<i>Capparis spinosa</i> L.	Fruit	Salve, Powder	treat hemorrhoids, Treat nervous diseases, Hyperglycemic, Obviation pain joint & rheumatism	summer	Abundant ^b	6
Nastaran vahshi	Nastaran vahshi	<i>Rosa canina</i> L.	Fruit, Flower	Decoction, Herbal Tea	Blood purifier, Heart tonic, Nerves tonic, Repulse renal calculi, Hair tonic, skin succulence & tonic	Spring, Autumn	Abundant ^a	5
Alaf chay	Gol raei	<i>Hypericum perforatum</i> L.	Leaf, Flower	Herbal Tea, Fumigation	Anodyne & sedative, Treat nervous diseases, Anti-migraine, resolver Vertigo & pate tonic, Relieve symptoms Sinusitis & head cold	Spring	Abundant ^c	4
Hava chobe	Hava chobe	<i>Arnebia decumbens</i> (Vevt.) Coss. & Kral	Root	Salve	resolver sub skin & bygone Infections, Rapid healing of fracture, Skeletal disorders & Vitamins Shortage	summer	Abundant ^c	3

a, b and c: relative abundance of species at the area, they are found up to 80-90%, 60-70% and 40-50%, respectively.

Table 3 Ailments grouped by different ailment categories (several diseases based on the similarity in one category).

Illness categories	Medical terms	No of species used
Gastro-intestinal complaints	stomach Antispasmodic, gastric sedative, anti-colic- Gastric reflux & Carminative- stomach Tonic- anti-anthelmintic & parasite- Dyspepsia obviator, Appetizer- Increased gastric juice- treat Diarrhea- Anti-emetic & bellyache- Purgative- Digest food- treat gastric and duodenal ulcers- treat hemorrhoids- anti-gastroenteritis	62
Respiratory problems	Cough & Lung antispasmodic- asthma, chronic bronchitis- Respiratory allergy- Antiseptic Lung, throat & nasal passages- expectorant	28
Hematological diseases	Hypertension- Anti-hypertension- Anti-hemorrhage- Blood purifier- Anemia Treatment- Decrease Hyperlipidemia	29
Cardiovascular diseases	Heart tonic- Vasodilators & current blood stimulus- promote healing of wound- Regulation of heartbeat	23
Nervous system	Anodyne & sedative- Anti-migraine- Nerves tonic- Depression Treatment- Anti-Convulsions- treat Nervous Diseases	38
Urinary tract problems	Repulse renal calculi- Repulse Bladder calculi- treat Infection & Pain renal- obviator Urinary Infection- Diuretic- Obviator cystitis & Urinary tract	18
Venereal and genital diseases	Gonorrhea- Syphilis- Prostatic problems- Spermatorrhoea	10
Female problems	Antiseptic & treat Female diseases- Menorrhagia & emmenagogue- Relieve menopausal symptoms- obviator dysmenorrhea- Galactagogue	17
Sexual stimulant	Aphrodisiac	7
Abortion inducing	Abortifacient	1
Diabetes	Treat Diabetes- Anti-hyperglycemic	22
Liver Disease	Bilious- jaundice treat- liver Tonic- Treat fatty Liver	12

Tumorous diseases	Impact on the thyroid gland- Impact on the A variety of hormones- Scrannel	6
Musculoskeletal disorders	Obviation pain spaciosus & rheumatism- Fracture- Muscle pain & Muscle damage- Gout- Skeletal disorders & Vitamins Shortage- Muscle antispasmodic	24
Hair growth stimulant	Anti-alopecia- hair Tonic- Hair Softener	7
Immune system	Immune system tonic- Stimulant & resolver exhaustion- MS Treatment	15
Dermatology problems	Strengthening of the scalp & anti-dandruff- Skin hypoallergenic & itching- Healing Surface sores & effects skin burns- skin succulence & tonic- Obviation Freckle & Acne & Skin discoloration- Anti-fungi	19
Infectious diseases	resolver sub skin & bygone Infections- resolver sub skin & bygone Infections- Febrifuge, anti- sunstroke- Healer inner & surface sores- Relieve symptoms Sinusitis & headcold	38
Oral and dental disorder	Toothache & anodyne- Antiseptic Gums & Oral Abscess	12
Brain & memory	Memory tonic- Anti-Alzheimer- resolver Vertigo & pate tonic	10
Eye, Ear, nose, throat disorder (ENT)	Eyesight tonic- Hoarseness and nasal congestion	9
Bites	Insects Sting	1

Table 4 Informant consensus factor (F_{ic}) for categorized ailments

Ailment category	Number of use- reports (N_{ur})	Number of taxa (N_t)	Informant consensus factor (F_{ic})
Gastro-intestinal complaints	78	62	0.21
Respiratory problems	30	28	0.07
Hematological diseases	45	29	0.36
Cardiovascular diseases	36	23	0.37
Nervous system	59	38	0.36
Urinary tract problems	42	18	0.58
Venereal and genital diseases	21	10	0.55
Female problems	25	17	0.33
Sexual stimulant	12	7	0.45
Abortion inducing	2	1	N/A
Diabetes	36	22	0.4
Liver Disease	25	12	0.54
Tumorous diseases	15	6	0.64
Musculoskeletal disorders	39	24	0.39
Hair growth stimulant	12	7	0.45
Immune system	20	15	0.26
Dermatology problems	24	19	0.22
Infectious diseases	45	38	0.16
Oral and dental disorder	24	12	0.52

Brain & memory	16	10	0.4
Eye, Ear, nose, throat disorder (ENT)	12	9	0.27
Bites	3	2	0.5

Table 5 Relative Importance (RI) values for Torghabeh-shandiz MPs used against eight or more specific use categories and seven or more ailments categories treated.

Species	PP ^a	AC ^b	RI ^c
<i>Cichorium intybus</i> L.	0.75	1.00	1.75
<i>Teucrium polium</i> L.	1.00	0.57	1.57
<i>Tanacetum parthenium</i> (L.) Schultz-Bip.	0.62	0.93	1.55
<i>Urtica dioica</i> L. var. <i>dioica</i>	0.5	1.00	1.5
<i>Achillea bieberesteini</i> Afan.	0.62	0.71	1.33
<i>Nepeta binaludensis</i> Jamzad	0.37	0.79	1.16
<i>Arctium lappa</i> L.	0.25	0.64	0.89
<i>Salix Alba</i> L.	0.12	0.71	0.83
<i>Hymenocrater platystegius</i> Rech.f.	0.12	0.64	0.76

^a PP=The number of pharmacological properties (reported specific ailments) attributed to a species divided by the maximum number of properties attributed to the most resourceful species (species with the highest number of properties).

^b AC=The number of ailment categories treated by a given species divided by the maximum number of ailment categories treated by the most resourceful species.

^c RI=PP+AC.

Table 6 Fidelity Level (FL) values of MPs cited by 7 or more informants for being used against a given ailment category

Medicinal plant name	Ailment category	U	n	Use value (UV)	CI
<i>Bunium persicum</i> (Boiss.)	Gastro-intestinal complaints	62	27	2.3	0.68
<i>Thymus Transcaspicus</i> Klokov	Gastro-intestinal complaints	40	21	1.9	0.44
<i>Mentha longifolia</i> (L.) Hudson var	Urinary tract problems	58	33	1.75	0.64
<i>Achillea bieberesteini</i> Afan.	Gastro-intestinal complaints	31	22	1.4	0.34
<i>Perovskia abrotanoides</i> karel	Gastro-intestinal complaints	25	18	1.38	0.27
<i>Chenopodium botrys</i> L.	Gastro-intestinal complaints	26	19	1.37	0.28
Nervous system	Nervous system	38	30	1.26	0.42
<i>Stachys lavandulifolia</i> vahl.	Nervous system	43	37	1.16	0.47
<i>Viola odorata</i> L.	Nervous system	35	31	1.12	0.38
<i>Chenopodium botrys</i> L.	Liver Disease	28	27	1.03	0.31

Table 7 Ranking of 10 Torghabeh-shandiz MPs using the procedure of preference ranking based on the degree of local popularity (plant with the highest score is the most popular one).

Medicinal plant name	Ailment category	U	n	Use value (UV)
<i>Bunium persicum</i> (Boiss.)	Gastro-intestinal complaints	62	27	2.3
<i>Thymus Transcaspicus</i> Klokov	Gastro-intestinal complaints	40	21	1.9
<i>Mentha longifolia</i> (L.) Hudson var	Urinary tract problems	58	33	1.75
<i>Achillea biebersteini</i> Afan.	Gastro-intestinal complaints	31	22	1.4
<i>Perovskia abrotanoides</i> karel	Gastro-intestinal complaints	25	18	1.38
<i>Chenopodium botrys</i> L.	Gastro-intestinal complaints	26	19	1.37
Nervous system	Nervous system	38	30	1.26
<i>Stachys lavandulifolia</i> vahl.	Nervous system	43	37	1.16
<i>Viola odorata</i> L.	Nervous system	35	31	1.12
<i>Chenopodium botrys</i> L.	Liver Disease	28	27	1.03

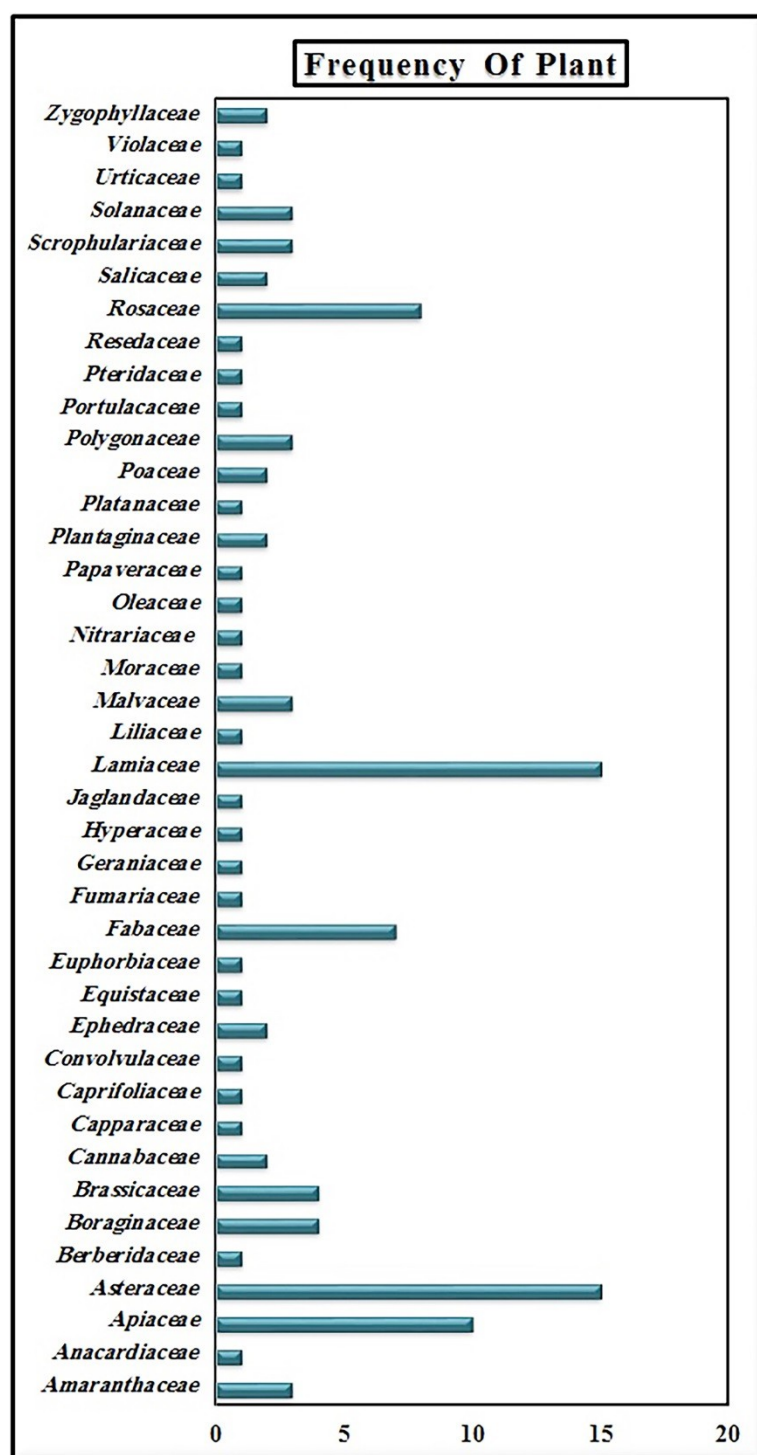


Fig. 1. Families of the plants with their frequencies.

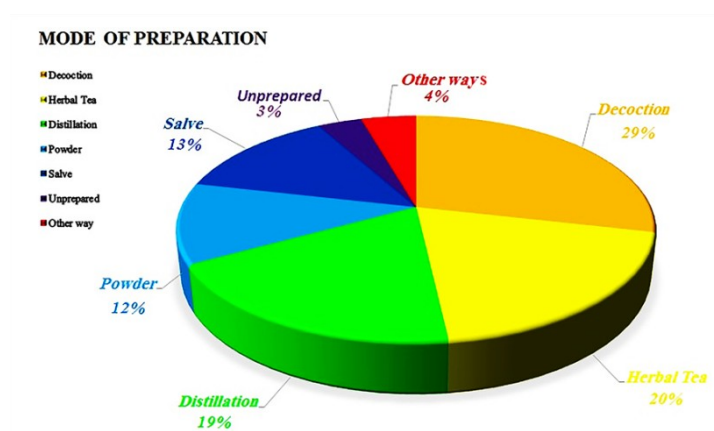


Fig 2. Percentage of preparation mode

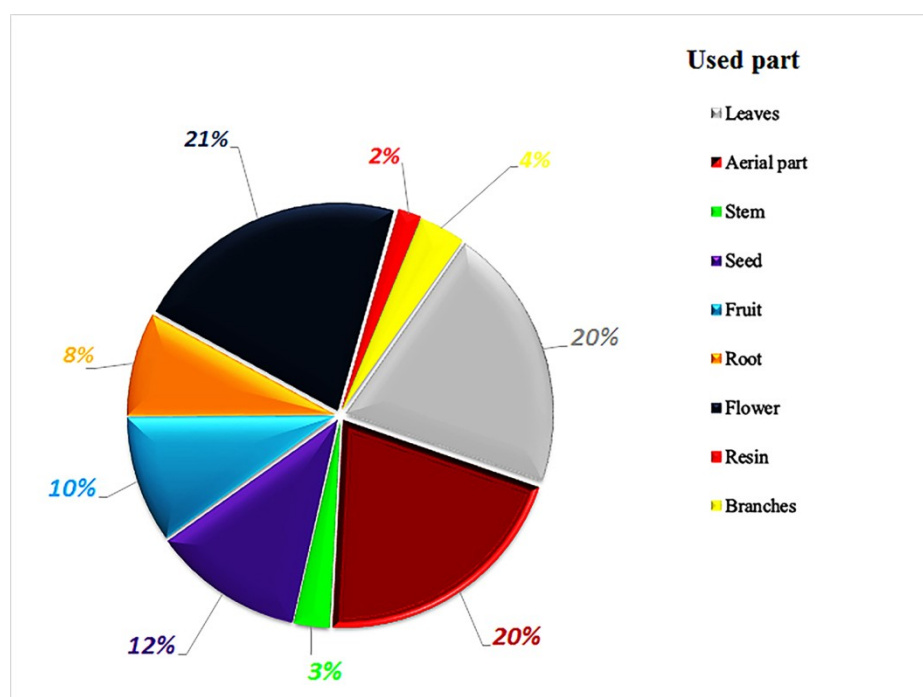


Fig 3. Percentage of used plant parts.

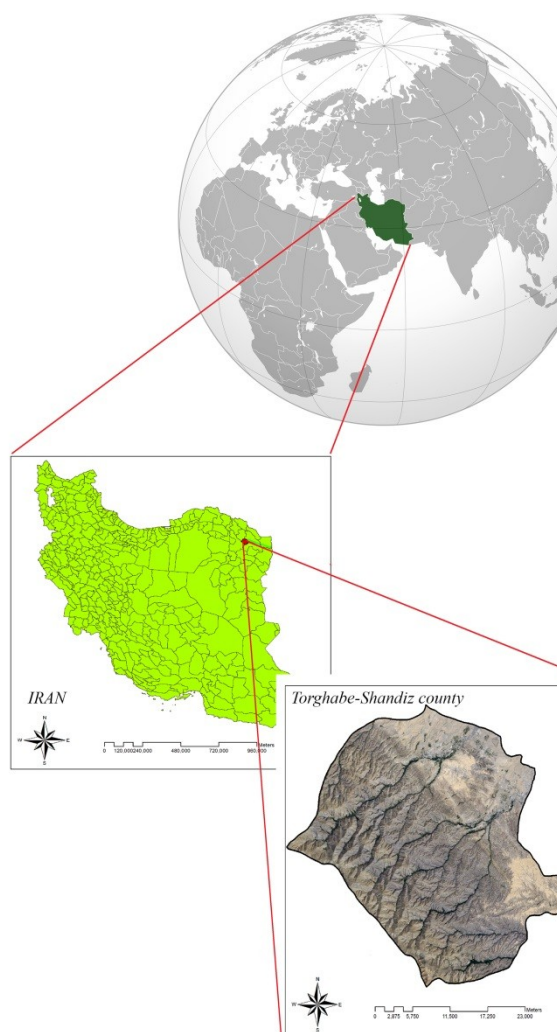


Fig 4. Location of study area (Torghabeh-Shandiz) of Iran in World Map