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# Ethnobotany of the medicinal plants used by the ethnic communities of Kerman province, Southeast Iran

Seyed Hamzeh Hosseini<sup>1\*</sup>, Hossein Bibak<sup>1</sup>, Abdollah Ramzani Ghara<sup>1</sup>, Amirhossein Sahebkar<sup>2,3</sup> and Abolfaz Shakeri<sup>4</sup>

## Abstract

**Background:** Traditional medicine is a major component in the primary healthcare system in the southeast of Iran, which has a rich floral diversity. However, there is no comprehensive report on the use of medicinal herbs in this specific region. This traditional usage of medicinal plants by local communities could serve as a source for pharmacological and phytochemical studies. The main objective of this study was to identify ethnopharmacological knowledge on medicinal plant species and their local healing applications by the folk communities of Kerman province in the southeast of Iran.

**Methods:** In this cross-sectional study, data were collected from 217 herbal healers using semi-structured questionnaires, open interviews, and field surveys. Factors including use reports (UR) for each species, frequency of citation (FC), and informant consensus factor (ICF) were used to analyze the data. Plant species were identified by botanists through standard taxonomic methods.

**Results:** A total of 402 medicinal plants were used in healing practices by the local communities of Kerman province. These species belong to 273 genera of 73 families, among which 367 species are dicotyledons, 27 are monocotyledons, 7 species are cryptogam, and one species is gymnosperm. An important implication from the current study is the identification of the traditional medicinal use of 292 plant species in this region for the first time. Asteraceae, Apiaceae, Lamiaceae, and Fabaceae were the dominant medicinally utilized plant families, respectively. Leaf, flower, fruit, and seed were the most common plant parts used. Generally, crude drugs were used in the form of decoction, followed by poultice and infusion forms. Moreover, oral route is considered as the most common administration route followed by topical route. Endocrine (diabetes), dermatological, gastrointestinal, and respiratory problems were ranked as the most frequent ailment categories for which medicinal plants in this region were applied, respectively. Our findings suggested dominant use of Asteraceae and Apiaceae plants for the treatment of gastrointestinal disorders, Lamiaceae plants for respiratory and gastrointestinal ailments, and Apocynaceae plants for dermatological problems.

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\* Correspondence: [Hamze@ujiroft.ac.ir](mailto:Hamze@ujiroft.ac.ir)

<sup>1</sup>Department of Biology, Faculty of Science, University of Jiroft, Jiroft, Iran  
Full list of author information is available at the end of the article



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**Conclusion:** Our findings suggested that Asteraceae and Apiaceae plants were used for the treatment of gastrointestinal disorders, Lamiaceae plants for respiratory and gastrointestinal ailments, and Apocynaceae and Euphorbiaceae plants for dermatological problems. Among the medicinal plants with high UR and new ethnobotanical uses, *Rhazya stricta* was used for wound healing, *Calotropis procera*, *Clematis ispanhanica* and *Euphorbia* spp. for eczema, *Cionura erecta* for the treatment of cough, *Launaea acanthodes* for the treatment of gastrointestinal parasites, *Berberis integririma* as an antidiabetic medicinal herb, *Dracocephalum polychaetum* and *Rydingia persica* for various types of chronic diseases, *Citrus limon* and *Citrus aurantium* for the treatment of ocular diseases and making the traditional kohl, *Calendula officinalis* for the treatment of pterygium and *Prosopis farcta* for preventing nasal bleeding. The identified medicinal plants can be further evaluated for their pharmacological activity and underlying mechanisms of action.

**Keywords:** Ethnobotany, Medicinal plants, ICPC category, Kerman province, Iran

## Introduction

According to the reports, medicinal use of plants dates back to at least 60,000 years. During this time, traditional systems of medicines have employed medicinal plants and their derivatives as valuable sources of new biologically active compounds and have been clinically practiced all over the world [1]. Until now, approximately 80% of the world's population still use traditional herbal medicines [2]. In fact, herbal medicines can serve as complementary or alternative therapies for different types of diseases because of their low cost, availability, and generally fewer side effects [3]. Several FDA-approved drugs including artemisinin (from *Artemisia annua*), quinine (from *Cinchona officinalis*), vinblastine, vincristine, vinorelbine (from *Vinca rosea*), and etoposide (from May-apple) primarily originate from traditional herbal medicines [4]. It has been estimated that nearly 400,000 flowering plant species exist on earth, among which only 6% have been evaluated for their biological properties, and still more than 90% remains unexplored [5]. Therefore, ethnobotanical study of medicinal plants provides valuable information for the synthesis of new drugs.

Around 8000 plant species have been listed in Iran, of which 2300 species have medicinal properties among which 75% (1728) are endemic species in Iran [6, 7].

Kerman province with 23 cities and 171,993 square kilometers area has covered about 11% of the land area of Iran [8], located in the southeast of this country, and bordered by 5 provinces of Yazd, South Khorasan, Hormozgan, Fars, and Sistan and Baluchestan. It has a unique biodiversity due to its diverse natural resources and climatic conditions including desert and semi-desert in the north, and dry, mountainous and Mediterranean in the south. Kerman province is a vast plain with the lowest altitude in Lut desert (300 m) and the highest altitude in the mountaintop of Hezar (4419 m) [8]. Based on the traditional pharmacopoeia and medicinal plant reports in some parts of this province, medicinal herbs mostly belong to the families of Labiatae, Rosaceae,

Papilionaceae, Compositae, and Umbelliferae, and the genera of *Salvia*, *Nepeta*, *Artemisia*, *Astragalus*, *Ferula*, *Plantago*, *Ephedra*, and *Amygdalus* [9, 10].

From the cultural point of view, Kerman province has around 89 tribal communities (including Baluch, Turkish, and Fars), most of them still being partially dependent on the medicinal plants. Therefore, this province is home to different cultures and beliefs resulting in rich traditional knowledge and traditional medicine practices. For example, the old city of Jiroft in the southeastern Kerman province dates to about 5000 years ago, which, according to the reports, is the beginning of human civilization [11]. In this respect, traditional medicine has played a key role in Iranian culture and civilization [12]. Therefore, this rich traditional knowledge is useful not only in the ancient medical systems but also in the present healthcare systems [10], especially for primary health care needs [13]. In fact, the dependence of the folk communities in Kerman on the medicinal herbs is not only due to the low availability to the health care system, but it is also rooted in the Iranian-rich culture of traditional medicine [14, 15]. For example, in the face of epidemiological diseases (e.g., cholera and colds), scientists of the Iranian traditional medicine (ITM) such as Avicenna, Rhazes, and Aghili Alavi Shirazi have suggested prescription of various herbal remedies. At present, the locals of Kerman, based on their ancient knowledge, utilize herbal medicines such as *Thymus fedtschenkoi*, *Zataria multiflora*, *Dracocephalum polychaetum*, and *Glycyrrhiza glabra* in the treatment of epidemics. Generally, Kerman province with a diverse climate and biodiversity is home to various cultures (from the prehistoric times to the present) and the center of agriculture in Iran [10, 16]. Accordingly, in some areas of this region, certain non-registered herbaceous species are used that can be obtained by the local people. There are many villages and nomadic districts that are largely dependent on the ethnomedicinal knowledge for primary health care, with many specific

traditional herbal medicine practices in this region that have not been recorded anywhere else. Hence, the current study aimed to carefully investigate and record the ethnobotanical knowledge of the whole districts and cultures, particularly subcultures that had the maximum dependence on the traditional health care system of the Kerman province.

**Materials and methods**

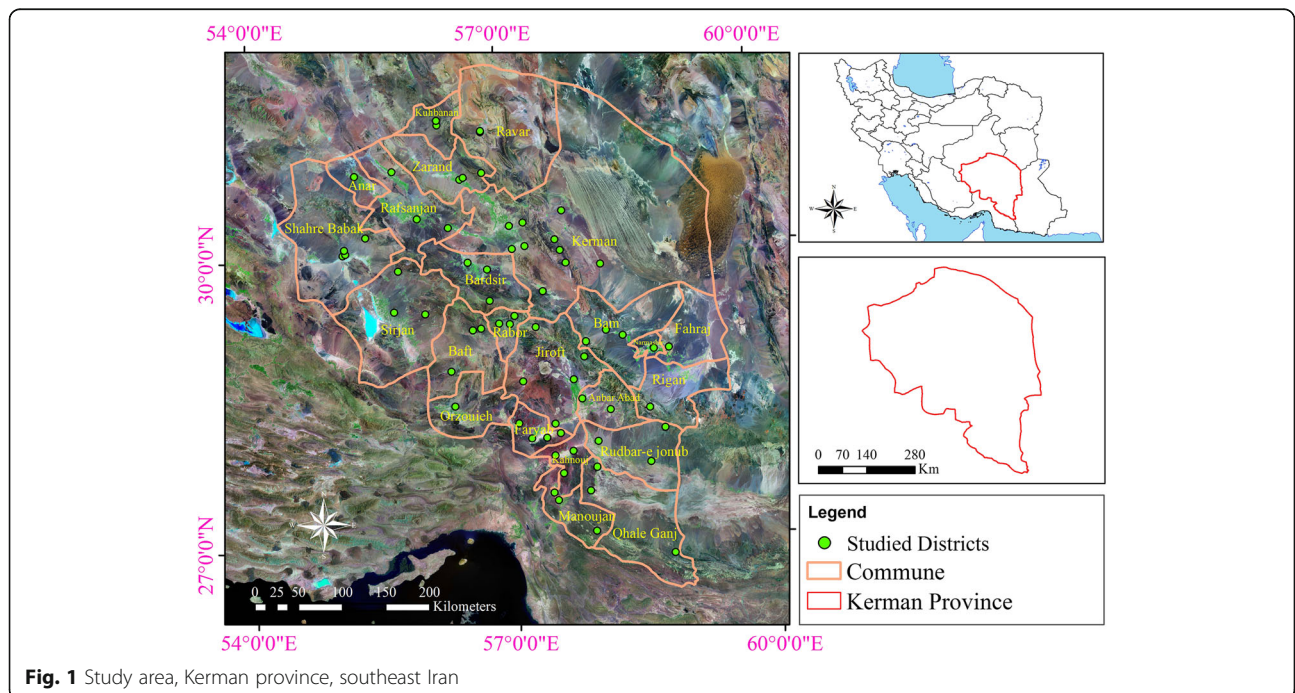
**Study area**

The present study was carried out in Kerman province in the southeast of Iran with 23 cities and 3,164,716 inhabitants. Regarding population, the most populated city is Kerman with the following other cities as progressively less populated: Jiroft, Sirjan, Rafsanjan, Kahnuj, Rudbar, Anbarabad, Qale Ganj, Manojan, Faryab, Zarand, Bam, Fahraj, Narmashir, Rigan, ShahrBabak, Baft, Rabor, Orzueeyeh, Bardsir, Ravar, Anar, and Koohbanan. In the current study, in each city, skilled herbalists, nomadic districts, and key villages were selected for data sampling. Kerman province is located between the 55 min and 25° to 32° north latitude and 26 min and 53° to 29 min and 59° east of the Greenwich meridian, as the largest province in Iran with the total area of 183.285 km<sup>2</sup>, and the elevation of 400 to 4501 m above the sea level. About 6.3 million hectares of deserts of Iran (equivalent to 20%) are located in Kerman province. The area of the forests of Kerman province is 1.3 million hectares and belongs to the two vegetation regions of Irano-Turanian and Khaleej-Omani.

Species of the Irano-Turanian forest of Kerman are comprised of *Pistacia atlantica*, *Pistacia khinjuk*, *Juniperus excels*, *Prunus scoparia*, *Crataegus azarolus*, *Celtis australis* in the mountainous area, and *Haloxylon* spp. and *Calligonum* spp. in the desert area. Also, the species of Khaleej-Omani include *Calotropis procera*, *Tamarix* spp., *Prosopis* spp., and *Ziziphus* spp. and the endemic rare species of *Tecomella undulate* with the local names Golpar and Anar sheytan (Fig. 1).

**Plant identification**

Based on the maps, access roads, natural features, vegetation, and subcultures in the study area, each city was classified into districts. Then, the number of the informants was determined. The plant specimens were collected during the field surveys from nomadic, rural, and urban areas of Kerman province from 2017 to 2019. The herbarium specimens were prepared following standard methods [17–19] and identified with the help of Herbarium of the University of Jiroft and Kerman Agricultural and Natural Resources Research and Education Center. Nomenclature was corrected using an online database (the international plant names index and the plant lists). The voucher herbarium specimens were deposited in the herbarium of the Department of Plant Biology, University of Jiroft, Jiroft, Iran. The voucher specimens were identified by one of the authors (H.B) and reaffirmed by taxonomic experts from the Department of Plant Biology at the herbarium of the University of Jiroft.



**Fig. 1** Study area, Kerman province, southeast Iran

### Ethnobotanical data collection

After classification of each city into districts, ethnobotanical surveys were carried out from October 2017 to the end of May 2019. The ethnobotanical data was collected using field surveys, open interviews, and semi-structured questionnaires. A total of 217 local informants (91 females and 126 males) aged between 30 and 79 years old were interviewed. Demographic properties including educational level, gender, age group, and occupation are recorded in Table 1. Also, geographical location and altitude (the lowest being 409 m in Manojan and the highest being 2800 m in Lalehzar) of each district are recorded in Table 2. Furthermore, information on local name, medicinal use, part(s) of the plant used, preparation, and administration methods is recorded (Table 3).

### Ailment categories

All recorded ailments and medicinal plant uses were categorized based on the International Classification of Primary Care (ICPC-2) (<http://www.who.int/classifications/icd/adaptations/icpc2/en/>).

Some modifications were made for diseases such as low back pain, which were not matched with the broad classification of diseases. Therefore, low back pain, infections, and some nontherapeutic applications (pickle, flavoring of food, appetizing, vegetable, thirst, pest control, food coloring, herbal adhesive, and washing powder) were placed in the General and Unspecified category.

According to the results, 16 disease categories were set, namely: (1) General and Unspecified; (2) Gastrointestinal; (3) Ophthalmological; (4) Ear, Nose and Throat; (5) Cardiovascular; (6) Hematological and immune mechanism; (7) Musculoskeletal; (8) Neurological; (9) Psychological; (10) Respiratory; (11) Dermatological; (12) Endocrine/ Metabolic and Nutritional; (13) Urological; (14) Pregnancy, Childbearing, Family Planning; (15) Female Genitals; and (16) Cancer.

**Table 1** Demographic profile of the local healers (n=217)

| Characteristics |                 | Abundance | Relative abundance |
|-----------------|-----------------|-----------|--------------------|
| Gender          | Male            | 126       | 57.60              |
|                 | Female          | 91        | 42.60              |
| Education       | Primary level   | 103       | 47.47              |
|                 | Secondary level | 86        | 39.63              |
|                 | Graduate        | 28        | 12.90              |
| Age group       | 30-45           | 51        | 23.50              |
|                 | 46-60           | 132       | 60.83              |
|                 | 61-79           | 34        | 15.67              |
| Occupation      | Nomadic tribe   | 94        | 43.31              |
|                 | Farmer          | 78        | 35.94              |
|                 | Herbal healer   | 45        | 20.74              |

### Data analysis

Data was analyzed using descriptive and quantitative statistical methods. In this regard, the ethnomedicinal data was analyzed using frequency, citation, and use reports. Use report was recorded whenever an informant cited a plant species or part(s) used for a particular ailment. Use reports were also quantified to define the highly used plant species for a particular ailment. Additionally, ICF was employed to determine the homogeneity of the information as follows:

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

Nur is the number of use citations for each ailment category and Nt is the number of plant species used for the same ailment category by all the healers [20]. ICF ranged between 0 and 1. ICF value is higher (near to 1) when a few plant species are cited by a higher proportion of healers, indicating homogeneity of information about the usage of specific plants. A low value (close to 0) demonstrates the healers' disagreement about the usage of the plant for a particular ailment category [21].

In order to find out the importance of a specific plant species by informants, the index of relative frequency of citation (RFC) was calculated by dividing the frequency of citation (FC) by the total frequency of informants (RFC = FC/N). In this formula, FC is the number of informants who mentioned plant species as useful and N is the total frequency of informants in the survey [22].

Moreover, in order to determine cultural significance of each plant species, cultural importance index (CI) [22] was calculated as follows:

$$CI = \sum_{u=1}^{u_{nc}} \cdot \sum_{i=1}^{i_n} UR_{\frac{ui}{N}}$$

Independent samples *t*-test was run to compare medicinal uses between men and women. One-way ANOVA and post hoc was used to compare medicinal uses among age groups, educational levels, and occupations.

## Results and discussion

### Botanical diversity

In this ethnobotanical survey which covered the whole Kerman province (23 cities and 3,164,716 population), a total of 217 local informant interviews revealed the application of 402 medicinal plants for the treatment of 95 diseases across 16 ICPC ailments categories. These results showed that herbal medicines are mainly used to treat ailments among the local communities and indicated the rich floral diversity of this region.

These species belong to 273 genera of 73 families where 367 species are Dicotyledons, 27 species Monocotyledons, 7 species Cryptogam, and one species Gymnosperm. An important implication of the current study is the identification of the traditional medicinal

**Table 2** Studied districts in the Kerman province with in-detail demographic characteristics of the local informants

| Area           | Village- nomadic district | Altitude | Location |           | Number of informants | Gender |        |
|----------------|---------------------------|----------|----------|-----------|----------------------|--------|--------|
|                |                           |          | Latitude | Longitude |                      | Male   | Female |
| Jiroft         | Esfandaghe                | 1724     | 515518   | 3173088   | 6                    | 5      | 1      |
|                | Boluk                     | 653      | 550080   | 3123049   | 4                    | 3      | 1      |
|                | Northen Jebal barez       | 1973     | 586377   | 3198024   | 5                    | 4      | 1      |
|                | Sardooiyeh                | 2622     | 532724   | 3234040   | 13                   | 7      | 6      |
|                | Central part              | 682      | 573397   | 3172706   | 8                    | 5      | 3      |
| Anbarabad      | Southern Jebal barez      | 890      | 613586   | 3136457   | 9                    | 7      | 2      |
|                | Central part              | 597      | 581969   | 3150210   | 5                    | 2      | 3      |
| Kahnuj         | Dehkehan                  | 810      | 556930   | 3066254   | 4                    | 2      | 2      |
|                | Dehzard                   | 518      | 548076   | 3086568   | 2                    | -      | 2      |
|                | Central part              | 513      | 568775   | 3090872   | 5                    | 4      | 1      |
| Faryab         | Sargorij                  | 692      | 555482   | 3111865   | 4                    | 2      | 2      |
|                | Mehuiyeh                  | 649      | 539817   | 3107390   | 3                    | 2      | 1      |
|                | Moordan                   | 1118     | 508786   | 3125367   | 1                    | 1      | -      |
|                | Central part              | 659      | 522398   | 3107510   | 1                    | 1      | -      |
| Rudbar-e Jonub | Zehkalut                  | 385      | 656761   | 3075068   | 2                    | -      | 2      |
|                | Mil-e Farhad              | 816      | 674888   | 3113175   | 1                    | 1      | -      |
|                | Central part              | 488      | 597867   | 3100902   | 2                    | 1      | 1      |
| Qaleh Ganj     | Sorkhqleh                 | 439      | 595145   | 3071601   | 1                    | 1      | -      |
|                | Maarz                     | 937      | 591255   | 2998867   | 3                    | 2      | 1      |
|                | Central part              | 407      | 586721   | 3045020   | 4                    | 1      | 3      |
| Manujan        | Nodej                     | 464      | 544955   | 3044682   | 2                    | 1      | 1      |
|                | Central part              | 358      | 549652   | 3035783   | 2                    | 1      | 1      |
| Baft           | Bazenjan                  | 2346     | 470709   | 3235218   | 2                    | -      | 2      |
|                | Khabr                     | 2039     | 434312   | 3188268   | 2                    | 1      | 1      |
|                | Central part              | 2262     | 461018   | 3233719   | 5                    | 3      | 2      |
| Rabor          | Sardmeshk                 | 2495     | 509371   | 3247951   | 3                    | 1      | 2      |
|                | Qanat Malek               | 2300     | 503669   | 3238948   | 3                    | 1      | 2      |
|                | Central part              | 2332     | 491445   | 3240172   | 4                    | 3      | 1      |
| Sirjan         | Balvard                   | 2035     | 407806   | 3254993   | 6                    | 4      | 2      |
|                | Pariz                     | 2313     | 379188   | 3305535   | 4                    | 2      | 2      |
|                | Central part              | 1744     | 372254   | 3258624   | 5                    | 1      | 4      |
| Rafsanjan      | Bahreman                  | 1330     | 377582   | 3419214   | 3                    | 1      | 2      |
|                | Kabutatkhan               | 1662     | 438574   | 3352462   | 3                    | 3      | -      |
|                | Central part              | 1515     | 403788   | 3364209   | 2                    | 1      | 1      |
| Anar           | Central part              | 1414     | 334675   | 3416022   | 4                    | 3      | 1      |
| Ravar          | Central part              | 1181     | 481234   | 3459578   | 4                    | 2      | 2      |
| Zarand         | Hotkan                    | 2325     | 479943   | 3412892   | 3                    | 2      | 1      |
|                | Mahmud abad               | 1651     | 454636   | 3406622   | 3                    | 1      | 2      |
|                | Central part              | 1656     | 458637   | 3408681   | 4                    | 3      | 1      |
| Shahr Babak    | Estabraq                  | 1794     | 316665   | 3326121   | 2                    | 2      | -      |
|                | Mehrabad                  | 1817     | 319991   | 3327739   | 2                    | 1      | 1      |
|                | Meymand                   | 2218     | 343549   | 3345546   | 5                    | 2      | 3      |
|                | Central part              | 1840     | 318777   | 3332404   | 3                    | 1      | 2      |

**Table 2** Studied districts in the Kerman province with in-detail demographic characteristics of the local informants (*Continued*)

| Area       | Village- nomadic district | Altitude | Location |           | Number of informants | Gender |        |
|------------|---------------------------|----------|----------|-----------|----------------------|--------|--------|
|            |                           |          | Latitude | Longitude |                      | Male   | Female |
| Koochbanan | Joz                       | 1989     | 431829   | 3470143   | 2                    | 2      | -      |
|            | Central part              | 1991     | 431755   | 3475352   | 2                    | 1      | 1      |
| Bam        | Dehbakri                  | 2039     | 589237   | 3215060   | 5                    | 4      | 1      |
|            | Central part              | 1068     | 631396   | 3220002   | 2                    | 1      | 1      |
| Fahraj     | Central part              | 678      | 683329   | 3204470   | 3                    | 1      | 2      |
| Narmashir  | Central part              | 753      | 665948   | 3204479   | 2                    | 2      | -      |
| Rigan      | Koosha                    | 1586     | 658487   | 3137050   | 2                    | -      | 2      |
|            | Central part              | 756      | 666076   | 3203853   | 2                    | -      | 2      |
| Orzueeyeh  | Central part              | 1044     | 436602   | 3148052   | 3                    | 2      | 1      |
| Bardsir    | Lalehzar                  | 2800     | 481843   | 3266686   | 4                    | 3      | 1      |
|            | Negar                     | 2090     | 480752   | 3302559   | 3                    | 3      | -      |
|            | Central part              | 2042     | 459122   | 3311509   | 2                    | 1      | 1      |
| Kerman     | Mahan                     | 1854     | 524742   | 3327108   | 3                    | 1      | 2      |
|            | Shahdad                   | 429      | 568791   | 3365494   | 3                    | 1      | 2      |
|            | Rayen                     | 2161     | 542947   | 3274724   | 4                    | 2      | 2      |
|            | Jopar                     | 1887     | 510333   | 3324762   | 5                    | 4      | 1      |
|            | Central part              | 1757     | 508230   | 3351251   | 11                   | 7      | 4      |
| Total      |                           |          |          |           | 217                  | 126    | 91     |

uses of 292 plant species in this region for the first time. Information about these recorded medicinal plants is summarized in Table 3 in terms of local names, voucher specimens, part(s) used, healing practices, drug preparation, ICPC classification, and use report (%).

Asteraceae, Apiaceae, and Lamiaceae with 43, 38, and 37 species were the dominant medicinally utilized plant families, respectively (Fig. 2). In the south of this province, Sadat-Hosseini et al. reported that Apiaceae, Asteraceae, and Lamiaceae are the dominant medicinal plant families [10]. Moreover, in several ethnobotanical studies in the neighboring provinces (in Sistan and Baluchesta [23], and in Isfahan [24]) and countries (like Turkey [25, 26], and Georgia [27]), similar results were reported on the dominance of two or three of these plant families. From the phytochemical point of view, the dominance of Apiaceae, Asteraceae, and Lamiaceae families might be due to phytochemical composition, which are clues to high content of essential oils and phenolic constituents responsible for antimicrobial and antioxidant properties [28, 29].

*Nepeta*, *Prunus*, *Ferula*, *Plantago*, *Ephedra*, *Euphorbia*, *Artemisia*, *Salvia*, *Artemisia*, and *Astragalus* were the dominant medicinally used plant genera. Moreover, the findings of Saber et al. revealed that *Salvia*, *Nepeta*, *Artemisia*, *Astragalus*, *Ferula*, *Plantago*, *Ephedra*, *Amygdalus*, and *Crataegus* are the most frequently and popularly

used medicinal plant genera in this district [8]. In general, the therapeutic significance of some plant families in a specific district may be related to the common distribution of their species [30].

There were some species like *Tecomella undulata* that were classified under vulnerable and endangered category of the IUCN list due to low reproduction and overexploitation [31, 32] while *Pergularia tomentosa* is a rare and endangered plant species which grows in the south of Kerman. Our previous research revealed that a low percentage of Kerman rangelands is vegetated with this plant and inhabitants uprooted it to meet their pharmacological needs [33].

The finding showed that the majority of the medicinal plant species (95%) belong to the wild habitat and the rest to cultivated areas. Other reports in this district [16, 27] confirm our results. In this case, informants of this region believed that wild plants are more medicinally effective than cultivated ones. Moreover, similar results were reported by Hu et al. in China [2].

With respect to healthcare policies, despite the relative adequate health services in this study area, local people and herbalists preferred herbal medicine due to the synthetic drugs side effects compared to herbal medicine. Furthermore, the general health policies that have been approved by the fifth development plan, as well as the national document on medicinal plants and traditional medicine, which emphasizes the organization and

**Table 3** Medicinal plants used by ethnic communities in the Kerman province

| Family         | Scientific name                                         | Local name (Persian); Voucher no. | Plant part used          | Medicinal use (UR)                                                                                                    | ICPC category                       | Preparation                | Mode of application | (UR) A, B, C |
|----------------|---------------------------------------------------------|-----------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------|---------------------|--------------|
| Acanthaceae    | <i>Blepharis edulis</i> (Forssk.) Pers.                 | Anjereh 503                       | Leaf, Seed               | Wound healing (3), Ear ache (2), Eye ache (2), Sore throat (3)                                                        | DER-S                               | Poultice, Decoction        | Topical             | 10 A         |
| Amaranthaceae  | <i>Amaranthus retroflexus</i> L.                        | Sorkhmaghz 598                    | Leaf                     | Jaundice (18)                                                                                                         | GAS-D                               | Decoction                  | Oral                | 18 B, C      |
| Amaranthaceae  | <i>Anabasis aphylla</i> L.                              | Aldorak 596                       | Aerial parts             | Weight loss (3), Constipation (1)                                                                                     | OTH-A, GAS-D                        | Aromatic water             | Oral                | 4 B, C       |
| Amaranthaceae  | <i>Seidlitzia rosmarinus</i> Bunge ex Boiss.            | Shoor 594                         | Aerial parts             | Washing powder (5)                                                                                                    | -, -                                | Powder                     | -                   | 5 B, C       |
| Amaranthaceae  | <i>Salsola incanescens</i> C.A. Mey.                    | Jar 593                           | Aerial parts             | Washing powder (2)                                                                                                    | -, -                                | Powder                     | -                   | 2 B, C       |
| Amaranthaceae  | <i>Dysphania botrys</i> (L.) Mosyakin & Clemants        | Dermeneh 595                      | Young flowering branches | Beauty of skin and hair (4)                                                                                           | DER-S                               | Oil                        | Topical             | 4 B, C       |
| Amaranthaceae  | <i>Suaeda aegyptiaca</i> (Hasselq.) Zohary              | Somsil 597                        | Aerial parts             | Blood purifier (4), Anemia (29), Vegetable (48)                                                                       | OTH-A, Blood-B                      | Vegetable                  | Oral                | 81 B, C      |
| Amaryllidaceae | <i>Allium atroviolaceum</i> Boiss.                      | Piaze vahshi 268                  | Bulb                     | Reduce blood sugar (2)                                                                                                | MET-T                               | Vegetable                  | Oral                | 2 B, C       |
| Amaryllidaceae | <i>Allium iranicum</i> (Wendelbo) Wendelbo.             | Serit 245                         | Leaf                     | Aromatic (4), Flavoring of food (33), Digestive (6)                                                                   | NER-N, -, GAS-D                     | Spice                      | Oral                | 43 B, C      |
| Amaryllidaceae | <i>Ixiolirion tataricum</i> (Pall.) Schult. & Schult.f. | Kheyaroo 269                      | Leaf and flower          | Pickle (6)                                                                                                            | OTH-A                               | Vegetable                  | Oral                | 6 B, C       |
| Amaryllidaceae | <i>Narcissus tazetta</i> L.                             | Narges 267                        | Bulb, Leaf               | Face rash treatment (3), Sterility treatment (2), Gastric discomfort (2), Blood coagulation (4), Anti-depressants (5) | DER-S, DER-S, GAS-D, Blood-B, NER-N | Mask, Decoction, infusion  | Topical, Oral       | 16 A, C      |
| Anacardiaceae  | <i>Pistacia atlantica</i> Desf.                         | Baneh 623                         | Seed                     | Bone and joint pains (5), Burn healing (68), Wound healing (26), Eczema (34)                                          | SKE-L, DER-S, DER-S                 | Oil                        | Topical             | 208 A        |
|                |                                                         |                                   | Olibanum                 | Scar (39)                                                                                                             | DER-S                               | Poultice                   | Topical             |              |
|                |                                                         |                                   | Olibanum                 | Lung infections (1)                                                                                                   | RES-R                               | Fume                       | Inhale              |              |
|                |                                                         |                                   | Leaf, Olibanum           | Stomach ulcers (31), Toothache (2)                                                                                    | GAS-D, GAS-D                        | Extract, Gum               | Oral                |              |
|                |                                                         |                                   | Fruit, Olibanum          | Disinfectant (2)                                                                                                      | OTH-A                               | Edible                     | Oral                |              |
| Anacardiaceae  | <i>Pistacia khinjuk</i> Stocks                          | Kasour 621                        | Seed, Leaf               | Hemorrhoid (1), Stomachache (9), Toothache (2), Memory Improvement (2), Jaundice (1)                                  | CAR-K, GAS-D, GAS-D, NER-N, GAS-D   | Nuts, Mixed with date, Gum | Oral                | 15 A         |
| Anacardiaceae  | <i>Pistacia vera</i> L.                                 | Pesteh 620                        | Fruit                    | Reinforcing sexual desire (2), Anti-nausea (1), Anti-diarrhea (1), Constipation (3)                                   | OTH-A, GAS-D, GAS-D, GAS-D          | Nuts                       | Oral                | 7 A          |
| Apiaceae       | <i>Ammi majus</i> L.                                    | Golsefid 220                      | Fruit                    | Anti-nausea (5), diuretic (4)                                                                                         | GAS-D, URO-U                        | Decoction                  | Oral                | 9 A          |
| Apiaceae       | <i>Anethum graveolens</i> L.                            | Maitokhm 234                      | Seed                     | Blood fat (3), Gastric discomfort (32), Energetic (2), Reduce blood sugar (2), Joint pain (5)                         | Blood-B, GAS-D, OTH-A, MET-T, SKE-L | Decoction                  | Oral                | 44 A         |
| Apiaceae       | <i>Apium graveolens</i> L.                              | Karafs 221                        | Aerial parts             | Relaxing (1), Disinfectant (2), Flavoring of food (40)                                                                | NER-N, OTH-A, -                     | Mixed with                 | Oral                | 43 B, C      |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family   | Scientific name                              | Local name (Persian); Voucher no. | Plant part used          | Medicinal use (UR)                                                                                                             | ICPC category                              | Preparation                          | Mode of application | (UR) | A, B, C |
|----------|----------------------------------------------|-----------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------------------|---------------------|------|---------|
| Apiaceae | <i>Bunium persicum</i> (Boiss.) B.Fedtsch.   | Ziresiah 227                      | Seed                     | Menstrual disorders (30), Flavoring of food (115), Digestive (2), Parasite repellent (3), Carminative (4), Antispasmodic (31), | GYN-X, OTH-A, GAS-D, GAS-D, GAS-D, NER-N   | Decoction, Infusion, Mixed with food | Oral                | 185  | A       |
| Apiaceae | <i>Carum carvi</i> L.                        | Ziresiah 230                      | Fruit                    | Carminative (6), Relaxing (1)                                                                                                  | GAS-D, NER-N                               | Infusion                             | Oral                | 7    | A, C    |
| Apiaceae | <i>Conium maculatum</i> L.                   | Showkaran 233                     | Whole plant              | Cough (4), Respiratory ailments (6)                                                                                            | RES-R, RES-R                               | Decoction                            | Oral                | 10   | A       |
| Apiaceae | <i>Coriandrum sativum</i> L.                 | Geshniz 238                       | Leaf, Seed, Aerial parts | Reduce blood sugar (3), Intestinal infections (2), Blood fat (4), lactiferous (5), Flavoring of food (18) Carminative (3)      | MET-T, GAS-D, Blood-B, PRE-W, OTH-A, GAS-D | Decoction, Dried vegetable           | Oral                | 35   | A       |
| Apiaceae | <i>Cuminum cyminum</i> L.                    | Ziresabz 225                      | Seed                     | Menstrual disorders (10), Flavoring of food (14), Body tonic (5)                                                               | GYN-X, -, OTH-A                            | Decoction, Infusion, Mixed with food | Oral                | 29   | A       |
| Apiaceae | <i>Daucus carota</i> L.                      | Havij 235                         | Bulb                     | Anemia (8), Sight enhancement (7), Appetizing (3)                                                                              | Blood-B, EYE-F, OTH-A                      | Salad                                | oral                | 18   | A, C    |
| Apiaceae | <i>Dorema ammoniacum</i> D. Don              | Oshtork 258                       | Gum                      | Disinfectant (4), Edible (7), Infectious wound healing (11)                                                                    | OTH-A, OTH-A, DER-S                        | Powder, Mask, Poultice, Vegetable    | Oral                | 22   | A       |
| Apiaceae | <i>Dorema aucheri</i> Boiss.                 | Oshtork 249                       | Gum                      | Disinfectant (4), Edible (7), Infectious wound (11)                                                                            | OTH-A, OTH-A, DER-S                        | Powder, Mask, Poultice, Vegetable    | Oral                | 22   | A       |
| Apiaceae | <i>Ducrosia anethifolia</i> (DC.) Boiss.     | Reshkak 291                       | Leaf, Seed               | Abdominal pains (6), Body tonic (7), Child Carminative (9)                                                                     | GAS-D, OTH-A, GAS-D                        | Infusion                             | Oral                | 22   | A       |
| Apiaceae | <i>Ducrosia assaii</i> Alava.                | Reshkak 237                       | Leaf and fruit           | Wound and burns healing (8)                                                                                                    | DER-S                                      | Oil                                  | Topical             | 8    | A       |
| Apiaceae | <i>Eryngium billardieri</i> Delile           | Chichagh 240                      | Aerial parts             | Expectorant (4), Bronchitis (4), Antispasmodic (1), Carminative (2), Cough (4), Pain relief (3), Reduce rheumatic pain (1)     | RES-R, RES-R, NER-N, GAS-D, RES-R, SKE-L   | Decoction                            | Oral                | 19   | B, C    |
| Apiaceae | <i>Eryngium bungei</i> Boiss.                | Shooghagh 242                     | Aerial parts             | Pain relief (4)                                                                                                                | NER-N                                      | Decoction                            | Oral                | 4    | B       |
| Apiaceae | <i>Ferula assa-foetida</i> L.                | Anghouze 245                      | Gum                      | Parasite intestine (16), Expectorant (2), Menstrual disorders (2), Gastritis (5)                                               | GAS-D, RES-R, GYN-X, GAS-D                 | Fume, Infusion                       | Oral                | 25   | A       |
| Apiaceae | <i>Ferula gummosa</i> Boiss.                 | Anghouzeh 236                     | Gum                      | Cough (6), Laxative (3)                                                                                                        | RES-R, GAS-D                               | Infusion                             | Oral                | 9    | A       |
| Apiaceae | <i>Ferula oopoda</i> (Boiss. & Buhse) Boiss. | Anghouzeh 252                     | Latex, Fruit             | Toothache (35), Carminative (18), Intestinal parasite (30), Tooth infection (10), Expectorant (4)                              | GAS-D, GAS-D, GAS-D, GAS-D, RES-R          | Poultice, Decoction                  | Oral                | 97   | A       |
| Apiaceae | <i>Ferula ovina</i> (Boiss.) Boiss.          | Anghouze shirin 247               | Aerial parts             | Carminative (15)                                                                                                               | GAS-D                                      | Decoction                            | Oral                | 15   | A       |



**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family      | Scientific name                                                 | Local name (Persian); Voucher no. | Plant part used     | Medicinal use (UR)                                                                                             | ICPC category                     | Preparation                     | Mode of application | (UR) A, B, C |
|-------------|-----------------------------------------------------------------|-----------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------|---------------------|--------------|
| Apiaceae    | <i>Ferula persica</i> Willd.                                    | Anghouzeh 250                     | Latex, Fruit        | Cough (6), Laxative (3)                                                                                        | RES-R, GAS-D                      | Decoction                       | Oral                | 9 A          |
| Apiaceae    | <i>Ferula szowitziana</i> DC.                                   | Anghouze 254                      | Latex               | Stomachache (6)                                                                                                | GAS-D                             | Cooked with meat and vegetables | Oral                | 6 A          |
| Apiaceae    | <i>Ferulago angulata</i> (Schltld.) Boiss.                      | Garchi 257                        | Aerial parts        | Carminative (6), Flavoring of butter (1), Aromatherapy (1)                                                     | GAS-D, OTH-A                      | Decoction, Powder, Dressing     | Oral                | 8 A          |
| Apiaceae    | <i>Foeniculum vulgare</i> Mill.                                 | Badioun 244                       | Seed                | Carminative (41), Gastric discomfort (27), Bone and joint pains (12), Asthma (1), Digestive (11)               | GAS-D, GAS-D, SKE-L, RES-R, GAS-D | Decoction                       | Oral                | 92 A         |
| Apiaceae    | <i>Pulicaria undulata</i> (L.) C.A.Mey.                         | Sooteh 259                        | Leaf                | Dysentery (10), Wound healing (3)                                                                              | GAS-D, DER-S                      | Decoction, Poultice             | Oral, Topical       | 14 A, C      |
| Apiaceae    | <i>Heracleum persicum</i> Desf. ex Fisch., C.A.Mey. & Avé-Lali. | Golpar 258                        | Fruit, Flower       | Relaxing (8)                                                                                                   | NERN                              | Aromatic water                  | Oral                | 8 B, C       |
| Apiaceae    | <i>Levisticum officinale</i> W.D.J.Koch                         | Karasm 262                        | Aerial part         | Carminative (5), Gastric discomfort (10), Blood pressure (19)                                                  | GAS-D, GAS-D, CAR-K               | Aromatic water                  | Oral                | 34 B, C      |
| Apiaceae    | <i>Levisticum persicum</i> Freyn & Bornm.                       | Karasm 260                        | Aerial parts, Stem  | Pickle (3), Aromatherapy (1), Flavoring of food (2)                                                            | OTH-A, OTH-A                      | Decoction, Dressing, Powder     | Oral                | 5 A          |
| Apiaceae    | <i>Petroselinum crispum</i> (Mill.) Fuss                        | Jafari 229                        | Young branches      | Urinary stone (3), Digestive (12), Anemia (5)                                                                  | URO-U, GAS-D, Blood-B             | Decoction                       | Oral                | 20 A         |
| Apiaceae    | <i>Pimpinella saxifraga</i> L.                                  | Jafari Kouhi 263                  | Leaf                | Stomachache (21)                                                                                               | GAS-D                             | Decoction                       | Oral                | 21 A         |
| Apiaceae    | <i>Platychaete aucheri</i> (Boiss.) Boiss.                      | Zarbarook 255                     | Leaf                | Asthma (7)                                                                                                     | RES-R                             | Decoction                       | Oral                | 7 A, C       |
| Apiaceae    | <i>Prangos cheilanthifolia</i> Boiss.                           | Sekbinch 280                      | Young branches, Gum | Carminative (5)                                                                                                | GAS-D                             | Mixed with food                 | Oral                | 5 B, C       |
| Apiaceae    | <i>Prangos ferulacea</i> (L.) Lindl.                            | Garchi 253                        | Foliage             | Flavoring of dairy (8), Parasite repellent (6), Toothache (7), Carminative (3), Acne (2), Infectious wound (5) | GAS-D, GAS-D, GAS-D, DER-S, DER-S | Edible, Decoction, Poultice     | Oral, Topical       | 41 B, C      |
| Apiaceae    | <i>Prangos uloptera</i> DC.                                     | Jashir 270                        | Young branches      | Carminative (15), Body tonic (17)                                                                              | GAS-D, OTH-A                      | Mixed with food                 | Oral                | 32 A, C      |
| Apiaceae    | <i>Psammogeton stocksii</i> (Boiss.) Nasir                      | Izbok 273                         | Aerial parts        | Febrifuge (4)                                                                                                  | OTH-A                             | Decoction                       | Oral                | 4 B, C       |
| Apiaceae    | <i>Scandix stellata</i> Banks & Sol.                            | Badiyan koochi 275                | Whole plant         | Body tonic (25), Stomach tonic (13)                                                                            | OTH-A, GAS-D                      | Decoction                       | Oral                | 38 B, C      |
| Apiaceae    | <i>Trachyspermum ammi</i> (L.) Sprague                          | Kaserk 277                        | Fruit               | Stomachache (19), Carminative (7)                                                                              | GAS-D, GAS-D                      | Decoction                       | Oral                | 26 A         |
| Apiaceae    | <i>Pycnocycla spinosa</i> Decne.                                | Sagdandan 279                     | Root                | Scorpion bite (1)                                                                                              | OTH-A                             | Decoction                       | Oral                | 2 B, C       |
| Apiaceae    | <i>Pycnocycla bashgardiana</i> Mozaiff.                         | Pvander 288                       | Flower              | Stomachache (2)                                                                                                | GAS-D                             | Decoction                       | Oral                | 3 B, C       |
| Apocynaceae | <i>Calotropis procera</i> (Aiton) Dryand.                       | Kark 849                          | Latex               | Eczema (98), Scorpion bite (9), Earache (4), Toothache (6), Cancer (1)                                         | DER-S, DER-S, Ear-H, GAS-D, CAN-C | Latex                           | Topical, Oral       | 151 B        |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family       | Scientific name                              | Local name (Persian); Voucher no. | Plant part used    | Medicinal use (UR)                                                                                                                                 | ICPC category                                          | Preparation                   | Mode of application | (UR) A, B, C                  |
|--------------|----------------------------------------------|-----------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------|---------------------|-------------------------------|
| Apocynaceae  | <i>Cionura erecta</i> (L.) Griseb.           | Jaze sabz 852                     | Leaf               | Reduce blood sugar (11), Bruise (10)                                                                                                               | MET-T, SKE-L                                           | Poultice                      | Topical             | 167 B, C                      |
| Apocynaceae  | <i>Nerium oleander</i> L.                    | Gish 861                          | Leaf               | Sore throat (3), Expectorant (77), Cough (87)<br>Stomachache (3), Skin diseases (1)                                                                | OTH-A, RES-R, RES-R<br>GAS-D                           | Decoction<br>Decoction, Latex | Oral                | 4 A, C                        |
| Apocynaceae  | <i>Pergularia tomentosa</i> L.               | Keshtook 855                      | Latex              | Eczema (2), Constipation (1), Parasite repellent (2), Cancer (1)                                                                                   | DER-S, GAS-D, CAIN-C                                   | Poultice, Decoction           | Topical, Oral       | 15 B, C                       |
| Apocynaceae  | <i>Periploca aphylla</i> Decne.              | Shirbadam 853                     | Whole parts        | Hair removal of animal skin (9)                                                                                                                    | OTH-A                                                  | Decoction                     | Topical             | 8 B, C                        |
| Apocynaceae  | <i>Rhazya stricta</i> Decne.                 | Eshbarg 859                       | Leaf               | Burn healing (3), Skin inflammation (5)                                                                                                            | DER-S, DER-S                                           | Mask, Poultice                | Topical             | 173 B                         |
| Arecaceae    | <i>Phoenix dactylifera</i> L.                | Mogh 1123                         | Leaf               | Scorpion and snake bite (5), Sore throat (2), Febrifuge (41), Ear ache (1), Eye ache (1)                                                           | DER-S                                                  | Decoction                     | Bath                | 17 B, C                       |
| Arecaceae    | <i>Nannorrhops ritchieana</i> (Griff) Aitch. | Daz1 125                          | Pollen             | Wound healing (63), Joint pains (57), Reduce blood sugar (3)                                                                                       | DER-S, SKE-L, MET-T                                    | Poultice                      | Topical             | 17 B, C                       |
| Asparagaceae | <i>Leopoldia comosa</i> (L.) Parl.           | Simook 1235                       | Pith parenchyma    | Improvement of male fertility (11)                                                                                                                 | PRE-W                                                  | Mixed with honey              | Oral                | 8 B, C                        |
| Asteraceae   | <i>Achillea eriophora</i> DC.                | Gole bengerask 921                | Fruit              | Memory improvement (5)                                                                                                                             | NER-N                                                  | Edible                        | Oral                | 8 B, C                        |
| Asteraceae   | <i>Achillea santalinoides</i> Lag.           | Gole bengerask 918                | Flowering branches | Vegetable (8)                                                                                                                                      | OTH-A                                                  | Edible                        | Oral                | 6 B, C                        |
| Asteraceae   | <i>Achillea wilhelmsii</i> C. Koch           | Gole bengerask 922                | Bulb               | Anti-diarrhea (2), Bronchitis (3), Cough (1)                                                                                                       | GAS-D, RES-R, RES-R                                    | Mixed with food               | Oral                | 46 A                          |
| Asteraceae   | <i>Arctium lappa</i> L.                      | Babaadam 950                      | Flowering branches | Relaxing (4), Gastric discomfort (7), Parasite repellent (3), Anti-diarrhea (10), Menstrual disorders (2), Cramps, Febrifuge (8), Stomachache (12) | NER-N, GAS-D, GAS-D, GAS-D, GYN-X, SKE-L, OTH-A, GAS-D | Infusion, Powder              | Oral                | 46 A, C                       |
| Asteraceae   | <i>Artemisia absinthium</i> L.               | Afsantin 930                      | Flowering branches | Relaxing (4), gastric discomfort (7), Parasite repellent (3), Anti-diarrhea (10), Menstrual disorders (2), Cramps, Febrifuge (8), Stomachache (12) | NER-N, GAS-D, GAS-D, GAS-D, GYN-X, SKE-L, OTH-A, GAS-D | Infusion, Powder              | Oral                | 26 A                          |
| Asteraceae   | <i>Artemisia aucheri</i> Boiss.              | Jaz 934                           | Flowering branches | Stomach ache (12), Disinfectant (1), Blood purifier (2), Carminative (4), Diuretic (1), Antispasmodic (6)                                          | GAS-D, OTH-A, Blood-B, GAS-D, URO-U, NER-N             | Decoction                     | Oral                | 20 B, C                       |
| Asteraceae   | <i>Artemisia persica</i> Boiss.              | Dermene torki 931                 | Flowering branches | Vertigo (3), Blood purifier (2), Antispasmodic (4), Detoxification (1), Food digestion (7), Parasite repellent (1), Kidney diseases (2)            | NER-N, OTH-A, NER-N, OTH-A, GAS-D, GAS-D, URO-U        | Poultice, Decoction           | Oral                | 5 A                           |
| Asteraceae   |                                              |                                   | Flowering branches | Intestinal parasites (5)                                                                                                                           | GAS-D                                                  | Decoction                     | Oral                | 68 A, C                       |
| Asteraceae   |                                              |                                   | Flowering branches | Relaxing (6), Abdominal pains (27), Respiratory diseases (3), Body tonic (6), Febrifuge (25)                                                       | NER-N, GAS-D, RES-R, OTH-A, OTH-A                      | Decoction                     | Oral                | Essential oil, Aromatic water |
| Asteraceae   |                                              |                                   | Flowering branches | Beauty of skin and hair (1)                                                                                                                        | DER-S                                                  | Decoction                     | Topical             | 179 A, C                      |
| Asteraceae   |                                              |                                   | Flowering branches | Febrifuge (44), Gastric infection (62), Stomachache (73)                                                                                           | OTH-A, GAS-D                                           | Decoction                     | Oral                |                               |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family     | Scientific name                                 | Local name (Persian); Voucher no. | Plant part used    | Medicinal use (UR)                                                                                     | ICPC category                            | Preparation                | Mode of application | (UR) A, B, C |
|------------|-------------------------------------------------|-----------------------------------|--------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------|---------------------|--------------|
| Asteraceae | <i>Artemisia scoparia</i> Waldst. & Kitam.      | 932                               | Aerial parts       | Stomachache (13)                                                                                       | GAS-D                                    | Decoction                  | Oral                | 13 B, C      |
| Asteraceae | <i>Artemisia sieberi</i> Besser                 | Sorkhdemon 953                    | Flowering branches | Anti-nausea (20), Antispasmodic, (8) Parasite repellent (18)                                           | GAS-D, NER-N, GAS-D                      | Decoction                  | Oral                | 61 A         |
| Asteraceae | <i>Atractylis cancellata</i> L.                 | Kharcharkha 940                   | Flowering branches | Bruise (15)                                                                                            | SKE-L                                    | Decoction                  | Topical             |              |
| Asteraceae | <i>Calendula officinalis</i> L.                 | Gole bahari 942                   | Aerial parts       | Carminative (2), Pancreatic cancer (1)                                                                 | GAS- D, CAN-C                            | Infusion                   | Oral                | 8 B, C       |
| Asteraceae | <i>Carthamus lanatus</i> L.                     | Khazard 971                       | Flower             | Bruise (2)                                                                                             | SKE-L                                    | Poultice                   | Topical             | 2 B, C       |
| Asteraceae | <i>Carthamus oxyacantha</i> M.Bieb.             | Golrangzard 972                   | Leaf and flower    | Purgative (1), Menstrual disorders (1), Blood purifier (1)                                             | GAS-D, GYN-X, OTH-A                      | Decoction                  | Oral                | 3 B, C       |
| Asteraceae | <i>Centaurea benedicta</i> (L.) L.              | Khar moghadas 980                 | Flowering branches | Memory tonic (2)                                                                                       | NER-N                                    | Decoction                  | Oral                | 2 B, C       |
| Asteraceae | <i>Centaurea bruguierana</i> (DC.) Hand.-Mazz.  | Gole gandom 981                   | Aerial parts       | Anti-inflammatory (2)                                                                                  | SKE-L                                    | Decoction                  | Oral                | 2 A          |
| Asteraceae | <i>Cichorium intybus</i> L.                     | Kasni 925                         | Leaf and Flower    | Jaundice (15), Liver diseases (2), Diuretic (2), Febrifuge (13), Antihypertensive (2), Laxative (55)   | GAS-D, GAS-D, URO-U, OTH-A, CAR-K, GAS-D | Aromatic water, Maceration | Oral                | 89 A, C      |
| Asteraceae | <i>Cichorium pumilum</i> Jacq.                  | Kasni 913                         | Leaf and Flower    | Jaundice (14), Liver diseases (2), Febrifuge (14), Blood purifier, Antihypertensive (2), Laxative (50) | GAS-D, GAS-D, OTH-A, OTH-A, GAS-D        | Aromatic water, Maceration | Oral                | 96 A         |
| Asteraceae | <i>Cirsium anvense</i> (L.) Scop.               | Kangar 925                        | Root               | Appetizing (5)                                                                                         | OTH-A                                    | Decoction                  | Oral                |              |
| Asteraceae | <i>Cota tinctoria</i> (L.) J.Gay                | Babouneh 939                      | Flowering branches | Gastric discomfort (8), Appetizing (2), Disinfectant (4), Febrifuge (7)                                | GAS-D, OTH-A, OTH-A, OTH-A               | Decoction                  | Oral                | 21 A         |
| Asteraceae | <i>Cousinia congesta</i> Bunge.                 | Poloosh 945                       | Gum                | Throat pains (4), Nervous problems (13), Common cold (14), Anti-diarhea (20), Prostate (5)             | GAS-D, NER-N, RES-R, GAS-D               | Decoction                  | Oral                | 56 A, C      |
| Asteraceae | <i>Cyanus depressus</i> (M.Bieb.) Soják         | Gole gandom 977                   | Flower             | Asthma (2)                                                                                             | RES-R                                    | Decoction                  | Oral                | 2 B, C       |
| Asteraceae | <i>Echinops ritrodes</i> Bunge                  | Kaloor 983                        | Fruit              | Digestive (11), Cough (1), Laxative (6)                                                                | GAS-D, RES-R, GAS-D                      | Decoction                  | Oral                | 18 B, C      |
| Asteraceae | <i>Glebionis coronaria</i> (L.) Cass. ex Spach. | Davoodi 986                       | Aerial parts       | Gastric discomfort (7)                                                                                 | GAS-D                                    | Decoction                  | Oral                | 7 B, C       |
| Asteraceae | <i>Gundelia tournefortii</i> L.                 | Kangar 974                        | Pith parenchyma    | Blood purifier (2), Eyesight enhancement (2)                                                           | OTH-A, EYE-F                             | Infusion                   | Oral                | 4 B, C       |
| Asteraceae | <i>Hertia angustifolia</i> (DC.) Kuntze         | Karkich biabani 975               | Leaf, Flower       | Gastric discomfort (8), Constipation (12), Reduce Blood fat (1), Blood purifier (15)                   | GAS-D, GAS-D, OTH-A, OTH-A               | Edible, Salad              | Oral                | 36 B, C      |
| Asteraceae | <i>Hertia intermedia</i> (Boiss.) Kuntze        | Karkich 973                       | Flowering          | Pain relief (4)                                                                                        | NER-N                                    | Decoction                  | Oral                | 4 B, C       |
| Asteraceae |                                                 |                                   |                    | Insect bite (5), Purgative (2), Parasite repellent (1)                                                 | DER-S, GAS-D, GAS-D                      | Poultice,                  | Topical,            | 8 A          |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family            | Scientific name                                     | Local name (Persian); Voucher no. | Plant part used        | Medicinal use (UR)                                                                                                                          | ICPC category                            | Preparation            | Mode of application | (UR) A, B, C |
|-------------------|-----------------------------------------------------|-----------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------|---------------------|--------------|
| Asteraceae        | <i>Inula britannica</i> L.                          | Mosafa 979                        | Aerial parts           | Reducing thirst (3)                                                                                                                         | OTH-A                                    | Decoction              | Oral                | 3            |
| Asteraceae        | <i>Lactuca orientalis</i> (Boiss.) Boiss.           | Jaroo 958                         | Latex<br>Flower        | Insomnia (3)                                                                                                                                | OTH-A                                    | Decoction              | Oral                | 3            |
| Asteraceae        | <i>Lactuca serriola</i> L.                          | Kahokhardar 916                   | Aerial parts;<br>Latex | Bone and joint pains (1), Purgative (1)                                                                                                     | SKE-L, GAS-D                             | Poultice,<br>Decoction | Topical,<br>Oral    | 2            |
| Asteraceae        | <i>Lauraea acanthodes</i> (Boiss.) Kuntze           | Goojar 918                        | Aerial parts           | Animal parasite repellent (122), Pain relief (4)                                                                                            | GAS-D, NER-N                             | Maceration             | Oral                | 126          |
| Asteraceae        | <i>Matricaria chamomilla</i> L.                     | Babounak 946                      | Flowering branches     | Anti-inflammation (2), Anti-nausea (3)                                                                                                      | SKE-L, GAS-D                             | Decoction              | Oral                | 5            |
| Asteraceae        | <i>Onopordum carmanicum</i> (Bomm.) Bomm.           | Kangar 919                        | Young branches         | Gastric discomfort (4)                                                                                                                      | GAS-D                                    | Decoction              | Oral                | 4            |
| Asteraceae        | <i>Onopordum leptolepis</i> DC.                     | Kangar 920                        | Aerial parts           | Urinary stone (6), Abdominal pains (9), Anti-diarrhea (8)                                                                                   | URO-U, GAS-D, GAS-D                      | Decoction              | Oral                | 23           |
| Asteraceae        | <i>Rhaponticum repens</i> (L.) Hidalgo              | Talkhe sadi 927                   | Aerial parts           | Baby fever (2), Cancer (2)                                                                                                                  | OTH-A, CAN-C                             | Poultice,<br>Decoction | Topical             | 4            |
| Asteraceae        | <i>Scorzenera mucida</i> "Rech.f., Aellen & Esfand. | Kalaghoo 912                      | Fresh leaf             | Infectious wound (3)                                                                                                                        | DER-S                                    | Poultice               | Topical             | 3            |
| Asteraceae        | <i>Senecio glaucus</i> L.                           | Bangdaneh 990                     | Aerial parts           | Chronic wound (6)                                                                                                                           | DER-S                                    | Poultice               | Topical             | 6            |
| Asteraceae        | <i>Silybum marianum</i> (L.) Gaertn.                | Khamaryam 995                     | Leaf                   | Fatty liver (35), Reduce blood sugar (3)                                                                                                    | GAS-D, MET-T                             | Decoction              | Oral                | 38           |
| Asteraceae        | <i>Sonchus asper</i> (L.) Hill                      | Shirtghak 996                     | Leaf                   | Skin rash (3)                                                                                                                               | DER-S                                    | Poultice               | Topical             | 3            |
| Asteraceae        | <i>Sonchus oleraceus</i> (L.) L.                    | Shirtghak 997                     | Leaf                   | Skin rash (3)                                                                                                                               | DER-S                                    | Poultice               | Topical             | 4            |
| Asteraceae        | <i>Tanacetum parthenium</i> (L.) Sch.Bip.           | Babouneh 960                      | Aerial parts           | Parasite repellent (4), Migraine (2), Anti-inflammation (10), Peptic ulcer (3), Gastritis (6)                                               | OTH-A, NER-N, SKE-L, GAS-D, GAS-D        | Decoction              | Oral                | 25           |
| Asteraceae        | <i>Taraxacum assemanii</i> Boiss.                   | Shirdandan 998                    | Leaf, Flower           | Liver tonic (1), Diuretic (1)                                                                                                               | GAS-D, URO-U                             | Decoction              | Oral                | 2            |
| Asteraceae        | <i>Taraxacum pseudocalcephalum</i> Soest.           | Gasedak 906                       | Seed                   | Blood fat (1)                                                                                                                               | Blood-B                                  | Decoction              | Oral                | 1            |
| Asteraceae        | <i>Tragopogon graminifolius</i> DC.                 | Sheng 999                         | Leaf, Root             | Diuretic (3), Gastrointestinal disorders (2)                                                                                                | URO-U, GAS-D                             | Decoction              | Oral                | 5            |
| Berberidaceae     | <i>Berberis integririma</i> Bunge                   | Zarch 681                         | Root                   | Reduce blood sugar (61), Animal parasite repellent (2), Hepatitis (2), Joint pains (22), Breaking bone healing (15), Leaving addiction (27) | MET-T, GAS-D, CAR-K, GAS-D, SKE-L, SKE-L | Decoction              | Oral                | 182          |
| Biebersteiniaceae | <i>Biebersteinia multifida</i> DC.                  | Piche bahman 683                  | Leaf                   | Textile fiber color (9), Blood pressure (28)                                                                                                | OTH-A, CAR-K                             | Decoction              | -                   | 17           |
| Bignoniaceae      | <i>Tecomella undulata</i> (Sm.) Seem.               | Golparak 701                      | Stem bark,<br>Leaf     | Blood purifier (30), Heat regulation (1), Hives (3), Laxative (4), Reinforcing sexual desire (9), Pain relief (5), Colic (3)                | OTH-A, OTH-A, DER-S, GAS-D               | Decoction              | Oral                | 194          |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family       | Scientific name                                 | Local name (Persian); Voucher no. | Plant part used               | Medicinal use (UR)                                                                                                                                                         | ICPC category                                             | Preparation                          | Mode of application | (UR) A, B, C |
|--------------|-------------------------------------------------|-----------------------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|--------------------------------------|---------------------|--------------|
| Boraginaceae | <i>Anchusa azurea</i> Mill.                     | Gavzaban 710                      | Flower                        | Relaxing (4)                                                                                                                                                               | NER-N                                                     | Decoction, Infusion                  | Oral                | 4 A, C       |
| Boraginaceae | <i>Buglossoides arvensis</i> (L.) I.M.Johnst.   | Sangdaneh 711                     | Leaf, Root                    | Pain relief (6)                                                                                                                                                            | NER-N                                                     | Decoction                            | Oral                | 6 B, C       |
| Boraginaceae | <i>Coccinia macranthera</i> (Banks & Sol) Brand | Gavzaban 720                      | Flower                        | Relaxing (3)                                                                                                                                                               | NER-N                                                     | Decoction                            | Oral                | 3 A, C       |
| Boraginaceae | <i>Cordia myxa</i> L.                           | Pohil 724                         | Fruit                         | Common cold (5), Appetizing (4), Throat pain (10), Eczema (2), Kidney stone (5)                                                                                            | RES-R, -, GAS-D, DER-S, URO-U                             | Poultice, Infusion                   | Oral, Topical       | 26 B, C      |
| Boraginaceae | <i>Echium amoenum</i> Fisch. & C.A.Mey. 734     | Golgavzaban 734                   | Flower                        | Sleeplessness (27), Relaxing (76), Anorexia (1)                                                                                                                            | NER-N, NER-N, Psy-P                                       | Decoction                            | Oral                | 104 A, C     |
| Boraginaceae | <i>Nonea caspica</i> (Willd.) G.Don 715         | Gavzabanak 715                    | Leaf, Flower                  | Relaxing (2), Anorexia (1)                                                                                                                                                 | RES-R, NER-N, Psy-P                                       | Decoction                            | Oral                | 5 A          |
| Boraginaceae | <i>Nonea persica</i> Boiss.                     | Serkoee Cheskoee 712              | Flower and Leaf               | Relaxing (3), Heart tonic (5), Expectorant (2), Disinfectant (4),                                                                                                          | NER-N, CAR-K, RES-R, OTH-A                                | Decoction                            | Oral                | 14 B, C      |
| Boraginaceae | <i>Onosma stenosisiphon</i> Boiss.              | Hoochoo 716                       | Root                          | Women infection (7), Pain relief (6), Bruise (8), Wound sucker (13), Burn healing (9)                                                                                      | GYN-X, NER-N, DER-S, DER-S, DER-S                         | Poultice, Decoction                  | Oral, Topical       | 43 B, C      |
| Boraginaceae | <i>Solenanthes circinatus</i> Ledeb.            | Chooobe Azar 725                  | Stem bark                     | Bruise (95)                                                                                                                                                                | DER-S                                                     | Poultice                             | Topical             | 95 B, C      |
| Boraginaceae | <i>Trichodesma stocksii</i> Boiss.              | Gavzaban 727                      | Flower                        | Nerve tonic (6), Respiratory ailments (1), Sore throat (1), Relaxing (1)                                                                                                   | NER-N, RES-R, GAS-D                                       | Decoction                            | Oral                | 9 A          |
| Brassicaceae | <i>Alyssum linifolium</i> Stephan ex Willd.     | Ghodomeh 756                      | Seed                          | Laxative (3), Cough (2)                                                                                                                                                    | GAS-D, RES-R                                              | Decoction                            | Oral                | 5 A, C       |
| Brassicaceae | <i>Alyssum szovitsianum</i> Fisch. & C.A.Mey.   | Toodari karopoo 740               | Seed                          | Laxative (14)                                                                                                                                                              | GAS-D                                                     | Decoction                            | Oral                | 14 B, C      |
| Brassicaceae | <i>Brassica nigra</i> (L.) K.Koch               | Khardal 750                       | Root, Leaf, Seed              | Memory improvement (1), Skin clarification (2)                                                                                                                             | NER-N, DER-S                                              | Poultice, Decoction                  | Oral, Topical       | 3 B, C       |
| Brassicaceae | <i>Brassica rapa</i> L.                         | Shalgham 749                      | Root                          | Respiratory ailments (5), Common cold (69)                                                                                                                                 | RES-R, RES-R                                              | Edible                               | Oral                | 74 A         |
| Brassicaceae | <i>Capsella bursa-pastoris</i> (L.) Medik.      | Kisekeshish 745                   | Aerial parts                  | Blood purifier (7)                                                                                                                                                         | Blood-B                                                   | Decoction                            | Oral                | 7 B, C       |
| Brassicaceae | <i>Decuraria sophia</i> (L.) Webb. ex Prantl    | Khakshir 762                      | Seed                          | Laxative (42), Disinfectant (5), Reducing thirst (7), Constipation (46), Throat infection (10), Intestinal pain (7), Blood purifier (4), Heatstroke (7), Anti-diarrhea (5) | GAS-D, GAS-D, OTH-A, -, GAS-D, GAS-D, GAS-D, OTH-A, GAS-D | Decoction, Syrup, Maceration         | Oral                | 96 A         |
| Brassicaceae | <i>Eruca vesicaria</i> (L.) Cav.                | Mandow 755                        | Young stem and leaf           | Body tonic (2)                                                                                                                                                             | OTH-A                                                     | Salad                                | Oral                | 2 B, C       |
| Brassicaceae | <i>Erysimum crassicaule</i> (Boiss.) Boiss. 760 | Khakshir talkh 760                | Seed                          | Respiratory ailments (4)                                                                                                                                                   | RES-R                                                     | Maceration                           | Oral                | 4 A, C       |
| Brassicaceae | <i>Fortuynia garcinii</i> (Burm.f) Shuttlew.    | Shabboo 765                       | Aerial parts, Leaf and flower | Migraine (5), Relaxing (6), Menstrual disorders (2), Flavoring of food (4), Antispasmodic (3), Stomach tonic (6)                                                           | NER-N, NER-N, GYN-X, NER-N, GAS-D                         | Decoction, Infusion, Mixed with food | Oral                | 26 A, C      |
| Brassicaceae | <i>Goldbachia laevigata</i> (M.Bieb.) DC.       | Nakhonak 780                      | Seed                          | Antimicrobial (1)                                                                                                                                                          | OTH-A                                                     | Decoction                            | Oral                | 1 B, C       |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family          | Scientific name                                                | Local name (Persian); Voucher no. | Plant part used                | Medicinal use (UR)                                                                                                                           | ICPC category                                            | Preparation             | Mode of application | (UR) A, B, C |
|-----------------|----------------------------------------------------------------|-----------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------|---------------------|--------------|
| Brassicaceae    | <i>Lepidium draba</i> L.                                       | Mookoo 759                        | Leaf                           | Eczema (4), Reduce rheumatic pain (7), Diuretic (8), Gastritis (4), Stomach acidification (4), Cough (8), Flavoring of food (16), Anemia (3) | DER-S, SKE-L, URO-U, GAS-D, GAS-D, RES-R, OTH-A, Blood-B | Poultice, Decoction     | Topical, Oral       | 54 B, C      |
| Brassicaceae    | <i>Lepidium latifolium</i> L.                                  | Tarantizak 770                    | Aerial parts                   | Pickle (9), Body tonic (3)                                                                                                                   | OTH-A, OTH-A                                             | Edible                  | Oral                | 12 B, C      |
| Brassicaceae    | <i>Lepidium sativum</i> L.                                     | Shahi 776                         | Leaf                           | Muscle cramps (2), Reduce rheumatic pain (3)                                                                                                 | SKE-L, SKE-L, SKE-L, SKE-L                               | Decoction               | Oral                | 5 B, C       |
| Brassicaceae    | <i>Raphanus caudatus</i> L.                                    | Torobcheh 784                     | Root                           | Digestive (6), Urinary problems (2)                                                                                                          | GAS-D, URO-U                                             | Vegetable, Decoction    | Oral                | 8 B, C       |
| Brassicaceae    | <i>Sisymbrium irio</i> L.                                      | Khakshir 763                      | Seed                           | Laxative, Constipation                                                                                                                       | GAS-D, GAS-D                                             | Infusion                | Oral                | A            |
| Brassicaceae    | <i>Isatis tinctoria</i> L.                                     | Vasmeh 783                        | Leaf                           | Hair tonic and hair color (24)                                                                                                               | DER-S                                                    | Powder mixed with water | Topical             | 24 A, C      |
| Brassicaceae    | <i>Thlaspi perfoliatum</i> L.                                  | Kisehchoochan 785                 | Seed                           | Diuretic (5)                                                                                                                                 | URO-U                                                    | Decoction               | Oral                | 5 B, C       |
| Cannabaceae     | <i>Cannabis sativa</i> L.                                      | Kanaf 1240                        | Seed, Leaf, flowering branches | Urinary problems (3), Sleeplessness (2), Nervous system tonic (7), Relaxing (2)                                                              | URO-U, NER-N, NER-N, NER-N                               | Decoction               | Oral                | 14 B, C      |
| Campanulaceae   | <i>Campanula kermanica</i> (Rech.f., Aellen & Esfand.) Rech.f. | Gole ghifoo 1325                  | Flower and leaf                | Cough (4)                                                                                                                                    | RES-R                                                    | Decoction               | Oral                | 4 B, C       |
| Capparidaceae   | <i>Capparis spinosa</i> L.                                     | Dak 634                           | Fruit, Leaf                    | Liver diseases (1), Anemia (1), Joint pains (3), Antimicrobial (12), Pickle (7), Eczema (16)                                                 | RES-R, OTH-A, SKE-L, OTH-A, OTH-A, DER-S                 | Decoction, Poultice     | Oral, Topical       | 40 A         |
| Caprifoliaceae  | <i>Lomelosia olivieri</i> (Coul.) Greuter & Burdet             | Sarbanafsheh talkh 1331           | Flower                         | Diarrhea (5), Joint pains (4)                                                                                                                | GAS-D, SKE-L                                             | Decoction, Poultice     | Topical, Oral       | 9 B, C       |
| Caprifoliaceae  | <i>Scabiosa canadensis</i> DC.                                 | Talikhou 1332                     | Flower                         | Anti-diarrhea (8), Abdominal pains (5), Bone and joint pains (2)                                                                             | GAS-D, GAS-D, SKE-L                                      | Decoction, Poultice     | Topical             | 16 A         |
| Caprifoliaceae  | <i>Scabiosa flavida</i> Boiss. & Hausskn.                      | Sarbanafsheh talkh 1334           | Flower                         | Anti-diarrhea (4), Joint pains (3)                                                                                                           | GAS-D, SKE-L                                             | Decoction, Poultice     | Topical, Oral       | 7 B, C       |
| Caprifoliaceae  | <i>Valeriana ficarifolia</i> Boiss.                            | Alafe gorbe 1337                  | Root, Rhizome                  | Relaxing (5)                                                                                                                                 | NER-N                                                    | Decoction               | Oral                | 5 B, C       |
| Caryophyllaceae | <i>Dianthus crinitus</i> Sm.                                   | Ghemehei 612                      | Seed                           | Toothache (17), Breath freshener (2)                                                                                                         | OTH-A, RES-R                                             | Decoction, Poultice     | Oral, Topical       | 19 B, C      |
| Caryophyllaceae | <i>Dianthus orientalis</i> Adams                               | Mikhak 611                        | Leaf, Flower                   | Toothache (24), Breath freshener (2), Headache (18), Nerve pain (27)                                                                         | OTH-A, RES-R, NER-N, NER-N                               | Poultice, Decoction     | Oral, Topical       | 71 A         |
| Caryophyllaceae | <i>Hemaria hirsuta</i> L.                                      | Fetgh 613                         | Aerial parts                   | Burn wound healing (5)                                                                                                                       | DER-S                                                    | Poultice                | Topical             | 5 B, C       |
| Cleomeaceae     | <i>Cleome coluteoides</i> Boiss.                               | Alafe maar 1350                   | Leaf, Flower and Fruit         | Diuretic (5), Laxative (2), Anti-nausea (2), psoriasis (2)                                                                                   | URO-U, GAS-D, GAS-D, DER-S                               | Decoction, Poultice     | Oral                | 11 B, C      |
| Colchicaceae    | <i>Colchicum schimperii</i> Janka ex Stef.                     | Hasratoo 452                      | Root                           | Wart treatment (5), Joint pains (6), Reduce the pain of gout disease (4)                                                                     | DER-S, SKE-L, NER-N                                      | Poultice                | Topical             | 15 B, C      |
| Convolvulaceae  | <i>Convolvulus avensis</i> L.                                  | Pichak 791                        | Leaf, Flower, Seed             | Gastric discomfort (12), Wound healing (3), Asthma (2)                                                                                       | GAS-D, DER-S                                             | Decoction, Poultice     | Oral, Topical       | 17 A         |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family         | Scientific name                              | Local name (Persian); Voucher no. | Plant part used       | Medicinal use (UR)                                                                                                                                       | ICPC category                                   | Preparation                       | Mode of application | (UR) A, B, C |
|----------------|----------------------------------------------|-----------------------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------|---------------------|--------------|
| Convolvulaceae | <i>Cressa cretica</i> L.                     | Alaf mourcheh 790                 | Aerial parts          | Antifungal (4), Antibacterial (14)                                                                                                                       | OTH-A, OTH-A                                    | Poultice                          | Topical             | 18 A         |
| Convolvulaceae | <i>Cuscuta epithymum</i> (L.) L.             | Ses 792                           | Aerial parts          | Diuretic (2), Jaundice (2)                                                                                                                               | URO-U, GAS-D                                    | Decoction                         | Oral                | 4 A, C       |
| Cucurbitaceae  | <i>Citrullus colocynthis</i> (L.) Schrad.    | Gelgenjak 890                     | Fruit, Seed, Root     | Reduce blood sugar (91), Reduce rheumatic pain (3), Scorpion bite (6), Chronic ulcers (5), Antihypertensive (4), Febrifuge (2), Bone and joint pains (8) | MET-T, DER-S, DER-S, OTH-A, CAR-K, DER-S, SKE-L | Poultice, powder                  | Topical, Oral       | 119 A        |
| Cucurbitaceae  | <i>Cucumis sativus</i> L.                    | Kheyar 889                        | Aerial parts          | Laxative (13)                                                                                                                                            | GAS-D                                           | Decoction                         | Oral                | 13 A, C      |
| Cucurbitaceae  | <i>Cucurbita moschata</i> Duchesne           | Kadoohalvae 891                   | Seed                  | Prostate (6)                                                                                                                                             | URO-U                                           | Decoction                         | Oral                | 6 A, C       |
| Cucurbitaceae  | <i>Cucurbita pepo</i> L.                     | Kadoo 885                         | Fruit                 | Blood fat (8), Constipation (4)                                                                                                                          | Blood-B, GAS-D                                  | Edible                            | Oral                | 12 A, C      |
| Cupressaceae   | <i>Juniperus excedisa</i> M.Bieb.            | Avors 203                         | Fruit                 | Common cold (14), Hair tonic and hair color (3), Freshener body (6), Skin rash (31), Wound healing (12)                                                  | RES-R, DER-S, OTH-A, DER-S, DER-S               | Powder, Bath, Decoction, Poultice | Topical, Oral       | 143 B        |
| Elaeagnaceae   | <i>Elaeagnus angustifolia</i> L.             | Senjed 544                        | Leaf                  | Pest Control (15), Algae Pool Control (3), Wood corrosion (10), Pain relief (4)                                                                          | OTH-A, OTH-A, OTH-A, NER-N                      | Dressing, Powder, Decoction       | Topical, Oral       |              |
| Ephedraceae    | <i>Ephedra distachya</i> L.                  | Khimouk 182                       | Leaf and fruit        | Stomach tonic (7), Appetizing (5), Reduce rheumatic pain (11)                                                                                            | GAS-D, OTH-A, SKE-L                             | Decoction, Poultice               | Oral, Topical       |              |
| Elaeagnaceae   | <i>Elaeagnus angustifolia</i> L.             | Senjed 544                        | Seed                  | Joint pains (26), Anti-diarrhea (48), Peptic ulcer (10)                                                                                                  | SKE-L, GAS-D, GAS-D                             | Poultice, Powder                  | Topical, Oral       | 90 A         |
| Ephedraceae    | <i>Ephedra distachya</i> L.                  | Khimouk 182                       | seed                  | Health tonic (6)                                                                                                                                         | OTH-A                                           | Oil                               | Oral                |              |
| Ephedraceae    | <i>Ephedra foliata</i> Boiss. ex C.A.Mey.    | Khimouk 180                       | Young branches        | Stomachache (12), Relaxing (8), Peptic ulcer (62), Stomach burning, (22) Traditional tannery (10), Relaxing (1)                                          | GAS-D, NER-N, GAS-D, GAS-D, GAS-D, NER-N        | Decoction, Infusion               | Oral                | 115 B, C     |
| Ephedraceae    | <i>Ephedra major</i> Host                    | Alijoon 185                       | Young branches, Fruit | Stomachache (2), Relaxing (3), Peptic ulcer (3), Relaxing (1)                                                                                            | GAS-D, NER-N, GAS-D, NER-N                      | Decoction, Infusion               | Oral                | 9 B, C       |
| Ephedraceae    | <i>Ephedra pachyclada</i> Boiss.             | Hoome nar 186                     | Young branches, Fruit | Respiratory ailments (4), Cough (4), Common cold (5), Pain relief (24), Relaxing (1)                                                                     | RES-R, RES-R, RES-R, NER-N, NER-N               | Decoction                         | Oral                | 53 A         |
| Ephedraceae    | <i>Ephedra intermedia</i> Schrenk & C.A.Mey. | Khimouk 179                       | Young branches        | Traditional tannery (15)                                                                                                                                 | OTH-A                                           | Decoction                         | -                   |              |
| Ephedraceae    | <i>Ephedra pachyclada</i> Boiss.             | Hoome nar 186                     | Young branches, Fruit | Common cold (5), Stomachache (7), Weight loss (36), Peptic ulcer (50), Traditional tannery (15), Relaxing (1)                                            | RES-R, GAS-D, OTH-A, GAS-D, OTH-A, NER-N        | Decoction, Infusion               | Oral                | 114 B, C     |
| Ephedraceae    | <i>Ephedra strobilacea</i> Bunge             | Khimook 189                       | Young branches, Fruit | Cramp (9), Food coloring (10)                                                                                                                            | SKE-L, OTH-A                                    | Decoction, Infusion               | Oral                | 19 A, C      |
| Ephedraceae    | <i>Ephedra strobilacea</i> Bunge             | Khimook 189                       | Young branches, Fruit | Pain relief (37), Gastric discomfort (53), Relaxing (1)                                                                                                  | NER-N, GAS-D, NER-N                             | Decoction                         | Oral                | 91 A         |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family        | Scientific name                                                                     | Local name (Persian); Voucher no. | Plant part used | Medicinal use (UR)                                                                                                                                                                        | ICPC category                                                        | Preparation               | Mode of application | (UR) A, B, C |
|---------------|-------------------------------------------------------------------------------------|-----------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|---------------------------|---------------------|--------------|
| Euphorbiaceae | <i>Euphorbia bussei</i> Pax                                                         | Shirsag 470                       | Young leaf      | Treatment of Blister (5), Skin stimulant (3), Reduced vision (3), Anemia (2)                                                                                                              | DER-S, DER-S, EYE-F, Blood-B                                         | Decoction, Poultice       | Oral, Topical       | 13 A, C      |
| Euphorbiaceae | <i>Euphorbia granulata</i> Forssk                                                   | Shirbeng 472                      | Latex           | Eczema (2)                                                                                                                                                                                | DER-S                                                                | Latex                     | Topical             | 2 B, C       |
| Euphorbiaceae | <i>Euphorbia helioscopia</i> L.                                                     | Shirbeng 484                      | Leaf, Seed      | Joint pains (3), Skin rash (3), Reduce rheumatic pain (2)                                                                                                                                 | SKE-L, DER-S, SKE-L                                                  | Decoction, Poultice       | Topical, Oral       | 8 A          |
| Euphorbiaceae | <i>Euphorbia pepylus</i> L.                                                         | Alafe zegi 1475                   | Latex           | Eczema (2)                                                                                                                                                                                | DER-S                                                                | Latex                     | Topical             | 2 B, C       |
| Euphorbiaceae | <i>Euphorbia serpens</i> Kunth                                                      | Gazeroo 477                       | Latex           | Eczema (10)                                                                                                                                                                               | DER-S                                                                | Latex                     | Topical             | 10 B, C      |
| Euphorbiaceae | <i>Euphorbia turcomanica</i> Boiss.                                                 | Farfeyoon 478                     | Latex           | Eczema (3)                                                                                                                                                                                | DER-S                                                                | Latex                     | Topical             | 3 B, C       |
| Euphorbiaceae | <i>Ricinus communis</i> L.                                                          | Kenton 499                        | Seed            | Laxative (3), Skin patches (2), Hair tonic (5), Disinfectant (4)                                                                                                                          | GAS-D, DER-S, DER-S, OTH-A                                           | Poultice, Oil             | Topical             | 13 A         |
| Fabaceae      | <i>Alhagi maurorum</i> Medik.                                                       | Adoor 675                         | Aerial parts    | Urinary stone (13), Hemorrhoid (2), Reduce rheumatic pain (1)                                                                                                                             | URO-U, CAR-K, SKE-L                                                  | Decoction, Poultice       | Topical, Oral       | 15 A, C      |
| Fabaceae      | <i>Alhagi pseudalhagi</i> (M. Bieb.) Desv. ex B. Keller & Shap.                     | Adoor 674                         | Aerial parts    | Urinary stone (13), Child jaundice (4)                                                                                                                                                    | URO-U, GAS-D                                                         | Aromatic water, Decoction | Oral                | 17 A         |
| Fabaceae      | <i>Astracantha lateritia</i> (Boiss. & Hausskn) Podlech                             | Khar 640                          | Stem            | Hair tonic (22), Eczema (45)                                                                                                                                                              | DER-S, DER-S                                                         | Gel                       | Topical             | 67 B, C      |
| Fabaceae      | <i>Astragalus eremophilus</i> Boiss.                                                | Gavan 643                         | Seed            | Reinforcing sexual desire (3), Asthma (5), Preventing of the Blood coagulation (2), Expectorant (5)                                                                                       | OTH-A, RES-R, Blood-B, RES-R                                         | Decoction                 | Oral                | 15 A         |
| Fabaceae      | <i>Astragalus fasciculifolius</i> subsp. <i>arbusculinus</i> (Bornm. & Gauba) Tietz | Anzaroot 645                      | Gum, Stem bark  | Ear infection (3), Earache (2), Cough (3), Stomachache (5), Livestock parasite (6), Common cold (4), Detoxification (5), Foot-and-mouth disease of livestock (10), Wart (6), Eye ache (2) | Ear-H, Ear-H, RES-R, GAS-D, GAS-D, RES-R, OTH-A, GAS-D, DER-S, EYE-F | Poultice, Decoction       | Oral, Topical       | 46 B, C      |
| Fabaceae      | <i>Astragalus gossypinus</i> Fisch.                                                 | Gavan 641                         | Gum, Stem bark  | Traditional kohl (67), Hair beauty (15), Hair tonic (15)                                                                                                                                  | DER-S, DER-S, DER-S                                                  | Gel, Poultice             | Topical             | 97 B, C      |
| Fabaceae      | <i>Astragalus ovoideus</i> Širj. & Rech.f.                                          | Margin 685                        | Gum             | Anti-stress (4), Relaxing (4)                                                                                                                                                             | NER-N, NER-N                                                         | Decoction                 | Oral                | 8 B, C       |
| Fabaceae      | <i>Cercis siliquastrum</i> L.                                                       | Argavan 646                       | Leaf, Stem bark | Gastric discomfort (3), Expectorant (2)                                                                                                                                                   | GAS-D, RES-R                                                         | Decoction, Infusion       | Oral                | 5 B, C       |
| Fabaceae      | <i>Cicer arietinum</i> L.                                                           | Nokhod kermani 659                | Seed            | Hair tonic (2), Diuretic (3)                                                                                                                                                              | DER-S, URO-U, CAN-C                                                  | Decoction, Poultice       | Oral, Topical       | 5 A, C       |
| Fabaceae      | <i>Cicer kermanense</i> Bornm.                                                      | Nokhode kermani 660               | Fruit           | Hair tonic (2), Diuretic (3), Menstrual regulation (2)                                                                                                                                    | DER-S, URO-U, GYN-X                                                  | Decoction, Poultice       | Topical, Oral       | 7 A          |
| Fabaceae      | <i>Colutea persica</i> Boiss.                                                       | Feh 652                           | Stem bark       | Wound healing (3)                                                                                                                                                                         | DER-S                                                                | Poultice                  | Topical             | 3 B, C       |
| Fabaceae      | <i>Dalbergia sissoo</i> DC.                                                         | Jag 653                           | Stem bark       | Abortion (2), Expectorant (7), Anti-parasitic (2), Burn healing (2), Anti-nausea (2), Reducing thirst (1)                                                                                 | PRE-W, RES-R, GAS-D, DER-S, GAS-D, GAS-D                             | Decoction, Poultice       | Oral, Topical       | 16 A         |
| Fabaceae      | <i>Genista tinctoria</i> L.                                                         | Rangineh 654                      | Aerial parts    | Anti-diarrhea (2), Gastric discomfort (4), Abdominal pains (3), Constipation (2)                                                                                                          | GAS-D, GAS-D, GAS-D, GAS-D                                           | Decoction                 | Oral                | 11 A         |
| Fabaceae      | <i>Glycyrrhiza glabra</i> L.                                                        | Matki 650                         | Root            | Stomach ulcers (28), Aphthous ulcer (83), Expectorant (9), Breaking bone healing (14), Prostate (4)                                                                                       | GAS-D, GAS-D, RES-R, SKE-L, URO-U                                    | Decoction, Poultice       | Oral                | 138 A, C     |
| Fabaceae      | <i>Lathyrus sativus</i> L.                                                          | Karoo 661                         | Arial part      | Laxative (5), Common cold (2), Fatty liver (2), Jaundice (3),                                                                                                                             | GAS-D, RES-R, GAS-D,                                                 | Edible,                   | Oral,               | 14 B, C      |



**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family      | Scientific name                                   | Local name (Persian); Voucher no. | Plant part used     | Medicinal use (UR)                                                                                              | ICPC category                            | Preparation           | Mode of application | (UR) A, B, C    |
|-------------|---------------------------------------------------|-----------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------|---------------------|-----------------|
| Fabaceae    | <i>Lens culinaris</i> Medik.                      | Adas 663                          | Seed                | Eczema (2)                                                                                                      | GAS-D, DER-S                             | Poultice              | Topical             |                 |
| Fabaceae    | <i>Medicago sativa</i> L.                         | Yonjeh 665                        | Young Leaf          | Body tonic (10)<br>Intestinal parasites (1), Eyesight tonic (7), Appetizing (2), Anemia (8)                     | OTH-A<br>GAS-D, EYE-F, OTH-A, OTH-A      | Edible<br>Edible      | Oral<br>Oral        | 10 A, C<br>28 A |
| Fabaceae    | <i>Mellilotus officinalis</i> (L.) Pall.          | Kallialimolk 697                  | Root                | Stomach tonic (3), Gastric discomfort (3), Leaving addiction (2), Reduce blood sugar (2)                        | GAS-D, GAS-D, NER-N, MET-T               | Decoction             | Oral                |                 |
| Fabaceae    | <i>Onobrychis altissima</i> Grossh.               | Esperes 670                       | Leaf and young stem | Common cold (4), Diuretic (2), Relaxing (9), Antispasmodic (3)                                                  | RES-R, URO-U, NER-N, NER-N               | Edible                | Oral                | 18 B, C         |
| Fabaceae    | <i>Ononis spinosa</i> L.                          | Kharkhar 668                      | Leaf, Flower        | Jaundice (7), Appetizing (2)                                                                                    | GAS-D, OTH-A                             | Decoction             | Oral                | 9 A             |
| Fabaceae    | <i>Phaseolus vulgaris</i> L.                      | Loobia sabz 669                   | Root                | Inflammation of the urinary tract (6), Diuretic (6)                                                             | URO-U, URO-U                             | Decoction             | Oral                | 12 B, C         |
| Fabaceae    | <i>Prosopis cineraria</i> (L.) Druce              | Kahoor 655                        | Fruit               | Cardiovascular diseases (5), Diuretic (2), Cancer (1)                                                           | CAR-K, URO-U, CAN-C                      | Mixed with food       | Oral                | 8 B, C          |
| Fabaceae    | <i>Prosopis cineraria</i> (L.) Druce              | Kahoor 655                        | Latex               | Eczema (10)                                                                                                     | DER-S                                    | Latex of burning stem | Topical             | 26 B, C         |
| Fabaceae    | <i>Prosopis farcta</i> (Banks & Sol.) J.F.Macbr.  | Kahoorak 684                      | Stem bark           | Traditional tannery (16)                                                                                        | OTH-A                                    | Decoction             | -                   |                 |
| Fabaceae    | <i>Sophora alopecuroides</i> L.                   | Talkheh 687                       | Dried Fruit         | Anthistamine (2), Preventing of nose bleeding (2)                                                               | RES-R, RES-R                             | Decoction             | Oral                | 4 B, C          |
| Fabaceae    | <i>Sophora mollis</i> (Royle) Baker               | Talkheh 688                       | Whole plant         | Antihypertensive (1), Antibacterial (2), Constipation (2), Pain relief (1)                                      | CAR-K, OTH-A, GAS-D, NER-N               | Decoction             | Oral                | 6 B, C          |
| Fabaceae    | <i>Sophora pachycarpa</i> C.A.Mey.                | Talkheh 690                       | Seed                | Antihypertensive (1), Antibacterial (2), Constipation (2), Pain relief (1)                                      | CAR-K, OTH-A, GAS-D, NER-N               | Mixed with food       | Oral                | 6 B, C          |
| Fabaceae    | <i>Tavemiera cuneifolia</i> (Roth) Ali            | Lati 614                          | Seed                | Antihypertensive (1), Antibacterial (2), Constipation (2), Pain relief (1)                                      | CAR-K, OTH-A, GAS-D, NER-N               | Mixed with food       | Oral                | 6 B, C          |
| Fabaceae    | <i>Tavemiera nummularia</i> DC.                   | Daf 615                           | Seed                | Antihypertensive (1), Antibacterial (2), Constipation (2), Pain relief (1)                                      | CAR-K, OTH-A, GAS-D, NER-N               | Mixed with food       | Oral                | 6 B, C          |
| Fabaceae    | <i>Tragacantha fasciculifolia</i> (boiss.) Kuntze | Khaar 680                         | Leaf                | Wound healing (9)                                                                                               | DER-S                                    | Poultice              | Topical             | 9 B, C          |
| Fabaceae    | <i>Trifolium repens</i> L.                        | Shabdare sefid 693                | Leaf                | Wound healing (9)                                                                                               | DER-S                                    | Poultice              | Topical             | 9 B, C          |
| Fabaceae    | <i>Trigonella foenum-graecum</i> L.               | Shanbalieh 694                    | Stem and leaf       | Hair tonic (3), Gingival inflammation (5)                                                                       | DER-S, GAS-D                             | Gum, Powder           | Topical, Oral       | 8 B, C          |
| Fabaceae    | <i>Vicia faba</i> L.                              | Bagla 689                         | Aerial parts        | Blood purifier (3), Cough (2), Cardiovascular disorders (1), Anti-diarrhea (3), Digestive (4), Burn healing (6) | OTH-A, RES-R, CAR-K, GAS-D, GAS-D, DER-S | Decoction, vegetable  | Oral                | 9 A, C          |
| Fabaceae    | <i>Vicia sativa</i> L.                            | Mash 617                          | Leaf and young stem | Antihypertensive (6), Reduce blood sugar (5)                                                                    | CAR-K, MET-T                             | Decoction             | Oral                | 21 A            |
| Fabaceae    | <i>Lens culinaris</i> Medik.                      | Adas 630                          | Seed                | Reduce the blood fat (3), Constipation (4)                                                                      | Blood-B, GAS-D                           | Food                  | Oral                | 7 A             |
| Fabaceae    | <i>Lens culinaris</i> Medik.                      | Adas 630                          | Seed                | Anti-diarrhea (2), Diuretic (1), Gumboil (2)                                                                    | GAS-D, URO-U, GAS-D                      | Eat as food           | Oral                | 5 A             |
| Fabaceae    | <i>Lens culinaris</i> Medik.                      | Adas 630                          | Seed                | Anti-diarrhea (2), Diuretic (1), Gumboil (2)                                                                    | GAS-D, URO-U, GAS-D                      | Eat as food           | Oral                | 5 A             |
| Geraniaceae | <i>Erodium cicutarium</i> (L.) L'Her.             | Soozan Kalaghoo 1411              | Aerial parts        | Antibacterial (2), Wound healing (5), Anti-diarrhea (3), Intestinal infection (4)                               | OTH-A, DER-S, GAS-D, GAS-D               | Decoction, Poultice   | Oral                | 14 B, C         |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family       | Scientific name                                 | Local name (Persian); Voucher no. | Plant part used           | Medicinal use (UR)                                                                                                                                                                                              | ICPC category                                                               | Preparation                           | Mode of application | (UR) | A, B, C |
|--------------|-------------------------------------------------|-----------------------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------|---------------------|------|---------|
| Geraniaceae  | <i>Geranium rotundifolium</i> L.                | Soozani 1412                      | Bulb                      | Intestinal infection (3), Anti-diarrhea (1)                                                                                                                                                                     | GAS-D, GAS-D                                                                | Decoction                             | Oral                | 4    | A, C    |
| Gentianaceae | <i>Centaurium pulchellum</i> (Sw.) Druce        | Ghontorionasa 1413                | Aerial parts              | Febrifuge (4), Body tonic (3), Carminative (3)                                                                                                                                                                  | OTH-A, OTH-A, GAS-D                                                         | Decoction                             | Oral                | 10   | B, C    |
| Gisekiaceae  | <i>Gisekia pharnaceoides</i> L.                 | Bargdyereii 1416                  | Aerial parts              | Remove skin bur (5)                                                                                                                                                                                             | DER-S                                                                       | Dressing                              | Topical             | 5    | A       |
| Hypericaceae | <i>Hypericum perforatum</i> L.                  | Raei 859                          | Leaf and flower           | Burn wound (3)                                                                                                                                                                                                  | DER-S                                                                       | Poultice                              | Topical             | 3    | A, C    |
| Iridaceae    | <i>Iris germanica</i> L.                        | Zanbagh 314                       | Aerial parts              | Antifungal (2), Reduce rheumatic pain (2)                                                                                                                                                                       | OTH-A, SKE-L                                                                | Decoction                             | Oral                | 4    | B, C    |
| Iridaceae    | <i>Moraea sisyrinchium</i> (L.) Ker Gawl.       | Zanbagh 317                       | Aerial parts              | Cough (3), Common cold (5)                                                                                                                                                                                      | RES-R, RES-R                                                                | Decoction                             | Oral                | 8    | A, C    |
| Juglandaceae | <i>Juglans regia</i> L.                         | Gerdoo 1450                       | Leaf                      | Beans pest (12), Arthritis (1), treatment of Secretions of the womb (2)                                                                                                                                         | OTH-A, SKE-L, GYN-X                                                         | Powder, Decoction                     | Topical             | 16   | A, C    |
| Lamiaceae    | <i>Ajuga chamaecistus</i> Ging. ex Benth.       | Sameesk 811                       | Root bark                 | Tooth germ (2)                                                                                                                                                                                                  | GAS-D                                                                       | Tooth brush                           | Oral                |      |         |
| Lamiaceae    | <i>Clinopodium graveolens</i> (M.Bieb.) Kuntze. | Melangoo 813                      | Fruit, Seed, Aerial parts | Febrifuge (5), Antihypertensive (4), Kidney disorders (2), Antifungal (1)                                                                                                                                       | OTH-A, CAR-K, URO-U, OTH-A                                                  | Vegetable                             | Oral                | 12   | B, C    |
| Lamiaceae    | <i>Dracocephalum polychaetum</i> Bomm.          | Zarab 834                         | Leaf, flowering branches  | Detoxification (7), Peptic ulcer (6), Dry cough (8), Expectorant (8)                                                                                                                                            | OTH-A, GAS-D, RES-R, RES-R                                                  | Vegetable, mixed with food, Decoction | Oral                | 29   | B, C    |
| Lamiaceae    | <i>Lallemantia royleana</i> (Benth.) Benth.     | Malangoo 821                      | Fruit                     | Reduce rheumatic pain (2), Stomachache (34), Toothache (15), Headache (12), Reduce blood sugar (8), Anti-diarrhea (26), Detoxification (33), Body tonic (37), Relaxing (9), Back pain (23), Blood purifier (17) | SKE-L, GAS-D, GAS-D, NER-N, MET-T, GAS-D, OTH-A, OTH-A, NER-N, SKE-L, CAR-K | Decoction, Infusion                   | Oral                | 216  | B       |
| Lamiaceae    | <i>Lamium album</i> L.                          | Gazaneh 816                       | Flowering branches, Root  | Carminative (3), Cough (4), Constipation (4), Expectorant (3), Vermicide (5), Dysentery (3)                                                                                                                     | GAS-D, RES-R, GAS-D, RES-R, GAS-D, GAS-D                                    | Decoction                             | Oral                | 22   | A       |
| Lamiaceae    | <i>Lavandula angustifolia</i> Mill.             | Ostokhodoo 823                    | Leaf                      | Anti-diarrhea (2), Wound healing (2), Reduce rheumatic pain (3)                                                                                                                                                 | GAS-D, DER-S, SKE-L                                                         | Decoction, Poultice                   | Oral, Topical       | 7    | A       |
| Lamiaceae    | <i>Leonurus cardiaca</i> L.                     | Dom shir 825                      | Leaf                      | Bone and joint pains (20), Reduce rheumatic pain (12), Relaxing (10)                                                                                                                                            | SKE-L, SKE-L, NER-N                                                         | Decoction                             | Oral                | 62   | A, C    |
| Lamiaceae    | <i>Marrubium vulgare</i> L.                     | Boogandoo 820                     | Leaf and flower           | Cardiac distress (4)                                                                                                                                                                                            | CAR-K                                                                       | Decoction                             | Oral                | 4    | A       |
| Lamiaceae    | <i>Melissa officinalis</i> L.                   | Badranjbooye 830                  | Foliage                   | Bone and joint pains (4), Reduce blood sugar (7), Antibacterial (1), Reinforcing sexual desire (3), Prostate (4), Anti-diarrhea (6), Women diseases (3)                                                         | SKE-L, MET-T, OTH-A, OTH-A, URO-U, GAS-D, GYN-X                             | Decoction                             | Oral, Topical       | 28   | B, C    |
| Lamiaceae    | <i>Mentha longifolia</i> (L.) L.                | Poodeneh 827                      | Leaf and Flower           | Bone and joint pains (12), Appetizing (10), Headache (5), Dizziness (6)                                                                                                                                         | SKE-L, -, NER-N, NER-N                                                      | Decoction                             | Oral                | 33   | A, C    |
| Lamiaceae    | <i>Mentha spicata</i> L.                        | Pooneh sonbolehee                 | Leaf and flower           | Stomach ache (31), Edible (44), Common cold (6), Anti-diarrhea (30), Carminative (14), Cough (6), Gastrointestinal pains (27), Antispasmodic (3)                                                                | GAS-D, -, RES-R, GAS-D, GAS-D, GAS-D, NER-N                                 | Edible, Decoction                     | Oral                | 161  | A       |
| Lamiaceae    | <i>Mentha spicata</i> L.                        | Pooneh sonbolehee                 | Leaf and flower           | Anti-diarrhea (10), Carminative (5), Antispasmodic (6), Pain relief (7)                                                                                                                                         | GAS-D, GAS-D, GAS-D, NER-N                                                  | Infusion, Mixed with                  | Oral                | 28   | A       |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family    | Scientific name                                        | Local name (Persian); Voucher no. | Plant part used             | Medicinal use (UR)                                                                                                                                                                       | ICPC category                                                           | Preparation                               | Mode of application | (UR) A, B, C |
|-----------|--------------------------------------------------------|-----------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------|---------------------|--------------|
|           |                                                        | 832                               |                             |                                                                                                                                                                                          |                                                                         | food, Aromatic water                      |                     |              |
| Lamiaceae | <i>Nepeta borrmuelleri</i> Hausskn. ex Bomm.           | Poodneh 837                       | Aerial parts                | Relaxing (4), Anti-diarrhea (12), Carminative (2)                                                                                                                                        | NER-N, GAS-D                                                            | Decoction                                 | Oral                | 18 A         |
| Lamiaceae | <i>Nepeta bracteata</i> Benth.                         | Zoofa 840                         | Flowering branches          | Disinfectant (9), Common cold (15)                                                                                                                                                       | OTH-A, RES-R                                                            | Decoction, Powder                         | Oral                | 24 A         |
| Lamiaceae | <i>Nepeta cataria</i> L.                               | Nana 841                          | Leaf                        | Cough (17), Febrifuge (22), Colic (18), Stomachache (42), Edible (62), Common cold (35), Anti-diarrhea (68), Carminative (19), Cough (9), Antispasmodic (7), Gastrointestinal pains (31) | RES-R, OTH-A, GAS-D, GAS-D, -, RES-R, GAS-D, GAS-D, RES-R, GAS-D, GAS-D | Infusion, Mixed with food, Aromatic water | Oral                | 328 A        |
| Lamiaceae | <i>Nepeta daenensis</i> Boiss.                         | Poodneh 842                       | Leaf and flowering branched | Antimicrobial (2), Stomachache (5), Anti-diarrhea (14)                                                                                                                                   | OTH-A, GAS-D, GAS-D                                                     | Aromatic water                            | Oral                | 21 A         |
| Lamiaceae | <i>Lophanthus dschuparensis</i> (Borrm.) Levin         | Poodneh 843                       | Leaf and flowering branched | Antimicrobial (2), Stomachache (5), Anti-diarrhea (14)                                                                                                                                   | OTH-A, GAS-D, GAS-D                                                     | Aromatic water                            | Oral                | 21 B, C      |
| Lamiaceae | <i>Nepeta glomerulosa</i> Boiss.                       | Badrange golmowroo 844            | Aerial parts                | Disinfectant (6), Joints pain (2)                                                                                                                                                        | OTH-A, SKE-L                                                            | Decoction, Powder                         | Oral                | 8 A          |
| Lamiaceae | <i>Nepeta ispanhanica</i> Boiss.                       | Gole Zoofa 845                    | Leaf, Flower                | Anti-inflammatory (6), Antifungal (5), Antispasmodic (3)                                                                                                                                 | SKE-L, OTH-A, NER-N                                                     | Aromatic water, Decoction                 | Oral                | 14 A         |
| Lamiaceae | <i>Nepeta rivularis</i> Bomm.                          | Poodneh 846                       | Leaf and flowering branched | Antimicrobial (1), Stomachache (7), Anti-diarrhea (15)                                                                                                                                   | OTH-A, GAS-D, GAS-D                                                     | Aromatic water                            | Oral                | 23 A         |
| Lamiaceae | <i>Nepeta saccharata</i> Bunge.                        | Poodneh 847                       | Leaf and flowering branched | Antimicrobial (2), Stomachache (5), Anti-diarrhea (14)                                                                                                                                   | OTH-A, GAS-D, GAS-D                                                     | Aromatic water                            | Oral                | 21 A         |
| Lamiaceae | <i>Nepeta supina</i> Steven                            | Makhleseh 848                     | Leaf and flowering branched | Anti-nausea (7)                                                                                                                                                                          | GAS-D                                                                   | Aromatic water                            | Oral                | 7 A, C       |
| Lamiaceae | <i>Nepeta teucriifolia</i> Willd.                      | Poodneh 837                       | Leaf and flowering branched | Antimicrobial (2), Stomachache (5), Anti-diarrhea (14), Anti-nausea (8), Gastrointestinal pains (4), Carminative (3)                                                                     | OTH-A, GAS-D, GAS-D, GAS-D                                              | Aromatic water                            | Oral                | 36 A         |
| Lamiaceae | <i>Ocimum basilicum</i> L.                             | Reyhan 835                        | Aerial parts                | Sore throat (2), Common cold (8), Flavoring of food (16), Digestive (5), Asthma (2)                                                                                                      | OTH-A, RES-R, -, GAS-D, RES-R                                           | Edible, decoction                         | Oral                | 33 A         |
| Lamiaceae | <i>Origanum vulgare</i> L.                             | Mirzangoo 810                     | Aerial parts                | Carminative (2), Diuretic (3), Disinfectant (3), Flavoring of food (5)                                                                                                                   | GAS-D, URO-U, OTH-A, OTH-A                                              | Decoction, Poultice, mixed with food      | Oral, Topical       | 13 A, C      |
| Lamiaceae | <i>Rydingia persica</i> (Burm.f.) Scheen & V.A. Alborn | Golder 822                        | Leaf, Flower                | Reduce blood sugar (26), Liver diseases (10), Leaving addiction (28), Bone and joints pains (69), Bone tonic                                                                             | MET-T, GAS-D, NER-N, SKE-L, SKE-L, OTH-A                                | Decoction                                 | Oral                | 254 B, C     |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family     | Scientific name                            | Local name (Persian); Voucher no. | Plant part used         | Medicinal use (UR)                                                                                                                                                                                                                       | ICPC category                                                        | Preparation                 | Mode of application | (UR) | A, B, C |
|------------|--------------------------------------------|-----------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-----------------------------|---------------------|------|---------|
| Lamiaceae  | <i>Salvia compressa</i> Vent.              | Morporzou 806                     | Aerial parts            | (68), Body tonic (52), Relaxing (1)<br>Stomachache (47), Anti-diarhea (25), Gastric discomfort (20), Women infection (18)                                                                                                                | NER-N<br>GAS-D, GAS-D, GAS-D, GYN-X                                  | Decoction                   | Oral                | 110  | A       |
| Lamiaceae  | <i>Salvia lenifolia</i> Benth.             | Nowroozak-807                     | Foliage                 | Carminative (5), Stomach tonic (9)                                                                                                                                                                                                       | GAS-D, GAS-D                                                         | Decoction                   | Oral                | 14   | A, C    |
| Lamiaceae  | <i>Salvia macrosiphon</i> Boiss.           | Moorehshk 812                     | Seed                    | Menstrual disorders (13), Leaving addiction (16), Anti-diarhea (5), Antibacterial (4), Carminative (2), Reduce blood sugar (4), Wound healing (7), Blood purifier (1), Respiratory infection (2), Expectorant (3)                        | GYN-X, NER-N, GAS-D, OTH-A, GAS-D, MET-T, DER-S, CAR-K, RES-R, RES-R | Decoction, Poultice         | Oral, Topical       | 56   | A       |
| Lamiaceae  | <i>Salvia mizayyanii</i> Rech.f. & Estand. | Mourporzou 814                    | Leaf and young branches | Stomachache (54), Leaving addiction (11), Anti-diarhea (46), Women infection (6)                                                                                                                                                         | GAS-D, NER-N, GAS-D, GYN-X                                           | Decoction, Poultice         | Oral                | 117  | A       |
| Lamiaceae  | <i>Stachys lavandulifolia</i> Vahl         | Gole moureshk 831                 | Leaf                    | Antifungal (5)                                                                                                                                                                                                                           | OTH-A                                                                | Decoction                   | Oral                | 5    | A, C    |
| Lamiaceae  | <i>Stachys inflata</i> Benth.              | Gole moorshak 805                 | Leaf and flower         | Febrifuge (4), Body tonic (4), Anti-inflammatory (4), Respiratory ailments (2)                                                                                                                                                           | OTH-A, OTH-A, SKE-L, RES-R                                           | Decoction                   | Oral                | 14   | A       |
| Lamiaceae  | <i>Teucrium polium</i> L.                  | Kalpooreh 819                     | Leaf and young branches | Menstrual disorders (17), Bone pain (21), Child diarhea (58), Stomachache (70), Febrifuge (34), Carminative (15), Reduce rheumatic pain (2), Anti-nausea (4), Anti-diarhea (16), Reduce blood sugar (3), Gastrointestinal infection (20) | GYN-X, SKE-L, GAS-D, GAS-D, OTH-A, GAS-D, SKE-L, GAS-D, GAS-D        | Decoction                   | Oral                | 260  | A       |
| Lamiaceae  | <i>Teucrium scordium</i> L.                | Maryamgoli 815                    | Flowering branches      | Stomachache (17)                                                                                                                                                                                                                         | GAS-D                                                                | Decoction                   | Oral                | 17   | A,      |
| Lamiaceae  | <i>Thymus fedtschenkoi</i> Ronneger.       | Avishan 828                       | Leaf and flower         | Cough (102), Expectorant (31), Common cold (55), Antibacterial (20), Sore throat (32)                                                                                                                                                    | RES-R, RES-R, RES-R, RES-R, OTH-A                                    | Decoction                   | Oral                | 240  | A       |
| Lamiaceae  | <i>Zataria multiflora</i> Boiss.           | Avishane-shirazi 807              | Leaf and young stem     | Cough (104), Expectorant (36), Common cold (64), Sore throat (43), Antibacterial (32)                                                                                                                                                    | RES-R, RES-R, RES-R, RES-R, OTH-A                                    | Decoction                   | Oral                | 281  | A       |
| Lamiaceae  | <i>Ziziphora clinopodioides</i> Lam.       | Aghalaleh 804                     | Leaf and flower         | Flavoring of food (30), Common cold (20), Nerve tonic (13), Relaxing (15)                                                                                                                                                                | OTH-A, RES-R, NER-N, NER-N                                           | Edible, Decoction           | Oral                | 83   | A       |
| Lamiaceae  | <i>Ziziphora tenuior</i> L.                | Kakooti 803                       | Aerial parts            | Gastrointestinal pains (18), Body tonic (9), Stomach tonic (5), Flavoring of food (30)                                                                                                                                                   | GAS-D, OTH-A, GAS-D                                                  | Decoction                   | Oral                | 62   | A       |
| Liliaceae  | <i>Tulipa biflora</i> Pall.                | Laleh 1010                        | Bulb                    | Cough (6)                                                                                                                                                                                                                                | RES-R                                                                | Powder                      | Oral                | 6    | A       |
| Linaceae   | <i>Linum album</i> Ky. ex Boiss.           | Gole-sefidoo 604                  | Seed                    | Prostate (3), Weight loss (2), Anorexia (4)                                                                                                                                                                                              | URO-U, OTH-A, Psy-P                                                  | Infusion                    | Oral                | 14   | B, C    |
| Linaceae   | <i>Linum usitatissimum</i> L.              | Keran 606                         | Seed                    | Prostate (3), Weight loss (2), Anorexia (4)                                                                                                                                                                                              | URO-U, OTH-A, Psy-P                                                  | Infusion                    | Oral                | 9    | A, C    |
| Lythraceae | <i>Lawsonia inermis</i> L.                 | Hana 1020                         | Leaf                    | Jaundice (63), Fingernail and hair tonic (57), Eczema (18), Burn scar (21)                                                                                                                                                               | GAS-D, DER-S, DER-S, DER-S                                           | Bath, Decoction, Poultice   | Oral, Topical       | 164  | A       |
| Lythraceae | <i>Punica granatum</i> L.                  | Anar 1021                         | Root                    | Diuretic (3), Bronchitis (2)                                                                                                                                                                                                             | DER-S, RES-R                                                         | Decoction                   | Oral                | 77   | A       |
| Lythraceae | <i>Punica granatum</i> L.                  | Anar 1021                         | Peel skin               | Stomach ulcers (55), Wound healing (32), Sore throat (10)                                                                                                                                                                                | GAS-D, DER-S, OTH-A                                                  | Poultice, Decoction, Powder | Oral, Topical       | 77   | A       |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family         | Scientific name                                        | Local name (Persian); Voucher no. | Plant part used      | Medicinal use (UR)                                                                              | ICPC category                     | Preparation                     | Mode of application | (UR) A, B, C |
|----------------|--------------------------------------------------------|-----------------------------------|----------------------|-------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------|---------------------|--------------|
| Malvaceae      | <i>Althaea aucheri</i> Boiss.                          | Khatmi 584                        | Leaf                 | Laxative (30), Cough (3), Antihypertensive (7), Jaundice (15), Skin discomfort (8)              | GAS-D, RES-R, CAR-K, GAS-D, DER-S | Maceration                      | Oral                | 63 A         |
| Malvaceae      | <i>Grewia tenax</i> (Forsk.) Fiori.                    | Pootorak 570                      | Stem                 | Cough (2)                                                                                       | RES-R                             | Decoction                       | Oral                | 2 B, C       |
| Malvaceae      | <i>Hibiscus sabdariffa</i> L.                          | Chay torsh 571                    | Leaf                 | Antihypertensive (10)                                                                           | CAR-K                             | Decoction                       | Oral                | 10 A, C      |
| Malvaceae      | <i>Malva microcarpa</i> Pers.                          | Khatmi 574                        | Seed, Leaf           | Pain relief (13), Anti-inflammatory (10), Disinfectant (3), Jaundice (19), Infectious wound (6) | NER-N, SKE-L, OTH-A, GAS-D, DER-S | Decoction, Maceration, Poultice | Oral, Topical       | 51 A         |
| Malvaceae      | <i>Malva neglecta</i> Wallr.                           | Khatmi sefid 575                  | Seed, Leaf           | Diuretic (5), Anti-inflammatory (3)                                                             | URO-U, SKE-L                      | Maceration                      | Oral                | 8 A, C       |
| Malvaceae      | <i>Malva sylvestris</i> L.                             | Khatmi 577                        | Seed, Leaf           | Heatstroke (4), Febrifuge (4), Mouth and throat protuberance (5), Cough (6), Febrifuge (9)      | OTH-A, OTH-A, GAS-D, RES-R        | Maceration                      | Oral                | 19 A         |
| Menispermaceae | <i>Cocculus pendulus</i> (J.R.Forst. & G.Forst.) Diels | Pichakoo 1030                     | Leaf                 |                                                                                                 | OTH-A                             | Decoction                       | Oral                | 9 B, C       |
| Moraceae       | <i>Ficus carica</i> L.                                 | Anjir 1040                        | Fruit, Leaf          | Constipation (5), Memory improvement (3), Common cold (5), Sore throat (6)                      | GAS-D, NER-N, RES-R, OTH-A        | Infusion                        | Oral                | 19 B, C      |
| Moraceae       | <i>Ficus johannis</i> Boiss.                           | Anjire dalmi 1042                 | Leaf                 | Stomach tonic (15)                                                                              | GAS-D                             | Decoction                       | Oral                | 15 B, C      |
| Moraceae       | <i>Morus alba</i> L.                                   | Toot-e sefid 1043                 | Fruit, Leaf          | Reduce blood sugar (2), Relaxing (2), Diuretic (1) Febrifuge (3)                                | MET-T, NER-N, URO-U, OTH-A        | Edible                          | Oral                | 11 A         |
| Moraceae       | <i>Morus nigra</i> L.                                  | Shahtoot 1044                     | Fruit                | Constipation (3)                                                                                | GAS-D                             | Edible                          | Oral                |              |
| Myrtaceae      | <i>Eucalyptus camaldulensis</i> Dehnh.                 | Kalitus 1700                      | Leaf                 | Common cold (8), Sore throat (7), Urinary infection (2)                                         | RES-R, OTH-A, URO-U               | Syrup                           | Oral                | 17 A         |
| Myrtaceae      | <i>Myrtus communis</i> L.                              | Moordaneh 1050                    | Leaf, Seed           | Common cold (28), Respiratory ailments (22), Disinfectant (3)                                   | RES-R, RES-R, OTH-A               | Decoction, Poultice             | Oral, Topical       | 54 A         |
| Myrtaceae      | <i>Syzygium cumini</i> (L.) Skeels                     | Jam 1051                          | Ash of Leaf and seed | Common cold (14), Relaxing (3), Removing the armpit odor (5)                                    | RES-R, NER-N, OTH-A               | Decoction                       | Oral, Topical       | 22 A         |
| Nitriariaceae  | <i>Peganum harmala</i> L.                              | Esfand 1060                       | Fruit, Seed          | Blood purifier (4), Gastric discomfort (4)                                                      | OTH-A, GAS-D                      | Burnt ash                       | Oral                | 8 B, C       |
| Oleaceae       | <i>Jasminum officinale</i> L.                          | Yas sefid 1065                    | Flower               | Disinfectant (52), Reduce rheumatic pain (2), Reduce blood sugar (9), bruise (18)               | OTH-A, SKE-L, MET-T, SKE-L        | Poultice, Decoction             | Topical, Oral       | 81 A         |
| Oleaceae       | <i>Olea europaea</i> L.                                | Zeytoon 1066                      | Leaf, Fruit          | Antiviral (2), Relaxing (6)                                                                     | OTH-A, NER-N                      | Infusion                        | Oral                | 8 B, C       |
| Oleaceae       |                                                        |                                   | Leaf, Fruit          | Antihypertensive (21), Bone and joint pains (5), Appetizing (2), Urinary, (5), Hair tonic (3)   | CAR-K, DER-S, SKE-L, OTH-A, URO-U | Decoction, Oil, Pickle          | Oral, Topical       | 61 A         |
| Oleaceae       |                                                        |                                   | Leaf, Fruit          | Antibacterial (4)                                                                               | OTH-A                             | Decoction, Poultice             | Topical, Oral       |              |
| Oleaceae       | <i>Syringa persica</i> L.                              | Yas 1069                          | Stem bark, Fruit     | Reduce blood sugar (5), Remove bur from skin (16)                                               | MET-T, DER-S                      | Oil, Poultice                   | Topical, Oral       |              |
| Oleaceae       |                                                        |                                   | Leaf and             | Relaxing (3)                                                                                    | NER-N                             | Infusion                        | Oral                | 3 B, C       |
| Onagraceae     | <i>Epilobium angustifolium</i> L.                      | Bid alafi 1070                    | Leaf and             | Pesticide (4), Anti-inflammation of mucosa and mouth                                            | OTH-A, OTH-A, DER-S,              | Decoction                       | Oral                | 34 A         |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family         | Scientific name                           | Local name (Persian); Voucher no. | Plant part used         | Medicinal use (UR)                                                                                                                                  | ICPC category                                                 | Preparation                   | Mode of application | (UR) A, B, C |
|----------------|-------------------------------------------|-----------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------------|---------------------|--------------|
| Onagraceae     | <i>Epilobium hirsutum</i> L.              | Bid alafi korkee 1072             | seed                    | (6), Wound healing (9), Heart tonic (8), Febrifuge (7)                                                                                              | CAR-K, OTH-A                                                  | Infusion                      | Oral                | 5 B, C       |
| Orobanchaceae  | <i>Orobancha ramosa</i> L.                | Poor 1080                         | Stem                    | Stomachache (19)                                                                                                                                    | GAS-D                                                         | Edible, Decoction             | Oral                | 19 B, C      |
| Papaveraceae   | <i>Fumaria indica</i> (Hausskn.) Pugsley. | Shatereh 1090                     | Leaf and young branches | Anti-diarrhea (5), Anti-nausea (4), Stomachache (5)                                                                                                 | GAS-D, GAS-D, GAS-D                                           | Decoction                     | Oral                | 14 A         |
| Papaveraceae   | <i>Fumaria officinalis</i> L.             | Shatreh 1091                      | Foliage                 | Blood purifier (6)                                                                                                                                  | OTH-A                                                         | Infusion                      | Oral                | 6 A, C       |
| Papaveraceae   | <i>Fumaria parviflora</i> Lam.            | Shatereh 1093                     | Leaf and young branches | Anti-diarrhea (3), Anti-nausea (4), Stomachache (4), Blood purifier (6), Diuretic (3), Cutaneous itching (5)                                        | GAS-D, GAS-D, GAS-D, OTH-A, URO-U, DER-5                      | Decoction                     | Oral                | 25 A         |
| Papaveraceae   | <i>Fumaria vaillantii</i> Loisel.         | Shatereh 1095                     | Leaf and young branches | Anti-diarrhea (3), Anti-nausea (4), Stomachache (4)                                                                                                 | GAS-D, GAS-D, GAS-D                                           | Decoction                     | Oral                | 11 B, C      |
| Papaveraceae   | <i>Hypecoum pendulum</i> L.               | Shatereh 1096                     | Root, Leaf              | Cough (3), Anti-diarrhea (2)                                                                                                                        | RES-R, GAS-D                                                  | Decoction                     | Oral                | 5 B, C       |
| Papaveraceae   | <i>Papaver dubium</i> L.                  | Taryakoo 1098                     | Bulb, Leaf              | Eczema (3), Acne (4), Anti-inflammatory (5), Bronchitis (6), Cough (5), Pain relief (3)                                                             | DER-5, DER-S, SKE-L, RES-R, RES-R, NER-N                      | Mixed with vinegar, Decoction | Topical, Oral       | 32 B, C      |
| Papaveraceae   | <i>Roemeria hybrida</i> (L.) DC.          | Shagayeg 1099                     | Flower                  | Pain relief (9)                                                                                                                                     | NER-N                                                         | Decoction                     | Oral                | 9 B, C       |
| Pedalicaceae   | <i>Sesamum indicum</i> L.                 | Konjed 1140                       | Seed                    | Prevention of hair loss (24), Blood fat (5)                                                                                                         | DER-S, Blood-B                                                | Decoction, Oil                | Oral, Topical       | 29 A         |
| Plantaginaceae | <i>Plantago amplexicaulis</i> Cav.        | Tangbar 491                       | Leaf, Seed              | Wound healing (5), Allergy (3), Heatstroke (2), Infectious disease (3), Stomachache (2), Respiratory ailments (2)                                   | DER-5, OTH-A, OTH-A, OTH-A, GAS-D, RES-R                      | Poultice, Decoction           | Topical, Oral       | 17 B, C      |
| Plantaginaceae | <i>Plantago ciliata</i> Desf.             | Kowchak 493                       | Leaf, Seed              | Antibacterial (4), Burns (9), Anti-inflammatory (2), Constipation (3)                                                                               | OTH-A, DER-5, SKE-L, GAS-D                                    | Poultice, Decoction, Syrup    | Topical, Oral       | 13 A         |
| Plantaginaceae | <i>Plantago gentianoides</i> Sm.          | Tangbar 494                       | Leaf, Seed              | Constipation (5), Anti-inflammatory (5), Cough (4)                                                                                                  | GAS-D, SKE-L, RES-R                                           | Decoction                     | Oral                | 14 B, C      |
| Plantaginaceae | <i>Plantago indica</i> L.                 | Kowchak 495                       | Seed                    | Anti-inflammatory (2), Constipation (3)                                                                                                             | SKE-L, GAS-D                                                  | Decoction, Poultice, Syrup    | Topical, Oral       | 5 B, C       |
| Plantaginaceae | <i>Plantago lanceolata</i> L.             | Kowchak 490                       | Leaf, Root, Seed        | Baby jaundice (22), Constipation (18), Blood coagulation (3), Asthma (4), Stomachache (6)                                                           | OTH-A, GAS-D, Blood-B, RES-R, GAS-D                           | Dressing, Decoction           | Topical, Oral       | 40 A         |
| Plantaginaceae | <i>Plantago major</i> L.                  | Barhang 492                       | Aerial parts            | Dry cough (6), Itchy throat (8), Alzheimer (5), Cancer (2), Anti-inflammatory (3), Baby jaundice (21), Cough (2), Expectorant (4), Burn healing (4) | RES-R, RES-R, NER-N, CAN-C, SKE-L, OTH-A, RES-R, RES-R, DER-5 | Dressing, Decoction           | Topical, Oral       | 28 A         |
| Plantaginaceae | <i>Plantago ovata</i> Forssk.             | Tokhm sefid 499                   | Seed                    | Anti-inflammatory (2), Constipation (3)                                                                                                             | SKE-L, GAS-D                                                  | Decoction, Poultice, Syrup    | Topical, Oral       | 5 B, C       |
| Plantaginaceae | <i>Veronica anagallis</i> L.              | Sizab 489                         | Aerial parts            | Stomach tonic (10), Diuretic (7)                                                                                                                    | GAS-D, URO-U                                                  | Decoction                     | Oral                | 17 B         |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family         | Scientific name                                           | Local name (Persian); Voucher no. | Plant part used              | Medicinal use (UR)                                                                                                                                          | ICPC category                                          | Preparation                    | Mode of application | (UR) A, B, C |
|----------------|-----------------------------------------------------------|-----------------------------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------|---------------------|--------------|
| Platanaceae    | <i>Platanus orientalis</i> L.                             | Chenar 487                        | Fruit, Root, Leaf, Stem bark | Acne (3), Snakebite (3), Hoarseness (2)                                                                                                                     | DER-S, DER-S, OTH-A                                    | Poultice, Decoction            | Oral, Topical       | 8 B, C       |
| Plumbaginaceae | <i>Acantholimon scorpius</i> (Jaub.&Spach) Boiss          | Kharposhtoo 511                   | Root                         | Livestock wound healing (6), Washing powder (10)                                                                                                            | DER-S, OTH-A                                           | Poultice, Powder               | Topical             | 16 B, C      |
| Poaceae        | <i>Avena sativa</i> L.                                    | Jow dosar 334                     | Leaf, Seed                   | Disinfectant (3)                                                                                                                                            | OTH-A                                                  | Decoction                      | Topical             | 3 B, C       |
| Poaceae        | <i>Gymbopogon schoenanthus</i> (L.) Spreng.               | Kaboo 335                         | Leaf and stem                | Body tonic (4)                                                                                                                                              | OTH-A                                                  | Decoction                      | Oral                | 4 B, C       |
| Poaceae        | <i>Gynodon dactylon</i> (L.) Pers.                        | Marg 337                          | Aerial parts                 | Anti-diarrhea (3), Asthma (2)                                                                                                                               | GAS-D, RES-R                                           | Decoction                      | Oral                | 8 B, C       |
| Poaceae        | <i>Desmostachya bipinnata</i> (L.) Stapf                  | Kerteh 339                        | Root                         | Body tonic (4)                                                                                                                                              | OTH-A                                                  | Decoction                      | Oral                | 4 B, C       |
| Poaceae        | <i>Hordeum distichon</i> L.                               | Jow 329                           | Fruit                        | Febrifuge (2), Reducing thirst (3)                                                                                                                          | OTH-A, OTH-A                                           | Decoction                      | Oral                | 7 B, C       |
| Poaceae        | <i>Hordeum vulgare</i> L.                                 | Jow 328                           | Fruit                        | Reduce blood sugar (3)                                                                                                                                      | MET-T                                                  | Decoction,                     | Oral                | 7 A          |
| Poaceae        | <i>Melica persica</i> Kunth                               | Oshlom 325                        | Buds                         | Acne (4)                                                                                                                                                    | DER-S                                                  | Mask                           | Topical             |              |
| Poaceae        | <i>Phragmites australis</i> (Cav.) Trin. ex Steud.        | Ney 324                           | Aerial parts                 | Washing powder (7)                                                                                                                                          | OTH-A                                                  | Powder                         | -                   | 7 B, C       |
| Poaceae        | <i>Setaria italica</i> (L.) P. Beauv.                     | Garch 340                         | Root and Rhizome             | Breast milk reduction (5)                                                                                                                                   | OTH-A                                                  | Pickle                         | Oral                | 5 A, C       |
| Poaceae        | <i>Sorghum halepense</i> (L.) Pers.                       | Garch 342                         | Seed                         | Hair tonic (5), Carminative (2)                                                                                                                             | DER-S, GAS-D                                           | Poultice, Decoction            | Topical, Oral       | 7 A          |
| Poaceae        | <i>Triticum aestivum</i> L.                               | Gandom 345                        | Oil of seed                  | Diuretic (6)                                                                                                                                                | URO-U                                                  | decoction                      | Oral                | 5 A          |
| Poaceae        | <i>Zea mays</i> L.                                        | Zorat 347                         | Style                        | Eczema (6)                                                                                                                                                  | DER-S                                                  | Poultice                       | Topical             | 6 B, C       |
| Polygonaceae   | <i>Polygonum persicaria</i> L.                            | Bandwash 430                      | Leaf and flower              | Kidney stone (27)                                                                                                                                           | URO-U                                                  | Decoction                      | Oral                | 37 A, C      |
| Polygonaceae   | <i>Pteropryum aucheri</i> Jaub. and Spach                 | Perent 425                        | Foliage                      | Asthma (8), Constipation (5)                                                                                                                                | RES-R, GAS-D                                           | Infusion, Oili, Aromatic water | Oral                | 13 B, C      |
| Polygonaceae   | <i>Rheum ribes</i> L.                                     | Torshak 437                       | Leaf and petiole             | Acne (4), Infectious wounds (5)                                                                                                                             | DER-S, ER-S                                            | Poultice                       | Topical             | 9 B, C       |
| Polygonaceae   | <i>Rumex crispus</i> L.                                   | Rohoo 432                         | Aerial parts                 | Reduce blood sugar (5), Stomach and liver tonic (3), Appetizing (2), Laxative (6), Blood purifier (3), Vermicide (2), Bone tonic (4), Sight Enhancement (6) | MET-T, GAS-D, OTH-A, GAS-D, OTH-A, GAS-D, SKE-L, EYE-F | Decoction                      | Oral                | 31 B, C      |
| Polygonaceae   | <i>Rumex vesicarius</i> L.                                | Torshak 438                       | Leaf and petiole             | Laxative (4), Acute pulmonary embolism (7), Detoxificant of body (5)                                                                                        | GAS-D, RES-R, GAS-D                                    | Decoction                      | Oral                | 16 B, C      |
| Portulacaceae  | <i>Portulaca oleracea</i> L.                              | Gholfeh 561                       | Leaf, Seed                   | Reduce blood sugar (2)                                                                                                                                      | GAS-D                                                  | Vegetable                      | Oral                | 2 A          |
| Primulaceae    | <i>Anagallis arvensis</i> L.                              | Delpasand 1145                    | Aerial parts                 | Stomach tonic (1), Reducing thirst (2), Febrifuge (1), Cough (6), Blood purifier (12)                                                                       | GAS-D, -, OTH-A, RES-R, OTH-A                          | Vegetable                      | Oral                | 21 B, C      |
| Primulaceae    | <i>Lysimachia maritima</i> (L.) Galasso, Banfi & Soldano. | Shabdari 1147                     | Whole plant                  | Liver cysts (4), Urinary stones (4)                                                                                                                         | GAS-D, URO-U                                           | Infusion                       | Oral                | 8 A          |
| Primulaceae    | <i>Lysimachia maritima</i> (L.) Galasso, Banfi & Soldano. | Shabdari 1147                     | Whole plant                  | Antispasmodic (5), Bronchitis (3)                                                                                                                           | NER-N, RES-R                                           | Decoction                      | Oral                | 8 B, C       |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family        | Scientific name                                  | Local name (Persian); Voucher no. | Plant part used    | Medicinal use (UR)                                                                     | ICPC category                     | Preparation                     | Mode of application | (UR) A, B, C |
|---------------|--------------------------------------------------|-----------------------------------|--------------------|----------------------------------------------------------------------------------------|-----------------------------------|---------------------------------|---------------------|--------------|
| Primulaceae   | <i>Primula capitellata</i> Boiss.                | Pamchoo 1149                      | Root and flower    | Vermicide (4), Antispasmodic (8)                                                       | GAS-D, NER-N                      | Aromatic water                  | Oral                | 12 B, C      |
| Primulaceae   | <i>Sarmolus valerandi</i> L.                     | Alaf 1150                         | Aerial parts       | Body tonic (4)                                                                         | OTH-A                             | Decoction                       | Oral                | 4 A          |
| Pteridaceae   | <i>Adiantum capillus-veneris</i> L.              | Siahlengoo 1170                   | Leaf               | Common cold (49), Expectorant (51), Relaxing (3), Menstrual disorders (2), Earache (3) | RES-R, RES-R, NER-N, GYN-X, Ear-H | Decoction                       | Oral                | 110 A, C     |
| Ranunculaceae | <i>Adonis aestivalis</i> L.                      | Chashm gargavol 1180              | Whole plant        | Anti-inflammatory (5)                                                                  | SKE-L                             | Decoction                       | Oral                | 5 B, C       |
| Ranunculaceae | <i>Adonis microcarpa</i> DC.                     | Chashm gargavo 1182               | Flower             | Anti-inflammatory (3)                                                                  | SKE-L                             | Decoction                       | Oral                | 3 B, C       |
| Ranunculaceae | <i>Anemone biflora</i> DC.                       | Shagayeg neman 1185               | Flower             | Common cold (6)                                                                        | RES-R                             | Decoction                       | Oral                | 6 B, C       |
| Ranunculaceae | <i>Clematis ispahamica</i> Boiss.                | Chaspakoo 1187                    | Aerial parts       | Diuretic (3), Joint pain (3), Headache (3), Eczema and psoriasis (3)                   | URO-U, SKE-L, NER-N, DER-S        | Decoction                       | Oral                | 12 A         |
| Ranunculaceae | <i>Consolida rugulosa</i> (Boiss.) Schrödingen   | Zaban mooshoo 1189                | Aerial parts       | Anti-inflammatory (4)                                                                  | SKE-L                             | Decoction                       | Oral                | 4 B, C       |
| Ranunculaceae | <i>Nigella sativa</i> L.                         | Siahdaneh 1190                    | Seed               | Blood pressure (7), Blood fat (7), Asthma (2)                                          | CAR-K, Blood-B, RES-R             | Infusion                        | Oral                | 16 B, C      |
| Ranunculaceae | <i>Ranunculus anvensis</i> L.                    | Alaleh 1192                       | Flower             | Urinary disease (3)                                                                    | URO-U                             | Aromatic water                  | Oral                | 3 B, C       |
| Ranunculaceae | <i>Ranunculus muricatus</i> L.                   | Alaleh 1193                       | Root, Leaf, Flower | Skin diseases (2)                                                                      | DER-S                             | Poultice                        | Topical             | 2 B, C       |
| Ranunculaceae | <i>Thalictrum minus</i> L.                       | Sadabi 1195                       | Aerial parts       | Gastric discomfort (4)                                                                 | GAS-D                             | Decoction                       | Oral                | 4 A          |
| Resedaceae    | <i>Ochradenus aucheri</i> Boiss.                 | Kolirim 1200                      | Leaf               | Parasite repellent (2), Wound healing (3)                                              | GAS-D                             | Decoction, Poultice             | Oral                | 5 B, C       |
| Resedaceae    | <i>Reseda aucheri</i> Boiss.                     | Varas 1205                        | Leaf               | Laxative (1), Diuretic (3) Reducing thirst (3)                                         | GAS-D, URO-U, OTH-A               | Decoction, Row                  | Oral                | 5 B, C       |
| Rhamnaceae    | <i>Rhamnus persica</i> Boiss. & Hohen            | Titoomari 1210                    | Fruit              | Anti-diarrhea (11)                                                                     | GAS-D                             | Decoction                       | Oral                | 11 B, C      |
| Rhamnaceae    | <i>Rhamnus prostrata</i> Jacq.                   | Titoomari 1211                    | Fruit              | Anti-diarrhea (5)                                                                      | GAS-D                             | Decoction                       | Oral                | 5 B, C       |
| Rhamnaceae    | <i>Sageretia thea</i> (Osbeck) M.C. Johnst. Ch   | Bastel 215                        | Fruit              | Laxative (2), Blood purifier (2)                                                       | GAS-D, CAR-K                      | Decoction                       | Oral                | 4 A          |
| Rhamnaceae    | <i>Ziziphus jujuba</i> Mill.                     | Annab 1218                        | Fruit              | Bronchitis (3), Common cold (4), Laxative (20)                                         | RES-R, RES-R, GAS-D               | Infusion, Edible                | Oral                | 24 B, C      |
| Rhamnaceae    | <i>Ziziphus nummularia</i> (Burn.f.)Wight & Arn. | Konar 1220                        | Leaf               | Common cold (3), Antimicrobial (1)                                                     | RES-R, OTH-A                      | Decoction, Poultice             | Oral, Topical       | 4 A          |
| Rhamnaceae    | <i>Ziziphus spina-christi</i> (L.) Desf.         | Konar 1221                        | Leaf, Fruit        | Stomach tonic (5), Hair tonic (4), Infectious tuber (2), Skin rash (7)                 | GAS-D, DER-S, DER-S               | Eat as fruit, Poultice, Shampoo | Oral, Topical       | 18 A         |
| Rosaceae      | <i>Agrimonia eupatoria</i> L.                    | Ghafes 370                        | Aerial parts       | Wound healing (18), Fatty liver (8), Anti-diarrhea (7)                                 | DER-S, GAS-D, GAS-D               | Poultice, Decoction             | Topical, Oral       | 33 A, C      |
| Rosaceae      | <i>Amygdalus elaeagnifolia</i>                   | Arjan 372                         | Stem, Fruit        | Nuts (18), Eczema (7)                                                                  | OTH-A, DER-S                      | burning of                      | Oral,               | 25 B, C      |



**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family   | Scientific name                                     | Local name (Persian); Voucher no. | Plant part used     | Medicinal use (UR)                                                                                                                                | ICPC category                            | Preparation             | Mode of application | (UR) A, B, C |
|----------|-----------------------------------------------------|-----------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------|---------------------|--------------|
|          | Spach                                               |                                   |                     |                                                                                                                                                   |                                          | semi dried wood, Edible | Topical             |              |
| Rosaceae | <i>Amygdalus wendelboi</i> Freitag                  | Archen 373                        | Latex               | Eczema (4), Bone and joint pains (3)                                                                                                              | DER-S                                    | Latex of burning stem   | Topical             | 7 B, C       |
| Rosaceae | <i>Cotoneaster kotschyi</i> (C.K.Schneid.) G.Klotz  | Siahchoo 375                      | Latex, Leaf         | Jaundice (5), Constipation (6), Dry cough(4)                                                                                                      | GAS-D, GAS-D, RES-R                      | Infusion                | Oral                | 15 A         |
| Rosaceae | <i>Crataegus ambigua</i> C.A.Mey. ex A. K.Becker    | Kalkouhi 365                      | Leaf, fruit, Flower | Relaxing (5), Spasms (4), Cardiac distress (4), Hypertension (4), Anti-diarrhea (7)                                                               | NER-N, NER-N, CAR-K, CAR-K, GAS-D        | Decoction, Salad        | Oral                | 24 B, C      |
| Rosaceae | <i>Crataegus azarolus</i> L.                        | Kalkkoohi 380                     | Leaf and fruit      | Antihypertensive (6), Relaxing (11), Antispasmodic (10), Cardiac distress (5)                                                                     | CAR-K, NER-N, NER-N, CAR-K               | Decoction               | Oral                | 32 A         |
| Rosaceae | <i>Crataegus meyeri</i> Pojark.                     | Kalkkouchi 381                    | Leaf, fruit, Flower | Relaxing (5), Spasms (4), Cardiac distress (4), Antihypertensive (4)                                                                              |                                          | Decoction               | Oral                | 17 B, C      |
| Rosaceae | <i>Cydonia oblonga</i> Mill.                        | Beh 351                           | Seed                | Sore throat (4)                                                                                                                                   | OTH-A                                    | Decoction               | Oral                | 4 B, C       |
| Rosaceae | <i>Prunus dulcis</i> (Mill.) D.A.Webb               | Badam-e shirin 353                | Seed                | Hair tonic (5), Preventing of hair loss (9)                                                                                                       | DER-S, DER-S                             | Oil                     | Topical             | 14 B, C      |
| Rosaceae | <i>Prunus eburnea</i> (Spach) Aitch. & Hemsl.       | Archen 354                        | Fruit, Gum          | Bone and joint pains (6), Allergies (5), Hair tonic (3)                                                                                           | OTH-A, DER-S                             | Decoction, Poultice     | Oral, Topical       | 14 B, C      |
| Rosaceae | <i>Prunus lycioides</i> (Spach) C.K.Schneid.        | Badame koochi 355                 | Leaf and fruit      | Preventing of hair loss (5)                                                                                                                       | DER-S                                    | Poultice, Oil           | Topical             | 8 B, C       |
| Rosaceae | <i>Prunus mahaleb</i> L.                            | Mahlab 356                        | Leaf bark           | Relaxing (5), Liver cysts (4), Parasite repellent (4), Joint pain (4)                                                                             | NER-N, GAS-D, GAS-D, SKE-L               | Decoction, dressing     | Oral, Topical       | 17 A         |
| Rosaceae | <i>Prunus orientalis</i> (Mill.) Koehne             | Archen 357                        | Fruit               | Bone and joint pains (6), Allergies (5), hair tonic (3)                                                                                           | OTH-A, DER-S                             | Decoction, Poultice     | Oral, Topical       | 14 B, C      |
| Rosaceae | <i>Prunus persica</i> (L.) Batsch                   | Holo 358                          | Fruit               | Laxative (6)                                                                                                                                      | GAS-D                                    | Nuts, Maceration        | Oral                | 6 B, C       |
| Rosaceae | <i>Prunus scoparia</i> (Spach) C.K.Schneid.         | Badam-e koochi 376                | Seed                | Anti-dandruff (29), Preventing of hair loss (27), Earache (3), Health and beauty of the skin (8), Cancer prevention (3), Burned wound healing (4) | DER-S, DER-S, Ear-H, DER-S, CAN-C, DER-S | Poultice, Nut, Oil      | Topical, Oral       | 74 B         |
| Rosaceae | <i>Prunus avium</i> (L.) L.                         | Gilas 378                         | Stem bark           | Stomach tonic (4)                                                                                                                                 | GAS-D                                    | Decoction               | Oral                |              |
| Rosaceae | <i>Prunus cerasus</i> L.                            | Albaloo 359                       | Pedicel             | Kidney stone (7)                                                                                                                                  | URO-U                                    | Decoction               | Oral                | 24 A, C      |
| Rosaceae | <i>Rosa beggeriana</i> Schrenk ex Fisch. & C.A.Mey. | Roz sefid 360                     | Flower              | Kidney stone (5)                                                                                                                                  | URO-U                                    | Decoction               | Oral                | 5 A, C       |
| Rosaceae | <i>Rosa canina</i> L.                               | Korrik 362                        | Leaf, Flower, Fruit | Stomach tonic (5), Relaxing (8)                                                                                                                   | GAS-D, NER-N                             | Decoction               | Oral                | 13 B, C      |
| Rosaceae | <i>Rosa damascena</i> Herrm.                        | Gole mohammadi 374                | Flower              | Relaxing (5)                                                                                                                                      | NER-N                                    | Decoction               | Oral                | 5 B, C       |
| Rosaceae |                                                     |                                   | Flower              | Flavoring of food (8), Laxative (25), Nervous tonic (43)                                                                                          | OTH-A, GAS-D, NER-N                      | Aromatic water          | Oral                | 76 B, C      |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family           | Scientific name                                    | Local name (Persian); Voucher no. | Plant part used    | Medicinal use (UR)                                                                                     | ICPC category                            | Preparation                   | Mode of application | (UR) A, B, C |
|------------------|----------------------------------------------------|-----------------------------------|--------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------|---------------------|--------------|
| Rosaceae         | <i>Rosa moschata</i> Herrm.                        | Korik 377                         | Flower             | Nervous tonic (3)                                                                                      | NER-N                                    | Decoction                     | Oral                | 3 B, C       |
| Rosaceae         | <i>Rubus caesius</i> L.                            | Sagher 371                        | Leaf, Fruit        | Laxative (14)                                                                                          | GAS-D                                    | Decoction, Syrup              | Oral                | 14 A         |
| Rosaceae         | <i>Sanguisoba minor</i> Scop.                      | Gheytran 379                      | Fruit              | Common cold (3), Relaxing (4), Cough (4), Jaundice (5), Toothache (6)                                  | RES-R, NER-N, NER-N, GAS-D, GAS-D        | Decoction                     | Oral                | 32 A         |
| Rubiaceae        | <i>Placama aucheri</i> (Guill.) MBacklund & Thulin | Khargo 520                        | Foliage            | Bone and joint pain (3), Reduce rheumatic pain (2), Reduce blood sugar (3), Digestive (3)              | SKE-L, SKE-L, MET-T, GAS-D               | Decoction, Infusion, Poultice | Topical, Oral       | 11 B, C      |
| Rubiaceae        | <i>Rubia albicaulis</i> Boiss.                     | Roonask 523                       | Fruit              | Bone tonic (4), Constipation (3)                                                                       | SKE-L, GAS-D                             | Decoction, Infusion           | Oral                | 7 B, C       |
| Rubiaceae        | <i>Rubia tinctorum</i> L.                          | Roonask 524                       | Root               | Bone tonic (4), Constipation (3)                                                                       | SKE-L, GAS-D                             | Decoction, Infusion           | Oral                | 7 B, C       |
| Rutaceae         | <i>Citrus aurantium</i> L.                         | Nareng 527                        | Flower             | Anti-diarrhea (5), Relaxing (8), Eye diseases (8), Traditional kohl (3)                                | GAS-D, NER-N, EYE-F                      | Decoction, Kohl               | Oral                | 24 B, C      |
| Rutaceae         | <i>Citrus limon</i> (L.) Osbeck                    | Limoo torsh 528                   | Fruit, Seed        | Eye diseases (15), Traditional kohl (3)                                                                | EYEF                                     | Juice, Kohl                   | Eye Drop            | 18 B, C      |
| Rutaceae         | <i>Haplophyllum robustum</i> Bunge                 | Sadoo 530                         | Aerial parts       | Gastric discomfort (1)                                                                                 | GAS-D                                    | Decoction                     | Oral                | 1 B, C       |
| Rutaceae         | <i>Haplophyllum tuberculatum</i> Juss.             | Gahich 531                        | Aerial parts       | Febrifuge (2), Headache (2)                                                                            | GAS-D, NER-N                             | Decoction, Poultice           | Oral, Topical       | 4 A          |
| Rutaceae         | <i>Ruta graveolens</i> L.                          | Soddab 535                        | Leaf               | Urinary stone (6)                                                                                      | URO-U                                    | Decoction                     | Oral                | 6 A          |
| Salicaceae       | <i>Populus alba</i> L.                             | Sepidar 600                       | Stem bark and leaf | Blood purifier (4), Pain relief (3)                                                                    | OTH-A, NER-N                             | Decoction                     | Oral                | 7 A          |
| Salicaceae       | <i>Populus euphratica</i> Oliv.                    | Senewbar 601                      | Stem bark          | Parasite repellent (7)                                                                                 | GAS-D                                    | Decoction                     | Oral                | 4 A          |
| Salicaceae       | <i>Salix aegyptiaca</i> L.                         | Beedmeshk 605                     | Inflorescence      | Laxative (3), Anti-diarrhea (2), Gastrointestinal pains (2), Menstruation pains (3)                    | GAS-D, GAS-D, GAS-D, GYN-X               | Decoction, Aromatic water     | Oral                | 10 A         |
| Salicaceae       | <i>Salix alba</i> L.                               | Beed 606                          | Stem bark, Leaf    | Febrifuge (21), Common cold (6)                                                                        | OTH-A, RES-R                             | Decoction, Aromatic water     | Oral                | 27 A         |
| Salvadoraceae    | <i>Salvadora oleoides</i> Decne.                   | Pir 1230                          | Fruit              | Appetizing (7), Laxative (4), Parasite repellent (10), Hemorrhoids (4), Bronchitis (3)                 | OTH-A, GAS-D, GAS-D, CAR-K, RES-R        | Decoction, Edible             | Oral                | 28 B, C      |
| Salvadoraceae    | <i>Salvadora persica</i> L.                        | Chooch1231                        | Fruit              | Appetizing (5), Expectorant (8)                                                                        | OTH-A, RES-R                             | Decoction, Edible             | Oral                | 15 B, C      |
| Scrophulariaceae | <i>Scrophularia scopoli</i> Hoppe ex Pers.         | Makhleseh 842                     | Young stem, Fruit  | Waist pain (3), Respiratory diseases (2)                                                               | OTH-A, SKE-L                             | Poultice, Decoction           | Topical, Oral       | 5 A, C       |
| Scrophulariaceae | <i>Scrophularia striata</i> Boiss.                 | Makhleseh 840                     | Fruit              | Gastric discomfort (2), Respiratory diseases (2), Waist pain (3), Wound healing (2)                    | GAS-D, RES-R, OTH-A, DER-5               | Poultice, Decoction           | Oral, Topical       | 9 A, C       |
| Solanaceae       | <i>Datura stramonium</i> L.                        | Tatooreh 1250                     | Leaf, Seed         | Sexual tonic (6), Bone and joint pains (8), Reduce rheumatic pain (5), Asthma (5), Cough (4), Burn (5) | OTH-A, SKE-L, SKE-L, RES-R, RES-R, DER-5 | Decoction, Poultice           | Oral, Topical       | 33 B, C      |
| Solanaceae       | <i>Hyoscyamus reticulatus</i> L.                   | Borji 1255                        | Aerial parts       | Pain relief (9), Leaving addiction (9), Narcotic (15)                                                  | NER-N, NER-N, RES-R                      | Infusion                      | Oral                | 33 A, C      |

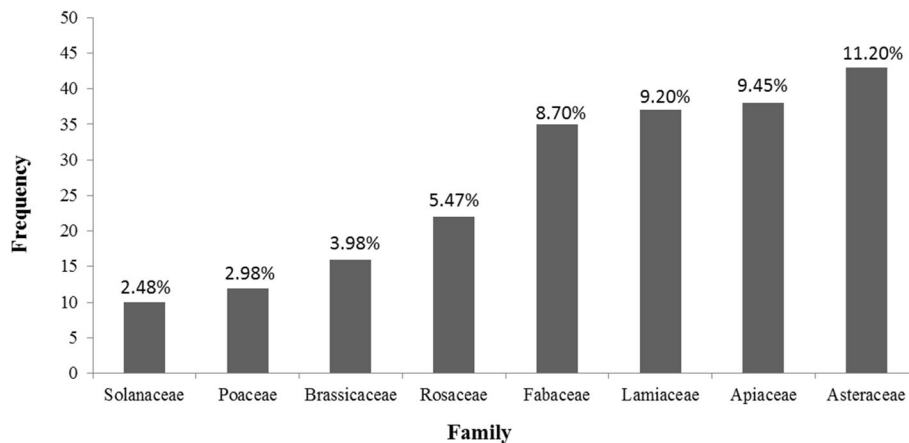
**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family        | Scientific name                              | Local name (Persian); Voucher no. | Plant part used             | Medicinal use (UR)                                                                       | ICPC category                     | Preparation               | Mode of application | (UR) | A, B, C |
|---------------|----------------------------------------------|-----------------------------------|-----------------------------|------------------------------------------------------------------------------------------|-----------------------------------|---------------------------|---------------------|------|---------|
| Solanaceae    | <i>Hyoscyamus senecionis</i> Willd.          | Bangdaneh 1256                    | Flower                      | Pain relief (8)                                                                          | NER-N                             | Decoction                 | Oral                | 8    | A, C    |
| Solanaceae    | <i>Hyoscyamus squarrosus</i> Griff.          | Bangdaneh 1257                    | Whole plant                 | Pain relief (8)                                                                          | NER-N                             | Decoction                 | Oral                | 8    | A, C    |
| Solanaceae    | <i>Lycium barbarum</i> L.                    | Zeel 1260                         | Fruit                       | Sleeplessness (4)                                                                        | NER-N                             | Eat as fruit              | Oral                | 8    | B, C    |
| Solanaceae    | <i>Lycium depressum</i> Stocks               | Zeel 1261                         | Fruit                       | Anticonvulsant (11)                                                                      | OTH-A, NER-N                      | Decoction                 | Oral                | 11   | B       |
| Solanaceae    | <i>Lycium shawii</i> Roem. & Schult.         | Dahiri 262                        | Leaf                        | Vision enhancement (2)                                                                   | EYE-F                             | Crashed Juice             | Topical             | 2    | B, C    |
| Solanaceae    | <i>Physalis alkekengi</i> L.                 | Aroosake 1265                     | Fruit                       | Kidney diseases (3), Laxative (5), Expectorant (2)                                       | OTH-A, GAS-D, RES-R               | Edible                    | Oral                | 10   | B, C    |
| Solanaceae    | <i>Solanum nigrum var. villosum</i> L.       | Roopas 1268                       | Fruit                       | Febrifuge (6), Blood coagulation (5), Pain relief (4)                                    | OTH-A, Blood-B, NER-N             | Decoction                 | Oral                | 15   | A       |
| Solanaceae    | <i>Solanum lycopersicum</i> L.               | Gewjeh 1251                       | Fruit                       | Infectious wounds (5)                                                                    | DER-S                             | Poultice                  | Topical             | 5    | B, C    |
| Solanaceae    | <i>Withania somnifera</i> (L.) Dunal         | Kahkenj 1270                      | Aerial parts                | Nerve tonic (5)                                                                          | NER-N                             | Decoction                 | Oral                | 5    | A       |
| Tamaricaceae  | <i>Tamarix aphylla</i> (L.) Karst.           | Koor gaz 1350                     | Latex of burning stem       | Eczema (16), Skin disease (8)                                                            | DER-S, DER-S                      | Poultice                  | Topical             | 24   | B, C    |
| Tamaricaceae  | <i>Tamarix kotschyj</i> Bunge                | Gole kist 1351                    | Latex of burning stem       | Eczema (16), Skin disease (8)                                                            | DER-S, DER-S                      | Poultice                  | Topical             | 24   | B, C    |
| Thymelaeaceae | <i>Daphne mucronata</i> Royale               | Terveet 704                       | Leaf                        | Influenza (3), Arthritis (3), Blood cancer (1)                                           | MET-T, RES-R, SKE-L, CAN-C        | Decoction, Dressing       | Oral, Topical       | 7    | A       |
| Thymelaeaceae | <i>Daphne oleoides</i> Schreb.               | Terveet 705                       | Foliage                     | Traditional dyeing (10), Natural color for textile (10)                                  | OTH-A, OTH-A                      | Decoction, Fume           | -                   | 24   | B, C    |
| Thymelaeaceae | <i>Daphne straphii</i> Borrm& Keisslere.     | Terveet 706                       | Foliage                     | Constipation (4)                                                                         | GAS-D                             | Decoction                 | Oral                | 6    | B, C    |
| Thymelaeaceae | <i>Diarrhron lessertii</i> (Wikstr.) Kit Tan | Gole bidi 708                     | Leaf and flowering branches | Stomachache (2), Stomach and liver tonic (2), Arthritis (2)                              | GAS-D, GAS-D, SKE-L               | Aromatic water, Poultice  | Oral, Topical       | 6    | B, C    |
| Urticaceae    | <i>Parietaria judaica</i> L.                 | Gooshe Moosh 323                  | Leaf and flower             | Diuretic (3), Acute pulmonary embolism (4)                                               | URO-U, RES-R                      | Decoction                 | Oral                | 7    | B, C    |
| Urticaceae    | <i>Urtica dioica</i> L.                      | Soosonakoo 320                    | Leaf and flower             | Urinary stone (7), Reduce blood sugar (4)                                                | URO-U, MET-T                      | Infusion                  | Oral                | 11   | A       |
| Urticaceae    | <i>Urtica urens</i> L.                       | Soosonakoo 321                    | Aerial parts                | Febrifuge (5), Gastrointestinal pains (4), Relaxing (2), Anti parasite (2), Toothache(3) | OTH-A, GAS-D, NER-N, GAS-D, GAS-D | Decoction, Aromatic water | Oral                | 15   | B, C    |
| Violaceae     | <i>Viola odorata</i> L.                      | Gole-e banafsheh 1370             | Leaf and flower             | Laxative (8), Chronic cough (5), Expectorant (3)                                         | GAS-D, RES-R, RES-R               | Decoction                 | Oral                | 16   | B, C    |

**Table 3** Medicinal plants used by ethnic communities in the Kerman province (Continued)

| Family           | Scientific name                                    | Local name (Persian); Voucher no. | Plant part used       | Medicinal use (UR)                                                                                                                     | ICPC category                                   | Preparation                            | Mode of application | (UR) A, B, C |
|------------------|----------------------------------------------------|-----------------------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------------------------------|---------------------|--------------|
| Verbenaceae      | <i>Verbena officinalis</i> L.                      | Shahpasand 1380                   | Aerial parts          | Febrifuge (3), Nerve tonic (7)                                                                                                         | OTH-A, NER-N                                    | Poultice, Decoction                    | Topical             | 10 A         |
| Vitaceae         | <i>Vitis vinifera</i> L.                           | Maviz 1390                        | Dried Fruit           | Memory improvement (5)                                                                                                                 | NER-N                                           | Nuts                                   | Oral                | 5 A          |
| Xanthorrhoeaceae | <i>Aloe vera</i> (L.) Burmf.                       | Alovera 1500                      | glazed materials      | Diabetic wound (7), Eczema (22)                                                                                                        | DER-S, DER-S                                    | Poultice                               | Topical             | 29 A         |
| Xanthorrhoeaceae | <i>Asphodelus tenuifolius</i> Cav.                 | Peemazoo 1505                     | Seed                  | Diuretic (15)                                                                                                                          | URO-U                                           | Decoction                              | Oral                | 17 A         |
| Xanthorrhoeaceae |                                                    |                                   | Root                  | Herbal adhesive (2)                                                                                                                    | OTH-A                                           | Crushed extract                        | -                   |              |
| Xanthorrhoeaceae | <i>Eremurus kopetdaghensis</i> M.Popex B.Fredtsch. | Horishoo 1510                     | Root, Leaf and flower | Herbal adhesive (4), Vegetable (8), Jaundice (6), Liver Disease (5), Disinfectant (4)                                                  | OTH-A, OTH-A, GAS-D, GAS-D, OTH-A               | Vegetable, Decoction, Poultice         | Topical, Oral       | 27 B, C      |
| Xanthorrhoeaceae | <i>Eremurus persicus</i> (Jaub. & Spach) Boiss.    | Serishoo 1511                     | Leaf and flower       | Flavoring of food (15), Laxative (6), Herbal adhesive (4), Vegetable (7), Disinfectant (3), Jaundice (6), Liver and kidney Disease (2) | OTH-A, GAS-D, OTH-A, OTH-A, OTH-A, GAS-D, GAS-D | Powder, Vegetable, Decoction, Poultice | Topical, Oral       | 52 B, C      |
| Zygophyllaceae   | <i>Fagonia bruguieri</i> DC.                       | Alaf Kharoo 1550                  | Root                  | Liver and stomach discomfort (31)                                                                                                      | GAS-D                                           | Powder                                 | Oral                |              |
| Zygophyllaceae   | <i>Tribulus terrestris</i> L.                      | Kharkhesak 1555                   | Aerial parts          | Appetizing (2), Vermicide (2), Carminative (5)                                                                                         | OTH-A, GAS-D, GAS-D                             | Decoction, infusion                    | Oral                | 9 A          |
| Zygophyllaceae   | <i>Zygophyllum eurypterum</i> Boiss. & Buhse.      | Gich 1560                         | Seed                  | Kidney stone (43)                                                                                                                      | URO-U                                           | Decoction                              | Oral                | 43 A         |
| Zygophyllaceae   | <i>Zygophyllum fabago</i> L.                       | Gich 1561                         | Seed                  | Lactiferous (4), Anti-nausea (3), Stomach tonic (4), Laxative (4), Vermicide (3)                                                       | PRE-W, GAS-D, GAS-D, GAS-D, GAS-D               | Decoction                              | Oral                | 18 B, C      |
| Zygophyllaceae   |                                                    |                                   | Seed                  | Lactiferous (4), Anti-nausea (3), Stomach tonic (4), Laxative (4), Vermicide (3)                                                       | PRE-W, GAS-D, GAS-D, GAS-D, GAS-D               | Decoction                              | Oral                | 18 B, C      |

C: indicate the medicinal plants which reported in this region for the first. A: indicate the ethno-medicinal uses of the medicinal plants which quoted in the in the Persian ethnobotany. B: was not quoted in the in the Persian ethnobotany.



**Fig. 2** Top dominants medicinally utilized plant families

development of natural and traditional products, could play an important role in shaping people’s inclination towards traditional medicine [34]. Moreover, the medicinal plants’ availability, low cost, positive experiences, and reliable Iranian references like Avicenna could be the other reasons to form positive attitudes. Kerman province is a pivotal state in the ancient Iran (Persia) and it is estimated that the human civilization emerged from Jiroft in the south of this province [11]. Therefore, with a rich history, it has developed a sound traditional health care system.

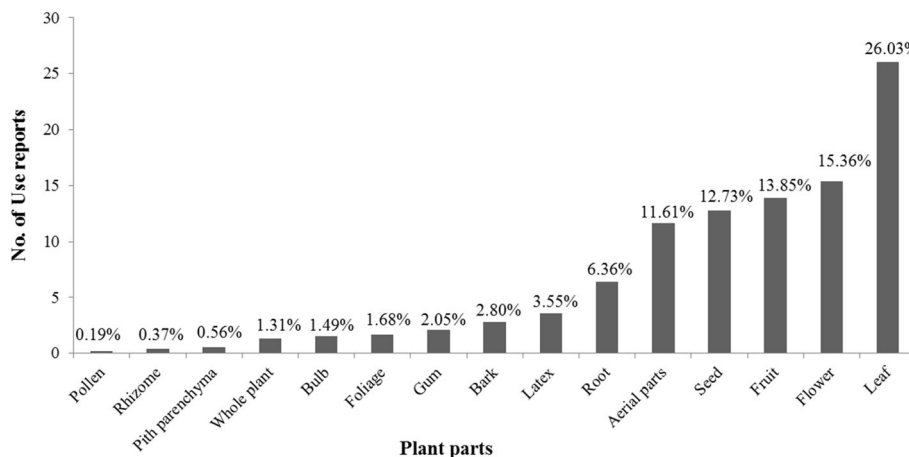
**Plant parts used**

To prepare crude drugs (Fig. 3) from 15 plant parts, the most common plant parts used were leaf, flower, fruit, and seeds with 26.03, 15.36, 13.85, and 12.73 percentages, respectively. According to many reports, the leaf is the most common medicinal plant part used in the ethnopharmacological applications [35, 36]. Field discussion

and other similar reports [30] indicated that availability, abundance, efficiency of use, and attention to the conservation points are the main reasons for the maximum usage of the leaves by local healers. In fact, local informants believed that different parts of the medicinal plants could have different therapeutic effects. In other words, plant organs have received varying degrees of attention based on traditional herbal medicine experiences of the ethnic communities. For instance, the root of *Berberis integerrima* is decocted and taken orally to treat diabetes while its leaf is used to treat hypertension. In addition, latex of *Calotropis procera* was used to cure eczema but its leaf is taken in the form of poultice to treat bruise and diabetes.

**Preparation and application modes**

The medicinal herbs were prepared in 14 forms including decoction, poultice, infusion, aromatic water, powder, vegetable, maceration, syrup, mask, fume, brush,



**Fig. 3** Plant parts used in traditional herbal drug preparation and the number of use reports

and shampoo by local communities. The most common form of the crude drug was decoction (52.99%), followed by poultice (18.32%) and infusion (7.56%) (Fig. 4). The local informants of Kerman province believed that by decocting the medicinal plants parts, their extract becomes more concentrated and obtains better taste and stronger efficacy. Based on various reports [9, 16, 37–40], decoction is the most common method to prepare herbal medicine.

The medicinal drugs administrated in six categories included oral, topical, dressing, eye drop, inhale, and bath. Analyzing the ethnobotanical data showed that the most common administration route was oral, followed by topical (Fig. 5). Other ethnobotanical studies in Iran and other countries revealed that ethnic communities mostly prefer these two methods of preparation [5, 10, 41]. But some plant species such as *Lawsonia inermis*, *Juniperus excels*, *Rhazya stricta*, and *Pistacia atlantica* are utilized in both topical and oral administration routes. For example, bath with the aqueous extract of *Lawsonia inermis* leaves is known as an effective method for the treatment of jaundice. The poultice of this plant is used to cure skin disorders like eczema and wound scar while its root is decocted and used orally as a diuretic and for the treatment of bronchitis.

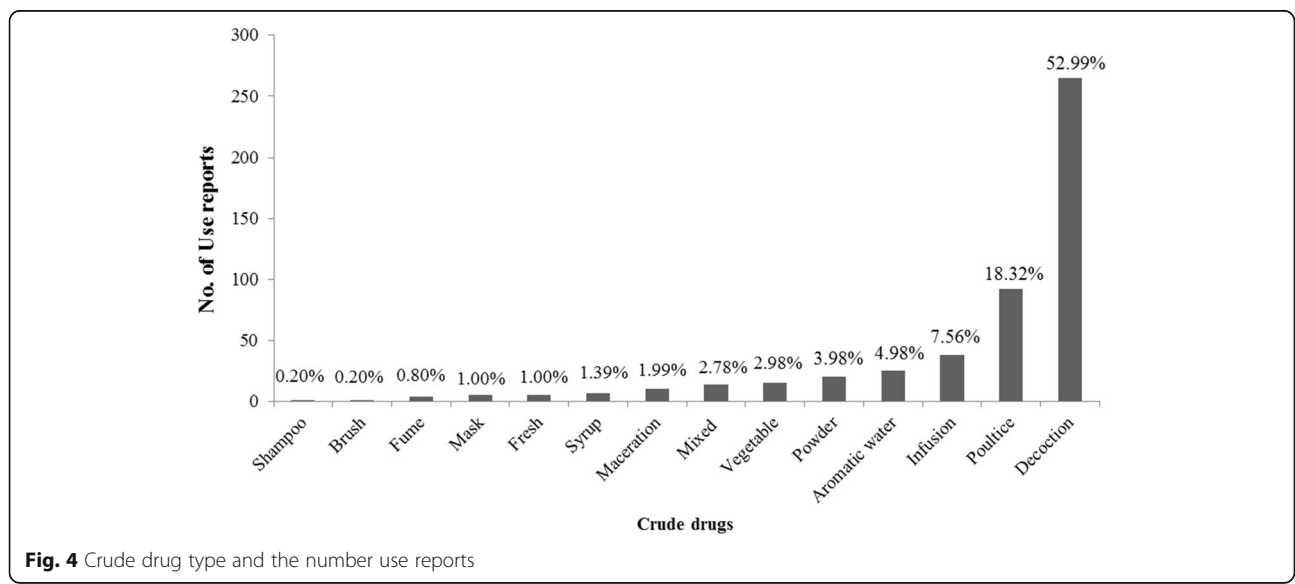
**Informant consensus factors (ICF)**

The ICF values for different ailment categories treated by the local informants in this survey ranged from 0.25 to 0.92 (Table 4). Endocrine (diabetes), dermatology, gastrointestinal, and respiratory with 0.92, 0.91, 0.90, and 0.89 ICF, respectively, were ranked as the most popular ailment categories for medicinal plants in this region.

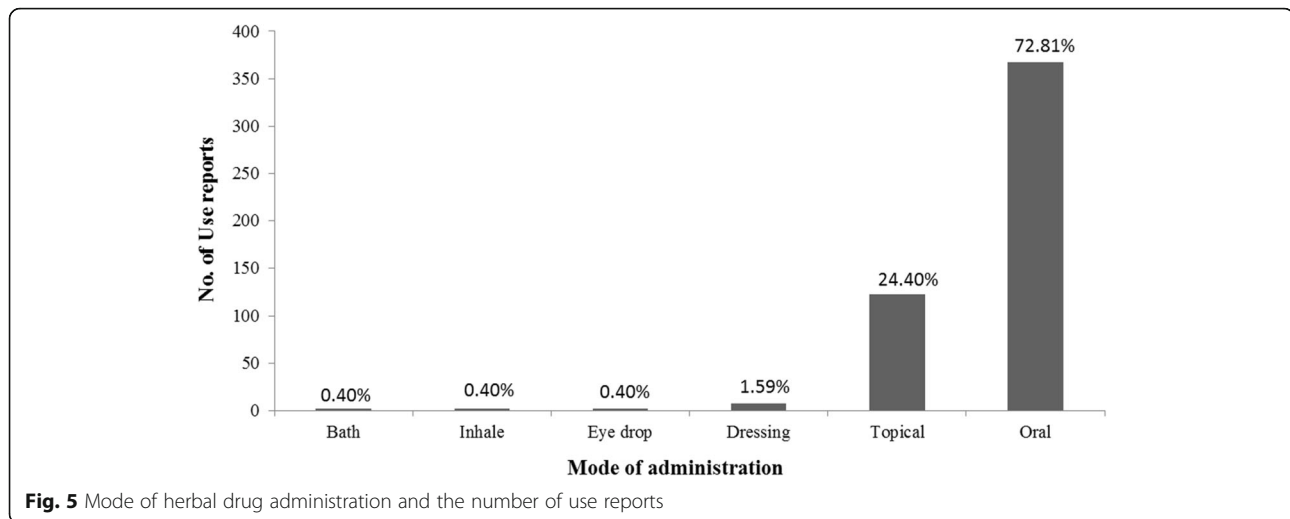
Diabetes disorder scored the highest ICF (0.92). This unexpected result is due to the high use report of few medicinal plants for treating diabetes mellitus such as *Citrullus colocynthis*, *Berberis integerrima*, and *Tecomella undulata* with 91, 61, and 41 use reports, respectively. In this case, *C. colocynthis*, a reputed medicinal plant in Kerman province, is well known due to its anti-diabetic properties [42]. Moreover, in this case, the locals extremely used the root of *Berberis integerrima* and stem bark of *T. undulata* in treating diabetes mellitus. Field surveys and discussion with herbalists revealed that stress caused by poor economic conditions and job pressures can be one of the reasons for the high prevalence of diabetes in this region, but it needs more investigation.

Second ICF was found in dermatological ailment category with 1563 use reports. These findings are due to high use reports for plant species such as *Calotropis procera*, *Pergularia tomentosa*, *Rhazya stritcta*, and *Tecomella undulata* in the treatment of eczema, wound healing, and other skin disorders. High ICF of dermatological disorders in this region might be due to high and long-term sunlight exposure, which caused skin disorders [10]. In addition, based on the field surveys, some environmental problems such as dust and wind associated with the particles of sands especially in the cities of Shahdad, Roodbar, Bam, Baravat, Qale Ganj, and Fahraj can be considered critical risk factors. Heidari et al. reported that the main reason for the skin diseases in the desert areas of the Kerman province like city of Bam is the dusty winds [43].

The third highest ICF (0.90) was found in gastrointestinal ailment category for 243 medicinal plant species. Species like *Artemisa* spp. *Glycyrrhiza glabra* and *Nepeta cataria* were typical medicinal herbs for



**Fig. 4** Crude drug type and the number use reports



gastrointestinal disorders. Such findings indicated the rich and high level of informant consensus on the variety of medicinal herbs used to treat gastrointestinal ailments, and confirmed the prevalence of gastrointestinal ailments among people who lived in a specific region [30]. Moreover, ITM (e.g., Canon) has attracted considerable attention for the treatment of gastrointestinal disorders [44, 45]. Several studies in Iran and other countries reported that the species *Nepeta cataria* [46, 47], *Glycyrrhiza glabra* [48, 49], and *Artemisa* spp. [50, 51] were traditionally used to treat gastrointestinal diseases.

The 4th disease category with ICF value of 0.89 was respiratory disorders. *Zataria multiflora*, *Thymus fedtschenkoi*, and *Cionura erecta* were major plant species for cough with 104, 102, and 87 use reports, respectively. The large number of use reports for respiratory disorder category might be attributed to undesirable working conditions of local populations, like agriculture and husbandry in the dry and dusty regions without quick access to the health care systems. In confirmation of the present findings, Khanjani et al. studied the relationship between air pollution and respiratory diseases in Kerman from 2006 to 2010 and reported that sandstorms and the dust content increase of the atmosphere exacerbate respiratory diseases in this region [52].

#### Use report

Medicinal plants of the families Lamiaceae (such as *Nepeta cataria* and *Zataria multiflora*), Asteraceae (like *Artemisia persica* and *Launaea acanthodes*), and Apiaceae (such as *Bunium persicum*) had the largest number of use report in this area. Bibak and Moghbeli, and Sadat-Hosseini et al. studied the medicinal plants of the Jiroft and Kanuj in the south of Kerman and, similar to the findings of the current study, confirmed the

importance of traditional medication of these three families [10, 16]. In addition, plant species of the Apocynaceae family (like *Cionura erecta*, *Rhazya stricta*, and *Calotropis procera*) were ranked with a high use report. In this case, *Cionura erecta* is a well-known medicinal plant in the southern regions of Kerman for the treatment of sore throat and cough with no official records.

#### Cultural importance and relative frequency of citation index

The highest CI was found for *Nepeta cataria*, *Zataria multiflora*, *Teucrium polium*, *Rydingia persica*, and *Thymus fedtschenkoi*. The second highest CI was found for *Dracocephalum polychaetum* and *Pistacia atlantica*. These findings revealed that the first CI of the medicinal plants in Kerman province belonged to the Lamiaceae family. Additionally, *Pistacia atlantica* was ranked as an important medicinal plant with high CI index in this region. High CI values show that these medicinal plants are either highly utilized, or their uses are rising in traditional herbal medicine in a specific region [53].

However, for the RFC index, *Lawsonia inermis*, *Artemisia persica*, *Zataria multiflora*, and *Nepeta cataria* were classified as the first rank. In other words, the mentioned medicinal plants were referred by most of the informants. RFC value specifies the usefulness of medicinal plant species [5]. Table 5 shows the ranking based on each index (CI and RFC) for 20 dominant medicinal plant species with the highest CI and RFC indices.

Based on the independent samples *t*-test, women had more knowledge about the medicinal plants ( $t = 1.87$ ,  $p = 0.04$ ). Based on the field surveys, women in Kerman province are the preparers of the plant species for the medicinal applications, and it can be concluded that women had more practical experience in traditional

**Table 4** Informant consensus agreement for ailment categories in the Kerman province

| ICPC categories                                            | Recorded ailments                                                                                                                                                                                                                                                      | Nt* | Nur** | ICF value*** |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------|--------------|
| General and Unspecified (OTH-A)                            | Health and body tonic (88), Fever (279), Disinfectant (116), Detoxification (51), Sore throat (142), Allergy (13), Back pain (6), Undefined illness (59), No diseases (344)                                                                                            | 136 | 1052  | 0.87         |
| Digestive (GAS-D)                                          | Constipation (146), Toothache (127), Gastritis (395), Intestinal worm (69), Diarrhea (492), Jaundice (191), Nausea (54), Stomachic (781), Tooth germ (2), Liver ailment (115), Carminative (229), Vomiting (16), Digestive (32)                                        | 243 | 2609  | 0.90         |
| Ophthalmological (EYE-F)                                   | Eye Sight enhancement (5), Pterygium (2), Eye diseases (8)                                                                                                                                                                                                             | 6   | 15    | 0.64         |
| Ear (Ear-H)                                                | Earache (9), Ear diseases (5)                                                                                                                                                                                                                                          | 5   | 14    | 0.69         |
| Cardiovascular (CAR-K)                                     | Blood pressure (105), Hemorrhoids (13), Heart tonic (13), Cardiovascular disease (6), Blood purifier (115)                                                                                                                                                             | 37  | 252   | 0.85         |
| Blood, Blood Forming Organs and Immune Mechanism (Blood-B) | Anemia (42), Blood coagulation (14), Blood fat (31)                                                                                                                                                                                                                    | 87  | 16    | 0.82         |
| Musculoskeletal (SKE-L)                                    | Bone and Joint pains (215), Anti-inflammation (74), Muscular cramps (2), Rheumatism (58), Arthritis (9), Waist pain (6)                                                                                                                                                | 60  | 364   | 0.83         |
| Neurological (NER-N)                                       | Dizziness (9), Nervous problems (115), Migraine (7), Antispasmodic (93), Pain relief (161), Relaxing (246), Sleeplessness (33) Alzheimer (5), Memory Improvement (18), Depression (5), Headache (40), Leaving addiction (100), Anticonvulsant (7)                      | 112 | 852   | 0.86         |
| Psychological (Psy-P)                                      | Anorexia (10)                                                                                                                                                                                                                                                          | 4   | 10    | 0.66         |
| Respiratory (RES-R)                                        | Cough (445), Asthma (37), Respiratory diseases (112), Colds (454), Bronchitis (48), Itchy throat (8), Acute pulmonary embolism (18), Influenza (6)                                                                                                                     | 121 | 1128  | 0.89         |
| Skin (DER-S)                                               | Bites (32), Bruise (138), Burn (144), Wound (317), Eczema (368), Skin ailments (105), Skin rash (50), Beauty of skin and hair (13), Acne (22), Scar (61), Blister (5), Skin patches (2), Skin bur, (22) Hair tonic (208), Dandruff (29), Hair leprosy (36), Warts (11) | 132 | 1563  | 0.91         |
| Endocrine/ Metabolic and Nutritional (MET-T)               | Diabetes (310)                                                                                                                                                                                                                                                         | 25  | 310   | 0.92         |
| Urological (URO-U)                                         | Urinary problems (75), Kidney stone (77), Kidney diseases (14)                                                                                                                                                                                                         | 32  | 191   | 0.83         |
| Pregnancy, Childbearing, Family Planning (PRE-W)           | Male infertility (11), Lactiferous (13)                                                                                                                                                                                                                                | 6   | 24    | 0.78         |
| Female Genital (GYN-X)                                     | Menstrual irregular (79), Women infection (31), Ovarian augmentation (3)                                                                                                                                                                                               | 113 | 16    | 0.86         |
| Cancer (CAN-C)                                             | Tumorous cancer (9), Blood cancer (1)                                                                                                                                                                                                                                  | 7   | 9     | 0.25         |

Nt= number of plant species used in each ailment category; NUR= number of mentions in each used category; ICF= Informant Consensus actor.

medicine in this region. The findings of Sadat-Hosseini et al. in the southern part of this region also confirmed our results [10].

The results of ANOVA showed that there were significant differences between the three age groups ( $F = 3.17$ ,  $p = 0.02$ ), and different levels of education ( $F = 2.56$ ,  $p = 0.03$ ). Also, based on Duncan's test, the two older age groups (older than 45 years old) with low level of education had more traditional knowledge about the medicinal plants. Based on these results and other reports like that of Hu et al., despite the importance of the traditional medicine for the older inhabitants, the younger generation does not show interest, which means that the ethnobotanical knowledge does not further flourish [2].

Finally, based on the results of ANOVA and Duncan's tests, occupation of the informants had a significant effect on their traditional medicinal knowledge ( $F = 4.19$ ,  $p = 0.01$ ), and genuine information belonged to the herbal healers, nomadic people, and villagers, respectively. Field surveys revealed that herbal healers, due to their job requirement, record and learn the relevant knowledge of the other ethnic groups like nomadic and villagers and usually have more comprehensive traditional knowledge.

#### Ethnopharmacological knowledge of tribes and different area

In the hot and dry regions of Kerman province like Kahnuj, Roodbar, Anbarabad, Qale Ganj, Manojan, Faryab,



**Table 5** Comparison of dominant plants by using indices and species ranking based on each index (RFC and CI)

| Family        | Scientific name                                         | RFC  | CI   | RFC ranking | CI ranking |
|---------------|---------------------------------------------------------|------|------|-------------|------------|
| Cucurbitaceae | <i>Citrullus colocynthis</i> (L.) Schrad.               | 0.42 | 0.55 | 4           | 4          |
| Asteraceae    | <i>Launaea acanthodes</i> (Boiss.) Kuntze               | 0.37 | 0.58 | 4           | 4          |
| Fabaceae      | <i>Glycyrrhiza glabra</i> L.                            | 0.56 | 0.64 | 3           | 4          |
| Cupressaceae  | <i>Juniperus excelsa</i> M.Bieb.                        | 0.41 | 0.66 | 4           | 4          |
| Apocynaceae   | <i>Calotropis procera</i> (Aiton) Dryand.               | 0.63 | 0.70 | 2           | 4          |
| Lamiaceae     | <i>Mentha longifolia</i> (L.) L.                        | 0.49 | 0.74 | 3           | 3          |
| Lythraceae    | <i>Lawsonia inermis</i> L.                              | 0.77 | 0.76 | 1           | 3          |
| Apocynaceae   | <i>Cionura erecta</i> (L.) Griseb.                      | 0.31 | 0.77 | 4           | 3          |
| Apocynaceae   | <i>Rhazya stricta</i> Decne.                            | 0.63 | 0.80 | 2           | 3          |
| Asteraceae    | <i>Artemisia persica</i> Boiss.                         | 0.79 | 0.82 | 1           | 3          |
| Berberidaceae | <i>Berberis integerrima</i> Bunge                       | 0.66 | 0.84 | 2           | 3          |
| Apiaceae      | <i>Bunium persicum</i> (Boiss.) B.Fedtsch.              | 0.73 | 0.85 | 2           | 3          |
| Bignoniaceae  | <i>Tecomella undulata</i> (Sm.) Seem.                   | 0.51 | 0.89 | 3           | 3          |
| Anacardiaceae | <i>Pistacia atlantica</i> Desf.                         | 0.75 | 0.96 | 2           | 2          |
| Lamiaceae     | <i>Dracocephalum polychaetum</i> Bornm.                 | 0.64 | 1.00 | 2           | 2          |
| Lamiaceae     | <i>Thymus fedtschenkoi</i> Ronneger.                    | 0.86 | 1.11 | 1           | 1          |
| Lamiaceae     | <i>Rydingia persica</i> (Burm.f.) Scheen & V.A. Altbort | 0.67 | 1.17 | 2           | 1          |
| Lamiaceae     | <i>Teucrium polium</i> L.                               | 0.72 | 1.20 | 2           | 1          |
| Lamiaceae     | <i>Zataria multiflora</i> Boiss.                        | 0.87 | 1.29 | 1           | 1          |
| Lamiaceae     | <i>Nepeta cataria</i> L.                                | 0.89 | 1.51 | 1           | 1          |

Bam, Fahraj, Narmashir, Rigan, and plain part of Jiroft, most inhabitants are from Baluch tribe and the natives of Jiroft and Kahnooj. Based on the results, medicinal plants such as *Berberis integerrima*, *R. persica*, *Calotropis procera*, and *R. stricta* are widely used to treat dermatological diseases. The rate of drug abuse in these regions is more than in mountainous areas because these cities are in the neighborhood of Afghanistan and the availability of drugs is thus higher. Hence, medicinal plants such as the plant from the genus *Achillea* (*A. wilhelmsii*, *A. eriophora*, *A. santolinoides*), *Berberis integerrima*, and *R. persica* are used individually or in combination by the locals for stopping drug abuse.

Tribal communities and folk people, who live in the mountainous areas such as Hezar, Sirch, and Jebal barez, mainly use the herbal medicine for the treatment of gastrointestinal disorders. Based on the field surveys and discussion with the herbal healers, the main food of the nomadic people is milk and its derivatives especially curd and buttermilk, and they do not have a diverse diet. There is a significant relationship between the consumption of low-diversity diets and the risk of non-communicable diseases [54, 55].

#### New traditional medicinal uses

According to the in-depth comparison of the current ethnobotanical findings with previous national reports, a

large volume of unrecorded traditional medicine knowledge was gathered. A major implication of the current study is identification of traditional medicinal use of 292 plants in the Kerman province and 201 plants species in the Persian ethnobotany for the first time. This unrecorded knowledge is summarized based on the plant families as follows:

Amaranthaceae (*Amaranthus retroflexus* for the treatment of jaundice; *Anabasis aphylla* and *Seidlitzia rosmarinus* as traditional washing powders), Apiaceae (*Eryngium billardieri* and *Eryngium bungei* in pain relief, *Prangos ferulacea* as parasite repellents); Apocynaceae (*Cionura erecta* for sore throat and cough, *Rhazya stricta* for joint pains and body ache, *Calotropis procera* in the healing of skin disorders like eczema); Asteraceae (*Launaea acanthodes* as intestinal parasite repellents, *Artemisia* spp. for the treatment of gastric infection and stomachache, *Calendula officinalis* for the treatment of pterygium); Boraginaceae (*Cordia myxa* for common cold, sore throat and kidney stone); Ephedraceae (*Ephedra distachya* and *Ephedra foliata* for peptic ulcer and as materials in traditional tannery), Euphorbiaceae (*Euphorbia serpens* for eczema); Fabaceae (*Astracantha lateritia* for hair tonic and eczema, *Prosopis cineraria* for eczema and in traditional tannery, *Prosopis farcta* in preventing nose bleeding) Lamiaceae (*Dracocephalum polychaetum* as potent and multipurpose medicinal plant);

Plantaginaceae (*Plantago amplexicaulis*, *Plantago gentianoides* and *Plantago indica* for constipation and jaundice); Polygonaceae (*Pteropyrum aucheri* in healing of infectious wounds); Ranunculaceae (*Clematis ispahanica* in healing of eczema and psoriasis); Rosaceae (*Rosa moschata* as nerve tonic, *Prunus scoparia* in cancer prevention); Rubiaceae (*Plocama aucheri* in reducing rheumatic pain and blood sugar); Rutaceae (*Citrus limon* and *Citrus aurantium* for the treatment of eye diseases and making the traditional kohl); Salvadoraceae (*Salvadora oleoides* as parasite repellent). Tamaricaceae (*Tamarix aphylla* and *Tamarix kotschy* in healing of eczema and skin disease); Thymelaeaceae (*Daphne oleoides* in traditional dyeing); Violaceae (*Viola odorata* for chronic cough and as expectorant); and Zygophyllaceae (*Zygophyllum eurypterum* and *Zygophyllum fabago* as lactiferous and vermicide). These findings highlight the importance of the documentation of such valuable ethnobotanical information. Also, some of these medicinal plants can be targeted for pharmacological and bioactive studies with the aim of identifying phytochemical content and therapeutic applications.

## Conclusion

Our extensive study in Kerman as the vastest province in Iran with 23 cities, 171,993 square kilometers area, and 89 tribal communities revealed rich traditional medicinal knowledge of its local populations. Traditionally, they used 402 medicinal plant species in 73 families to meet their pharmacological needs. Besides the common oral and topical utilization of the crude herbal drugs, dressing and bath with the medicinal plants are the exceptional mode of application in Kerman province. The highest ICF values belonged to diabetes, digestive, skin, and respiratory disorders, respectively.

Our findings suggested that Asteraceae and Apiaceae plants were dominantly used for the treatment of gastrointestinal disorders, Lamiaceae plants for respiratory and gastrointestinal ailments, and Apocynaceae plants for dermatological problems.

For several medicinal plants with high use reports such as *Cionura erecta*, *Tecomella undulata*, and *Launaea acanthodes*, scanty pharmacological and phytochemical data has been reported. On the other hand, the top list included *Rhazya stricta*: wound healing; *Calotropis procera*: eczema; *Berberis integerrima*: diabetes and addiction cessation; *Dracocephalum polychaetum*: stomachache, diarrhea, detoxification and strengthening body; *Rydingia persica*: leaving addiction; *Launaea acanthodes*: parasite repellent; *Cionura erecta*: expectorant; and *Tecomella undulata*: skin ailments, eczema, and diabetes. These results highlight the need for further bioactive and phytochemical studies on the mentioned medicinal plants. Finally, some frequently used medicinal

plants like *Cionura erecta*, *Dracocephalum polychaetum*, and *Tecomella undulate* are endangered and restricted in small parts of their habitats. Therefore, urgent conservation measures are needed.

## Abbreviation

ITM: Iranian traditional medicine

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## Authors' contributions

SHH and HB designed the work. AS, ARQ, and ASH participated in the organization of the ethnobotanical and ethnopharmacological data. HB conducted the botanical analysis. SHH participated in all steps (designing, field work, data analysis, literature search, etc.). The authors read and approved the final manuscript.

## Authors' information

The authors have doctoral qualification in Medicinal plants, Plant systematic, Biology, Pharmacognosy, and Pharmaceutical Biotechnology. This work is based on the research project of SH, which is granted by the University of Jiroft.

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## Availability of data and materials

All data generated or analyzed during this survey are included in this article.

## Ethics approval and consent to participate

This study was reviewed and approved by the Research Deputy at the University of Jiroft. The organization of the institute does not involve an Ethics Committee; therefore, there is no specific ethics code assigned to this study. However, each research proposal, like the one corresponding to the current study, is comprehensively reviewed by the university until an approval code is granted (No: 3818-97-6). We would like to clarify that this study did not involve any intervention and all questions from local informants were performed with prior verbal consent.

## Consent for publication

Not applicable.

## Competing interests

All the authors declare no conflict of interest.

## Author details

<sup>1</sup>Department of Biology, Faculty of Science, University of Jiroft, Jiroft, Iran.

<sup>2</sup>Biotechnology Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences, Mashhad, Iran.

<sup>3</sup>Neurogenic Inflammation Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.

<sup>4</sup>Department of Pharmacognosy, School of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran.

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