



Collection and assessment of traditional medicinal plants used by the indigenous people of Dastena in Iran

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ABSTRACT

Introduction: Nowadays, traditional and herbal medicines have attracted the attention of researchers all around the world and despite the development of synthetic drugs, demand for plant-based medicines is growing. The main reason for this growing trend is increasing public concerns about the adverse effects of synthetic medicines. Traditional medicine and ethnobotany are two important issues that should be noted to achieve effective herbal medicines with considerable therapeutic effects. Traditional medicine is based on experience of people over centuries and ethno-botany is based on recognition of the native plants. Iran has very high plant diversity because of its different climate, ecosystems and soil conditions. Regarding increasing demand for medicinal plants, this study aimed to collect some native plant varieties growing in Dastena and to review some of local and folk application of these plants.

Methods: In the present study, the plant species were collected during two consecutive years (2013-2014) and systematically identified. The traditional and local uses of collected plants were questioned through interviews with local people.

Results: In this study, 90 plant species belonging to 30 families were collected and identified. They had various therapeutic effects. Lamiaceae and Asteraceae families had the highest use among the collected plants.

Conclusion: Results of this study showed that herbal medicines in this area are mostly used to treat digestive and respiratory system disorders. They have economical values and should be studied and explored more detailed.

Implication for health policy/practice/research/medical education:

Dastena medicinal plants are mostly used to treat digestive and respiratory system disorders. They have economical values and should be studied and explored more detailed.

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Introduction

Iran has an excellent history of traditional medicine, dating back to the Old Babylonian and Assyrian periods. Throughout the centuries, Iranian traditional medicine has played a prominent role in the health of Iranian people and also entire population of the world (1). The origin of Iranian traditional medicine dates back to the age of Avicenna and his book of Canon. Latin translation of the canon has been taught at European colleges for centuries and played an invaluable contribution to world medicine (2). Traditional medicine is taking inspiration from nature to solve human problems. Ancient Iranian medicine uses temperament diagnosis in order to indicate the health status of people. Physiologically, it attributes the number

of human diseases to the person to dyspepsia (3). Iranian traditional medicine has a direct link with traditional nutrition. It designed a nutritional scheme for Iranian people based on climate, agricultural resources and experiences gained during the long period (4). Ethno-botanical study is documentation of non-written traditional information in order to ensure a more rational use of resources and effective protection of biodiversity and cultural information (5). During the first half of the 20th century, ethno-botany was merely descriptive and most of researches in this field have only provided long lists of plants and their uses. However, during the past 50 years, ethno-botany has become less purely descriptive and more analytical. Therefore, researchers are con-

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fronted with other theoretical questions. For example, the study of ways in which different cultures classify plant can be useful in cognitive processes such as categorization and classification (2).

Before past two decades, all drugs had natural and mainly plant origin but rapid advances in scientific medicine and technology reduced their use in comparison to the past. Therefore medicinal plants were replaced by synthetic drugs. Today, due to increased concerns about synthetic drugs and their unwanted side effect, researcher's attention has been shifted toward medicinal plant (2).

Adverse side effects associated with consumption of synthetic drug such as "thalidomide incident" in Europe was one of the most important reason for public approach to the medicinal plant (6).

Iran has a wide range of medical experiences because of long historical precedent and diversity of race, ethnicity, language, and climate. The herbal medicines are considered to be of great importance especially, for tribes and residents settled in the impassable part of the Iran. Gaining experiences and transferring them from one generation to the next is the important issue (7). On the other hand, climatic and environmental variability between regions leads to growth of different types of plant species. Iran is one of the few countries in the world that has such a rather large diversity. Regarding large diversity and distribution of medicinal plants in Iran, botanical research and collection of data obtained from other researches can provides a good recognition of this great treasure for us and future generation (8).

Dastena is one of cities of the province of Chahar-Mahal-va-Bakhtiyari in Iran, located 47 kilometers (29 miles) west of the center of the Chahar-Mahal-va-Bakhtiyari. The city's altitude is approximately 2000 meters above sea level. This city supports great diversity because of its mountainous weather and soil type. This study aimed to collect some native plant varieties growing in this city and to review some of local and folk application of these plants. At first, medicinal plants species were collected and identified, then their local names and traditional and local application in medicine were studied (9).

Materials and methods

Plant specimens were collected from plains and mountains from May 2013 to September 2014. In some cases, local people experiences were used to find the right place of plants. We tried to use standard methods in order to collect medicinal plants. Plants with traditional application in medicine were harvested through consulting with local people and experts (10,11). After collection, plant specimens were identified and approved by Mr. Mustafa Noroozi based on morphological and anatomical characters listed in textbook of plant taxonomy (12-18). The herbarium specimens of plant were recorded at the Herbarium of the Faculty of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran. It should be noted that information about local and traditional applications of plants were collected during

and after the sampling through an interviews. 37 individuals including 15 farmers, 2 medicinal plants sellers and 20 native who had knowledge about medicinal plants were interviewed. They were asked for local names and traditional applications of plants.

Results

A total of 90 species were collected from Dastena city, which belonged to 30 families. Lamiaceae (20 species), Asteraceae (12 species) and Fabaceae (7 species) were dominant families. The aerial parts of the plants are most commonly used by the indigenous people of Dastena region. In Dastena city, traditional medicines are mostly used to treat digestive and respiratory system disorders, although they are also used to treat variety of diseases. Since Chaharmahal-va-Bakhtiari and Kohghiluyeh-va-Boyer Ahmad are placed in close proximity and on the other hand two of them are located along the central Zagross mountains, there are some similarities in respect with traditional application of plants. So, according to what is said, we used of one ethnobotanical study in Kohghiluyeh va Boyer Ahmad to complete some cells of result table. Scientific and Persian names (19) of collected plants as well as used parts of plants, native name and their applications are shown in Table 1.

The most parts of the plants that were frequently used by native people include aerial parts (38%), leaf (14.2%), flowers (13.3%), seeds (8.8%) and roots (7%) (Figure 1). Medicinal plants in Dastena are mostly used to treat digestive system disorders (23%), respiratory system infections (13.5%), nervous system disorders (11%) and infections (1%) (Figure 2).

Discussion and Conclusion

This study led to the introduction of 90 plant species used by local people. It should be noted that a few of these applications are now common among local people but most of them were already common. Traditional medicine has become forgotten over time and today's generation pays little attention to it. Therefore there is a need to protect this precious treasure and transfer it to the next generation. In Dastena, Asteraceae and Lamiaceae were the most frequently used families. These families also had the highest frequency of use in Kohgiluyeh and Boyer-Ahmad (20). Medicinal plants have been used by local people of Dastena for various purposes. The parts of plant that were most frequently used by native peoples were aerial parts. Aerial parts especially leaves are photo synthetically active and produce large amounts of secondary metabolites. Moreover access to these parts is much easier than other parts. Previous study also showed that aerial parts of plants are more active than other parts. These can explain same results observed by different researchers in different parts of the world (20-22).

Use of medicinal herbs to overcome digestive system problems are also reported in several studies conducted in different parts of Iran (20-22). They are commonly used to treat digestive system disorders because they are edible

Table 1. Scientific, native and Persian names of collected plants as well as used parts of plants and their applications

Row	Scientific name	Family	Persian name	Local name	Parts used for medicinal purposes	Some local use
1	<i>Achillea wilhelmsii</i> C.Koch	Asteraceae	Bumadaran	Golberenjas	Flowering branches	Carminative, anti-nausea
2	<i>Adonis aestivalis</i> L.	Ranunculaceae	Cheshm khrus tabestani	Cheshm khrus	Aerial parts	Laxative, treatment of kidney stones
3	<i>Ajuga chamaecistus</i> Ging. Subsp.	Lamiaceae	Labdisi butei	Samsak	Aerial parts	Antipyretic
4	<i>Ajuga chamaecistus</i> Ging. Subsp.	Lamiaceae	Labdisi butei	Samsak	Aerial parts	Antipyretic
5	<i>Alcea koelzi</i> I. Riedl.	Malvaceae	Khatmiye lorestani	Gol khatmi	Flowers, roots	Soothing a sore throat, laxative
6	<i>Allium ampeloprasum</i> L.	Amaryllidaceae	Tare kuhi	Tara koei	Leaves and bulbs	Intestinal and urinary antiseptic, anti-rheumatism, Spice
7	<i>Allium austroiranicum</i> R.M.Fritsch.	Amaryllidaceae	Lepu	Lopu	Stem	Cooling tempers, seasoning of dairy products
8	<i>Allium hirtifolium</i> Boiss.	Amaryllidaceae	Musir	Musir	Leaves and bulbs	Seasoning of dairy products, reducing blood fat and sugar
9	<i>Allium schoenoprasum</i> L.	Amaryllidaceae	Piyaz kuhi	Sirdeng	Leaves and bulbs	Seasoning of food and salad, disinfectants digestive helper,
10	<i>Allyssum dasycarpum</i> Steph.ex Willd.	Brassicaceae	Ghodume mive korki	Ghoduma	Seed	Anti-cough
11	<i>Allyssum inflatum</i> Nyarady.	Brassicaceae	Ghodume bad karde	Ghoduma	Seed	Anti-cough
12	<i>Anchusa italica</i> Retz.	Boraginaceae	Gavzaban	Gol gov zoun	Aerial parts	Sedation, treatment of respiratory tract inflammation, laxative
13	<i>Anthemis odontostephana</i> Boiss.	Asteraceae	Babune taj dandani	Babuna	Flower	Anti-hair loss
14	<i>Artemisia aucheri</i> Boiss.	Asteraceae	Dermane kuhi	Derma	Flower	Stomach ache reliever
15	<i>Arum conophalloides</i> Ky.ex schott.	Araceae	Sheypuri	Kardim	Leaves	Elimination of seasonal allergies, used in a soup
16	<i>Asperugo procumbens</i> L.	Boraginaceae	Alaf chasbak	Chasbaki	Aerial parts	Sedation
17	<i>Astragalus adscendens</i> Boiss. & Hausskn.	Fabaceae	Gaz khansar	Gina Gazi	Resin	Treatment of diarrhea, treatment of burns
18	<i>Astragalus gossypinus</i> Fisch.	Fabaceae	katira	Gina katira	Resin	Laxative, anti-cough and treatment of hoarseness
19	<i>Avena sativa</i> L.	Poaceae	Jo do sar	Jo do sar	Seed	Nourishing the body, relieving fatigue
20	<i>Biebersteinia multifida</i> DC.	Graniaceae	Adamak	Bahman pich	Bulb	Superficial wounds, stomach disorders (20)
21	<i>Bromus tectorum</i> L.	Poaceae	Alaf bam	Alaf bum	Aerial parts	Healing of painful wound
22	<i>Capsella bursa-pastoris</i> (L.)Medicus.	Brassicaceae	Kise Keshish	Chalchalak	Leaves	Carminative, stomachache (20)
23	<i>Cardaria draba</i> (L.) Desv.	Brassicaceae	Ozmak	Moche	Seed, leaves	Seasoning of food, diuretic
24	<i>Centaurea depressa</i> M.B.	Astraceae	Gole gandom	Gole gandom	Flower	Diuretic, treatment of kidney stones
25	<i>Centaurea persica</i> Boiss.	Astraceae	Gole gandome farsi	Gole gandom	Flower	Diuretic, treatment of kidney stones
26	<i>Cerasus brachypetala</i> Boiss.	Rosaceae	Albaloye kuhestani	Albalo koei	Fruit	Controlling of blood pressure
27	<i>Cichorium intybus</i> L.	Astraceae	Kasni	Kashni	Root and flower	Stomach tonic, appetizer
28	<i>Cnicus benedictus</i> L.	Astraceae	Kharmoghadas	Kharshotor	Leaves	Treatment of kidney stones and bladder
29	<i>Crataegus azarolus</i> L.	Rosaceae	Zalzalake zard	Sista	Aerial parts	Cardiovascular tonic
30	<i>Descurainia sophia</i> (L.)Schur.	Brassicaceae	Khakshir irani	Khakiji	Seed	Appetizer, anti-heat stroke, anti-cough
31	<i>Dracocephalum kotschyi</i> Boiss.	Lamiaceae	Zarin giyah	Zarovi	Aerial parts	Anti-arthritic and rheumatic
32	<i>Echinophora platyloba</i> DC.	Apiaceae	Khosharize	Khoshoruza	Leaves	Seasoning of dairy product
33	<i>Equisetum arvensis</i> L.	Equisetaceae	Dom asbe sahraei	Dom asbi	Aerial parts	treatment of kidney stones

Table 1. Continued

34	<i>Eremostachys laevigata</i> Bunge.	Lamiaceae	Sonbol biyabaniye rafie	Gandal	Aerial parts	Insect repellent, lowering livestock fever
35	<i>Eremostachys macrophylla</i> Montbr & Auch.	Lamiaceae	Sonbole biyabani	Mer giyah	Seed, aerial parts	Wounds healing, creation love and affection between husband and wife
36	<i>Eryngium billardieri</i> F. Delaroche.	Apiaceae	Zool	KharZool	Root, stem	Treatment of constipation (20)
37	<i>Fibigia macrocarpa</i> Medicus.	Brassicaceae		Pulak	Aerial parts	Treatment of migraine headaches and sinus infections
38	<i>Ficus carica</i> L.	Moraceae	Anjir kuhi	Anchichak	Fruit	Laxative, abdominal strengthening
39	<i>Fritillaria imperialis</i> L.	Liliaceae	Lale vajegun	Ashke maryam	Bulbs	Treatment of abscess
40	<i>Glycyrrhiza glabra</i> L.	Fabaceae	Shirin bayan	Mejoo	Root	Treatment of digestive disorders and stomach ulcers
41	<i>Grammosciadium scabridum</i> Boiss.	Apiaceae	Shevid kuhi	Koru	Aerial parts	Sedation, treatment of stomach disorders and
42	<i>Gundelia tournefortii</i> L.	Astraceae	Kangar khoraki	Kangar	Flower, stem	Treatment of mouth ulcers and rheumatism, seasoning of dairy
43	<i>Hypericum scabrum</i> L.	Hypericaceae	Gole raei dayhami	Davasimi	Aerial parts	Woman infection, analgesic
44	<i>Leontica leontopetalum</i> L.	Podophyllaceae	Trob shir	Alaf shakhi	Aerial parts	Treatment of epilepsy
45	<i>Linum album</i> K.ex Boiss.	Linaceae	Katan sefid	Chakamdari	Aerial parts	Salves for bone fracture
46	<i>Lotus corniculatus</i> L.	Fabaceae	Yonje zard	Yonja	Aerial parts	Laxative, increasing blood
47	<i>Lycopus europaeus</i> L.	Lamiaceae	Paye gorg	Pa gorg	Aerial parts	Treatment of nervous disorders and anxiety
48	<i>Malva sylvestris</i> L.	Malvaceae	Panirak	Noon bengeshti	Flower	Anti-cough, soothing sore throat
49	<i>Marrubium astracanicum</i> Jacq.	Lamiaceae	Ferasion banafsh	Orishom mori	Aerial parts	Relieving stomach pain, joint pain (20)
50	<i>Marrubium cuneatum</i> Russell.	Lamiaceae	Ferasion tebi	Orishom mori	Aerial parts	Relieving stomach pain, joint pain (20)
51	<i>Mentha longifolia</i> (L.) Hudson.	Lamiaceae	Poone	Pina	Aerial parts	Carminative, treatment of menstrual disorders, flavoring of dairy
52	<i>Morina persica</i> L.	Morinacea	Khar aroos	Berenjak	Seed	General tonic
53	<i>Morus alba</i> L.	Moraceae	Tute sefid	Tit	Fruit	Laxative, dry instead of sugar for diabetics
54	<i>Nasturtium officinale</i> (L.) R. Br.	Brassicaceae	Bolagh oti	Ghegi, Mama cham. cham	Aerial parts	Antiparasitic, warm and wet nature
55	<i>Ononis spinosa</i> L.	Fabaceae	Khar khar	Khar khar	Root	Diuretic
56	<i>Papaver dubium</i> L.	Papaveraceae	Khashkash harz	Khashkash harz	Flower	Anti-inflammation and abscess
57	<i>Parietaria judaica</i> L.	Urticaceae	Gush mush afshan	Marzanjush	Aerial parts	Menstruation disorder (20)
58	<i>Peganum harmala</i> L.	Zygophyllaceae	Esfand	Dinisht	Seed	Disinfecting the environment, removing the evil eye
59	<i>Phlomis olivieri</i> Benth.	Lamiaceae	Gush bare	Bale gush	Aerial parts	Seasoning of food and dairy
60	<i>Plantago lanceolata</i> L.	Plantaginaceae	Barhange sar nayzei	Bartang	Seed	Treatment of sinusitis and bronchitis
61	<i>Plantago major</i> L.	Plantaginaceae	Barhang	Bartang	Aerial parts, seed	Anti-inflammation, treatment of sinusitis and bronchitis
62	<i>Prangos acaulis</i> (DC.) Bornm.	Apiaceae	Jashire kutule	Feala	Aerial parts	Seasoning of yogurt and buttermilk
63	<i>Prangos ferulacea</i> (L.) Lindl.	Apiaceae	Jashir	Kharkul	Aerial parts	Analgesic, antiseptic
64	<i>Prangos uloptera</i> DC.	Apiaceae	Jashire sakhrei	Kharkul	Aerial parts	Carminative, invigorating
65	<i>Quercus brantii</i> Lindl.	Fagaceae	Balut	Balit	Fruit, bark	Plant skin for strengthening the stomach, plant fruit for treatment of diarrhea
66	<i>Rhamnus cornifolia</i> Boiss.&Hohen.	Ramnaceae	Gerduye kuhi	Gerdu koei	Bark	Skin problems
67	<i>Rheum ribes</i> L.	Polygonaceae	Rivas	Rivas	Stem	Strong laxative, anti-parasitic, appetizer
68	<i>Rosa damascena</i> Mill.	Rosaceae	Gol mohammadi	Gol sor	Flower	Constipation, seasoning of yogurt

Table 1. Continued

69	<i>Rumex crispus</i> L.	Polygonaceae	Torshak mavaj	Torshak	Aerial parts	As vegetable broth
70	<i>Salix alba</i> L.	Salicaceae	Bid	Bi	Bark, leaves	Jaundice treatment with leaves
71	<i>Salvia hydrangea</i> DC.	Lamiaceae	Maryam goliye tamashaei	Gol ovrune	Aerial parts	Treatment of colds, anti-stress
72	<i>Salvia reuterana</i> Boiss.	Lamiaceae	Maryam goliye esfahani	Shayna	Aerial parts	Treatment of colds
73	<i>Salvia virgata</i> Jacq.	Lamiaceae	Maryam goliye tarkei	Maryam goliye harz	Aerial parts	Sedative, carminative
74	<i>Sanguisobra minor</i> Scop.	Rosaceae	Toot rubahi	Gheyтарun	Root, leaves	Oral infections and wounds, aiarrhea (20)
75	<i>Satureja bachtiarica</i> Bunge.	Lamiaceae	Marze bakhtiyari	Marza koei	Aerial parts	Seasoning of food and salad
76	<i>Scorzonera mucida</i> Rech. f. Aell. & Esfand.	Astraceae	Shange nal asbi	Shang	Aerial parts	Useful for sensitive skin, seasoning of dairy products
77	<i>Scrophularia striata</i> Boiss.	Scrophulariaceae	Gole maymuniye shiyar dar	Narmouk	Leaves	Joint pains, bone pains (20)
78	<i>Silene conoidea</i> L.	Caryophyllaceae	Silene mazrae ruy	Kashkul	Flower	Treatment of infections and sore eyes
79	<i>Stachys inflata</i> Benth.	Lamiaceae	Sonboleye arghavani	Gol murashk	Aerial parts	General tonic in weakness, fever reducing
80	<i>Stachys lavandulifolia</i> Vahl.	Lamiaceae	Chai kuhi	Ovlile pashmi	Aerial parts	Sedatives, anti-cough
81	<i>Stachys pilifera</i> Benth.	Lamiaceae	Sonboleye mu dar	Marze kuhi	Aerial parts	Treatment of colds and constipation (20)
82	<i>Tanacetum parthenium</i> (L.) Schultz-Bip.	Asteraceae	Babune gavi	Mokhalesa	Aerial parts	Anti-inflammatory, anti-flatulence, hot nature
83	<i>Tanacetum polycephalum</i> Schult-Bip.	Asteraceae	Minaye sakhrezi	Daramey-e pus	Aerial parts	Gastroenteritis (20)
84	<i>Teucrium polium</i> L.	Lamiaceae	Maryam nokhodi	Chez	Aerial parts	Hypoglycemic, wound antiseptic
85	<i>Thymus daenensis</i> Celak.	Lamiaceae	Avishane denaei	Ovshum	Aerial parts	Treatment of cold and sinusitis, treatment of women infections
86	<i>Trifolium pratens</i> L.	Fabaceae	Shabdare chamanzari	Shovare sor	Flower branch	Anti sputum, anti-cough
87	<i>Trifolium repens</i> L.	Fabaceae	Shabdare sefid	Shovar	Flower branch	Treatment of dermatitis, itching
88	<i>Tripleurospermum disciforme</i> (C.A.Mey.) Schults-Bip.	Astraceae	Babune kazez	Mamasur suri	Aerial parts	Strengthen of stomach, antiseptic, seasoning of yogurt
89	<i>Valeriana sisymbryfolia</i> Vahl.	Valerianaceae	Sonbolotibe kuhestani	Sonbolotib	Aerial parts	Sedative
90	<i>Ziziphora capitata</i> L.	Lamiaceae	Kakuti sarsan	Pina koei	Aerial parts	Tonic for the digestive system

and pass through the gastrointestinal tract and have most contact with it (20).

Among 90 collected species, In addition to medical and culinary purposes, 11 species have also used to flavor dishes. These species include *Allium ampeloprasum* L, *Allium austroiranicum* R.M. Fritsch, *Allium hirtifolium* Boiss, *Allium schoenoprasum* L, *Arum conophalloides* Ky.ex schott, *Cardaria draba* (L.) Des, *Gundelia tournefortii* L, *Mentha longifolia* (L.) Hudson, *Rosa damascene* Mill, *Scorzonera mucida* Rech.f.Aell. & Esfand, *Tripleurospermum disciforme* (C.A.Mey.) Schults-Bip. 5 species include *Echinophora platyloba* DC, *Phlomis olivieri* Benth, *Prangos acaulis* (DC.) Bornm, *Rumex crispus* L, *Satureja bachtiarica* Bunge were only edible and no therapeutic properties was mentioned for them.

A number of interviewees expressed incredibly weird facts

about *Eremostachys macrophylla* Montbr & Auch with native name of Mehrgiyah. Local people said that, in the past, Mehrgiyah was used to create and develop love and affection between husband and wife. Plant powder or seed was poured into food and given to one of them. They said that Mehrgiyah consumer should avoid dairy products. In order to prevent consumer from dairy and fluids consumption, someone was asked to take care of them. Interviewees said that Mehrgiyah consumption make person thirsty and he starts to drink a lot of water and sore liquid and if he drink too much he will die after a month.

A story about its abuse which had been lead to someone death was also mentioned by one interviewee. Another non therapeutic application of this plant was insect repellent use.

Some of native plants in this region are become endan-

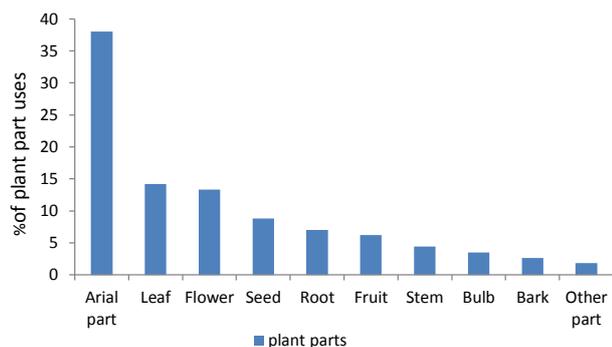


Figure 1. Different parts of plants used by local people of Dastena

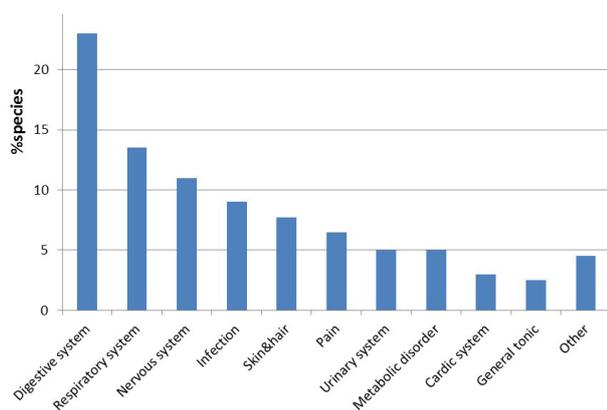


Figure 2. Percentage of species used for various diseases.

gered due to various factors like overgrazing and overharvesting. A few samples of *Crataegus azarolus* L, *Ficus carica* L. and *Quercus brantii* Lindl were reminded today and they are mainly found in private gardens with proper care. *Allium austroiranicum* Fritsch, *Allium hirtifolium* Boiss, *Allium schoenoprasum* L, *Dracocephalum kotschyi* Boiss, *Fritillaria imperialis* L, *Prangos acaulis* Bornm, and *Tanacetum parthenium* (L.) Schultz-Bip, were also declined considerably and samples are found in specific areas with no access for humans and livestock.

In conclusion, it can be seen that older people interviewed preferred to use herbal therapy and had considerable information but younger people preferred chemical ones and had less information. Dastena plants species have wide range of therapeutic applications in indigenous societies. Thus it is hoped and expected that this study brings valuable recognition and introduction about their therapeutic effects and applications and provides an appropriate management for their protection.

Authors' contributions

HM contributed to the conception and design of the work, drafting and revising the draft, approval of the final version of the manuscript, and agreed for all aspects of the work. SES contributed in the conception and design of the work, revising the draft, approval of the final version of the manuscript. MN contributed in the conception and design of the work. HM contributed in the translation and edition of article.

Conflict of interests

The authors declared no competing interests.

Ethical considerations

Ethical issues (including plagiarism, misconduct, data fabrication, falsification, double publication or submission, redundancy) have been completely observed by the authors.

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