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Original article

Ethnobotanical survey of medicinal plants used traditionally in two villages of Hamedan, Iran

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Abstract

A notable amount of medicinal plants grow in Iran and local communities in different parts of the country have developed a deep knowledge of various uses of plants during their old history. Several ethnobotanical studies have been conducted by the Traditional Medicine and Material Medica Research Center (TMRC) to investigate the use of medicinal plants by local people. Some of these studies have been carried out in Kohgiluye va Boyer Ahmad, Azarbayjan-e-Sharghi and Golestan provinces. These ethnobotanical data have been collected by semi-structured interviews. In the present study, two villages of Hamedan province were investigated and eleven informants were interviewed. Our results have presented 45 traditionally used plant species, belonging to 23 plant families and 39 genera. Asteraceae and Fabaceae were the dominant locally used families. The plants were used both for medicinal and non-medicinal purposes and the most treated problems were digestive disorders and infections.

Keywords*:* ethnobotany, Hamedan, Iran, medicinal plants

Introduction

Iran has a long medical tradition and traditional learning of plant remedies. The country encompasses such diverse climates and geographical regions that results in a wide distribution of medicinal plant species while each tribe uses its own plants and has its own customs [1]. Hamedan province lies in an elevated region with the 'Alvand' mountains located in Zagros mountain range, running from the North-West to the South-West and it has a cold, mountainous climate, with snowfall in winter. The vast plains of Hamedan located in the North and North-East of the province, are influenced by strong winds that almost last throughout the year. Heavy snowfall is common during winter and this can persist for periods of up to two months [2]. Hamedan is famous for possessing one of the oldest civilizations of Iran. It owns a brilliant

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reputation in traditional medicine and has been one of the major suppliers of medicinal herbs.
The importance of medicinal plant sources for the people of some countries such as Iran is due to their contribution to the welfare of the people through the health care program [3]. Besides, medicinal plants are considered as rich sources of ingredients which can be used in drug development and synthesis. They suggest a promising future for research purposes since there are about half million plants around the world and many of them have not been investigated yet. Moreover, plants play a critical role in the development of human cultures around the world [4].
Ethnobotany is the study of how people of a particular culture and region use indigenous plants. Ethnobotanists explore how plants are used for such things as food, shelter, medicine, clothing, hunting, and religious ceremonies [5].
The Traditional Medicine and Material Medica Research Center (TMRC) has conducted sveral ethnobotanical studies previously to study the uses of medicinal plants by people of Kohgiluye va Boyer Ahmad, Azarbayjan-e-Sharghi and Golestan provinces, Iran [6]. In the present study, the ethnobotanical knowledge of medicinal plants used by people in two village of Hamedan, Iran, were investigated.

Experimental
The present research is part of a more extensive study on the use and perception of herbal remedies in Hamedan, Iran. It has been conducted in the two villages "Ebrou and Yangijeh" with semi-structured interviews between June and July 2012. These villages are located at the altitude of 1762-2498 m above sea level, Hamedan province, Iran.
Eleven men, between 47 and 77 years of age, were interviewed. One local person as a native guide accompanied the group. During the study, the information including the scientific name, family, local name, plant part, kind of use, method of preparation, administration rout, dosage form, use record and voucher number were collected (table 1). Use records were classified as mentioned in "use categories" by Cook [7]. The plant specimens were collected during the study. They were dried and taxonomically identified by botanists. The voucher samples were maintained at the Herbarium of Traditional Medicine and Materia Medica Research Center (TMRC), Shahid Beheshti University of Medical Sciences, Teharan, Iran, for future reference.

Results and Discussion
A total of 42 medicinal plant species used for treating about 48 health problems were presented in this survey (table 1). The most utilized plant families were Asteraceae and Fabaceae with 13.6% and Rosaceae and Lamiaceae with 11.36% of the total plants. In previous ethnobotanical studies which had been carried out in Iran in Hormozgan [8], Kohgiluyeh va Boyer Ahmad [9] and Esfahan (Mobarakeh), Iran [10], Asteraceae and Lamiaceae were the most used families.
It seems that more plants from Asteraceae family have been used for medicinal purposes compared to other plant families because of their wide range of biologically active compounds which lead to medicinal properties and also because of being one of the largest families in the plant kingdom [11].
Our results have shown that several parts of plant species have been used for medical purposes. The most widely used plant parts were the leaves followed by flowers and aerial parts. One reason explaining the use of the leaves has been assumed to be the accumulation of tannins and alkaloids in the leaves [12] which may be responsible for their medicinal properties [13,14].
The most common method of preparation and the most administered routs were decoction and oral use as syrups, respectively.
From the 45 traditionally used plant species belonging to 23 plant families and 39 genera reported in this paper, 36 have demonstrated to possess both medicinal and non-medicinal uses. Two species including *Rumex acetosa* L. and *Heracleum persicum* Desf. ex Fischer have been

Table 1. Medicinal plants used in two villages of Hamedan

No.	Scientific name	Family	Voucher No.	Local name (in phonetics)	Part used	Method of preparation	Administration route	Disorders treated/ medicinal effects
1	*Achillea biebersteinii* Afan	Asteraceae	3419	/dæxiːle/	Flower	Extraction	Oral	Hypothermia
					Flower	Decoction	Oral	Carminative, Stomachache
					Flower	Infusion	Oral	Fever, Hypoglycaemia
					Leaf	Extraction	Oral	Hypothermia
					Leaf	Infusion	Oral	Infection Hypoglycaemia
					Root	Extraction	Oral	Hypothermia
					Whole Plant	Decoction	Oral	Food poisoning, Carminative Inflammation
2	*Achillea wilhelmsii* C. Koch	Asteraceae	3389	/buːmaːdærʌn/	Aerial Part	Extraction	Oral	Stomachache, Backache
3	*Alcea calverti* (Boiss.) Boiss.	Malvaceae	3435	/gɔːl-e xætmɾ/	Flower	Extraction	Oral	Infection
					Flower	Infusion	Oral	Asthma, Coughs, Infection
					Flower	Maceration	Oral	Coughs, Respiratory system disorders
4	*Alcea tarica* Pakravan. & Ghahremani	Malvaceae	3438	/gɔːl-e xætmɾ/	Flower	Extraction	Oral	Joint pains
					Flower	Decoction	Oral	Coughs
					Flower	Infusion	Oral	Fever, Respiratory system disorders , Coughs
					Flower	Decoction	Topical	Respiratory system disorders
5	*Alcea kurdica* Alef.	Malvaceae	3392	/gɔːl-e xætmɾ/	Flower	Infusion	Oral	Carminative in Veterinary Coughs
6	*Allium iranicum* (Wendelbo) Wendelbo	Alliaceae	3440	/siːr-e væhʃr/	Leaf	Infusion	Oral	Carminative
					Bulb	Decoction	Oral	Hypothermia Kidney stone
7	*Amygdalus communis* L.	Rosaceae	3457	/bɑːdɑːm/	Seed	Powdered	Oral	Hypoglycaemia Osteoporosis
					Seed	Powdered	Topical	Cramps, Joint pains

No.	Scientific name	Family	Voucher No.	Local name (in phonetics)	Part used	Method of preparation	Administration route	Disorders treated/ medicinal effects
8	*Amygdalus lycioides* Spach	Rosaceae	3444	/bɑ:dɑ:m-e væhʃr/	Fruit	Powdered	Oral	Hyperlipidaemia
					Seed	Powdered	Oral	Hypoglycaemia
9	*Anchusa azurea* Mill.	Boraginaceae	3432	/gɔ:lku:/	Flower	Decoction	Oral	Nervous system disorders
					Root	Decoction	Oral	Asthma
10	*Armeniaca vulgaris* Lam.	Rosaceae	3456	/zærda:lu:/	Fruit	Powdered	Oral	Anthelmintic
11	*Centaurea solstitialis* L.	Asteraceae	3423	/ʧæɜertekʌnr/	Whole Plant	Decoction	Oral	Kidney stones
12	*Ceratocephalus falcata* (L.) Pers	Ranunculaceae	3448	/peykɔ;L/	Aerial Parts	Decoction	Oral	Kidney stones
					Spine	Decoction	Oral	Kidney disorders
13	*Chenopodium album* L.	Chenopodiaceae	3439	/sælmʌntære/	Leaf	Powdered	Oral	Carminative, Hyperthermia
14	*Chenopodium botrys* L.	Chenopodiaceae	3424	/kæk kɔ:ʃ/	Leaf	Powdered	-	Insect repellant
15	*Cicer anatolicum* Alef.	Fabaceae	3443	/ʌlbʌlu væhʃ	Fruit	Decoction	Oral	Kidney stones
					Fruit	Maceration	Oral	Constipation
					Whole Plant	Decoction	Oral	Diarrhea
16	*Citrullus lanatus* (Thumb.) Matsum & Nakai	Cucurbitaceae	3426	/hendevɑ:ne deym/	Fruit	Cooked	Oral	Kidney stone
17	*Elaeagnus angustifolia* L.	Elaeagnaceae	3452	/serendʒek/	Fruit	Powdered	Oral	Diarrhoea
					Seed	Powdered	Oral	Osteoporosis
18	*Falcaria vulgaris* Bernh.	Apiaceae	3446	/ɤæzejʌæɤr/	Leaf	Powdered	Topical	Wounds
19	*Fumaria asepala* Boiss.	Fumariaceae	3427	/ʃʌhtære/	Leaf	Powdered	Topical	Sores
20	*Galium verum* L.	Rubiaceae	3430	/ælæfʤu:ʃ/	Aerial Parts	Powdered	Topical	Wounds
21	*Glycyrrhiza glabra* L.	Fabaceae	3395	/ʃi:rrn bæyʌn/	Latex	-	Oral	Stomachache
					Root	Cooked	Topical	Fractures
					Root	Decoction	Topical	Fractures
					Root	Decoction	Oral	Gastric ulcer, Stomachache
22	*Ligustrum ovalifolium* Hassk.	Oleaceae	3451	/bærg-e nɔ:/	Flower	Infusion	Oral	Vomiting, Diarrhea
					Seed	Powdered	Oral	Hypercholia

No.	Scientific name	Family	Voucher No.	Local name (in phonetics)	Part used	Method of preparation	Administration route	Disorders treated/ medicinal effects
23	*Linum album* Ky. ex Boiss.	Linaceae	3458	/kæm/	Aerial Parts	Powdered	Topical	Warts
					Leaf	Powdered	Topical	Fractures
					Stem	Powdered	Topical	Fractures
24	*Malva sylvestris* L.	Malvaceae	3422	/tuːle/	Aerial Parts	Powdered	Oral	Hair Loss
					Leaf	Decoction	Oral	Constipation
25	*Medicago sativa* L.	Fabaceae	3449	/jɔːndʒe/	Leaf	Extraction	Oral	Stomachache
					Leaf	-	Topical	Coagulation
					Whole Plant	Extraction	Oral	Infection
26	*Melilotus officinalis* (L.) Desr.	Fabaceae	3433	/dæle jɔːndʒe/	Aerial Part	Decoction	Oral	Inflammation, Hypercholia, Hypoglycemia, Hypotension
27	*Mentha longifolia* (L.) Hudson	Lamiaceae	3394	/puːne/	Stem	Extraction	Oral	Stomachache
					Aerial Parts	Extraction	Oral	Hypertension, Carminative
					Aerial Parts	Powdered	Oral	Diarrhea
					Flower	-	Oral	Food poisoning
					Flower	Extraction	Oral	Fever, Stomachache, Vomiting
					Flower	Powdered	Oral	Stomachache
					Leaf	Extraction	Oral	Fever, Vomiting
					Leaf	Decoction	Oral	Infection, Snake bites
28	*Mentha spicata* L.	Lamiaceae	3393	/nænɑː/	Aerial Parts	Extraction	Oral	Stomachache
					Flower	Extraction	Oral	Food poisoning
					Leaf	Infusion	Inhalation	Colds
29	*Ononis spinosa* L.	Fabaceae	3418	/gælem bʌrmʌdʒr/	Leaf	Decoction	Oral	Stomachache
					Leaf	Extraction	Topical	Skin
					Root	Decoction	Topical	Pains
30	*Orchis palustris* Jacq.	Orchidaceae	3450	/sæəlæb/	Leaf	Powdered	Oral	Respiratory system disorders

No.	Scientific name	Family	Voucher No.	Local name (in phonetics)	Part used	Method of preparation	Administration route	Disorders treated/ medicinal effects
31	*Ornithogalum brachystachys* C. Koch	Liliaceae	3437	/gi:lɑ:ʁe/	Leaf	cooked	Oral	Anthelmintic, Infection
32	*Papaver argemone* L.	Papaveraceae	3421	/ʁu:r ʧæŋr/	Flower	Decoction	Oral	Headache
					Flower	Infusion	Oral	Coughs
33	*Persica vulgaris* Mill.	Rosaceae	3447	/hɔ:lu:/	Leaf	Powdered	Anal	Haemorrhoids
34	*Plantago lanceolata* L.	Plantaginaceae	3420	/rægki:ʃe/	Seed	Powdered	Oral	Coughs
					Leaf	Powdered	Anal	Haemorrhages
					Leaf	Powdered	Topical	Infections, Wounds, Pains
35	*Sanguisorba minor* Scop.	Rosaceae	3453	/reveleks/	Root	Decoction	Oral	Haemorrhoids, Infections
					Bulb	Decoction	Oral	Hypothermia
36	*Senecio vulgaris* L.	Asteraceae	3454	/kɑ:hu ku:hr/	Whole Plant	Decoction	Oral	Drug dependency
37	*Sisymbrium brassiciforme* C. A. Mey	Brassicaceae	3436	/xɑ:kʃi:r/	Seed	Maceration	Oral	Fever, Hyperthermia
38	*Stachys lavandulifolia* Vahl.	Lamiaceae	3431	/tulkrʤe/	Aerial Part	Infusion	Oral	Tonic, Headache
					Flower	Infusion	Oral	Hypertension, Hyperlipidaem, Stomachache, Infection, Hypoglycaemia
					Flower	Decoction	Oral	Hypothermia, Gastric ulcer, Headache
					Flower	Infusion	Oral	Hypothermia, Carminative
39	*Thymus lancifolius* Celak.	Lamiaceae	3416	/ʌzɔ:rbe/	Aerial Part	Extraction	Oral	Stomachache
					Aerial Part	Infusion	Oral	Hypothermia, Stomachache
					Aerial Part	Powdered	Oral	Diarrhoea
					Leaf	Extraction	Oral	Carminative
					Leaf	Decoction	Oral	Gastric Ulcer,

No.	Scientific name	Family	Voucher No.	Local name (in phonetics)	Part used	Method of preparation	Administration route	Disorders treated/ medicinal effects
								Inflammation
					Leaf	Infusion	Oral	Hypothermia, Carminative
					Leaf	Powdered	Oral	Diarrhoea
					Root	Decoction	Oral	Hypothermia, Gastric Ulcer
40	*Tragopogon rechingeri* M. Ownbey	Asteraceae	3428	/ʃeng/	Leaf	Cooked	Oral	Anaemia
					Leaf	Powdered	Oral	Anaemia
41	*Tripleurospermum disciforme* (C. A. Mey.) Schultz	Asteraceae	3429	/ri:ʃe gæzr/	Flower	Decoction	Oral	Kidney stone
42	*Urtica dioica* L.	Urticaceae	3445	/gæzæne/	Aerial Part	Extraction	Oral	Stomachache
					Aerial Part	Decoction	Oral	Prostate, kidney Stone, Stomachache, Hypoglycaemia
					Leaf	Extraction	Oral	Hypoglycaemia
					Leaf	Decoction	Oral	Kidney stone, Hypoglycaemia
					Leaf	Infusion	Oral	Hypoglycaemia
					Leaf	Powdered	Oral	Hypoglycaemia
					Leaf	Powdered	Topical	Bursitis, Pain

recorded only as edible plants.

The results have shown that *Sophora alopecuroides* L. had been used as insecticide and fungicide, *Elaeagnus angustifolia* L. and *Ononis spinosa* L. for producing colors and *Alcea tarica* Pakravan. & Ghahremani as detergent. One species *Alcea kurdica* Alef. had been used in veterinary for digestive problems in animals. Most species of the present study such as *Thymus lancifolius* Celak. and *Achillea biebersteinii* Afan. have been used for feeding animals in these villages. This might result in a great threatening for these plants and special attention is needed to protect them from over harvesting or grazing.

Several ethnobotanical surveys, useful network information as well as experienced herbal medicine experts have been focused on ethnobotany in Iran. The ethnobotanical survey of Hamedan province allowed us to document the persistency of a number of traditional uses of medicinal plants, while most of them are unique and original and potentially interesting as a basis for future research works.

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Declaration of interest

The authors declare that there is no conflict of interest. The authors alone are responsible for the content and writing of the paper.

References

[1] Ahvazi M, Khalighi-Sigaroodi F, Charkhchiyan MM, Mojab F, Mozaffarian VA, Zakeri H. Introduction of medicinal plants species with the most traditional usage in Alamut region. *Iran J Pharm Res*. 2012; 11(1): 185-194.

[2] Reyahi-Khoram M, Jafary M, Bayati M, Reyahi-Khoram R. Plants and animals diversity in Buqaty Mountain Area (BMA) in Hamadan Province, Iran. *Biodiversitas.* 2012; 13(4): 190-194.

[3] Tilahun-Teklehaymanot T, Giday M. Quantitative ethnobotany of medicinal plants used by Kara and Kwego semi-pastoralist people in lower Omo River Valley, Debub Omo Zone, Southern Nations, Nationalities and Peoples Regional State, Ethiopia. *J Ethnopharmacol.* 2010; 130(1): 76-84.

[4] Reyahi-Khoram M, Karami-Nour M. A case study on environmental evaluation and planning for range and forest management by means of geographic information system (GIS). *J Agric Sci Technol.* 2010; 4(6): 57-62.

[5] Nasir TW, Mohammed A M, Nandikola JR. Ethnobotanical survey of medicinal plants in the Southeast Ethiopia used in traditional medicine. Spatula DD. 2011; 1(3):153-158

[6] Mosaddegh M, Esmaeili S , Naghibi F, Hamzeloo-Moghadam M , Haeri A, Pirani A, Moazzeni H. Ethnomedical survey and cytotoxic activity of medicinal plant extracts used in Kohgiluyeh and Boyerahmad province Iran. *J Herbs Spices Med Plants*. 2012; 18(3): 211-221.

[7] Cook FEM. *Economic Botany Data Collection Standard*, Kew: Royal Botanic Gardens, 1995.

[8] Safa O, Soltanipoor MA, Rastegar S, Kazemi M, Nourbakhsh Dehkordi Kh, Ghannadi A. An ethnobotanical survey on Hormozgan province, Iran. *Avicenna J Phytomedicine*. 2013; 3(1): 64-81.

[9] Mosaddegh M, Naghibi F, Moazzeni H, Pirani A, Esmaeili S. Ethnobotanical survey of herbal remedies traditionally used in Kohgiluyeh va Boyer Ahmad province of Iran. *J Ethnopharmacol.* 2012; 141(1): 80-95.

[10] Mardaninejad Sh, Janghorban M, Vazirpour M. Collection and identification of medicinal plants used by the indigenous people of Mobarakeh (Isfahan), South-Western Iran**.** *J Herb Drugs*. 2013; 4(1): 23-32.

[11] Thomas E, Vandebroek I, Sanca S, Van Damme P. Cultural significance of medicinal plant families and species among the Quechua farmers in Apillampampa, Bolivia. *J Ethnopharmacol.* 2009; 122: 60-67.

[12] Okoegwale EE, Omefezi JU. Some herbal preparations among the people of Isoko Clan of Delta State, Nigeria. *J Appl Sci*. 2001; 4: 2350-2371.

[13] Mirdeilami SZ, Barani H, Mazandarani M, Heshmati GA. Ethnopharmacological survey of medicinal plants in Maraveh Tappe region, North of Iran. *Iran J Plant Physiol.* 2011; 2(1): 327-338.

[14] Miraldi E, Ferri S, Mostaghimi V. Botanical drugs and preparations in the traditional medicine of West Azarbaijan (Iran). *J Ethnopharmacol*. 2001; 75: 77-87.