

Ethno Botanical Survey of Herbal Remedies Traditionally Used in North Khorasan Province of Iran

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Abstract

This study was carried out in north east of Iran to collect the information of traditionally used medicinal plants by the local communities. A total of 10 medicinal plants belonging to 6 families, have a traditional medicinal role in the treatment of severe cold, kidney disorder, hysteria, nervous affection, aroma, febrifuge, jaundice, rheumatism, gout, urinary infection, asthma and fever. Analysis showed that Lamiaceae were the most dominant families of medicinal plants in Darkesh area (18%). The most used part of the plants was the leaves at 50% and Decoction was the most popular form of treatment used. Some of the medicinal plants (*Kakoti*, *Zereshk Kuhi*, *Shir Khesht*) discussed in this article have new implications presented for the first time in northeastern Iran. Therefore, these findings are important for the management of aroma, febrifuge and jaundice. Local communities, especially, forest dweller heavily use these traditionally available medicinal plants for health and believe that these are easily available, less expensive and have no side effects. But Chemical medicines, because of their harmful and irreversible effects on people, are slowly being replaced by active substances of plants. Medicinal plants are widely used for treatment in the area and the result of this study showed that the region has great potential for increasing medical tourism.

Keywords: Traditional knowledge; Disease; Local community; Medical tourism; Iran

Introduction

The use of traditional and medicinal plants in developing countries is widely attracting attention as the main basis for maintaining health. Maintaining health through traditional medicine in general and utilization of medicinal plants in particular is almost as old as the history of humankind. According to Huat's research, when tourists visit a particular place, they stay locally and participate in free time activities at their leisure; therefore, the development of medical tourism could bring considerable benefits to the countries, in addition to their medical services. Iran is a growing one of the developing countries which has growing destination for medical tourism. In 2012, 30,000 people visited Iran to receive medical treatment. Most health tourists were from Azerbaijan, Turkmenistan, Iraq, Turkey, Kuwait, Oman, India and Pakistan. Last year, more than 4.5 million foreign tourists spent \$9 billion in Iran and created jobs for 2.5 million people directly or indirectly. Tourism is up by a million people on 2011; people being attracted by diversified climates as well as numerous tourist and historical attractions. The number of Omani nationals visiting Iran for medical tourism is on the rise with around 5,000 Omanis seeking treatment in the country every year, according to the Iranian Embassy. Medical tourists from neighboring states mostly come for transplants, ophthalmology, orthopedics and dentistry.

About 80% of the population of most developing countries still use traditional medicines derived from plants for treating human diseases. There is no specific statistics of Traditional Medicine and different schools of supplementary medicine and Traditional Medicine schools in Iran. However, a study in Esfahan city in 2000 showed that in the last 5 years, 62.5% of individuals had already used one of the substitute medicine methods at least once and using medicinal herbals, prayer therapy, cupping and acupuncture were more often used in 76.6%, 10.1%, 9.5% and 5.5%; respectively [1].

It has been estimated that there are between 35,000 to 70,000 plant species that have been used at one time or the other in one culture or another for medicinal purposes in the world. At least 6,500 species are used in Asia alone as home remedies for various ailments [2]. Iran has 80% of the world medicinal herbs. It has around 8000 species of plant life and researches indicate that more than 2300 species have remedial characteristics or can be used as cosmetic products (mehrnews.com). Today, medicinal plants are still widely used in Iran. Among different ailments, jaundice, aroma and febrifuge are the commonest ailments in Iran and herbal remedies (*Kakoti*, *Zereshk Kuhi*, *Shir Khesht*) are used to heal them [3].

Traditional knowledge transmitted verbally from one generation to another, and valuable information about medicinal plants is easily lost if not maintained in written form. Moreover, and for the first time in any region of Iran, the medicinal plants of the study area (Figure 1) are classified according to biological and chorological characteristics as well as ecological properties. It is necessary to know habitats (Figure 2) ethno-medicinal plants, as such knowledge is a vital to identify medicinal plants in each area. The aim of this article is aware of the importance of medicinal plants in providing primary health care to Iranian people. Also, the current study aimed to identify the medicinal plants used to treat prevalent disease in Darkesh, North khorasan Iran.

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Material and Method

Darkesh forest region is placed in the North of Khorasan Province of Iran. Its elevation ranges from 900 m to more than 2030 m a.s.l. and consists of about 22,500 ha (Figure 1). The land-use consists of: forest

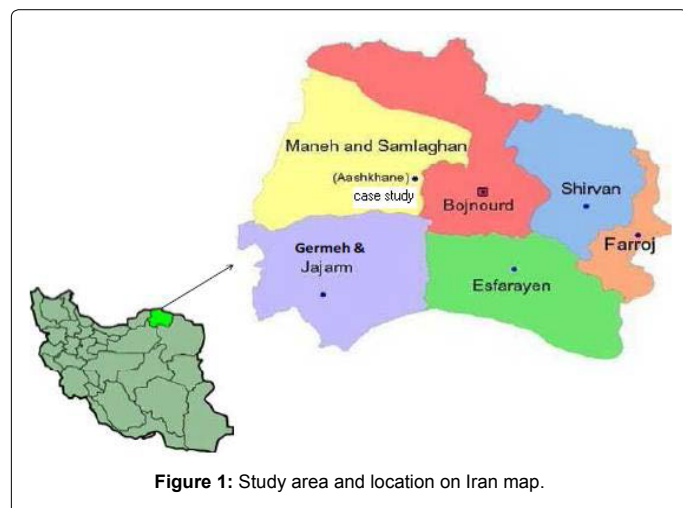


Figure 1: Study area and location on Iran map.

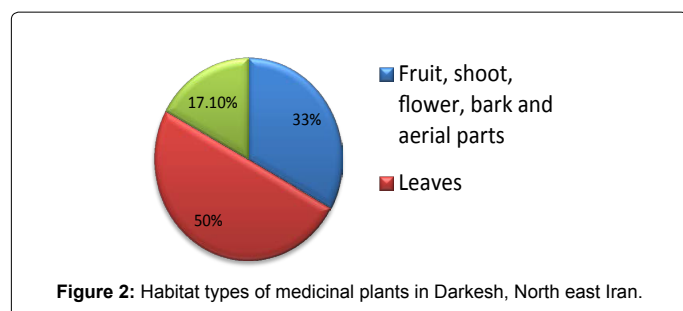


Figure 2: Habitat types of medicinal plants in Darkesh, North east Iran.

(45%), rangelands (35%), arable lands (12%), settlement areas (5%) and other (3%). The inhabitants are approximately 1,200 people having a demographic decline in the last decades. The farms in the area are about 0.5 ha and the main crops grown are wheat and barley. The climate of the region is in the range of cold-humid climate according to Amberger coefficient.

Methods

Plant species were collected from field sites that representing major habitats of study area. Surveys were managed during active growth periods (from 21 March to 21 September) in 2013 and 2014. The following plants (Table 1) were collected and identified with the help of standard flora [4-10] and preserved in the form of Herbarium for correct identification of plants.

Results

The results of this study demonstrate that Darkesh area as a remarkable tourist site has rich medicinal plants that play a crucial role in human healthcare in Iran.

A total of 10 medicinal plants were found which were used traditionally by local communities to cure human disease are given in Table 1 and Figure 3. The vegetation in this area is very diverse. These 10 medicinal plants belong to 6 Families (4 plant belong to Lamiaceae, 2 plant belong to Asteraceae and 4 plants belongs to Berberidaceae, Rosaceae, Fagaceae, and Apiaceae family) and consist of herbs, grasses, tree, shrub and perennial. Different parts of plants were having different medicinal values and were used to cure different disease. Out of 10 medicinal plants, 1 plant species was having Gum as medicinal part, 5 species containing fruit, flower, shoot and bark as medicinal, leaves of 6 species, and 2 plant species were identified as having medicinal value in whole plant body (Figure 2). The local people of the region usually utilize every part of the plant. The use of a medicinal plant part depends on the plant habit and user's needs. The most frequently used plant parts in the preparation of herbal remedies were leaves (50%),

Taxon name	Plant family	Local name	Habitat	Growth form	Frequency	Parts used	Medicinal uses, remedies	Plant status
<i>Achillea biebersteini</i>	Asteraceae	Boomadaran (per)	herb	perennial	Scattered	Shoots, flowers	Tea of shoots advised for severe colds and decoction of the flowers is good for kidney disorder	Indigenous
<i>Berberis integerrima</i>	Berberidaceae	Zereshk Kuhi	Woodland	Shrub	Scattered	Root bark Fruit	Dried root bark given orally as body tonic, Hypoglycemic, Antihypertensive, Blood and Liver Cleanser, Jaundice, Febrifuge, Anti gout	Indigenous
<i>Cotoneaster multiflora</i>	Rosaceae	Shir Khesht	herb	Perennial	Scattered	Manna	Manna advised for Jaundice, Febrifuge	Indigenous
<i>Dracocephalum kotschti</i>	Labiatae	Zarin giah (per)	herb	Perennial	Scattered	Aerial parts	Decoction advised for fever, analgesic, rheumatism	Indigenous
<i>Quercus sp</i>	Fagaceae	Mazou	Woodland	Tree	Common	Bark, leaf, Fruit, oak apple	Powdered fruits in urinary infection	Indigenous
<i>Tanacetum budjnurdense</i>	Asteraceae	Baboone (per)	herb	Perennial	Scattered	Flowers, leaves	Infusion advised for gout, expelling worm in children, hysteria and nervous affections	Indigenous
<i>Teucrium chamaedrys</i>	Lamiaceae	kamazerius	rocky habitats	perennial	Common	Aerial parts	Anti-inflammatory, Aperients, Astringent, Carminative, Diaphoretic, Digestive, Diuretic Stimulant	Indigenous
<i>Thymus transcaspicus</i>	Lamiaceae	Avishan	Mountain grassland	Perennial	Common	Shoots	Tea of shoots advised for treating pain and fever	Indigenous
<i>Ziziphora persica</i>	Lamiaceae	Kakoti (per.)	herb	Perennial	Common	Leaves	Edible medicinal plant advised for aroma and flavor	Indigenous
<i>Ferula assafoetida</i>	Apiaceae	Anghuzeh	herb	Perennial	Common	Gum	Gum advised for Carminative, asthma, hiccup	Indigenous

Table 1: 10 of the most common medicinal plants of the Darkesh area, Iran with their medicinal properties, and biological, ecological and chorological characteristics.

followed by fruit (33%), seeds, flowers, bark and whole plants (33%) and Gum (17.1%).

Among the 10 indigenous medicinal plants are indigenous to the area, the majority of species is common (50%) or scattered (50%) in the study area. More than 60% of the medicinal plant species encountered in this area occur in natural habitats, 40% occurred in woodland and mountain grasslands (Figure 2).

Discussion

This study was concerned with the wide variety of diseases treated using the medicinal plant species found in the Darkesh area for the first time in Northeast of Iran. In this study, 10 medicinal plants used for treatment of gout, pain and fever, hysteria and nervous affections, urinary infection, Carminative, asthma, hiccup, rheumatism and hysteria and nervous affections were identified. A number of diseases are treated by many medicinal species, indicating the predominance of those specific conditions in the community. These included diseases related to pain, fever and cold (4 species), worm infestation and urinary infection (3 species) jaundice, febrifuge and aroma (1 species). This study was concerned with the wide variety of diseases treated using the medicinal plant species found in the Darkesh area in Iran (Figures 3 and 4). Medicinal plants and remedies include;

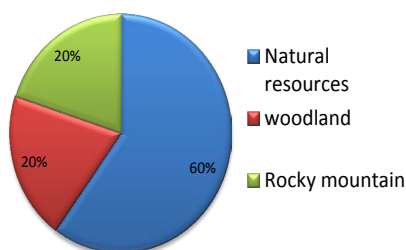


Figure 3: *Achillea*, *Cotoneaster*, *Ferula*, *Thymus*, *Berberis*, *Dracocephalum*, *Ziziphora*, *Tanasetum*, *Teusium*, *Quercus* in Darkesh North Khorasan, Iran.

Achillea biebersteinii, commonly known as “Qaysoum” in Arabic, is one of the predominant *Achillea* species in the Mediterranean region. It is a medicinal plant has essential oils, polyphenolic compounds, several types of flavonoids, sesquiterpene lactones, betaine, acetylene compounds, resin, tannins, phosphates, nitrates, potassium salts and organic acids. According to Persian traditional literature, *Achillea biebersteinii* have been used in medicine for treatment of hemorrhage, pneumonia, rheumatic pain and in wound healing [11]. Herbal teas prepared from *Achillea* species are traditionally used for abdominal pain and flatulence.

Berberis integerrima (Berberidaceae) is an important medicinal shrub that grows in most regions of Iran, especially in northern and northeast regions of the country. It has much medicinal properties and is used in the treatment of gastrointestinal disease, bleeding, swollen gums teeth, sore throat, fever, bile, malaria, hepatitis, inflammation and diarrhea. In addition, it has an important role in reducing blood cholesterol.

The genus *Cotoneaster* (Rosaceae) comprises 85 species, which are predominately distributed around the Asia [12].

Several species of *Cotoneaster* are used to medicinal purposes such as cardiotoxic, diuretic, expectorant and antiviral in different countries [13,14]. *Cotoneaster multiflora* called Shir Khesht is perennial herbs and grows in Iran. The medicinal uses of the species is advised for Jaundice, Febrifuge.

Dracocephalum kotschyi belongs to Labiatae family and is known as *badarnjboye* in Persian. The aerial parts of this plant continue to be traditionally used to treat rheumatoid arthritis in Iran [8].

Quercus spp showed wound healing activity in excision, incision, and dead space wound models with improvement of tensile strength, percentage of wound closure, complete epithelization, and size of scar [15]. Furthermore, *Q.spp* fruits exhibited significant wound healing activity in an excision wound model with enhancement of collagen deposition and antioxidant activity [16]. *Q. spp* fruits



Figure 4: Use of different plant parts in the preparation of remedies.

showed antibacterial activity, in addition, *Q. ilex* leaves demonstrated antioxidant activity *in vitro* [17].

One of species from the wide range of Asteraceae family, which has been found many applications both in folk and modern medicine, is *Tanacetum budjnurdense*. Extracts from this species have been used for treating many health problems such as digestive disorders, rheumatism, fever and ulcers [18]. It acts anti-inflammatorily [2,18,19] and also has been reported to have antimicrobial, antitumor and antioxidant properties [19].

The genus *Teucrium* (Germander) belongs to the family Lamiaceae, within the subfamily Ajugoideae. The Labiatae family (Lamiaceae) is one of the largest and most distinctive families of flowering plants, with about 220 genera and almost 4000 species worldwide. They are mostly perennial herbs, shrubs or subshrubs, while *T. chamaedrys* is an herbaceous annual herb. The species of this genus are widespread on all continents of the world, and a very large number of species are present in the Mediterranean. The most popular species of this genus are *T. chamaedrys*, *T. montanum* and *T. polium*, used in treatment of digestive and respiratory disorders, abscesses, gout and conjunctivitis, in the stimulation of fat and cellulite decomposition, and possess antiinflammatory, antioxidative, antimicrobial, antidiabetic and antihelmintic effects. However, their most significant therapeutic effect was the elimination of some problems in the digestive tract [20,21].

Thymus genus, which belongs to Lamiaceae family, is among the most popular plants throughout the world, commonly used as herbal teas, flavoring agents (condiment and spice), and aromatic and medicinal plants [22]. Furthermore, the essential oil and extract of different *Thymus* species are widely used in pharmaceutical, cosmetic, and perfume industry, as well as for flavoring and preservation of several food products [23]. Leaves and aerial part of this genus have also been used as herbal tea, antiseptic, antitussive, carminative, and flavoring agents [24].

Ziziphora persica L. is a common teapot herb. This species is available in local market or in Attaris (traditional medicinal plant stores). Four species of plant called *Ziziphora clinopodioides* (mountains' Kakoty) *Ziziphora capitata*, *Ziziphora persica* and *Ziziphora tenuir* have been identified in Iran [11]. Among the healing properties of this plant sputum collection, carminative and stomach reinforcement can be named. In some areas the dust of its grains mixed with honey is used to treat dysentery [11]. In different areas, the plant's powder is used as a garnish on yogurt and dairy products [25]. Also, it is used for treatment of diseases of the stomach and as an antiseptic to relieve colds [26].

Ferula species mostly distributed in Iran, is used in different countries for various purposes and not only used as a culinary condiment but also traditionally used to treat various diseases, including asthma, gastrointestinal disorders, intestinal parasites, etc. This oleo-gum-resin has been known to possess antifungal, anti-diabetic, anti-inflammatory, anti-mutagenic and antiviral activities. A wide range of chemical compounds including sugars, sesquiterpene coumarins and polysulfide have been isolated from oleo-gum-resin of the plant [27,28].

Conclusion

This study contributes knowledge about medicinal plant species not only in Darkesh, but also a potential to share this knowledge in Northeast of Iran.

The present study reveal that there are 10 medicinal species for various purpose not only used as trade in North east of Iran but also

traditionally used to treat various disease, including cold, kidney disorder, Blood and Liver Cleanser, pain and fever, Febrifuge and etc. Poor health is among the biggest problems in Iran, while medical tourism could be one of the solutions and medical tourism can led to improved public health.

The results of this study showed that the plants are potentially a good source of medical remedies and is a suitable option for medical tourism in this area, as well as keeping natural resources. Unfortunately there is no information available from Iran, about the present status of medical tourism and the action being taken for keeping natural resources. Research on medical tourism in Iran is currently inadequate and this study stimulates further development of medical tourism in Iran. For purpose of forest conservation and to increase the medical tourism we suggest to cultivate 10 medicinal plants with commercial value in Darkesh, North Khorasan Iran.

References

1. Akhiani H (2005) The illustrated flora of Goleston National Park, Iran, Tehran University Press 1: 481.
2. Amiri MS, Joharchi MR, Yazdi TMS (2014) Ethno-Medicinal Plants Used to Cure Jaundice by Traditional Healers of Mashhad, Iran. *Iranian Journal of Pharmaceutical Research* 13: 157-162.
3. Ardestani A, Yazdanparast R, Jamshid S (2008) Therapeutic effects of *Teucrium polium* extracts on oxidative stress in pancreas of Streptozotocin-induced diabetes rats. *J Med Food* 11: 525-532.
4. Assadi M, Maassoumi AA, Khatamsaz M, Mozaffarian V (1988) Flora of Iran. Research Institute of Forests and Rangelands Publications, Tehran. (In Persian) 1-66.
5. Babakhanloo P, Mirza M, Sefidkan F, Barazandeh M (1998) Chemical components of essential oil of *Ziziphora clinopodioides*. *Med Plant Res J* 2: 103-114.
6. Banerjee M (2002) Public policy on Ayurveda. *Economic and political weekly*. 37: 1136-1146.
7. Chevolleau S, Mallet JF, Debal A, Ucciani E (1993). Antioxidant activity of mediterranean plant leaves: Occurrence and antioxidative importance of α -tocopherol. *J Am Oil Chem Soc* 70: 807-809.
8. Davis PH (1965-1988) Flora of Turkey and the east Aegean Islands, Edinburgh University Press. UK 10.
9. Ebrahimi A, Khayami M, Nejadi V (2012) Evaluation of the antibacterial and wound healing activity of *Quercus persica*. *J Basic Appl Sci* 8: 118-123.
10. Amiri H (2012) Essential oils composition and antioxidant properties of three thymus species, *Evidence-Based Complementary and Alternative Medicine*, 2012: 8.
11. Iranshahy M (2011) Traditional uses, phytochemistry and pharmacology of *Asafoetida* (*Ferula assa-foetida* oleo-resin). A Review. *Journal of Ethnopharmacology* 34: 1-10.
12. Jalalpure SS, Patil MB, Alagawadi KR (2002) Wound healing activity of the galls of *Quercus infectoria* Olivier. *J Nat Remedies* 2: 54-58.
13. Bauer KD, Garbe H and Surburg H (1997) *Common Fragrance and Flavor Materials*, Wiley-VCH, Weinheim, Germany.
14. Khan S, Riaz N, Afza N, Malik A, Rehman A, et al. (2009) Antioxidant constituents from *Cotonaster racemiflora*. *J Asian Nat Prod Res* 11: 44-48.
15. Komarov VL, Shishkin BK (1963-1974) Flora of the USSR, Russia 1-30.
16. Lahlou S, Tangi KCh, Lyoussi B, Morel N (2008) Vascular effects of *Tanacetum vulgare* L. leaf extract: *in vitro* pharmacological study. *J. Ethnopharmacol* 120: 98.
17. Hudaib M, Speroni E, Di Pietra AM and Cavrini V (2002) GC/MS evaluation of thyme (*Thymus vulgaris* L.) oil composition and variations during the vegetative cycle. *Journal of Pharmaceutical and Biomedical Analysis* 29: 691-700.
18. Pala N, Negi A, Todaria N (2010) Traditional uses of medicinal plants of Pauri Garhwal, Uttarakhand. *N. Y. Sci. J* 8: 57-61.

19. Pandey MR (2007) Use of medicinal plants in Traditional Tibetan therapy system in upper Mustang Nepal. *Our Nat* 4: 69-82.
20. Pourmotabbed A, Farshchi A, Ghiasi G, Khatibi MP (2010) Analgesic and Anti-inflammatory Activity of *Teucrium chamaedrys* leaves aqueous extracts in male rats. *Iran. J Bas Med Sci* 13: 119-125.
21. Rechinger KH (1982) Euphorbiaceae. In: Rechinger KH (ed) *Flora Iranica*, Graz: Akademische Druck-u, Verlagsanstalt 6: 8-48.
22. Sajadi SE, Ghasemi Dehkordi N, Baloochi M (2003) Volatile Constituents of *Ziziphora clinopodioides* Lam. *Journal of research and reconstruction* 8: 1-9.
23. Townsend CC, Guest E, Omar SA, Al-kayat AH (1985) *Flora of Iraq*, Ministry of Agriculture and Agrarian Reform Republic of Iraq 1-9.
24. Tutin TG, Heywood VH, Burges NA, Valentine DH, Walters SM, et al. (1964-1980) *Flora European*, Cambridge University Press, UK 1-5.
25. Williams ChA, Harborne JB, Geiger H, Robin J, Hoult S (1999) *Xanthium macrocarpum*. *Phytochemistry* 51: 417.
26. Xie G, Schepetkin IA, Quinn MT Int. (2007) Immunomodulatory activity of acidic polysaccharides isolated from *Tanacetum vulgare* L. *Immunopharmacol* 7: 1639.
27. Zamani, Reza A, Mehdizadeh, Morteza, Yekta, et al. (2000) Study the Place of Substitute Medicine in Providing Medical Services, Esfahan. *Journal of education and research, Superior Health* 1.
28. Zargari A (1995) *Iranian medicinal plants*. Tehran University Press 4: 103-104.