Introduction of Medicinal Plants Species with the Most Traditional Usage in Alamut Region

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Abstract

The ethnobotany of the medicinal plants of Alamut region is important in understanding the cultures and traditions of Alamut people. This study documents 16 medicinal plant species, most commonly used by the indigenous people of Alamut region (Ghazvin Province), northwest, Iran. The botanical name, family name, vernacular name, part used, and the application of the plants have been provided in this paper. Alamut region was divided into different villages with the aid of maps. We recorded traditional knowledge and use of medicinal plants from herbal practitioners and village seniors in Alamut. The plants were gathered from different sites. The fully dried specimens were then mounted on herbarium sheets. We found 16 medicinal plants belonging to 11 families which were traditionally used in Alamut. Finally, we describe traditional usages by the native people in the Alamut region. The obtained results were compared with data on the herb’s clinical effects. A set of voucher specimens were deposited to the Institute of Medicinal Plants Herbarium (IMPH).

Keywords: Medicinal plants; Ethnobotany; Alamut; Ghazvin; Iran.

Introduction

Before the introduction of chemical medicines, man relied on the healing properties of medicinal plants. Some people value these plants due to the ancient belief which says plants are created to supply man with food, medical treatment, and other effects. It is thought that about 80% of the 5.2 billion people of the world live in the less developed countries and the World Health Organization estimates that about 80% of these people rely almost exclusively on traditional medicine for their primary healthcare needs. Medicinal plants are the “backbone” of traditional medicine, which means more than 3.3 billion people in the less developed countries utilize medicinal plants on a regular basis (1). There are nearly 2000 ethnic groups in the world, and almost every group has its own traditional medical knowledge and experiences (2, 3). Iran is home to several indigenous tribes with a rich heritage of knowledge on the uses of medicinal

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plants. Iran has varied climates and geographical regions that have caused a wide distribution of individual medicinal plant species such that each tribe has its own plants and customs. Alamut is one of the most important geographic regions in Iran because of its ancient history of cultivating traditional medicinal plants. Alamut region and the several villages it encompasses are secluded from other cities in Iran, which is why the people living in this region have relied on indigenous medical knowledge and medicinal plants. In this study, we analyzed the medicinal plants with most therapeutic usage in the region.

**Experimental**

*Geographic and climatic overview*

Alamut mountainous region is situated in the central Alborz Mountains, between 36°24´ and 36°46´ northern latitudes and 50°30´ and 50°51´ eastern longitudes with an altitude ranging from 2140 to 4175 m. The region is located on the northeast of Ghazvin Province and is bounded to the north by the Mazandaran Province in Tonekabon and bounded on the east by Tehran Province in the Taleghan mountains. Annually, it rains 368.03 mm and the average temperature is 14°C. Topography is distinctly marked with several mountains, springs, rivulets, and rivers. This area is geographically located in the Irano-Turanian region (Figure 1).

The ethnic composition of the region is quite diverse and almost 90% of its population resides in rural areas. The language of the inhabitants is known as Deylamite. People of Alamut have a long history of exporting medicinal plants to other regions of Iran. Roadways have increased communication among the rural natives in Alamut and have also increased tourism to the region because of its several ancient castles. Because of good quality of medicinal plants in this region and more imminent pick of them, some of species have become extinct. For this reason, an important aim of this study is to protect the preservation of the region’s plants. Other aims include:

- Documenting the traditional knowledge of medicinal plants from the natives.
- Assessing the most commonly used local medicinal plants.
- Promoting the potential benefits of medicinal plants.

**Data collection**

We first prepared a map with a scale of
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1:25,000 from the region to identify the number of villages, roads, and vegetations. We visited the region and spoke to herbal practitioners and village seniors. A questionnaire was used to obtain information on the types of ailments treated using traditional medicinal plant species. Sometimes informants were asked to come to the field and introduce us to the plants. When this was not possible, plants were collected around the villages of the informants and were shown to them to confirm the plant names. This investigation took over 2 years and information was collected 1-2 days per week. Voucher samples were also collected for each plant and were identified using floristic, taxonomic references. Flora Iranica and a dictionary of Iranian plant names were used for identification purposes (4, 5). Plants were deposited at the herbarium of Institute of Medicinal Plants (IMPH).

Results and Discussion

Although ancient sages through trial and error methods have developed herbal medicines, the reported uses of plant species do not certify their efficacy (6). Reports on ethnomedicinal uses of plant species require pharmacological screenings, chemical analyses, and tests for their bioactive activities. Pharmacological screening of plant extracts provides insight to both their therapeutic and toxic properties as well as helps in eliminating the medicinal plants or practices that may be harmful (7).

This study provides information on 16 medicinal plants belonging to 12 families that are most commonly used for traditional medicine in Alamut region. Botanical names of plants were sorted alphabetically, and for each species and the following information was hence represented: family, vernacular name, part used (Table 1). Traditional use and preparation was compared with other references (Table 2).

| Botanical name/Voucher specimen no. | Family        | Vernacular name | Part used                        |
|------------------------------------|---------------|-----------------|----------------------------------|
| Achillea millefolium L. Ahvazi 422 (IMPH) | Asteraceae   | Boomadaran      | Aerial parts                     |
| Anchusa italica Retz. Ahvazi 457 (IMPH) | Boraginaceae | Gav zaban       | Flowers                          |
| Berberis integerrima Bge. Ahvazi 455 (IMPH) | Berberidaceae | Vialesk         | Fruits, roots                    |
| Capparis spinosa L. Ahvazi 636 (IMPH) | Capaeidaceae | Kabar gol, kafar gol | Fruits, blooms, roots without bulk, flowers |
| Echium amoenum Fisch and May. Ahvazi 637 (IMPH) | Boraginaceae | Gole gavzaban   | Flowers                          |
| Ferula persica Willd. Ahvazi 407 (IMPH) | Apiaceae     | Jarand          | Stems, roots, leaves             |
| Fumaria asepala Boiss. Ahvazi 638 (IMPH) | Fumariaceae  | Shatare         | Aerial parts                     |
| Botanical name/Voucher specimen no. | Family       | Vernacular name | Part used             |
|------------------------------------|--------------|-----------------|-----------------------|
| *Grammosciadium platycarpum*       | Apiaceae     | Jafari kohi     | Leaves                |
| Boiss. and Hausskn. Ahvazi 409 (IMPH) |              |                 |                       |
| *Heracleum persicium* Desf. ex Fischer Ahvazi 410 (IMPH) | Apiaceae     | Golpar          | Flowers, seeds        |
| *Hippophae rhamnoides* L. Ahvazi 494 (IMPH) | Elagnaceae   | Kaham           | Fruits                |
| *Juglans regia* L. Ahvazi 639 (IMPH) | Juglandaceae | Gerdo           | Leaves, fruits, fresh aerial parts |
| *Malva neglecta* Wallr. Ahvazi 541 (IMPH) | Malvaceae    | Paniraki, pandiraki | Flower, leaves, roots |
| *Smyrnium cordifolium* Boiss. Ahvazi 640 (IMPH) | Apiaceae     | Avandol         | Stems                 |
| *Stachys lavandulifolia* Vahl Ahvazi 534 (IMPH) | Lamiaceae    | Kaklikoti       | Flowers               |
| *Viola odorata* L. Ahvazi 593 (IMPH) | Violaceae    | Banafshe        | Flowers               |
| *Ziziphora clinopodioides* Lam. Ahvazi 538 (IMPH) | Lamiaceae    | Kakoti          | Aerial parts          |
| *Ziziphora clinopodioides* Lam. Ahvazi 538 (IMPH) | Lamiaceae    | Kakoti          | Aerial parts          |
### Table 2. Comparison of problems due to hot flash in studied groups during the study base on HFQ.

| Botanical name                  | Traditional Preparation | Traditional uses in Alamut region                                      | Traditional and medicinal uses in references                                                                 |
|---------------------------------|-------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| **Achillea millefolium**        | Infusion, decoction     | Backache, asthma, pectoralgia, infections of pregnant women            | Tonic, anti-hemorrhoids, healing the wounds (8), diaphoretic, emmenagogue (9), cholagogue, antibacterial, astringent, loss of appetite, dyspeptic complaints, liver and gallbladder complaints (10), anti-inflammatory, antispasmodic (used in cold, flatulent colic, heartburn), cicatrizant, antidysenteric, antihaemorrhagic, antipyretic, diuretic, urinary antisepic (11) to heal chapped skin, haemostatic, hair tonic, decrease blood pressure, antispasmodic, flatulence (11, 12) |
| **Anchusa italica**             | Infusion, decoction     | Common cold                                                            | Stimulant, tonic, demulcent; used in bilious complaints, fever, cough, asthma; as diuretic in bladder and kidney stones (11), sedative (8, 13) |
| **Berberis integerrima**        | Infusion, decoction, edible | Enteric fever, hyperlipidemia, diabetes, anemia                        | Enhances the antibacterial activity of ampicillin against *Staphylococcus aureus* (14), antibilious (13), hepatoprotective activity (15), control of hypertension as ACEIs (16) |
| **Capparis spinosa**            | Edible, decoction and demulcent of root | Headache, renal calculus, pododynia, Blooms after boiling are used in some foods because of its hot effects | Diuretic, tonic, anti-hyperacidity, gout (17), astringent, diuretic, expectorant, stimulating tonic, gastrointestinal infections, diarrhea, rheumatism, eye infections (18), carminative, headache, blood fat and sugar, hemorrhoids, digestive disorders (19), antibacterial and antifungal activity (20), anti-inflammatory, deobstruent to liver and spleen, anthelmintic, vasoconstrictive (11). Bark: given in splenic, renal and hepatic complaints (11). Juice of leaves and fruits: anticycstic, bactericidal and fungicidal (11). Dried flower buds: used in scurvy (11), splenomegaly, vomiting (21) |
| **Echium amoenum**              | Infusion                | Common cold, stomachache, headache, sedative                          | Common cold, sedative, exhilarating, diuretic (22), analgesic (23), antioxidant, anxiolytic (24, 25), diaphoretic (8) |
| **Ferula persica**              | Steam cooked, edible    | Spicy, cooking, heart oxygenating, gout, sinusitis, pododynia, backache | Carminative, diuretic, laxative, alexipharmic, digestive, emmenagogue, antispasmodic (26), hot and dry effects, anti-flatulence, renal calculus, arthralgia, gout, stomach worms, diuretic (27), antihysteria (28) |
| **Fumaria asepala**             | Powder with henna       | Migraine, hand schism, mange                                          | Sedative, diuretic, hypotensive and weight reducing (29) |
| **Grammosciadium platycarpum**  | Edible                  | Tonic, cooking some foods                                             | Antibacterial (30, 31) |
| **Heracleum persicium**         | Infusion, powder, decoction | Tremor, migraine, headache caused by sinusitis (It is harmful for eyes), ascaris worms | Spice, flatulence, indigestion,(28), anticonvulsant activity (32), anti-inflammatory and analgesic properties (33) |
Among these medicinal plants, Apiaceae, Lamiaceae, and Boraginaceae were the most dominant families with 4, 2, 2 species belonging to 4, 2, 2 genera of medicinal plants, respectively. Of the 16 medicinal plants, 8 species had similar effects in traditional and medicinal uses when comparing Alamut with other references. Achillea millefolium had antibacterial effects; Capparis spinosa is used for headache, renal complaints and stimulating tonic; Echium amoenum is used for common cold and had sedative effects; Ferula persica is used for gout; Juglans regia is used for diabetes; Smyrnium cordifolium is edible and used as tonic; Viola odorata is used for fever and migraine; Ziziphora clinopodioides is used for cold, infections and stomachache.
Table 3. Medicinal plant species were used in treating different types of ailment.

| No. | Ailment            | Medicinal plants                                                                 |
|-----|--------------------|----------------------------------------------------------------------------------|
| 1   | Anemia             | Berberis integerrima                                                             |
| 2   | Ascaris worms      | Heracleum persicum                                                              |
| 3   | Asthma             | Achilla millefolium                                                             |
| 4   | Backache           | Achilla millefolium, Ferula persica, Juglans regia                              |
| 5   | Common cold        | Anchusa italica, Echium amoenum, Ziziphora clinopodioides                       |
| 6   | Constipation       | Malva neglecta, Viola odorata                                                   |
| 7   | Diabetes           | Berberis integerrima, Juglans regia                                              |
| 8   | Enteric fever      | Berberis integerrima                                                             |
| 9   | Fever              | Viola odorata                                                                   |
| 10  | Gonalgia           | Juglans regia                                                                   |
| 11  | Gout               | Ferula persica                                                                  |
| 12  | Hand schism        | Fumaria asepala                                                                 |
| 13  | Headache           | Capparis spinosa, Echium amoenum, Fumaria asepala, Heracleum persicum, Stachys lavandulifolia, Viola odorata, Ziziphora clinopodioides |
| 14  | Heart oxygenating  | Ferula persica                                                                  |
| 15  | Hyperlipidemia     | Berberis integerrima, Grammosciadium platycarpum, Hippophae rhamnoides          |
| 16  | Hypertension       | Hippophae rhamnoides, Viola odorata                                             |
| 17  | Increase nausea    | Ziziphora clinopodioides                                                         |
Some effects which are mentioned in traditional medicine of Alamut region were important with no scientific information about them. For example, *Berberis integerrima* and *Hippophae rhamnoides* had good effect on lowering of serum lipids and blood sugar and hypertension. *Malva neglecta* is used for mouth fungal infection in children and *Stachys lavandulifolia* is used for headache and renal calculus. Other researches can perform experiments to discover their components and effects.

All of the medicinal plants were collected from the wild or in the native people’s gardens. Some medicinal plants can no longer be found in the region and are only cultivated in the native people’s gardens. For example, *Echium amoenum* is an endemic plants in Iran with historically wide spread in the region, but because of frequent picking, the species is now just cultivated in the native people’s gardens.

Different parts of medicinal plants were used by the inhabitants of Alamut region as medicine for treating ailments. The most common parts used were flowers (25%). The use of aerial parts, leaves, fruits and roots were the same (15%). Use of the stems (7%), seeds, and blooms (4%) were lower than the others (Figure 2). The 16 medicinal plant species were used in treating 27 different types of ailment (Table 3).

**Acknowledgment**

This work was supported by grants from Institute of Medicinal Plants and the Iranian Academic Center for Education, Culture, and Research (ACECR). The authors would like to thank Ghazvin Research Institute of Forests and Rangelands for their sincere cooperation.

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