



Introduction of Medicinal Plants in The South of Lorestan Province

Mohammad Mehrnia^{1*}, Zahra Hosseini¹

¹Lorestan Agricultural and Natural Resources Research and Education Center, AREEO, Khorramabad, Iran

Abstract

Background and aims: The present study identified the medicinal species of southern Lorestan province and explored their traditional uses and potential applications in modern medicine.

Methods: The study involved face-to-face interviews and personal observations to gather information on local names and traditional medicinal uses of plants. Use value (UV) and informant consensus factor (ICF) were used to analyze the data obtained from the interviews. The UV index was calculated to determine the relative importance of medicinal species native to the region.

Results: The plant species were identified using standard herbarium methods. A total of 106 medicinal species from 95 genera and 40 plant families were identified, which are utilized by locals for various medicinal purposes in southern Lorestan province. According to the findings, leaves (22.3%), seeds (19%), and fruits (14.5 %) were the most commonly used parts of medicinal species. Edible and infusion were identified as the primary treatment methods in traditional medicine in southern Lorestan province.

Conclusion: The predominant therapeutic uses of medicinal species in traditional medicine in the area focused on treating digestive disorders.

Keywords: Ethnobotany, ICF, Herbal medicine, Zagros

*Corresponding Author:

Mohammad Mehrnia,
Emails: m_mehrnia2004@yahoo.com, mehrnia@rifr-ac.ir

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Introduction

Plants are among the earliest and most accessible sources of unknown chemical substances with potential therapeutic effects for treating various diseases. The estimated number of medicinal plant species traditionally used ranges from 10000 to 53000 (1). Despite this vast diversity, humans often rely on a limited number of plant species for their needs. Unfortunately, only some medicinal plants are cultivated and used in Lorestan province.

Many active components and chemical compounds of medicinal plants, like drugs, have been discovered through ethnobotanical knowledge and traditional plant uses (2). Indigenous people have acquired knowledge of wild edible plants through field experiments. Protecting plants and natural resources is an integral part of the cultural ethics of native communities. Traditional medicine is commonly used even in developed countries where Western medicine is prevalent. According to the World Health Organization, in Asian and African countries, 80% of the population relies on traditional medicines for primary health care (1).

Iran has a long history of using medicinal plants, with records indicating that Iranians were pioneers in utilizing plants for medicinal purposes. Iran is home to 7500-8000 plant species (3), with around 5000 species used for medicinal purposes (4). Studies on identifying medicinal

properties and traditional medicinal plant use in various cities in the Zagros region have been research in Fasa in the Fars (5), Basht and Gachsaran in the Kohgiluyeh and Boyer Ahmad (6), Bazarjan and Shazand in Markazi (7,8), Behbahan in Khuzestan (9), Sojasrood in Zanjan (10), Mian Tangan in Kohgiluyeh, and Boyer Ahmad (11) and Zarivar in Kurdistan (12).

Approximately 2000 plant species have been identified in Lorestan province (13), with around 550 medicinal species recognized (14). The southern part of Lorestan has a tropical climate and distinct vegetation from the northern regions, leading to different cultures of medicinal plant consumption. Therefore, collecting and documenting this valuable information in real time is essential. The south of Lorestan boasts a rich ethnobotanical heritage, emphasizing the importance of conducting more research to recognize, preserve, and record this valuable heritage.

The economic potential and wealth generation capacity that can be derived from the abundant source of medicinal species in the province still need to be fully realized. The vegetation in the southern tropical areas of Lorestan province primarily consists of open grasslands dominated by a unique type of grass. Additionally, the south region of Lorestan, situated along the Seimarah, Kashkan, and Zal rivers, is mountainous, further enhancing its ecological complexity. These conditions are essential to the endemic

nature of Lorestan, making it a significant genetic and plant center in the country. The production, consumption, and trade of medicinal plants and herbal medicines have risen in recent years, with expectations for significant growth. This study aimed to identify and introduce medicinal plants, their local names, medicinal properties, and the value of their use in traditional medicine in the southern regions of Lorestan. The findings of this research could serve as a foundation for understanding the mechanisms of action of medicinal plants, validating their efficacy, developing new drugs, and enhancing the production of high-value medicinal species.

Materials and Methods

The purpose of this research is to identify and introduce the medicinal plants of the southern regions of Lorestan province. The collection was done from 2010 to 2017. Specimens were collected from this region: Poldokhtar, Chagabal, Sepiddasht, Mamoulan, and Babazaid (Figure 1).

The geographic characteristics of the natural habitats, including the altitude and longitude, were recorded with the collection of medicinal species from the studied areas. Medicinal species of the studied area were pressed and registered using standard methods. The herbarium specimens were deposited in the Herbarium of Lorestan Agriculture and Natural Resources Research and Education Center. Identification of species based on reliable floral sources, including Flora Iranica (15) and Flora of Iran (16), has been made. Information such as local names, parts used, preparation methods, and medicinal effects of each plant were then recorded. To introduce the medicinal use of the identified plants, interviews were conducted with Healer, native people, and people familiar

with the traditional uses of medicinal plants. The study interviewed 145 local informants, including Healers and local individuals, who were classified into two age groups: more than 40 years and less than 40 years. Semistructured and open-ended questionnaires were utilized during the interviews, which took place at various locations and medicinal plant stores. Sociodemographic details such as gender, educational level, and age group were recorded (Table 1).

Further, by referring to reliable scientific sources of medicinal plants and information available in reliable internet search engines, their traditional uses were prepared with an emphasis on comparing these uses with modern medicine.

Quantitative methods used in ethnobotanical studies allow the selection of the most important species of medicinal plants to start medicinal research (17). In line with this study's objectives, the data obtained from the interviews were analyzed using use value (UV) and

Table 1. Demographic profile of interviewees in the study area (n=145)

Characteristics	Items	n	Percent
Gender	Male	88	60.6
	Female	57	39.3
Age	< 40	28	19.3
	> 40	117	80.7
Education	Less than Diploma	77	53
	Diploma	43	29.6
	Bachelor, Licentiate	23	15.7
	Master	2	1.38
Healer (Attar)	Male	14	70
	Female	6	30

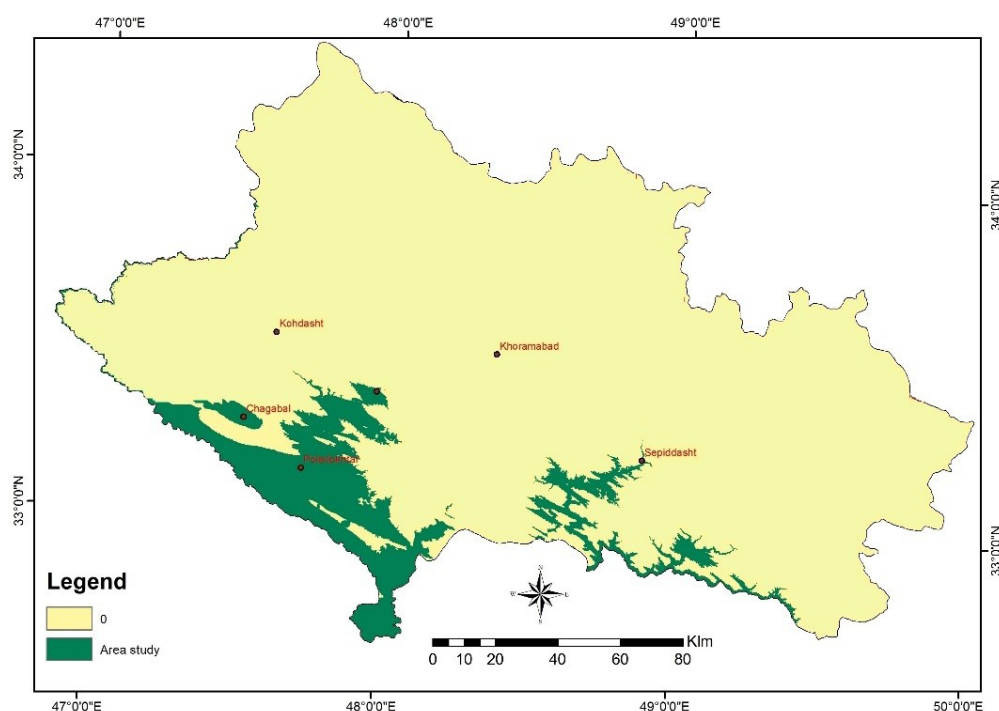


Figure 1. Map of Lorestan. Regions with green color were studied.

informant consensus factor (ICF). To determine the relative importance of medicinal species native to the region, the UV index was calculated, which is obtained by the following formula:

$$UV = \sum U_i / n$$

Which U_i = number of informants and interviewees who mentioned a specific species; n = the total number of interviewees for each species (17).

In this study, 145 people were questioned about all the medicinal species of the region. The ICF is used to show and prove the homogeneity of information. Disease groups have been listed according to the International Statistical Classification of Diseases and Health Problems (18).

ICF is calculated using the following formula:

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

In this formula, Nur is the Number of citations mentioned for each group, and Nt is the Number of medicinal species used to treat each group of diseases (19).

Results

Information such as family name, scientific and local name, value of use, used parts, method of preparation, and traditional uses or diseases treated with medicinal species of the southern regions of the province are presented (Supplementary file 1, Table S1). In total, 106 plant species belonging to 118 genera and 46 families are used by local people for medicinal purposes in the south of the province. Based on the results of Figure 2, the most used plant family, Lamiaceae (13 species), Asteraceae (12 species), Apiaceae (10 species), and Fabaceae (8 species) had the highest number of species. According to the results of this study, people over 40 years of age usually have more knowledge and use of medicinal plants. The method of preparation and consumption of medicinal

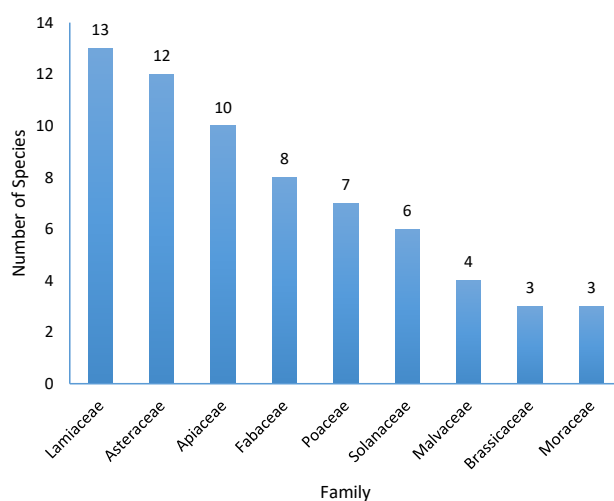


Figure 2. Plant families with the most Number of medicinal species in the south of Lorestan

plants in the study areas was reported as oral and infusion. Also, leaves (22.3 %), seeds (19 %), and fruits (14.5 %) contributed the most to the use and preparation of these medicinal plants.

Some species in the southern regions of Lorestan have a higher reputation among the residents; 17 cases have been mentioned as species with high UV. Figure 2 presents the plant families with the most significant Number of medicinal species in the southern regions of Lorestan province.

Medicinal species *Silybum marianum* (L.) Gaertn., *Cichorium intybus* L., *Satureja khuzistanica* Jamzad., *Mentha longifolia* (L.) L., respectively (0.78), (0.77), (0.77) and (0.76) had the highest utilization value (UV). The names of 17 species with UV values greater than 0.7 are given in Figure 3.

Medicinal plants used to treat chronic ailments and diseases were divided into 11 groups. These groups were created based on ethnobotanical results using the International Classification of Diseases and Health Related Problems (20). ICF values were calculated for the digestive problems group (0.6), metabolic problems (0.59), and cold, fever, and flu group (0.5). The classification of diseases and plants used for these disorders is presented in Table 2.

The low ICF values for each medicinal plant indicate that this species' medicinal value and traditional use are not well known in the people's region. The above ICF indicates that the therapeutic value and use of the medicinal species have been well done by sharing and exchanging information about a particular species between the informants and the people.

Discussion

According to the topographical position of Lorestan province and the existence of its mountains and rivers, the species and their distribution in the northern part of the province with a cold and temperate climate are different

Table 2. The classification of diseases and the number of plants used for disorders

Category/Diseases	Use citation	No. of plant used	Category uses taxon ICF
Digestive problems	75	30	0.6
Cold/ flu/ fever	57	29	0.5
Metabolic (diabetes, diuretic)	59	25	0.59
Sedative, narcotic	20	13	0.37
Emollient	35	22	0.38
Blood purifier	24	14	0.43
Eye problems	9	6	0.37
Respiratory disorders	56	40	0.29
Genitourinary	32	20	0.39
Musculoskeletal disorders	20	12	0.42
Diseases of the nervous system (epilepsy, melancholy, migraine)	7	5	0.33

from the species in the southern part of the province with a warm climate. Another study (20) discussed the species of the northern regions of the province.

By comparing the results of the present study with those of other studies in the Zagros area (Table 3), it was observed that the most medicinal species used by the native residents of these areas belong to the families Lamiaceae, Asteraceae, Apiaceae, and Fabaceae (5,6,8-10,12).

According to this study's results, some medicinal species were more known and widely used among the people. Medicinal plants with the highest UV consist of *Satureja khuzestanica* Jamzad, *Mentha longifolia* (L.) L., *Ziziphus spina-christi* (L.) Willd., *Thymbra spicata* L., *Cichorium intybus* L., *Myrtus communis* L., *Ephedra procera* Fisch. et Mey., *Achillea wilhelmsii* C.Koch., *Silybum marianum* (L.) Gaertn, *Capparis spinosa* L., *Bryonia multiflora* Boiss. & Heldr., *Avena sativa* L., *Plantago major* L., *Vitex pseudo-negundo* Hausskn., *Hyoscyamus niger* L., *Nerium oleander* L., and *Eucalyptus globulus* Labill.

In the herbal culture of the study areas, one of the medicinal plants with high UV is jataneh (*Satureja*

khuzestanica Jamzad.), used as an herbal tea, often taken after a meal with high fat and consumed; the problem of high blood fat is minimized. Recent studies have confirmed the effects of anti-diabetic, anti-hyperlipidemia, vasodilation, anti-spasm, and pain in Khuzestan savory essential oil on mice (21). Also, among the region's residents, a decoction of the medicinal chicory root (*Cichorium intybus* L.), with the local name of Chaghchagha, is used to treat diabetes. By conducting clinical trials, it has been confirmed that the Inulin content of *C. intybus* is comparable to that of sugar beet. Diabetic rats treated with chicory resisted the excessive increase in fasting blood sugar, and feeding them with *C. intybus* leaf powder led to Blood sugar levels decreasing to almost average levels (22).

Medicinal properties of plants, before they can find their way to the market, commercialization, and production of herbal medicines in modern medicine, are used as herbal drugs for diseases and ailments in traditional and experimental medicine. Gastrointestinal system disorders have a high prevalence in human societies. Digestive diseases, directly and indirectly, have psychological effects. Among medical diseases for which

Table 3. Comparison of the results of other research and this study

Area	Province	Species No.	Family No.	Family with maximum species
Fasa (5)	Fars	62	27	Asteraceae, Fabaceae, Lamiaceae
Basht and Gachsaran (6)	Kohgiluyeh and Boyer Ahmad	56	32	Lamiaceae, Fabaceae, Apiaceae, Asteraceae,
Bazarjan (Tafresh) (7)	Markazi	33	33	Asteraceae, Brassicaceae, Lamiaceae
Shazand (8)	Markazi	56	23	Lamiaceae, Apiaceae, Asteraceae
Behbahan (9)	Khuzestan	60	23	Lamiaceae, Apiaceae
Sojasrood (10)	Zanjan	52	22	Lamiaceae, Asteraceae, Rosaceae, Fabaceae
Mian Tangan (11)	Kohgiluyeh and Boyer Ahmad	36	15	Apiaceae
Zarivar (12)	Kurdistan	56	24	Lamiaceae, Asteraceae
South of Lorestan	Lorestan	106	95	Lamiaceae, Asteraceae, Apiaceae, Fabaceae

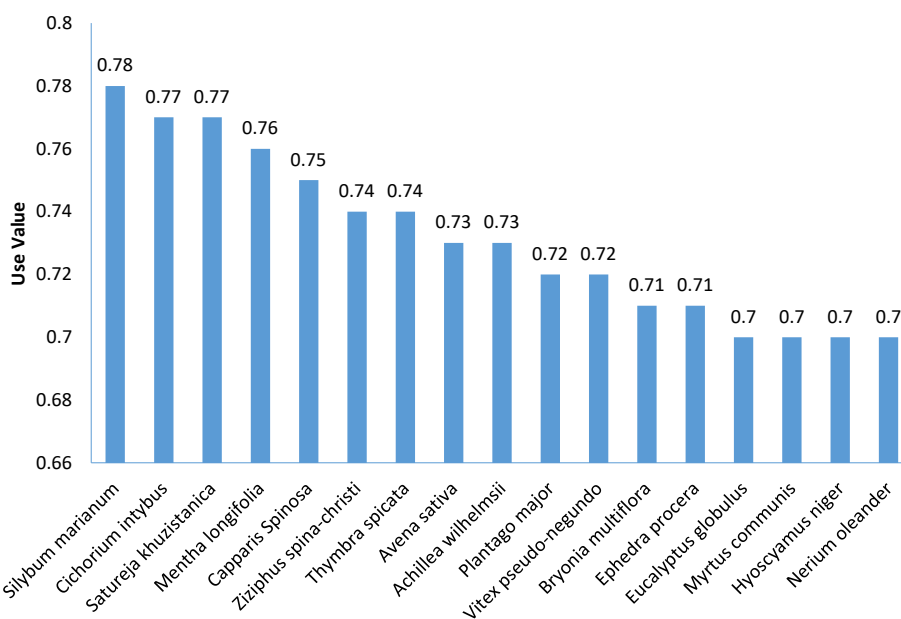


Figure 3. Species with (UV) values greater than 0.7

psychiatric consultation is requested, they are ranked first. This reflects the relationship between psychiatric disorders and the physical symptoms of gastrointestinal disorders (23). Based on the results of this study, the most therapeutic use of plants in traditional medicine of the southern regions of Lorestan is related to the treatment of digestive system disorders. According to other studies, the main use of traditional medicine and medicinal plants in different regions is in the treatment of digestive problems (6-8,10,12). Based on this study's results, most effective plants in treating gastrointestinal disorders belong to the family (Asteraceae), which is consistent with the results of other research (23). This plant family has the most significant Number of medicinal species with anti-inflammatory properties and the ability to relax smooth muscles and thus soothe the digestive system. The reason for the importance of this family is its many species and its wide range of natural products in the treatment of diseases of rural residents of Mexico (24).

Conclusion

Local people often use modern medicine for acute health problems and medicinal plants for chronic and less acute problems. The use of medicinal plants and traditional medicine in mountain villages far from the city center and areas where it was challenging to pass was more than in villages near the city center. Traditional medicine is still widely used among the people of these remote areas. However, for many reasons, it has changed drastically with the arrival of modern medicines and pharmaceuticals. Due to the migration of rural people to big cities, the traditional uses of medicinal plants in the region are disappearing. Research with the objectives of optimizing and improving the skills of conventional medicine specialists in developing countries, safe and effective treatment with traditional medicine (especially for diseases that have the most incredible pressure on poor populations), protecting the indigenous knowledge of conventional medicine, and sustainable cultivation of medicinal plants are among the most important programs of the World Health Organization. To preserve and record the valuable knowledge of traditional medicine in these regions and document them, it is suggested to prioritize phytochemical tests to verify their traditional uses and identify the most effective and safest treatment methods.

Authors' Contribution

Conceptualization: Mohammad Mehrnia.

Data curation: Mohammad Mehrnia.

Investigation: Mohammad Mehrnia.

Methodology: Mohammad Mehrnia.

Project administration: Mohammad Mehrnia.

Resources: Mohammad Mehrnia, Zahra Hosseini.

Supervision: Mohammad Mehrnia.

Writing—original draft: Mohammad Mehrnia, Zahra Hosseini.

Writing—review & editing: Mohammad Mehrnia, Zahra Hosseini.

Competing Interests

The authors declare that they have no conflicts of interest.

Ethical Approval

Not applicable.

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Supplementary Files

Supplementary file 1 contains Table S1.

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