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# Ethnobotanical Study for Hypertension Treatment: An Ethnobotanical Study of Abadeh, South Iran

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## ABSTRACT

**Introduction:** High blood pressure plays an important role in the occurrence of fatal heart diseases. Medicinal plants are an important source for the treatment of a wide range of diseases, including high blood pressure. Hence, the purpose of this investigation was to conduct an ethnobotanical study about medicinal plants used for the management of hypertension in Abadeh, South Iran.

**Methods:** This study was performed in Abadeh, South Iran. Ethnobotanical evidence was obtained through interviews and questionnaires among 12 traditional healers. Demographic information was also received from traditional healers. Ultimately, the information was analyzed by Excel.

**Results:** We highlighted that six species of medicinal herbs from four families were administrated for controlling hypertension. On the other hand, we found that Lamiaceae, Asteraceae, Liliaceae, and Brassicaceae families were the most important families used for the management of hypertension, respectively. In addition, it has been concluded that flowers, leaves, roots, aerial parts, onion bulbs, flowering branches, and petals were recommended parts of these medicinal plants for the treatment of hypertension. Furthermore, the results of this study indicated that all of the mentioned medicinal plants were consumed as a decoction for the treatment of hypertension.

**Conclusion:** The mentioned medicinal plants showed beneficial effects against hypertension. Therefore, additional investigations about the therapeutic role of phytochemical constituents presented in these medicinal plants could increase the acceptance of the use of these herbs.

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## Intorduction

Hypertension (High blood pressure) is a chronic disease that requires long-term treatment, which, despite being asymptomatic, leads to complaints and fatal complications

(Grassi et al., 2019). About one billion people in the world suffer from high blood pressure and 2 million people die from this disease every year (Andriani et al., 2020). High

blood pressure, like smoking and diabetes, is one of the risk factors for cardiovascular diseases, which is the cause of one-third of deaths. High blood pressure may go undiagnosed for many years and until the adverse consequences of the disease occur (Luo et al., 2020).

Hypertension is a leading cause of premature death and disability worldwide. Hypertension is the most important risk factor for coronary artery disease (CAD), stroke, congestive heart failure (CHF), chronic kidney disease (CKD) and dementia (Jankowski et al., 2021). On the other hand, by controlling blood pressure, the risks of cardiovascular diseases such as myocardial infarction (MI) and stroke are reduced by 50% and 40-35%, respectively (Fuchs et al., 2020). Although the prevalence of hypertension has reached a stable trend in developed countries, it is still increasing in developing countries, with the highest prevalence of hypertension in Africa (46%), the United States (35%), and Canada (23%) and in Iran it is reported from 17 to 68 percent (Zhou et al., 2021). Despite the advances in treatment, about half of patients are unable to control their blood pressure. Researchers have considered the use of simple methods other than synthetic drug treatment, such as lifestyle changes and even the use of medicinal plants, to be effective in managing high blood pressure (Toulabi et al., 2022). Nowadays, due to the necessity of finding new drugs with less side effects, the tendency to use medicinal plants and their phytochemical constituents for the treatment and management of a wide range of diseases, including high blood pressure, has increased. Medicinal plants are rich sources of chemical compounds with various biological properties, including antioxidant, anti-inflammatory and antimicrobial effects (Boy et al., 2018). Iran, having a high diversity of weather and special geographical conditions, has cultivated many plant species. These diverse plant species contain a wide range of effective medicinal compounds with amazing healing properties (Hosseini et al., 2021). Hence, the purpose of this investigation was to conduct an ethnobotanical study about medicinal plants used for the management of hypertension in Abadeh, South Iran.

## Materials and Methods

### Region of Study

The present study was carried out in Abadeh. Abadeh is the northernmost city of Fars province. Abadeh covers 31°09'39"N 52°39'02"E geographical coordinates. Abadeh is located at 1900 meters' altitude. Abadeh has a continental semi-arid climate (Figure 1).

### Data Collection

The present ethnobotanical study was conducted through a questionnaire in Abadeh city. This ethnobotanical investigation was performed from June 2021 to September 2021. This study was conducted through face-to-face visits and through interviews and questionnaires among 12 traditional healers. The questionnaire was distributed among traditional healers. The questionnaires contained demographic information. The questioners personally visited the studied subjects and registered the beliefs of herbal medicine in relation to receiving medicinal and

ethnobotanical information. The results obtained from the questionnaires were directly transferred to the relevant tables and recorded. Finally, the data were analyzed by Excel (Baharvand-Ahmadi et al., 2016).



**Figure 1.** Location of study area, Abadeh, in Iran Map

## Results

Our findings indicated that of 12 traditional healers studied, 2 were women and 10 were men. As shown in Table-1, our evaluation displayed that six medicinal plants from four families were used for treatment of hypertension. On the other hand, we found that Lamiaceae, Asteraceae, Liliaceae, and Brassicaceae families were the most important families used for the management of hypertension, respectively. In addition, it has been concluded that flowers, leaves, root, aerial parts, onion bulb, flowering branch and petals were recommended parts of these medicinal plants for the treatment of hypertension. Furthermore, the results of this study indicated that all of the mentioned medicinal plants were consumed as a decoction for the treatment of hypertension.

**Table 1.** Medicinal plants used for the management of hypertension

Scientific name	Family	Persian name	Usable part of plant	Preparation methods
<i>Ajuga chamaecistus</i>	Lamiaceae	Labdisi	Aerial parts	Decoction
<i>Salvia sp.</i>	Lamiaceae	Maryamgoli	Flowering branch and petals	Decoction
<i>Allium sp.</i>	Liliaceae	Piaz vahshi	Onion bulb	Decoction
<i>Satis minima</i>	Brassicaceae	Vasmeh biabani	Flowers	Decoction
<i>Scariola orientalis</i>	Asteraceae	Kahoo vahshi	Leaves	Decoction
<i>Taraxacum syriacum</i>	Asteraceae	Gole ghasedak	Flowers, root, leaves	Decoction

## Discussion

Ethnobotanical studies can provide effective solutions to identify important medicinal plants in the treatment of various diseases (Süntar et al., 2020). Hence, the goal of the present investigation was to obtain ethno-medicinal evidence from herbal traditional healer in Abadeh for the management of medicinal herbs as a remedy for hyperlipidemia. The results of the present study highlighted that six species of medicinal plants such as *Ajuga chamaecistus*, *Salvia sp.*, *Allium sp.*, *Satis minima*, *Scariola orientalis*, and *Scariola orientalis* from four families were used for treatment of hypertension. On the other hand, we found that Lamiaceae, Asteraceae, Liliaceae and Brassicaceae families were the most important families used for the management of hypertension, respectively. In addition, it has been concluded that flowers, leaves, root, aerial parts, onion bulb, flowering branch and petals were recommended parts of these medicinal plants for the treatment of hypertension. Furthermore, the results of this study indicated that all of the mentioned medicinal plants were consumed as decoction for the treatment of hypertension. *Ajuga chamaecistus* is a medicinal herb with numerous therapeutic properties. It has been suggested that these beneficial effect of *Ajuga chamaecistus* may be attributed to the presence of the various phytochemical constituents such as  $\beta$ -Pinene and Linalool (Tahan et al., 2020). Linalool as a main phytochemical constituent present in *Ajuga chamaecistus* has shown various biological properties including cardio protective and anti-hypertension effects (Camargo et al., 2018). *Allium sp.* are another important species of medicinal plants which exert several therapeutic properties (Kumar et al., 2022). *Allium sativum* is a well-known species of allium genus with different types of healing effects. *Allium sativum* is recognized as a common medicinal herb for the treatment of the hypertension in various countries all over the world. There are several pieces of evidence about the association between the presences of active ingredients in *Allium sp.* and their therapeutic role (Rouf et al., 2020). In a study conducted by Baharvand-Ahmadi B and his colleagues in Shiraz, south of Iran, the results of their analysis revealed that twenty seven species of the medicinal plants were used for the management of hypertension. Their findings indicated that Apiaceae, Rosaceae and Papaveraceae were the most widely used families of the medicinal plants for the treatment of

hypertension in Shiraz. Furthermore, they found that leaves, fruits, aerial part and branches were widely used parts of the medicinal plants for the treatment of hypertension in this study. Decoction was the important preparation methods for the treatment of hypertension in the study of Baharvand-Ahmadi B et al. Several types of medicinal plants play role in the treatment of the hypertension in various parts of Iran. For instance, in Mobarakeh of Isfahan province, there are several medicinal plants used for the management of the hypertension such as *Ziziphus jujube*, *Rumex crispus* and *Olea europaea*. A growing body of evidence revealed that various species of medicinal plants including *Berberis vulgaris*, *Ecballium elaterium*, *Achillea millefolium*, *Crataegus monogyna*, *Ribes orientale* and *Taxus baccata* play role in management of high blood pressure in Northwestern Iran (Arasbaran). *Nigella sativa* is another medicinal plants used for controlling high blood pressure in Sistan and Baluchestan province (Baharvand-Ahmadi et al., 2016).

## Conclusions

In conclusion, the findings of the present study indicated that various species of medicinal herbs could be traditionally used for the treatment of high blood pressure. Ethnobotanical studies play an important role in directing research toward the use of compounds of natural origin in the treatment of various diseases. However, the need for additional studies is felt in order to determine the mechanism of action of these plants and their chemical compounds.

## Conflict of interest

There is no conflict of interest among the authors.

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## Consent for publications

The authors approved the manuscript for publication.

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The authors stated that this study was carried out with personal funds from the authors.

## Authors' contributions

ND conceived the research idea and DA designed the work. SSH carried out the experiment, SS and ND wrote the first draft of the manuscript, ND and DA carried out the literature search, ND carried out the statistical analysis, and ND supervised the study. All authors read and approved the final manuscript for publication.

## Ethical considerations

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

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