



Research Article

Ethnobotanical Study on Medicinal Plants in Villages of Adaklı (Bingöl-Turkey)

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Abstract: In an ethnobotanical study carried out in the Adaklı (Bingöl) region between 2021 and 2023, 150 plant taxa belonging to 42 families and 125 genera were detected. In the research area, local people use wild plants mostly for medicinal (104) and food (89) purposes, and in small amounts for fuel, fodder, brooms, etc. In this article, wild plant taxa (104) determined to be used by the local people for medicinal purposes are included. Local names, parts used and areas of use of these medicinal plants were determined. The plants used in Adaklı are known by the same or different local names in various parts of Anatolia. Plants with medicinal uses mostly belong to the Astreaceae (14 taxa), Rosaceae (10 taxa), Lamiaceae (10 taxa), Fabaceae (7 taxa) and Apiaceae (5 taxa) families. It has been determined that medicinal plants are used in the treatment of many diseases, especially colds, shortness of breath, heart and gastrointestinal diseases.

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1. Introduction

As a result of the relationship between humans and plants that has been going on for centuries, the field of ethnobotany, which is accepted by the whole world today and in which serious research is carried out, has emerged (Koçyiğit, 2005). In a broad sense, ethnobotany deals with the plant-human relationships of different human societies. In the modern era, the term ethnobotany is used to understand not only the use of plants, but also why they are used and how they are grown (Heinrich, 2000).

Turkey has rich flora thanks to its geographical location, geomorphologic structure and influence of various climate types. The number of species found in Turkish flora is 9.996 including plants with foreign origins along with cultivated plants. Regarding endemism, the number of endemic species in the flora is 3.035. Adding 500 endemic sub-species to this number along with 253 varieties, we obtain a total number of 3.788 endemic taxa (Güner et al., 2012).

Our country has been home to many civilizations and people have a rich wealth of traditional botanical knowledge. Many ethnobotanical studies have been carried out in Turkey in order to transfer this knowledge to future generations.

Turkey is home to a vast array of flora and a rich tradition of folkloric medicine, making it an ideal location for studies in this field. The majority of Turkish people living in rural areas have traditionally relied on plants for their nutrition and healthcare needs. In recent years, the traditional use of plants has attracted the attention of researchers in our country.



The first studies on medicinal plants in Anatolia were generally under the headings of folk medicine and folk remedies, and the sources of this information date back to ancient times. For example, it is known that during the Hittite period, some herbal drugs such as poppy head and saffron were obtained in Anatolia and sold to foreign countries. By Baytop (1997) about plants with ethnobotanical use. In the prepared list, there are various Turkish names and Latin equivalents of approximately 1300 plant species used as spices, food, medicine, dyestuffs and ornamental plants in our country.

While traveling around the Bingöl plateaus, the famous traveler Evliya Çelebi talks about the many kinds of herbs and colorful flowers that will be useful to all doctors. In his famous work, Seyahatname, Çelebi describes the tutya he saw in the Bingöl mountains (*Primula sp.*), kanger (*Gundelia sp.*), hyacinth (*Hyacinthus sp.*), lily (*Lilium sp.*), basil (*Ocimum sp.*) etc. It describes the beauty and healing properties of many plant varieties (Baytop, 2004). While many studies have been conducted on naturally growing plants in our country, studies on wild plants growing in the Bingöl region are extremely limited (Nadiroğlu et. al., 2019, Polat et. al., 2011, Polat et. al., 2012b, Polat et. al., 2018). East Anatolia has a rich flora, due to its variable climate and high number of ecological zones. This diversity in flora provides a rich source of medicinal plants, which has long been utilized by Anatolian cultures, and hence accounts for the accumulation of remarkable medicinal folk knowledge in the region (Özgökçe and Özcelik, 2004).

The main purpose of our study is to determine the diversity of different plant uses based on the rich cultural heritage in the Eastern Anatolia Region and to shed light on future ethnobotanical studies. It has been reported that no ethnobotanical studies have been carried out in Adaklı villages before. In this study, wild plants used by the people of Adaklı District of the Eastern Anatolia Region for ethnobotanical purposes were identified, and the local names of these plants were also revealed.

2. Materials and Methods

2.1 Study area

Bingöl province, located in the Upper Euphrates section of the Eastern Anatolia Region, is located between 41°20' and 39°54' northern latitudes and 38°27' and 40°27' eastern longitudes. There are Erzurum and Erzincan in the north of the province, Tunceli and Elazığ in the west, Muş in the east, and Diyarbakır in the South (Figure 1). Adaklı district is located in the southern part of Bingöl Province, with Yedisu District in the north, Kiğı District in the west, and Karlıova District in the east. The road of Adaklı district, which is 74 km away from Bingöl city center, is stabilized, which is negative in terms of transportation. It is 198 km away from Elazığ city center. Geographically, in the northwestern part of Bingöl province and its altitude is 1500 meters. The district, with a surface area of 841 square kilometers, has rugged and mountainous terrain, the majority of which is covered with oak forests (Figure 2). The climate structure is in the continental climate zone, with harsh and long winters and hot and dry summers. In Adaklı District, there are Paleozoic aged Bitlis Metamorphites and different formations from various periods. Among these formations, the Elmalı Formation belongs to the Upper Cretaceous-Paleocene period. Additionally, alluviums belonging to Quaternary signatures are also present (Avcı, 2016). There are different types of soil structures in the research area, including basaltic soils, colluvial soils, and non-calcareous brown forest soils.

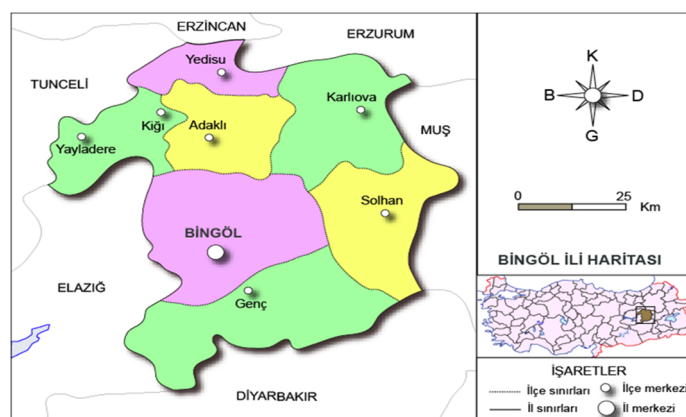


Figure 1. Bingöl province map.

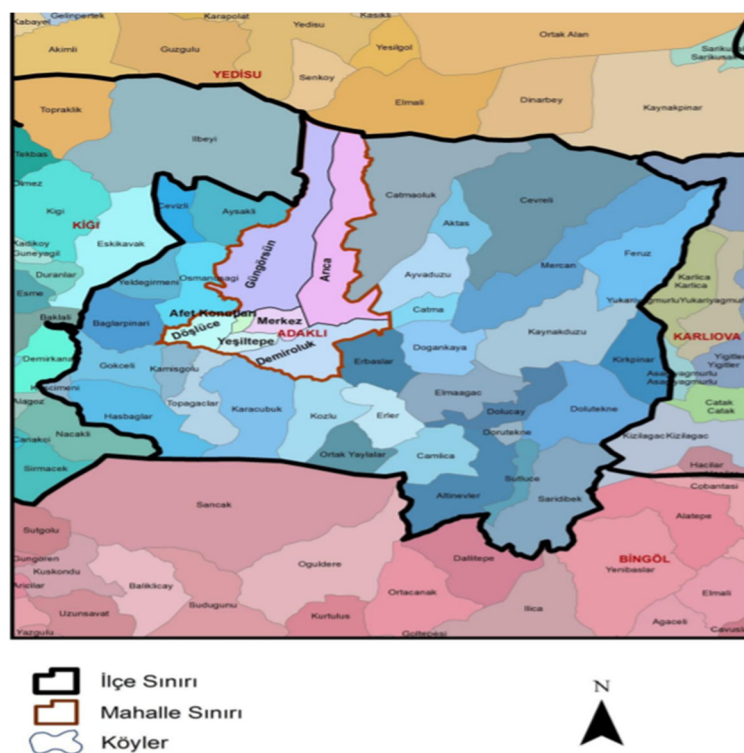


Figure 2. Map showing Adaklı district and its villages.

2.2. Plant materials

Field studies were conducted for approximately 2 years (2021–2023). During this period, 350 plant taxa were collected. Plants were pressed in the field and prepared for identification. The work titled "Flora of Türkiye and the Eastern Aegean Islands" was used to describe these samples (Davis, 1965-1982). In addition, the source named "List of Plants of Turkey - Vascular Plants" was used to determine current Turkish names (Güner, 2012). The samples are kept in the Fırat University Herbarium (FUH). Within the scope of the study, many wild plant taxa used for ethnobotanical purposes were numerated, the areas where the plants grow, their local names, parts used, usage patterns and collection periods were noted, and photographs of many plants were also taken.

2.3. Interviews with resource persons

A survey was conducted on 103 people from different age and occupation groups living in Adaklı district and surrounding villages. 31% of the respondents are between the ages of 25-40, 25% are between the ages of 41-50, 28% are between the ages of 51-60, 13% are between the ages of 61-70 and 3% are between the ages of 81-90. 88% are men and 12% are women. The distribution of the professions of the respondents is 24% Ranger, 15% Farmer, 12% Headman, 12% Housewife, 10% Retired, 8% Civil Servant and those working in other jobs. Educational status consists of 12% University, 19% High School, 19% Secondary School, 33% Primary School, 9% literate and 8% illiterate.

3. Results

In the research conducted in Adaklı region, 150 plant materials belonging to 42 families and 125 genera were identified. In the research area, local people use wild plants mostly for medicinal (104) and food (89) purposes, and in small amounts for fuel, fodder, brooms, etc. In this Article, wild plant taxa (104) determined to be used by the local people for medicinal purposes are included. The medicinal plants used by the local people were identified and presented in Table 1. In the table respectively; the family of the plant, Latin species names, Turkish names, local

names, its intended use, and parts used presented in detail. The plants used in Adaklı are known by the same or different local names in various parts of Anatolia. Plants with medicinal uses mostly belong to the Asteraceae (14 taxa), Rosaceae (10 taxa), Lamiaceae (10 taxa), Fabaceae (7 taxa) and Apiaceae (5 taxa) families. It has been determined that medicinal plants are used in the treatment of many diseases, especially colds, shortness of breath, heart and gastrointestinal diseases.

Table 1. List of wild medicinal plants investigated with their related information.

Family, Plant species	Turkish name of Plant	Vernacular name of Adaklı	Uses	Plant part(s) used
Acanthaceae				
<i>Acanthus dioscoridis</i> L.	Lokman ayı pençesi	Gerik	Diarrhea	Aerial parts
Amaranthaceae				
<i>Beta vulgaris</i> var. <i>altissima</i> Döll.	Şeker Pancarı	Silk	Cholesterol, anemia, the healthy functioning of the kidneys.	Underground parts
<i>Chenopodium foliosum</i> (Moench) Aschers.	Cülek	-	Diarrhea and inflammatory kidney diseases	Aerial parts
Amaryllidaceae				
<i>Allium vineale</i> L.	Sirmo	Siri	To lower tension	Root
<i>Allium cepa</i> L.	Yeşil Soğan	Pivaz	Immune system	Whole Plant
Anacardiaceae				
<i>Rhus coriaria</i> L.	Sumak	Mende	Stomach disorders, dilute the blood, mouth and throat sores	Fruits
<i>Pistacia terebinthus</i> L.	Sakız Ağacı	-	Cancer, cardiac disorders, ulcer, urinary tract inflammation	Stem, leaves and fruits
Apiaceae				
<i>Petroselinum crispum</i> (Mill.) A.W. Hill	Maydanoz	-	Digestive system disorders	Aerial parts
<i>Daucus carota</i> L.	Yabani Havuç	-	Eye health	Underground parts
<i>Eryngium billardier</i> Delar.	Boğa Dikeni	-	Hypertension, dental health, wound healing	Aerial parts
<i>Prangos pabularia</i> Lindl.	Beyik	Cağık	Hypertension, diabetes	Aerial parts
<i>Sium sisarum</i> L.	Derekerevizi	Kardu	Diabetes, goiter, rheumatism, to facilitate digestion, stomach ache, labor pains	Aerial parts
Apocynaceae				
<i>Vincetoxicum tmoleum</i> Boiss.	Hıyaluk	-	Fungal disease	Aerial parts
Araceae				
<i>Biarum bovei</i> Blume	Yılanpancarı	Karut	Diarrhea, stomach ache, relieve the digestive system, rapid recovery after birth	Aerial parts
Asteraceae				
<i>Achillea arabica</i> Kotschy	Hanzabel	Gihaye Zer	Chest pains, cough suppressant, stomach ache, asthma, kidney pain, skin spots, diuretic, rheumatism, gynecological diseases, toothaches and inflammations, stomach aches	Flowers and aerial parts
<i>Achillea millefolium</i> L.	Civanperçemi	-	Heart disease, common cold, liver inflammations, digestive	Flowers

<i>Onopordum carduchorum</i> Bornm. & Beauverd	Kav dikenli	-	Hemorrhoids	Aerial parts
<i>Helichrysum plicatum</i> DC.	Mantıvar	Kulilkizer	Intestinal diseases	Flowers and aerial parts
<i>Cichorium intybus</i> L.	Hindiba	-	Heart power booster, hemorrhoids, wounds and cuts	Aerial parts
<i>Scorzonera veratrifolia</i> Fenzl.	Nerebent	-	Wounds	Milk obtained from the underground parts
<i>Centaurea saligna</i> (C. Koch.) Wagenitz	Hol	-	Stomach disorders	Aerial parts
<i>Centaurea kurdica</i> Reichardt	Pamukdikenli	-	Malaria	Flowers
<i>Taraxacum butleri</i> Soest.	Karahindiba	-	Gastritis, digestive disorders	Flowers
<i>Anthemis scariosa</i> Boiss.	Duvaklı papatya	-	Digestive system	Flowers
<i>Cota tinctoria</i> L. var. <i>tinctoria</i>	Boyacı Papatyası	-	Common cold, asthma, hair loss	Flowers
<i>Tragopogon porrifolius</i> L.	Yemlik	Sping	Immune system, protective against cancer	Whole Plant
<i>Tussilago farfara</i> L.	Öksürükotu	-	Breathlessness, Bronchitis	Leaves
<i>Echinops orientalis</i> Trautv.	Dağ Şekeri	-	Diabetes, hemorrhoids	Flowers
Betulaceae				
<i>Corylus avellana</i> L.	Fındık	Bindik	Cancer	Fruits
Boraginaceae				
<i>Anchusa azurea</i> Mill.	Siğirdiili	-	Rheumatism	Aerial parts
<i>Macrotomia densiflora</i> (Ledeb.) McBride	Kocaeğnik	-	Fungal disease, Wounds and burns, boils	Root
<i>Cerintho minor</i> L. subsp. <i>auriculata</i> (Ten.) Domac	Livarotu	-	Stomach aches, constipation	Leaves
<i>Echium italicum</i> L.	Kurtkuyruğu	-	Stomach aches, wound, gallbladder disorders, diabetes	Aerial parts
<i>Heliotropium circinatum</i> Griseb.	Deli Bambulotu	-	Kidney stones, cancer	Flowers
Brassicaceae				
<i>Bunias orientalis</i> L.	Çırşalgamı	Divrika beci	Stomach aches	Stem
<i>Cardamine uliginosa</i> M. Bieb.	Su Teresi	Kiji	Kidney stones	Aerial parts
<i>Aethionema grandiflorum</i> Boiss. & Hohen.	Kocakaya gülü	Gıhaye Birina	Acne	Flowers
<i>Eruca vesicaria</i> (L.) Cav.	Roka	-	Appetite stimulant	Leaves
Campanulaceae				
<i>Campanula glomerata</i> L. subsp. <i>hispidula</i> (Witasek) Hayek	Yumakçanı	-	Gastritis	Flowers
<i>Campanula saxonorum</i> Gandoger	İnce Çingirak	-	Cough suppressant	Leaves
<i>Campanula sclerotracha</i> Boiss.	Dereçingırağı	-	Wounds and burns	Aerial parts
Caryophyllaceae				
<i>Gypsophila aucheri</i> Boiss.	Taşçöveni	-	Rheumatism	Aerial parts

<i>Saponaria prostrata</i> Willd. subsp. <i>anatolica</i> Hedge	Anasabunotu	-	Expectorant, asthma	Leaves
<i>Silene compacta</i> Fischer	Kanlıbasırotu	-	Urinary tract inflammations	Leaves
Colchicaceae				
<i>Colchicum szovitsii</i> Fisch & C.A.Mey	Katır Çiğdemi	Pivok	Immune system, lung diseases	Aerial parts
Convolvulaceae				
<i>Convolvulus arvensis</i> L.	Tarla Sarmaşığı	-	Constipation, icterus	Root, leaves
Cucurbitaceae				
<i>Citrullus lanatus</i> (Thunb.) Matsum.& Nakai	Karpuz	-	Protective against cancer	Fruits
<i>Cucumis melo</i> L.	Kavun	-	Regulating bowel movements, Constipation	Fruits
<i>Cucumis sativus</i> L.	Hıyar	Hıyar	Lowering blood sugar, digestive facilitator	Fruits
Elaeagnaceae				
<i>Elaeagnus angustifolia</i> L.	İğde	-	Immune system, cough suppressant	Fruits, flowers
Euphorbiaceae				
<i>Chrozophora tinctoria</i> (L.) A. Juss.	Siğilotu	-	Wart and Acne	Fruits
Equicetaceae				
<i>Equisetum giganteum</i> L.	Kırkilitotu	-	Skin diseases, hair and nail health, urinary tract diseases	Aerial parts
Fabaceae				
<i>Cicer bijugum</i> Rech. f.	Pıtrak Nohut	Nok	Bone health and strengthening	Fruits
<i>Astragalus gummifer</i> Labill.	Sakızlı Geven	-	Stomach aches, diarrhea, breathlessness	Seeds, leaves
<i>Astragalus longifolius</i> Lam.	Taze geven	Guniye Şirik	Diabetes, heart disease	Root
<i>Lathyrus boissieri</i> Sirj.	Ercolban	-	Icterus	Seeds
<i>Lathyrus cicera</i> L.	Colban	-	Icterus	Seeds
<i>Glycyrrhiza glabra</i> L.	Meyan	Sus	Intestinal parasites, Foot wounds and pains	Root, leaves
<i>Trifolium pratense</i> L.	Çayır Üçgülü	Nefera sor	Menstrual cramps	Aerial parts
Hypericaceae				
<i>Hypericum perforatum</i> L.	Kantaron	Kantaron	Wounds and burns	Aerial parts
<i>Hypericum scabrum</i> L.	Karahaşçıyıt	Kantaron	Wounds and burns	Aerial parts
Iridaceae				
<i>Crocus biflorus</i> Mill.	İkiz Çiğdem	Pivok	Rheumatism	Flowers
<i>Iris reticulata</i> Bieb.	Karakörpeze	Gulsosun	Breathlessness, asthma	Aerial parts
Juglandaceae				
<i>Juglans regia</i> L.	Ceviz	Güz	Cholesterol	Leaves
Lamiaceae				
<i>Lamium amplexicaule</i> L.	Baltutan	Pünk	Common cold	Aerial parts
<i>Mentha longifolia</i> (L.) L.	Pünk	Pung	Common cold	Leaves
<i>Thymus kotschyanus</i> Boiss.& Hohen.	Kekik	Anığ	Blood thinner, cancer, strengthens the digestive system, lungs, respiratory tract	Leaves

<i>Melissa officinalis</i> L.	Oğulotu	Oğulotu	Anxiolytic, sleeping disorder, indigestion, wounds, skin cleansing	Leaves
<i>Teucrium polium</i> L.	Acıyavşan	Meyremhort	Common cold, diabetes, toothaches	Leaves, aerial parts
<i>Ziziphora capitata</i> L.	Anuk	Dağ Reyhanı	Stomach aches	Aerial parts
<i>Salvia multicaulis</i> Vahl.	Kürt reyhanı	Punga reş	Stomach aches, migraine, wounds,	Leaves, aerial parts
<i>Stachys iberica</i> M. Bieb.	Dağ Çayı	Gihaye zerike	Icterus, high fever and common cold	Aerial parts
<i>Phlomis armeniaca</i> Willd.	Boz Şavlak	Pazağ	Hemorrhoids, stomach disorders, malaria, eye pain	Leaves, flores
<i>Thymus transcausicus</i> Ronniger	Kır Kekliği	Anığ	Common cold	Leaves
Malvaceae				
<i>Alcea calvertii</i> (Boiss.) Boiss.	Hıraççeği	-	Joint rheumatism, respiratory diseases and cough suppressant	Flores, leaves
<i>Malva neglecta</i> L.	Çoban çöreği	Ebe gömeci, Tolık	Bone fractures, eye dryness, cough, expectorant, stop bleeding, edema reliever	Aerial parts
<i>Tilia cordata</i> Mill.	Kış ihlamuru	Ihlamur	Expectorant, diuretic, sedative	Flores
Moraceae				
<i>Morus alba</i> L.	Ak dut	Tu	Diabetes, Mouth sores	Fruits
<i>Morus nigra</i> L.	Karadut	Tu	Diabetes	Fruits
<i>Ficus carica</i> L.	İncir	İncir	Wart treatment	Latex
Orchidaceae				
<i>Orchis palustris</i> Jacq.	Çayır Salebi	Sahlep, Şapır	Diarrhea, cough suppressant	Underground tubers
<i>Orchis punctulata</i> Steven ex Lindley	Selef	-	Diarrhea, icterus, hemorrhoids, cough suppressant	Underground tubers
Papaveraceae				
<i>Papaver rhoeas</i> L.	Gelincik	-	Hemorrhoids, cough suppressant, menstrual regulator	Buds
Plantaginaceae				
<i>Plantago major</i> (Gilib.) Lange	Yedi damarotu	Pele hevesi	Cough suppressant, acne, pimples, anti-inflammatory, wound healer	Leaves
<i>Plantago lanceolata</i> L.	Sinir otu	Pele hevesi	Cough suppressant, antiinflammatory, wounds and boils, expectorant, constipation, urine enhancer	Aerial parts
Polygonaceae				
<i>Rumex scutatus</i> L.	Ekşimen	Tırşık, Tırşo	Antifebrile	Leaves
<i>Rumex acetosella</i> L.	Kuzukulağı	Tırşık, Tırşo	Hypertension	Leaves
<i>Rumex tuberosus</i> L.	Kuzukulağı	Tırşık, Tırşo	Diabetes, regulates intestinal activities	Leaves
<i>Rheum ribes</i> L.	Işkın	Rez	Cancer	Aerial parts
<i>Polygonum cognatum</i> Meissn.	Madımak	Levlevik	Urine enhancer, Rheumatism	Leaves
Portulacaceae				
<i>Portulaca oleracea</i> L.	Semizotu	Pınpar	Regulates intestinal activities, cholesterol, fatigue and depression	Aerial parts
Rosaceae				
<i>Cerasus avium</i> (L.) Moench	Kiraz	Kiraz	Regulates intestinal	Fruits
<i>Malus sylvestris</i> subsp. orientalis (Uglitk) Broowcz	Ekşi Elma	Sev	Diabetes	Fruits
<i>Cerasus microcarpa</i> (C. A. Meyer) Boiss.	Yaban Kirazı	Kiraz	Diabetes, prostate, kidney stone	Fruits

<i>Rubus sanctus</i> Schreb.	Böğürtlen	Dirik	Cold and cough	Fruits, Leaves
<i>Rosa canina</i> L.	Kuşburnu	Şilan	Cold and cough	Fruits
<i>Pyrus syriaca</i> var. <i>syriaca</i> Boiss.	Çakal Armut	Hermi	Diabetes, kidney stone	Fruits
<i>Cydonia oblonga</i> Mill.	Ayva	Pırçok	Diarrhea	Fruits
<i>Armeniaca vulgaris</i> Lam.	Kayısı	Herung	Regular functioning of the intestines	Fruits
<i>Crataegus monogyna</i> Jacq.	Yemişyen	Söz	Hypertension	Fruits
<i>Sorbus torminalis</i> (L.) Crantz	Pitlicen	Kırmut	Stomach aches, weakness, immune booster	Fruits
Solanaceae				
<i>Solanum tuberosum</i> L.	Patates	Kartol	Eye pain	Underground parts
<i>Hyoscyamus niger</i> L.	Banotu	Beng	Cold and flu, stomach aches, stomach gas, gum diseases, eye itching, inflammatory lung diseases	Aerial parts
Urticaceae				
<i>Urtica dioica</i> L.	Isırgan otu	Gezgezok	Cancer, hair loss, anti-inflammatory	Leaves
Zygophyllaceae				
<i>Tribulus terrestris</i> L.	Çobançökerten	DemirDiken	Hypertension, kidney stone, hemorrhoids, urinary tract diseases	Aerial parts

4. Discussion and Conclusions

The geographical structure of our study area, inadequate transportation facilities, animal husbandry and general lifestyle of the local people have made it necessary to benefit from wild plants. Due to the increasing migration from rural to urban areas, information on the use of wild plants has begun to be rapidly forgotten.

In the research conducted in Adaklı region, 150 plant materials belonging to 42 families and 125 genera were identified. In the research area, local people use wild plants mostly for medicinal (104) and food (89) purposes, and in small amounts for fuel, fodder, brooms, etc. Some taxa are used more than once for different purposes. Plants with medicinal uses mostly belong to the Asteraceae (14 taxa), Rosaceae (10 taxa), Lamiaceae (10 taxa), Fabaceae (7 taxa) and Apiaceae (5 taxa) families. Most of these plants used for treatment, aerial parts (35), leaves (26), fruits (21), flowers (14) under ground parts (6), roots (5), seeds (3), stem (2) and whole plant (2). Many plants are used in its treatment of diabetes disease, respiratory diseases (bronchitis, cough, shortness of breath, throat ache, cold and flu, breathlessness and asthma), kidney problems (diuretic, kidney pain, kidney stones), cardiovascular disorders (hypertension, high cholesterol), gastrointestinal disorders (stomach ache, gastric pain, hemorrhoids, diarrhea, bowel disease, constipation, gallbladder disorders), female problems (menstrual cramps), dermatological (allergy, wounds and boils, warts, skin cleansing, skin spots, skin diseases, fungal disease and acne) and rheumatic pains, etc. However, to a lesser extent, wild plants are used to relieve problems such as tooth and eye pain, cancer, icterus, hair and nail problems, prostate, migraine, mouth sores, fatigue and depression.

In the ethnobotanical study conducted by Nadiroğlu et al. in the Karlıova (Bingöl) region, it was reported that the local people used 99 plants belonging to 26 families for therapeutic purposes. In addition, in this study, it was determined that plants with medicinal uses are mostly used in the treatment of diseases such as diabetes, lung and respiratory diseases, urogenital and kidney problems, cardiovascular disorders, gastrointestinal disorders, gynecological problems, dermatological and rheumatic pain (Nadiroğlu et al., 2018)

In the study titled "Investigation of the ethnobotanical aspect of wild plants sold in local markets of Bingöl (Türkiye)" ethnobotanical uses of 32 plants were recorded. These included folk medicine, herbal tea, spices and food. The most common ethnobotanical plant families were Rosaceae (7 taxa), Lamiaceae (4 taxa), Apiaceae (3 taxa), Asteraceae (3 taxa), Liliaceae (3 taxa), Fabaceae (2 taxa) and Polygonaceae (2 taxa). In addition, local markets under study detected the vast majority of food crops are used for medicinal purposes. Local people are choosing to use herbal for the treatment of gastro-intestinal complaints such as stomachache, abdominal pain, carminative (14 taxa), cough and cold (6 taxa), heart and vascular diseases (6 taxa), diabetes (4 taxa), kidney disease (3 taxa), and cuts and wounds (2 taxa) (Polat et al., 2012b).

In another ethnobotanical study conducted in the Bingöl region; medicinal plants and their use properties of sold in herbal market were researched. It was determined that 50 medicinal plant species belonging to 25 families were widely sold by herbalists and 15 of these 50 medicinal species sold were collected from

the region. The digestive plants, which are thought to help losing weight, appear to be the best seller among the frequently sold drugs. Moreover, it can be said that also the plants which helps passing kidney stone, diabetes, sedative (stress - anxiety reliever) (Polat et. al., 2011).

In an ethnobotanical study conducted on medicinal plants in Çatak (Van-Türkiye) villages; It was determined that 78 plant taxa are used for medicinal or medicinal purposes, and 19 plants are not recorded in the literature. The most common families are Asteraceae, Apiaceae, Lamiaceae, Rosaceae, Euphorbiaceae, Fabaceae and Malvaceae (Mükemre et. al., 2015).

In an ethnobotanical research conducted on medicinal plants in Sivrice (Elazığ-Türkiye); a total of 81 medicinal plants belonging to 32 families were identified. It was recorded that 9 out of 81 plants were used for therapeutic purposes for the first time. The most encountered medicinal plant families were Asteraceae, Rosaceae, Urticaceae, Lamiaceae, Fabaceae, Polygonaceae, Poaceae. *Urtica dioica* was found out to be the plant most commonly used by the local people. *Thymus haussknechtii*, *Mentha spicata* subsp. *spicata*, *Malva neglecta*, *Rosa canina*, *Hypericum perforatum*, *Rheum ribes*, *Rubus discolor*, *Portulaca oleracea* were the other plants commonly used for curative purposes (Cakilcioglu and Turkoglu, 2010). We have determined that most of these species (*Urtica dioica*, *Malva neglecta*, *Rosa canina*, *Hypericum perforatum*, *Rheum ribes*, *Portulaca oleracea*) are used intensively by the local people of Adaklı.

As a result of the ethnopharmacological research of medicinal plants in the Maden (Elazığ-Turkey) region, a total of 88 medicinal plants belonging to 41 families were identified in the region. It was noted that 4 out of 88 plants were used for therapeutic purposes for the first time. The most encountered medicinal plant families were Urticaceae, Rosaceae, Lamiaceae, Asteraceae, Fabaceae, Brassicaceae, Poaceae; the most common preparations were decoction and infusion. *Mentha spicata* subsp. *spicata*, *Rosa canina* and *Urtica dioica* was the plants most used by the local people (Cakilcioglu et al., 2011).

Usage areas of medicinal plants identified in the study conducted by Özgen et al. in Ilica (Erzurum) region: skin problems (14.5%), digestive system diseases (13.6%), respiratory diseases (12.7%), hemorrhoids (10.8%), urinary tract diseases (8.5%), internal diseases (7%), general pain and complaints relief (6.6%), rheumatism (5.2%), gynecological diseases and diabetes (4.2%) it was reported as (Özgen et al. 2011). In the study conducted by Güneş and Özhatay in the Kars region, 15 of the 71 medicinal plants determined to be used in the treatment of kidney diseases, 12 for stomach problems, 11 for rheumatism and painkillers, 8 for diabetes, 7 for hemorrhoids and 6 for high blood pressure. It has been reported that it is used to reduce blood pressure (Güneş and Özhatay, 2011).

Urtica dioica, the leaf and root are used as a treatment for anti-inflammatory and cancer in the Adaklı region. In literature, similar uses of plants have been identified in many studies of Cakilcioglu et al. (2011), Akbulut and Bayramoglu, (2013), Mükemre et al. (2015), and Korkmaz et al. (2016). Previous studies showed that *Urtica dioica* results in analgesic and antimicrobial and antihyperglycemic activity (Bnouham et al., 2003; Gülcin et al., 2004). *Thymus* species have traditionally been widely used in colds in Adaklı. The preparations including thyme extract alleviate cough following common cold (Büechli et al., 2005) and decrease the severity and duration of bronchitis symptoms (Gruenwald et al., 2005).

In the Adaklı region, the aerial parts of the *Tribulus terrestris* species are used to pass kidney stones, urinary tract diseases, Hypertension and hemorrhoids. In the literature, Polat and Satıl (2012) and Ahmed (2016) also reported that the seeds and aboveground parts were used for therapeutic purposes in passing kidney stones and relieved stomach and back pain. *Rheum ribes* is a plant used as a vegetable in the Adaklı region and sold for economic purposes. In addition, the aboveground parts of this plant are also used in the treatment of cancer. Similar usage is also found in the literature in the studies of Behçet and Arık (2013) and Kaval et al. (2015).

Eryngium billardierei species is a medicinal plant used in the Adaklı region for hypertension, dental health and wound healing. Promoting wound healing indicates that it has an anti-inflammatory effect Yesilada et al. showed in a study that some *Eryngium* species have antioxidant and anti-inflammatory effects. (Yeşilada et. al., 1989). The fruits of the *Rosa canina* plant are used in the treatment of cold and cough in the Adaklı region. The fruit is used for the treatment of cold and cough by drinking after it is dried and added to boiled water. Similar uses are also found in the literature (Nadiroğlu and Behçet, 2018; Cakilcioglu and Turkoglu, 2010; Mükemre et. al., 2015; Polat et al., 2011; Polat et al., 2012a; Polat et al., 2012b; Polat, 2019; Cakilcioglu et. al., 2011).

Hypericum perforatum species is one of the used medicinal plants in the treatment of wounds and burns in the Adaklı region. A similar usage is also available in Sivrice (Elazığ) region (Cakilcioglu and Turkoglu, 2010). By Öztürk et al. that it has wound healing activity also reported (2007). *Malva neglecta* species is used in the Adaklı region for bone fractures, dry eyes, cough, expectorant, hemorrhage stopper and edema reliever. Similar uses have been found in some ethnobotanical studies (Cakilcioglu and Turkoglu, 2010; Nadiroğlu and Behçet, 2018).

As a result, these people use these wild plants to treat various diseases. When the literature was examined, it was seen that the medicinal plants grown in Adaklı were used in the treatment of similar diseases in different parts of Turkey. It is of great importance to investigate the heritage of traditional plant use

passed down from generation to generation. Therefore, such a study is important in terms of recording, preserving, and benefiting from the accumulation of this cultured form which has been exhibited for centuries only.

Conflicts of Interests

Authors declare that there is no conflict of interests

Financial Disclosure

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Statement contribution of the authors

In this study, the collection of plant material and interviews with local people were carried out by M. Durumlu; planning of this study, identification of the plants and writing of the article were done by G. Doğan.

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