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Araştırma Makalesi (Research Article)

**An Ethnobotanical Study of Medicinal Plants Used in Hizan District (Bitlis-Turkey)**

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**Abstract:** Medicinal plant use culture is very rich in East Anatolia. Hizan district is one of the best examples of this. Hizan has a very hilly topography. In the past, people is living in Hizan developed alternative medicines to treat their illnesses because of geographical structure and harsh winter conditions. This study was conducted in Hizan (Bitlis) district and it was the first investigation of the knowledge of tra-ditional medicinal plants used in Bitlis Province. This research aims to scientifically identify the medicinal plants used by local people and record the culture of traditional medicinal plants use of local people living in Hizan. Face-to-face interviews were conducted with participants with ethnobotanical knowled-ge and experience in 2018 and 2019 and the collected samples were prepared according to herbarium techniques. Consequently 71 taxa belonging to 29 families used for the treatment of 35 different diseases were identified. The traditional medical use of some taxa was specific to Hizan. The results revealed that the taxonomic family with the greatest number of utilized plants was Asteraceae. These are followed by Rosaceae, Lamiaceae, Malvaceae, Polygonaceae and Apiaceae.

**Hizan İlçesinde Kullanılan Tıbbi Bitkilerin Etnobotanik İncelemesi (Bitlis-Türkiye)**

**Makale Bilgileri**

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**Anahtar kelimeler**

Bitlis,  
Etnobotanik,  
Hizan,  
Şifalı bitkiler.

**Öz:** Doğu Anadolu'da tıbbi bitki kullanım kültürü çok zengindir. Hizan ilçesi bunun en güzel örneklerinden biridir. Hizan, oldukça engebeli bir topografyaya sahiptir. Geçmişte, Hizan halkı coğrafi yapısı ve sert kış koşulları nedeniyle hastalıklarını tedavi etmek için alternatif ilaçlar geliştirdi. Hizan (Bitlis) ilçesinde yürütülen bu çalışma Bitlis ilinde kullanılan geleneksel tıbbi bitkilerin bilgisinin ilk araştırmasıdır. Bu araştırma, yerel halk tarafından kullanılan tıbbi bitkileri bilimsel olarak tanımlamayı ve Hizan'da yaşayan yerel halkın geleneksel tıbbi bitki kullanım kültürünü kaydetmeyi amaçlamaktadır. 2018 ve 2019 yıllarında etnobotanik bilgi ve deneyime sahip katılımcılar ile yüz yüze görüşmeler yapılmış ve toplanan örnekler herbaryum tekniklerine göre hazırlanmıştır. Sonuç olarak 35 farklı hastalığın tedavisinde kullanılan 29 familyaya ait 71 takson tespit edilmiştir. Bazı taksonların geleneksel tıbbi kullanımı Hizan'a özgüdür. Sonuçlar, en fazla kullanılan bitki sınıfına sahip taksonomik familyanın Asteraceae olduğunu ortaya koymuştur. Bunları Rosaceae, Lamiaceae, Malvaceae, Polygonaceae ve Apiaceae takip etmiştir.

## 1. Introduction

The fossil records show that the human use of plants as medicines may be traced back at least 60 000 years (Solecki, 1975). According to some researchers (Miara et al., 2019), the great majority of developing countries (80%) use medicinal plants for health purposes. Documentation of ethnobotanical information is important for the conservation and use of biological resources (Muthu et al., 2006).

Medicinal plants in rural areas of developing countries have been used as the primary source of medicine in the treatment of human diseases (Palombo, 2009; Sönmez et al., 2019).

Many ancient civilizations had flourished in Turkey, and thus many food and medicinal plant domestication began in this area (Altundağ and Öztürk, 2011). The Anatolian people have been used plants for medicinal purposes by Paleolithic period (50 000 BC). The plant specimens that were found in the Neanderthal tombs in Şanidar cave in the Zagros Mountains of northwestern Iraq, which is not far from Hizan (our research area), are solid proofs of this assumption (Baytop, 1999). Anatolia is the meeting place of three phytogeographical regions (Euro-Siberian, Mediterranean and Irano-Turanian). Thus, it has a very rich flora (Özhatay et al., 2005).

There are some ethnobotanical studies done in Eastern Anatolia, but they are inadequate (Akan et al., 2008). In the past, due to harsh winter conditions and deficiency, people who had difficulty accessing health facilities started looking for alternative medicines for treatment in Bitlis province. Thus, the use of the culture of the traditional medicinal plants has enriched. (Tabata et al., 1994). One of the best examples of this condition is Hizan district.

This study was carried out to scientifically identify the medicinal plants used by local people living in Hizan district, to record this cultural heritage and to convey it to future generations.

## 2. Materials and Methods

### 2.1. The study area

Hizan is located in Eastern Anatolia Region. It is located at 38°13' N, 42°25' E coordinates and is 1700 meter above average sea level. Hizan is neighbour to Bahçesaray and Gevaş (Van) in the east, Pervari and Şirvan (Siirt) in the south and Tatvan (Bitlis) in northwest (Figure 1).

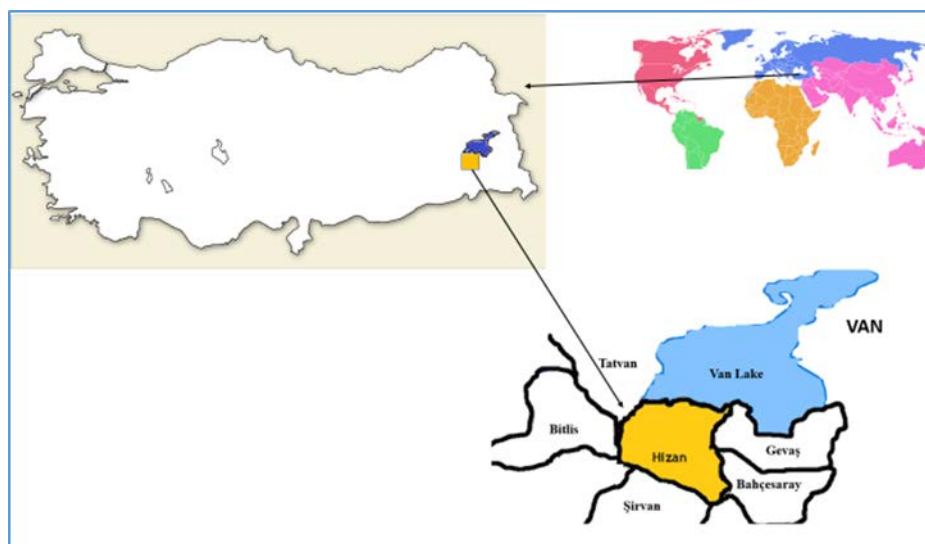


Figure 1. Geographical location of the research area (Hizan).

Hizan has been a center of civilization since the Hittites. According to historical records, human settlements are known to be present there from the 2000s BC. Human settlements started with the Hittites and continued under Persian, Roman, Byzantine and Arab rule. It was ruled by Seljuks in the 11th century and by Ottomans period in the 16th century (Çiçek, 2016).

## 2.2. Interviews with healer people

In 2018 and 2019, interviews were held face-to-face with participants who have ethnobotanical knowledge and experience (Figure 2). The view was obtained from 68 people, including 39 men and 29 women and information was obtained recorded. The average age of the participants is over 40. The job of these people living in the villages are generally farming.

The following questions were asked to the participants and the answers were recorded.

- What is the domestic names of the plant used?
- For what kind of diseases are the plants used?
- Which part of the plant is used?
- How you prepare a plant for use?
- How is used the herbal medicine?



Figure 2. Geographical location of the research area (Hizan).

## 2.3. Collecting and identification of medicinal plants

Medicinally used plant samples were collected from their natural habitats with the participants. The collected plant samples were collected according to the information provided by the healers.

The collected samples were prepared according to herbarium techniques and herbarium samples were stored in the Biology Department of Faculty of Sciences, Bitlis Eren University.

Identification of plant taxa was performed by using Flora of Turkey. (Davis, 1965-1985; Davis et al., 1988; Güner et al., 2000). The scientific names of the plant taxa were confirmed by using (The Plant List, 2013) and The taxonomic categories (family, species etc.) of the identified samples were arranged in alphabetical order (Table 1).

## 2.4. Classification of diseases

The treated diseases were classified according to the international classifications of diseases of the by the WHO (Staub et al., 2015). These ailments are: Antidote; (for snake bites and bites of other venomous animals); Aphrodisias; (stimulant, anti-stimulant, impotency); Cancer, Cardiovascular; (anti-arrhythmic, cardiotoxic, dropsy, blood circulation, haemorrhoids and varicose veins [both internal applications], hypertension); Dermatologic disorders;(incl. Infections, tonsillitis, mouth and throat infection, haemorrhoids and varicose veins, external applications),Metabolic syndromes; (diabetes, immunological problems), Gastrointestinal problems; (Ulcers, stomach-ache), Gynaecology (women's medicine), Infections (protozoal, bacterial and viral infections), Nervous system (peripheral and central, incl. Headache and insomnia, anal-gesics and unspecific spasmolytics, stimulants and hallucinogens), Parasites; (helminths, lice, insects); Respiratory complaints; (tonsillitis, mouth and

throat infection, asthma, pulmonary problems), Skeleto-muscular system; (rheumatism, muscle relaxant, gout) and Urological problems; (infections, dropsy, prostate, diuretic action).

Herbal remedies prepared by the participants were arranged according to the diseases categories shown above.

### 3. Results and Discussion

#### 3.1. Taxonomic identification of plants

The scientific name and voucher number, family name, local names, plant parts used of plants, preparation methods, utilization and uses of medicinal plants used in Hizan are given in Table 1. As a result of the study, 71 taxa relating to 29 families that are used 735ort he treatment of 35 different diseases were detected.

The results revealed that the taxonomic family with the greatest number of utilized plants was Asteraceae (10 species). This is followed closely by Rosaceae, (9 species), and then comes Lamiaceae (5 species), Malvaceae, Polygonaceae and Apiaceae (4 species each), Boraginaceae and Plantaginaceae (3 each). The remaining plant families were represented by only one or two taxa.

The medical use of 8 taxa listed in Table 1 was first encountered in Hizan district. These taxa are; *Paronychia kurdica* subsp. *Kurdica* Boiss. (wart treatment), *Rumex angustifolius* subsp. *Macranthus* (Boiss.) Rech.f. (cancer), *Scorzonera veratrifolia* Fenzl (cancer, diabetes), *Crataegus x sinaica* Boiss.( Cough, colds and flu), *Satureja macrantha* C.A.Mey. (Stomachache), *Scutellaria orientalis* subsp. *Porphyrostegia* J.R.Edm. (Hemorrhoids), *Eryngium thyrsoideum* Boiss. (Incision), *Salix acmophylla* Boiss. (Menstrual irregularities).

*Scutellaria orientalis* subsp. *porphyrostegia* J.R.Edm. was detected to be endemic plant used for medicinal purpose from Hizan. When compared with some other studies conducted in the Eastern Anatolia region (Tabata et al., 1994; Altundağ and Öztürk, 2011; Kaval et al., 2014; Mükemre et al., 2015, Polat, 2019), it is seen that the local names of some commonly used plants are almost the same. *Malva neglecta* Wallr. (tolık, tolk, tolık), *Rheum ribes* L. (Ribes, ribes, rewas, ribez), *E. Billardierei* F.Delaroche (Tüsü), *Urticadioica* L. (Geznik, gezing, gezgezok, gezne), *Allium cepa* L. (Pivaz, piyaz), *Allium sativum* L. (Sir) are some examples of this. However, some locally used names are specific to Hizan. The local names of plants species are: *Asparagus persicus* Baker (Tirhé mahré), *Arctium tomentosum* Mill. (Belge tehl), *Chrysophthalmum montanum* (DC.) Boiss. (Meryemxur), *Scorzonera latifolia*(Fisch. & C.A.Mey.) DC. (Nërebend), *Bryonia multiflora* Boiss. & Heldr. (Ture Gur), *Quercus brantii* Lindl. (Berüyê Hırçê), *Paronychia kurdica* subsp. *Kurdica* var. *Kurdica* Boiss (Giyayê tüyan), *Satureja macrantha* C.A.Mey. (Reyhana çiya), *Scutellaria orientalis* subsp. *Porphyrostegia* J.R.Edm. (Giyayê bavesirê), *Hypericum scabrum* L. (Bızın bezo), *Teucrium polium* L.(Cehdet), *Rumex angustifolius* subsp. *Macranthus* (Boiss.) Rech. F. (Bêjek), *Potentilla recta* L. (Zıla sor), *Rosa canina* L. (Masürük), *Daphne mucronata* Royle (Turi), *Daucus carota* L. (Giyayê Dıran eş). These names are only used in Hizan (Table 1).

Some local names of the plants are characterized by the disease treated. For instance;” Giyayê bavesirê “ is used for *Teucrium chamaedrys* L. And *Scutellaria orientalis* subsp. *porphyrostegia* J.R.Edm. “Giya” means herb in Kurdish and “bavesir” is the name of the hemorrhoid disease.

Table 1. Database of ethnomedicinal plants of Hizan District

Family, Plant species, Collector number	Local names	Part used	Preparation	Utilization method	Use
AMARYLLIDACEAE					
* <i>Allium cepa</i> L. İ.D. 2128	Pivaz, piyaz	Bulb	Boiled	Ointment.	Ringworm treatment
* <i>Allium sativum</i> L. İ.D. 2149	Sir	Bulb	Crushed	Ex(on face), Eat.	Acne treatment, hypertension

Table 1. Database of ethnomedicinal plants of Hizan District (continued)

Family, Plant species, Collector number	Local names	Part used	Preparation	Utilization method	Use
<b>ANACARDIACEAE</b>					
<i>Pistacia khinjuk</i> Stocks. İ.D. 2100,2105, 2124,2138,2140,2144	Kêzvan	Gum, Fruit	Latex Crushed	a. Wound b.İnternlly.	a.Inflamed wounds b. Gastric ulcer, aphrodisiac
<b>ARACEAE</b>					
<i>Arum rupicola</i> Boiss. İ.D. 2146,2163	Kari	Leaves	Cooked	Eat.	Lowering tapeworm in children
<b>ASPARAGACEAE</b>					
<i>Asparagus persicus</i> Baker. İ.D. 2097	Tırhê mahrê	Root	Crushed	Oinment	Rheumatism
<b>ASTERACEAE</b>					
<i>Achillea schischkinii</i> Sosn. İ.D. 2098	Pujan	Aerial parts	Infusion	İnternally	Diabetes
<i>Achillea tenuifolia</i> Lam. İ.D. 2093	Pujdar	Aerial parts	Boiled	Bath	Body fatigue a. Diabetes, shortness of breath. b. Body fatigue
<i>Achillea vermicularis</i> Trin. İ.D. 2142,2166	Pêşdang	Capitulum	Infusion	a.İnternally b. Bath	
<i>Achillea biebersteinii</i> Afan. İ.D. 2155	Pujdang	Aerial parts	Cooked	Eat	Infertility
<i>Arctium tomentosum</i> Mill. İ.D. 2108,2169	Belge tehl	Leaves	Crushed	Wound	Rheumatism
<i>Chrysophthalmum montanum</i> (DC.) Boiss. İ.D. 2174	Meryemxur	Leaves	Chew	Chew	Shortness of breath
* <i>Helianthus tuberosus</i> L. İ.D. 2119	Sêvka bînerd	Tuber	Eaten raw	Eat	Diabetes
<i>Onopordum carduchorum</i> . İ.D. 2159	Tovê karê	Seed	Crushed	Eaten with honey	Hemorrhoids, diabetes
<i>Scorzonera latifolia</i> (Fisch. & C.A.Mey.) DC. İ.D. 2154	Nêrebend	Root	Latex	Chew	Gastric ulcer
<i>Scorzonera veratrifolia</i> Fenzl. İ.D. 2175	Nêrebend	Root	Latex	Chew	Diabetes
<b>BORAGINACEAE</b>					
<i>Anchusa azurea</i> var. <i>azurea</i> Mill. İ.D. 2106,2187	Güzürok	Aerial parts	Cooked	Eat	Antidote
<i>Anchusa azurea</i> var. <i>kurdica</i> (Guşul.) D.F. Chamb İ.D. 2122	Güzürok	Aerial parts	Cooked	Eat	Antidote
<i>Echium italicum</i> L. İ.D. 2089	Guriz	Aerial parts	Cooked	Eat	Antidote
<b>BRASSICACEAE</b>					
* <i>Brassica oleracea</i> L. İ.D. 2112	Kelem	Leaves	Boiled	Oinment	Rheumatism, to step bleeding
<i>Sinapis arvensis</i> L. İ.D. 2180	Xerdel	Seed	Crushed	Eaten with honey	Aphrodisiac
<b>CHENOPODIACEAE</b>					
<i>Beta vulgaris</i> L. İ.D. 2113	Silk	Leaves	Decoction	İnternally	Cholesterol
<b>CUCURBITACEAE</b>					
<i>Bryonia multiflora</i> Boiss. & Heldr. İ.D. 2157	Ture Gur	Fruit	Crushed	Oinment	Rheumatism
* <i>Cucurbita maxima</i> Lam. İ.D. 2126	Gundura şaş	Fruit	Boiled	Oinment	Anti-inflammatory
<b>FABACEAE</b>					
<i>Astragalus gummifer</i> Labill İ.D. 2134	Günü	Root	Gum	Eaten with honey	Liver diseases
* <i>Medicago sativa</i> L. İ.D. 2168	Once	Leaves	Crushed	Oinment	to step bleeding
<b>FAGACEAE</b>					
<i>Quercus infectoria</i> Olivier İ.D. 2167	Mazü	Fruit	Crushed	Apply as powdered	Toothache
<i>Quercus brantii</i> Lindl. İ.D. 2147	Berüyê Hırçê	Fruit	Boiled	Eat	Diabetes, Gastric ulcer
<b>HPERICACEAE</b>					
<i>Hypericum scabrum</i> L. İ.D. 2162, 2179	Bızın bezo	Aerial parts	Crushed	Oinment	Incision

Table 1. Database of ethnomedicinal plants of Hizan District (continued)

Family, Plant species, Collector number	Local names	Part used	Preparation	Utilization method	Use
<b>ILLECEBRACEAE</b>					
<i>Paronychia kurdica</i> subsp. <i>kurdica</i> var. <i>kurdica</i> Boiss. İ.D. 2091,2130,2172	Giyayê tüyan	Aerial parts	Eaten raw	Eat with salt	Wart treatment
<b>JUNLANDACEAE</b>					
* <i>Juglans regia</i> L. İ.D. 2111,2148	a. Pota güza b. Xiça Guzê	Fruit, Sap	a. Boiled b. Sap	a. Internally b. Drop	a.Diabetes. b. stomachache in newborn child, ear pain
<b>LAMIACEAE</b>					
<i>Origanum vulgare</i> L. subsp. <i>gracile</i> (K.Koch) lets. İ.D. 2095, 2110	Cantıra reş	Aerial parts	Infusion	Internally	Shortness of breath, enuresis
<i>Satureja macrantha</i> C.A.Mey. İ.D. 2173,2181	Reyhana çiya	Aerial parts	Crushed	Internally	Stomachache
<i>Scutellaria orientalis</i> subsp. <i>porphyrostegia</i> . İ.D. 2177	Giyayê bavesirê	Aerial parts	Infusion	Internally	Hemorrhoids
<i>Teucrium chamaedrys</i> subsp. <i>sinuatum</i> (Celak.) Rech. f. İ.D. 2109,2186	Giyayê bavesirê	Aerial parts	Infusion	Internally	Hemorrhoids
<i>Teucrium polium</i> L. İ.D. 2092, 2129	1.Meryemkot 2.Cehdet	Leaves	a. Eaten raw b. Infusion	a. Eat b. Internally	a. Diabetes b. Afterpains
<b>MALVACEAE</b>					
<i>Alcea flavovirens</i> (Boiss. & Buhse) Iljin. İ.D. 2116	Gûl	Root	Boiled	Internally	Heart disease
<i>Alcea remotiflora</i> (Boiss. & Heldr.) Alef. İ.D. 2117,2160	Hêro	Aerial parts	Crushed	Hair washing	Hair care
<i>Malva neglecta</i> İ.D. 2121, 2123	Tulık, Giya dıpnu	Fruit	a. Decoction b. Cooked	a. Internally b. Eat	a. Stomachache b. Afterpains
<i>Malva slyvestris</i> L. İ.D. 2156	Tulık	Aerial parts	Decoction	Internally	Gastric ulcer
<b>MORACEAE</b>					
* <i>Ficus carica</i> subsp. <i>rupestris</i> (Hausskn.) Browicz İ.D. 2161.	Hejira reş	Bark	Crushed	Sniff	Nosebleed
* <i>Morus nigra</i> L. İ.D. 2132,2143	Tüye reş	Fruit	Crushed	a. Drop b. Eat	a. Eye pain, redout b. Icterus
<b>PLANTAGINACEAE</b>					
<i>Plantago lanceolata</i> L. İ.D. 2087, 2120	Giyabirin	Aerial parts	a. Eaten raw b. Crushed	a. Eat b. wound	a. Stomachache b.to step bleeding
<i>Plantago major</i> subsp. <i>intermedia</i> (Gilib.) Linge İ.D. 2088,2102,2107	Takêş, Heyiso	Aerial parts	a. Decoction b. Crushed	a. Internally b. Externally	a. Stomachache b.Inflamed wounds
<b>PLATACEAE</b>					
<i>Platanus orientalis</i> L. İ.D. 2086	Çınar	Leaves	Infusion	Internally	Rheumatism
<b>POACEAE</b>					
* <i>Zea mays</i> L. İ.D. 2115	Bacıık	Tassel of corn	Decoction	Internally	Kidney disease
<b>POLYGONACEAE</b>					
<i>Rheum ribes</i> L. İ.D. 2139,2143	Rıbês	Root	Boiled	Internally	Diabetes
<i>Rumex angustifolius</i> subsp. <i>macranthus</i> (Boiss.) Rech. f. İ.D. 2188	Bêjek	Aerial parts	Cooked	Eat	Cancer
<i>Rumex crispus</i> L. İ.D. 2085	Avilok	Fruit	Crushed	Oinment	Inflamed wounds
<i>Rumex patientia</i> L. İ.D. 2118	Avilok	Aerial parts	a. Decoction. b. Crushed	a. Internally b. Oinment	a. Intestinal ulcer b.to stop bleeding
<b>RANUNCULACEAE</b>					
* <i>Nigella sativa</i> L. İ.D. 2096	Çörek otu	Seed	Crushed	Eat with honey	Cancer
<i>Ranunculus kotschyi</i> Boiss. İ.D. 2135	Çüng	Aerial parts	Eaten raw	Eat	Cancer

Table 1. Database of ethnomedicinal plants of Hizan District (continued)

Family, Plant species, Collector number	Local names	Part used	Preparation	Utilization method	Use
<b>ROSACEAE</b>					
<i>Amygdalus orientalis</i> Miller. İ.D. 2158	Bihêv	Seed	Eaten raw	Eat with honey	Diabetes, headache
<i>Crataegus meyeri</i> Pojark. İ.D. 2151	Reyê gühüja spi	Root	Decoction	İnternally	Tuberculosis
<i>Crataegus x sinaica</i> Boiss. İ.D. 2190	Gühüj	Fruit	Infusion	İnternally	Cough, colds and flu
<i>Crataegus curvisepala</i> Lindm. İ.D. 2176	Reyê gühüjê	Root	Boiled	İnternally	Tuberculosis
<i>Malus sylvestris</i> subsp. <i>orientalis</i> var. <i>orientalis</i> (Uglitzk.) Browicz. İ.D. 2103, 2133	Sêva gevr	Fruit	Cooked	Eat	Tuberculosis
<i>Potentilla recta</i> L. İ.D. 2182	Zıla sor	Aerial parts	Boiled	Oinment	Rheumatism
<i>Rosa canina</i> L. İ.D. 2104,2125,2137	Masürük	Fruit	Decoction	İnternally	Cough, colds, flu and stomachache
<i>Rosa puberulenta</i> Rydb. İ.D. 2191	Masürük	Fruit	Decoction	İnternally	Cough, colds and flu
<i>Rubus idaeus</i> L. İ.D. 2153	Tütürk	Fruit	Eaten raw	Eat	Blood thinner
<b>SALICACEAE</b>					
<i>Salix acmophylla</i> Boiss. İ.D. 2152	Dara biyê	Leaves	Decoction	İnternally	Menstrual irregularities
<b>SCROPHULARIACEAE</b>					
<i>Verbascum oreophilum</i> var. <i>joannis</i> . (Bordz.) Hub.-Mor. İ.D. 2184	Sinem	Aerial parts	Boiled	Bath.	Diabetes
<b>THEACEAE</b>					
<i>Daphne mucronata</i> Royle. İ.D. 2189	Turi	Fruit	Crushed	Oinment	Rheumatism
<b>TILIACEAE</b>					
<i>Tilia tomentosa</i> Moench İ.D. 2094	Ihlamur	Flower	Infusion	İnternally	Cough, colds and flu
<b>UMBELLİFERAE</b>					
<i>Daucus carota</i> L. İ.D. 2101	Giyayê Dıran eş		Crushed	Mouthwash	Toothache
<i>Eryngium billardierei</i> F. İ.D. 2136	Tüsü	Fresh shoots	Crushed	Oinment	Burns
<i>Eryngium pyramidale</i> Boiss. & Hausskn., İ.D. 2165	Tüsü	Root	Decoction	İnternallt	Shortness of breath
<i>Eryngium thyrsoideum</i> Boiss. İ.D. 2170	Xiça tüsü	Fresh shoots	Crushed	Powder	Incision
* <i>Petroselinum crispum</i> (Mill.) A.W.Hill. İ.D. 2114	Maydanoz	Root	Decoction	İnternally	Kidney diseases
<i>Prangos pabularia</i> Lindl. İ.D. 2178	Xiça heliz	Aerial parts	Ointment	Wound	Erysipeloid
<b>URTICACEAE</b>					
<i>Urtica dioica</i> L. İ.D. 2099, 2127,2141,2145,2164,2183	Geznık	Seed Aerial parts Root	Crushed	a. Eatwith honey b. Oinment c. Oinment	a. aphrodisiac, cancer b. Rheumatism c. bone fracture treatment

İ.D: İbrahim DEMİR

\*Cultivated plants

### 3.2. Parts used and preparation method

Generally used plant parts are the following ones; Aerial part (32%), Fruits (21%), Leaves (15%), Roots (15%), Seeds (5%). Other parts were represented by only one or two percent (total 17%). (Figure 3).

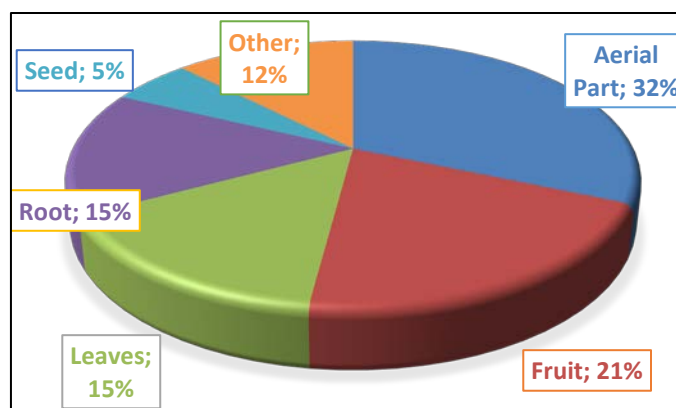


Figure 3. Parts of the plants used.

### 3.3. Traditional medicinal plants used for the treatment of different diseases in hizan

The plants used for types of diseases below are arranged according to the diseases classified by some authors (Staub et al., 2015). Dermatologic disorders (13), Metabolic syndromes (12), Gastrointestinal problems (11), Skeleto-muscular system disorders (10), Cardiovascular problems (10), Respiratory complaints (8), Nervous system diseases (5), Cancer (5), Infections (5), Gynecological diseases (4), Urological problems (3), Antidote (3), Aphrodisias (3) and Parasites (1). The reported ailments were grouped into 14 categories basing on the information gathered from the interviews (Figure 4).

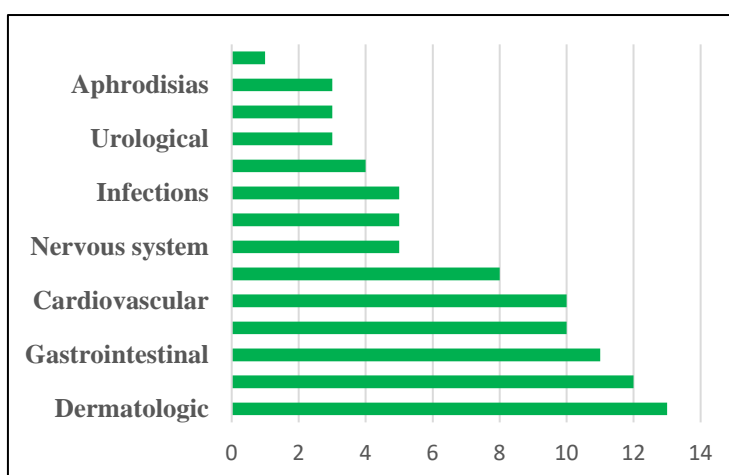


Figure 4. Number of taxa used for folk medicine in Hizan.

The most used plants in the research area are:

*Urtica dioica* L., (for aphrodisias, cancer and skeleto-muscular system) *Achillea vermicularis* Trin. (metabolic syndromes, respiratory complaints, skeleto-muscular system), *Plantago lanceolata* and *Plantago major* L. (dermatologic disorders, gastrointestinal problems), *Rheum ribes* L. (diabetes), *Pistacia khinjuk* Stocks (dermatologic disorders, gastrointestinal problems and aphrodisias), *Malva neglecta* Wallr. (gastrointestinal problems and Gynaecology) *Teucrium chamaedrys* subsp *sinuatum* (Celak.) Rech.f. and *Onopordum carduchorum* Bornm. & Beauverd (hemorrhoids), *Anchusa azurea* (for antidote) and *Paronychia kurdica* subsp. *kurdica* var. *kurdica* Boiss. (wart treatment) are most used species.

*Urtica dioica* L. is plants which are commonly used across the world and in Turkey. It is commonly used to treat cancers. In addition, this herb is used to diabetes disease, rheumatism, stomachache, colds, and flu arthritis, digestive, diuretic, genital disorders, in East Anatolia (Altundağ and Öztürk, 2011; Mükemre et al., 2015).



*Plantago* species (*P. lanceolata* L. and *P. major* L.) are widespread in Anatolia. They are used to treat abscess, gastric pain, hemorrhoids vulnerary, antiinflammatory, stomachic, ulcer, antihemorrhoidal, gynecologic diseases, to cure wounds, embolism, urinary inflammations, to heal wounds, antitussive, bronchitis, diarrhoea, expectorant, urinary inflammations (Tabata et al.,1994; Kaval et al., 2014; Mükemre et al., 2015).

*Rheum ribes* L. is one of the most collected plants from natural areas in East Anatolia. Fresh shoots of this plant are consumed as food in Eastern Anatolia and they are used for the treatment of diabetes (Tabata et al.,1994; Altundağ and Öztürk, 2011; 2015; Mükemre et al., 2015).

*Pistacia khinjuk* Stocks has antibacterial, antifungal, antioxidant, and wound healing properties (Al-Alfy et al., 2019).

*Pistacia khinjuk* widely used both for the treatment of diseases and as nutrient in Hizan. Also a latex ointment made from the trunk of the tree is also applied to inflamed wounds. *Pistacia khinjuk* Stocks was used for stomachache in the study conducted in Hakkâri province (Kaval et al., 2014). *P. khinjuk* has been used as an indigestion, tonic, toothache and astringent folk medicine. In addition, fruits of it used edible wild fruits (Pirbalouti and Aghaee 2011).

The use of *malva neglecta* Wallr. is common in all regions of Turkey. It is commonly consumed as food. And it is commonly used as a folk medicine in a number of conditions. In Hizan it is widely used for the treatment of stomachache as a pain reliever.

Many species of *Teucrium* are known for their utilization in traditional folk medicine. They are claimed to exhibit interesting biological properties such as; hypoglycaemic, hypolipidemic, antioxidant, antipyretic, anti-inflammatory, antiulcer, antitumor and anti bacterial (Bruno et al., 2004).

*Onopordum carduchorum* Bornm. & Beauverd is used for the treatment of hemorrhoids in Hizan. Ethnobotanical use of this plant for the same disease is found in Savur district (Mardin). (Arasan and Kaya, 2015).

The study called “Effects of *Paronychia kurdica* Boiss. on teat and udder papillomatosis in cows” was investigated and successful results were obtained (Apaydin et al., 2010).

Ethnobotanical record of *Rumex angustifolius* subsp. *macranthus* (Boiss.) Rech.f. plants were not found.

#### 4. Conclusion

Plants, which are of great importance for the continuity of life, are among the most important natural resources of a country.

Plant-human relationship is as old as human history. Almost all civilizations have used plants as a mean of treatment. The culture of medicinal plant use is very rich in Anatolia. It has hosted many civilizations throughout history. In the past, people who lived in places like Hizan where they had difficulty in accessing health care facilities due to challenging geographical structures and harsh winter conditions began to look for alternative remedies to treat their illnesses. Undoubtedly, the rich plant diversity in the region played an important role in alternative treatments. Ethnobotanical uses are gaining value day by day. Unfortunately, the value of this knowledge is not known well enough by younger generations. The number of people who have this knowledge is decreasing day by day. Therefore, ethnobotanical knowledge has to be recorded as soon as possible. Ethnobotanical research is important because it contains valuable information that has been acquired by trial and error and has been passed down from generation to generation as a result of a long period of time. With this study, it was aimed to record the plants' use culture of the local people living in Hizan district which has rich plant diversity and plant use accumulation.

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