

# An Ethnobotanical Study of Medicinal Plants in Savaştepe (Balıkesir-Turkey)

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## ABSTRACT

**Objective:** This research planned to record traditional uses and preparations of herbal medicines in Savaştepe, Balıkesir. The study was conducted between the years 2012-2016. The Savaştepe district is located on the borders of Balıkesir province.

**Methods:** 44 villages connected to Savaştepe were visited during the research. With the help of the local people, the collected plants were diagnosed and converted into herbarium specimens. All herbarium samples are stored in the Herbarium of Istanbul University Faculty of Pharmacy (ISTE). Information about the use of plants were collected by the help of interviews with 205 people (107 men, 98 women).

**Results:** As a result of this study, there were 163 medicinal plant taxa belonging to 53 families. Mostly used medicinal plant species families are Lamiaceae (22 taxa), Asteraceae (20 taxa), Rosaceae (16 taxa), Fabaceae (6 taxa), Brassicaceae (7 taxa), Apiaceae (4 taxa), Poaceae (4 taxa), Scrophulariaceae (4 taxa) respectively. According to the informations, the most common diseases were categorized into 12 group and their FIC values are calculated. The highest FIC value (0.852) for hemorrhoids. Having high use value represents that this taxa is commonly used in Savaştepe. The highest use value is 0.93 for *Urtica dioica*

**Conclusion:** This study documented the medicinal plants used by local people of Savaştepe and also the uses, preparations and vernacular names of medicinal plant species. This study will help to conserve valuable informations of the medicinal plants of Savaştepe.

**Keywords:** Ethnobotany, Ethnomedicine, Savaştepe, Medicinal plants, Turkey

## 1. INTRODUCTION

Turkey has a rich flora consisting of more than 12 000 taxa. Approximately 34% of these plants are endemic (1). Turkey has very rich knowledge about the ethnobotany. Ethnobotany is defined as a “human-plant relationship. It can be summarized as the knowledge of utilizing the plants for various purposes in a particular area. With ethnobotanical studies, it is aimed to identify the medicinal plant species in a particular region and as food, in the production of dyes, for cosmetic purposes, in animal diseases and tools. Ethnobotanical studies have been conducted in Turkey and other neighboring countries (2-7). Ethnobotanical studies of Turkey record very important information about the flora of the region, traditional uses of the plants, the cultural values in Turkey. The prospect of ethnobotanical studies have increased more after the migration of local populations to big cities. The villagers who have moved to big cities have forget the uses of plants in their daily life. At the same time, the recording of information about plants used in the region provides a better understanding of the plant’s benefits and

leads to the commercial-purpose plant production projects. Savaştepe is located in the southern part of the Marmara region, within the borders of Balıkesir province. According to literature, medicinal plants of Savaştepe have been studied for the first time. This study was carried out to preserve valuable informations about local uses of medicinal plants and helps to treasure up preliminary information for more investigation of chemical studies.

## 2. METHODS

### 2.1. Study Area

Savaştepe is in the south part of Balıkesir. It neighbors with İvrindi in the west, Bigadiç in the east and Soma in the South region. It has an area of about 430 km<sup>2</sup>. The climate of the Savaştepe district is similar to the climate of the Marmara and

Aegean regions. The general vegetation is maquis. The forests of the district are located in the east and south. Although there are a wide variety of plant species in the district, pine and oak trees are the majority. There are 44 villages in Savaştepe; (1) Akpınar, (2) Ardıçlı, (3) Aşağıdanışment, (4) Beyköy, (5) Bozalan, (6) Çaltılı, (7) Çamurlu, (8) Çavlı, (9) Çiftlikdere, (10) Çukurçayır, (11) Deveören, (12) Dikmeler, (13) Eğerci, (14) Esenköy, (15) Güvem, (16) Güvemküçüktarla, (17) Hıdırbalı, (18) İsadere, (19) Kalemköy, (20) Karacalar, (21) Karaçam, (22) Karapınar, (23) Kocabıyıklar, (24) Kocaören, (25) Kongurca, (26) Kovukyurt, (27) Kurudere, (28) Madenmezarı, (29) Mecidiye, (30) Minnetler, (31) Pelitcik, (32) Sarsüleymanlar, (33) Sıtmapınar, (34) Soğucak, (35) Söğütcük, (36) Söğütlügözü, (37) Tavşancık, (38) Türediler, (39) Yazören, (40) Yeşilhisar, (41) Yolcupınarı, (42) Yukarıdanışment, (43) Yukarıkaraçam, (44) Yunakdere (Figure 1). During the War of Independence, the National Army liberated Balıkesir and Savaştepe on 6 September 1922. The people of the district have fought so much in this war. For this reason, the city is called "Savaştepe (Warhill)". The population of the district was recorded as 20.201. Savaştepe is a district where the nomadic villages are very numerous and the nomadic cultures live intensely. The Karakeçili nomads live in about 20 villages. Apart from this, there are the villages established by the tribes of Mustard, Kılaz, Yüncü nomads. This information is obtained by asking the people of each village during field studies.

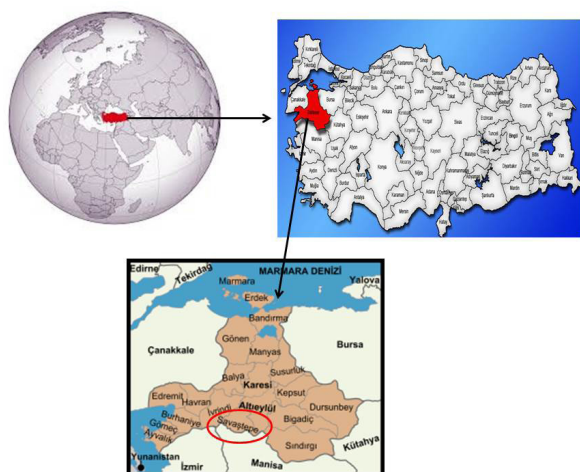


Figure 1. The geographical location of the study area.

## 2.2. Interviews With Local People

During the field studies 205 local people have been interviewed in 44 settlements, between 2012-2016. The ages of the informants were within 30–70 years. The educational status of the local people is usually at the primary, secondary and high school levels. A questionnaire form was used

to categorize the use of plants among the public during field studies. In every village, firstly the village reeve was interviewed and information was given about the work done. The names of the people who knew the plants best in the village were asked. The houses of these people and the village shepherds were visited and informations about the medicinal plants was collected from the knowledgeable people (Figure 2-5). During the field studies, the local names of the plants, the demographic characteristics of the participants in the study, the used parts of the plant and preparations written. Whenever possible, audio and video recordings of the interviews were recorded.



Figure 2. An interview with the local people in Yeşilhisar village tea house



Figure 3. Field studies with a vilager in Savaştepe





Figure 4. Yörük house in Kovukyurt village



Figure 5. A healer woman in Minnetler village

### 2.3. Plant Materials

To collect the material of the workshop, 12 times of field trips were organized in the study area between May 2012 and October 2015. In this field trips, 200 medicinal plant specimens were collected, 163 of them to be used for medicinal purpose. The informants who participated in the research were requested to show the plant's sample they used and photographs of the plants were taken in nature. The plant samples were collected, pressed with herbarium press. Some samples were taken from the informant's houses

which they use as a medicine, packaged and numbered (E.Ö code). The used plant samples were identified by the help of "Flora of Turkey and the East Aegean Islands" (1,8,9) and were compared with the other herbarium samples. The collected plants were deposited at herbarium (ISTE). The plant names were controlled from the plant list (10).

### 2.4. Calculations

The most common ailments of the study area were categorized into 12 section. Gastrointestinal disease, respiratory and throat disease, dermatological disease, endocrine system disease, cardiovascular disease, kidney disease, nervous system disease, cancer, skeletal muscular system disease, urogenital disease, headache-toothache-ear pain, and hemorrhoids. Informant consensus factors "ICF" (11) were calculated [ $FIC = (Nur - Nt) / (Nur - 1)$ ]. Nur = Number of citations used in each category, Nt= Number of the plant species used. If the FIC value is low (close to 0 value) it shows that plants are not chosen commonly. The use-value "UV" (11) shows the importance of plant species used in the area. It was calculated with following formula.  $UV = U/N$ , UV is the use-value of a species; U= the number of citations for every species; N= the number of informants.

## 3. RESULTS

### 3.1. Medicinal Plants

Interviews with the informants living in Savaştepe showed that, 163 taxa belonging to 53 families were used in the Savaştepe as a medicine. Among 163 plants, 23 plant species are cultivated. Lamiaceae (22 taxa), Asteraceae (20 taxa), Rosaceae (16 taxa), Leguminosae Fabaceae (6 taxa), Brassicaceae (7 taxa), Apiaceae (4 taxa), Poaceae (4 taxa) and Scrophulariaceae (4 taxa) (Figure 6). The 6 of these taxa are endemic. These are; *Acanthus hirsutus* Boiss., *Alcea pisidica* Hub.-Mor., *Ferulago macrosciadea* Boiss. & Balansa, *Tripleurospermum conoclinium* (Boiss. & Balansa) Hayek, *Stachys cretica* L. subsp. *anatolica* Rech. fil. and *Verbascum simavicum* Hub.-Mor. (1,8,12).

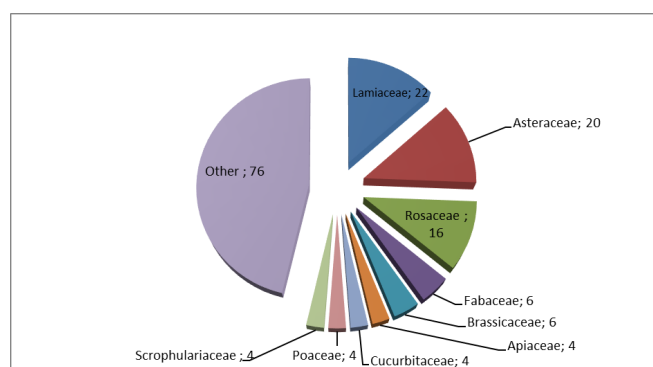


Figure 6. Most representantive families

There are different ways of herbal medicine preparations. In this study there were 226 internal uses (%70.9), and 94 external uses (%29.1). The number of methods for the preparation was calculated (Table 3). The most used preparations were infusion (%28.70) and decoction (%25.30). Some plants were used by mixing with honey (*Pinus brutia*, *Brassica nigra*, *Nigella sativa*, *Urtica dioica*, *Vitis vinifera*). The grated and crushed plant parts (*Allium sativum*, *Allium cepa*, *Quercus cerris*, *Olea europaea*, *Verbena officinalis*) are mixed with milk, olive oil, snake skin powder, salt, grated soap, yoğurt, tarhana for external application. These applications are the remedies for hair care, joint problems, panaris. The list of wild medicinal plants investigated with their related information and compared with the other ethnomedicinal studies in The West Anatolia. There are 12 taxa have been recorded for the first time as a medicinal plant in region. These taxa are indicated in table 4 in bold. These taxa are; *Onosma aucherana* DC., *Alyssum murale* Waldst. & Kit., *Lepidium spinosum* Ard., *Leontodon tuberosus* L., *Astragalus angustifolius* Lam., *Astragalus hamosus* L., *Melilotus indica* (L.) All., *Trifolium angustifolium* L., *Vicia tetrasperma* (L.) Schreb., *Stachys thirkei* K.Koch, *Veronica pectinata* L., *Scrophularia scopolii* Hoppe ex Pers. When this study is compared with other ethnobotanical studies conducted in the West Anatolia, if the medical use of taxa in Savaştepe is different from the use in other settlements, these uses are shown underlined in table 4. There are 79 taxa with different uses in this way.

**Table 1.** FIC values of categories of ailments

1. Hemorrhoids	0.852
2. Nervous system disease	0.813
3. Headache, tootache, ear pain	0.734
4. Kidney disease	0.702
5. Cancer	0.655
6. Gastrointestinal disease	0.643
7. Dermatological disease	0.637
8. Respiratory and throat disease	0.624
9. Skeletal muscular system disease	0.594
10. Cardiovascular disease	0.589
11. Endocrine system disease	0.455
12. Urogenital disease	0.428

**Table 2.** The most commonly used parts of the plants

Used part	Number	%
Aerial part	72	24
Leaf	71	23.7
Fruit	57	19
Seed	20	6.7
Flower	18	6
Stem	10	3.3
Cortex	8	2.7
Resin	5	1.7
Latex	2	0.6
Root	35	11.7
Tuber	2	0.6
Total	300	100.0

**Table 3.** Preparation methods of the medicinal plants in Savaştepe.

Preparation methods:		
Directly uses	60	18.52
After processing	264	81.48
Infusion	93	28.70
Decoction	82	25.30
Cooked	26	8.02
Crushed	24	7.40
Grated	7	2.16
Burned	5	1.54
Jam, molasses, marmalade	5	1.54
Mixed with honey	5	1.54
Macerated	5	1.54
Heated	4	1.23
Powdered	4	1.23
Juice	2	0.61
Pickle	1	0.31
Compote	1	0.31
Total	324	100.00

### 3.2. Data Analysis

Having high use value represents that this taxa is commonly used in Savaştepe/Balıkesir. The use values of *Urtica dioica* L. (0.93), *Salvia fruticosa* Mill (0.80), *Malva sylvestris* L. (0.59), *Matricaria chamomilla* L. (0.58), *Hypericum perforatum* L. (0.56), *Origanum vulgare* L. subsp. *hirtum* (0.54), *Thymus zygoides* Griseb. (0.49), *Pinus brutia* Ten. (0.41), *Platanus orientalis* L. (0.39), *Raphanus raphanistrum* L. (0.39), *Rumex crispus* L. (0.37) and *Rumex acetosella* L. (0.34) were the highest.

The plant species which have high use value can be selected for further pharmacological activity studies and these plant species can be chosen for trading purposes plant farming. In the research area, indications that most people use plants were determined. According to these informations, the most common diseases were categorized into 12 group (Table 1). The highest FIC value (0.852) for hemorrhoids. *Carpinus betulus* L., *Aetheorhiza bulbosa* (L.) Cass., *Carduus pycnocephalus* L. subsp. *albidus* (M.Bieb.) Kazmi, *Centaurea benedicta* (L.) L., *Tripleurospermum conoclinium* (Boiss. & Balansa) Hayek, *Dracunculus vulgaris* Schott, *Arum elongatum* Steven, *Xanthium strumarium* L., *Cornus mas* L., *Ecballium elaterium* (L.) A. Rich., *Dioscorea communis* (L.) Caddick & Wilkin, *Marrubium vulgare* L., *Teucrium chamaedrys* L., *Punica granatum* L., *Malva sylvestris* L. were reported for hemorrhoids. Nervous system disease had the second highest value (0.813). *Juniperus oxycedrus* L., *Pinus brutia* Ten., *Calendula officinalis* L., *Matricaria chamomilla* L., *Hypericum perforatum* L., *Melissa officinalis* L., *Rosmarinus officinalis* L., *Stachys thirkei* K. Koch, *Melilotus indica* (L.) All. were reported for nervous system disease. Headache, toothache, ear pain have 0.734 FIC value, kidney diseases have 0.702 FIC value, cancer have 0.655 FIC value, gastrointestinal diseases have 0.643 FIC value, dermatological diseases have 0.637 FIC value, respiratory and throat diseases have 0.624 FIC value. The last categories were reported to treat skeletal muscular

system diseases have 0.594 FIC value, cardiovascular diseases have 0.589 FIC value, endocrine system diseases have 0.455 FIC value, urogenital diseases have 0.428 FIC value. The aerial part of the plants were used mostly (72 of use-reports), leaf (71 of use reports), fruit (57), radix (35), seed (20), flos (18), stem (10), cortex (8), resin (5), tuber (2), latex (2) (Table 2).

People living in Savaştepe use medicinal plants mostly for Gastrointestinal disease (stomachache, diarrhea, heartburn, flatulence, nausea, reflux, ulcer): 72 taxa; respiratory and throat disease (asthma, bronchitis, cold, cough, dyspnea,

hoarseness, sore throat): 57 taxa; dermatological disease (burns, furuncle, cuts, rash, eczema, wounds): 55 taxa; endocrine system disease (thyroid, diabetes): 44 taxa; cardiovascular disease (hypertension, heart diseases, high cholesterol): 17 taxa; kidney disease (kidney gravel, kidney stone, nephritis): 15 taxa; nervous system disease: 12 taxa; cancer: 11 taxa; skeletal muscular system diseases: 29 taxa; urogenital disease (diuretic, dysuria, enuresisnocturna, menstruation problems): 29 taxa; headache, toothache, ear pain: 22 taxa; hemorrhoids: 23 taxa.

**Table 4.** The list of wild medicinal plants investigated with their related information

Family/ Botanical name	Local name in Savaştepe	Used parts	Preparation	Ailments treated, therapeutic effect	Herbarium number (ISTE, E.Ö.)	Use value
<b>PTERIDOPHYTA</b>						
<b>Aspleniaceae</b>						
<i>Ceterach officinarum</i> Willd.	Altın yıldız otu	Aerial part	Infusion, int.	Stomach pain	109566	0.15
<b>Dennstaedtiaceae</b>						
<i>Pteridium aquilinum</i> (L.) Kuhn	Eğrelti	Root	Decoction, int.	<u>Prostate</u>	109726	0.15
<b>Equisetaceae</b>						
<i>Equisetum arvense</i> L.	Eklemeli ot, Kirkkilit, Kilitotu	Aerial part	Decoction, ext.	Allergy	109971	0.18
		Aerial part	Decoction, int.	Kidney pain, prostate		
		Aerial part	Decoction, int.	<u>Constipation</u>		
		Aerial part	Decoction, ext.	Rheumatism		
		Root	Decoction, int.	Prostate		
<i>Equisetum ramosissimum</i> Desf.	Eklemeli otu	Aerial part	Decoction, int.	<u>Rheumatism</u>	109972	0.05
<b>SPERMATOPHYTA GYMNOSPERMAE</b>						
<b>Cupressaceae</b>						
<i>Cupressus sempervirens</i> L.	Selvi	Cone	Decoction, int.	Diabetes	E.Ö.2	0.1
<i>Juniperus oxycedrus</i> L.	Ardıç	Fruit, branch	Decoction, int.	Prostate	109615	0.26
		Fruit, branch	Decoction, ext.	Wound healing		
		Fruit	Decoction, int.	Cough, pain killer, kidney stone, diabetes, urinary system problems, throat pain		
		Stem and branch	Decoction, int.	Abdominal pain		
		Fruit	Eaten, int.	Eczema		
<b>Pinaceae</b>						

<i>Pinus brutia</i> Ten.	Çam	Resin	Eaten, int.	Breathing problems, expectorant	109873	0.41
				pain killer, stomach pain, ulcer, intestine cancer, inflammation		
		Resin	Infusion, int.	Stomach pain		
		Resin	Pastil, int.	Stomach pain		
		Resin	Mixed with honey	Bronchitis, ulcer		
		Resin	Put on skin, ext.	Wound		
		Stem and branch	Decoction, int.	Breathing problems, asthma		
		Stem and branch	Infusion, int.	Circulation problems, cholesterol		
		Young cone	Decoction, int.	Abdominal pain, asthma, bronchitis, expectorant		
Young Leaf	Decoction, int.	Diabetes				
<b>SPERMATOPHYTA ANGIOSPERMAE</b>						
<b>Acanthaceae</b>						
<i>Acanthus hirsutus</i> Boiss. (Endemic)		Aerial part	Infusion, int.	Fever	109529	0.02
<b>Adoxaceae</b>						
<i>Sambucus nigra</i> L.	Mürver	Cortex	Decoction, int.	Constipation	109530	0.09
<b>Amaranthaceae</b>						
<i>Beta vulgaris</i> L. *	Pancar	Fresh leaf	Freshly put on skin, ext.	<u>Wound healing, panaris</u>	E.Ö.3	0.49
<i>Chenopodium murale</i> L.	Sirken	Leaf	Eaten as a meal, int.	<u>Stomach pain, carminative, constipation</u>	109535	0.42
<b>Amaryllidaceae</b>						
<i>Allium ampeloprasum</i> L.	Pirasa	Aerial part	Eaten, int.	Breathing problems	109757	0.02
<i>Allium cepa</i> L. *	Soğan	Bulb	Grated and mixed with flour and olive oil, ext.	<u>Skin cracks</u>	E.Ö.4	0.11
		Bulb	Grated and mixed with salt, ext.	<u>Ankle joint problems,</u>		
		Bulb	Grated and mixed with grated soap, ext.	<u>Panaris</u>		
		Bulb	Grated and mixed with yogurt and tarhana, ext.	<u>Ankle joint problems</u>		

<i>Allium sativum</i> L. *	Sarımsak	Bulb	Eaten, int.	Bronchitis, blood pressure regulator,	E.Ö.5	0.2
		Bulb	Cooked, ext.	Ear pain,		
		Bulb	Crushed, ext.	Joint problems		
		Bulb	Crushed with salt, ext.	Toothache		
		Bulb	Crushed and mixed with olive oil, ext.	Hair care		
		Bulb	Crushed and mixed with snake skin powder	Hair care		
		Bulb	Grated, ext.	Protection against snake bites		
<b>Anacardiaceae</b>						
<i>Pistacia terebinthus</i> L.	Çetlemik, Çitlembik, Şimşir	Dry fruit	Crushed and infusion, int.	Breathing problems	109537	0.34
		Young leaf	Freshly eaten, int.	asthma		
<i>Rhus coriaria</i> L.	Somak, Sumak	Fruit	Freshly eaten, int.	Diabetes, diarrhea	109540	0.17
		Fruit	Decoction, int.	Stomach pain,		
		Seed		Goitre		
<b>Apiaceae</b>						
<i>Anethum graveolens</i> L.	Kırca	Leaf	Infusion, int.	Throat pain, grip	109550	0.07
<i>Ferulago macrosciadea</i> Boiss. & Balansa (Endemic)	Mide otu	Fruit	Decoction, int.	Stomach sour, carminative	109541	0.06
<i>Foeniculum vulgare</i> Mill.	Arap saçı	Fruit	Infusion, int.	Enuresis	E.Ö.6	0.22
<i>Petroselinum crispum</i> (Mill.) Fuss *	Maydanoz	Leaf	Infusion, int.	Ovarium problems	E.Ö.8	0.33
<b>Araceae</b>						
<i>Arum elongatum</i> Steven	Yılcık, Yılan burçağı, Yılan kavçığı, Yılan yastığı	Root	Crushed, ext.	Wound healing, rheumatism, egzama	109559, 109560	0.37
		Root	Eaten, int.	For animal antihelminthic		
		Root	Cooked as a meal, int.	Hemorrhoids		
		Leaf	Crushed and applied on skin, ext.	Warts, headache		
		Dried leaf	Cooked as a meal, int.	Surgical wound healing		
		Seed	2-3 seed taken with water, int.	Egzama, hand cracks, hemorrhoids, diabetes		
		Seed	Crushed and applied on skin, ext.	Warts		



<i>Dracunculus vulgaris</i> Schott		Root	Cooked as a meal, int.	<u>Diabetes, breathing problems</u>	109554, 109556, 109557	0.17
	Yılan burçağı, Yılan kavcığı, Yılan yastığı	Root	Cut into small pieces taken with water, int.	Hemorrhoids		
		Root	Decoction, int.	Abdominal pain killer		
		Root	Crushed and applied on skin, ext.	Wound healing, pain killer		
		Leaf	Applied on forehead, ext.	<u>Fever</u>		
<b>Asparagaceae</b>						
<i>Asparagus acutifolius</i> L.	Çıtır dikenli	Flower	Infusion, int.	Urinary system problems, kidney inflammation	109763	0.07
<i>Asparagus aphyllus</i> L. subsp. <i>orientalis</i> (Baker) P.H.Davis	Çiğer otu	Aerial part	Infusion, int.	<u>Lung problems, heart problems, kidney inflammation</u>	109762	0.08
<i>Ruscus aculeatus</i> L.	Köpek üzümü, Sidikkesen otu, Tavşan memesi, Tavşan topu, Tilki üzümü	Root	Decoction, int.	<u>Prostate</u>	109562	0.19
		Leaf	Infusion, int.	Heart problems		
		Fruit	2-3 fruits eaten, int.	Enuresis, <u>heart problems</u>		
<b>Asteraceae</b>						
<i>Achillea arabica</i> Kotschy	Ayvadana, Populca	Aerial part	Decoction, int.	Gynecological problems, abdominal pain	109618	0.1
		Capitulum	Infusion, ext.	Wound healing		
		Capitulum	Applied on abdomen, ext.	Abdominal pain		
<i>Achillea setacea</i> Waldst. & Kit.	Kurtotu	Aerial part	Decoction, int.	Abdominal pain, ulcer, cancer	109658, 109623	0.16
<i>Aetheorhiza bulbosa</i> (L.) Cass. Monotipik	Mayasıl otu	Tuber	2-3 tuber taken with water, int.	Hemorrhoids, <u>intestine problems, constipation, heel cracked, allergy</u>	109632	0.38
<i>Anthemis cotula</i> L.	Bopatça	Aerial part	Infusion, int.	Abdominal pain, cold,	109647, 109646	0.29
		Aerial part	Infusion, ext.	<u>allergy</u>		
<i>Anthemis cretica</i> L. subsp. <i>absinthifolia</i> (Boiss.) Grierson	Papatya	Aerial part	Infusion, int.	Abdominal pain	E.Ö.11	0.25



<i>Anthemis pseudocotula</i> Boiss.	Bopatça	Aerial part	Infusion, int.	Abdominal pain	109648	0.23
			Infusion, ext.	Farengitis		
<i>Artemisia annua</i> L.	Kabe süpürgeliği	Aerial part	Infusion, int.	<u>Menopause, menstruation</u>	109622	0.18
<i>Calendula officinalis</i> L.	Aynisefa otu	Capitulum	Infusion, int.	<u>Sedative</u>	E.Ö.12.	0.08
<i>Carduus nutans</i> L.	Deve dikeni	Seed	Eaten, int.	<u>Immune system tonic</u>	109620	0.07
<i>Carduus pycnocephalus</i> L. subsp. <i>albidus</i> (M.Bieb.) Kazmi	Çakır dikeni	Capitulum	Infusion, ext.	Hemorrhoids	109628	0.16
<i>Centaurea benedicta</i> (L.) L.	Sancı dikeni, Şevketi bostan	Aerial part	Decoction, int.	<u>Abdominal pain, hemorrhoids</u>	109621	0.31
			Decoction, ext.	<u>Hemorrhoids</u>		
			Cooked as a meal, int.	<u>Allergy</u>		
<i>Cota tinctoria</i> (L.) J.Gay	Akıllı papatya, Gömeç	Aerial part	Infusion, int.	Cold, abdominal pain	109660, 109662, 109663	0.12
<i>Pilosella hoppeana</i> (Schultes) C.H. & F.W.Schultz subsp. <i>testimonials</i> (Naegli ex Peter) Sell & West	Mercangümüş	Aerial part	Decoction, ext.	<u>Wound healing</u>	109653, 109652	0.08
<i>Leontodon tuberosus</i> L.	Hindibağ	<b>Root</b>	Infusion, int.	<b>Cold, stomach disease</b>	109636, 109635	0.16
<i>Matricaria chamomilla</i> L.	Bopatça, Papatça, Keloğlan çiçeği	Capitulum	Infusion, int.	Cold, diabetes, abdominal pain, headache, sinusitis, <u>sleep problems, depression, inflammation, urinary system problems</u>	109644	0.58
			Infusion, ext.	Burn, wound healing, rheumatism, leg pain, asthma, allergy		

<i>Silybum marianum</i> (L.) Gaertn.		Seed	Eaten, int.	Prostate, liver problems	109639	0.17
	Sarıköz	Latex	Chewed in the mouth, int.	<u>Toothache</u>		
		Stem	Eaten, int.	<u>Immune system tonic</u>		
<i>Taraxacum hybernum</i> Steven	Karahindibağ	Leaf	Cooked as a meal, int.	<u>Liver problems</u>	109641	0.19
		Root	Decoction, int.	<u>Immune system tonic</u>		
<i>Tripleurospermum conoclinium</i> (Boiss. & Balansa) Hayek (Endemic)	Uzun papatya	Capitulum	Infusion, int.	<u>Abdominal pain</u>	109659, E.Ö.17	0.06
<i>Xanthium strumarium</i> L.	Büyük pıtrak, Domuz pıtrağı	Fruit	Decoction, int.	<u>Hemorrhoids</u>	E.Ö.18	0.07
<i>Xeranthemum cylindraceum</i> Sm.	Duman otu	Aerial part	Infusion, int.	<u>Stomach disease</u>	E.Ö.19	0.11
		Aerial part	Burned and inhalation, ext.	<u>Cold (for animal)</u>		
<b>Betulaceae</b>						
<i>Carpinus betulus</i> L.	Gürgen	Cortex	Crushed, ext.	<u>Hemorrhoids</u>	109574	0.07
<b>Boraginaceae</b>						
<i>Echium plantagineum</i> L.	Engerek otu	Aerial part	Infusion, int.	<u>Expectorant</u>	109580	0.08
<i>Onosma aucherana</i> DC.	Emme otu	Root	Infusion, ext.	<b>Wound healing</b>	109577	0.14
<b>Brassicaceae</b>						
<i>Alyssum murale</i> Waldst. & Kit.	Sünnetlice	<b>Aerial part</b>	Infusion, int.	<b>Stomach pain</b>	109604	0.13
<i>Brassica oleracea</i> L.	Kelem	Leaf	Cut into small pieces, cooked with olive oil and applied on the skin, ext.	<u>Pain killer, wound healing,</u>	E.Ö.23	0.19
		Leaf	Heated on the stove, applied on joints with olive oil, ext.	<u>Joint problems, leg pain,</u> joint pain		
		Leaf	Immersed in hot water, applied on joints, ext.	<u>Joint problems</u>		
		Immature flower	Decoction, int.	Stomach pain		
<i>Brassica nigra</i> (L.) K.Koch	Hardala	Seed	Powdered and mixed with honey, int.	Appetizer (for kids)	109608	0.08

<i>Lepidium spinosum</i> Ard.	Muşurat	Aerial part	Freshly eaten, int.	Circulation problems	E.Ö.24	0.21
		Seed	Crushed and eaten, int.	Stomach disease		
<i>Nasturtium officinale</i> R.Br.	Deli kereviz, Gereviz, Su kazayağı	Leaf	Mashed with tarhana, applied on abdomen, ext.	Abdominal pain	109602, 109603	0.32
		Leaf	Freshly eaten, int.	Kidney stones		
<i>Raphanus sativus</i> L. *	Kara turp	Root	Grated and cooked, applied on skin, ext.	Joint and leg pain	E.Ö.25	0.07
		Root	Carved and put honey, kept one day, and taken, int.	Cough		
<i>Raphanus raphanistrum</i> L.	Eşek turbu, Turp otu	Root	Decoction, int.	<u>Kidney stone</u>	109611	0.39
<b>Cistaceae</b>						
<i>Cistus creticus</i> L.	Pamuklar	Aerial part	Infusion, int.	<u>Diarrhea</u>	109586, 109593	0.11
<i>Cistus salviifolius</i> L.	Pamuklar	Aerial part	Infusion, int.	<u>Diarrhea</u>	109626, 109592	0.09
			Decoction, int.	Urinary system problems, <u>prostate</u>		
<b>Cornaceae</b>						
<i>Cornus mas</i> L.	Kızılcık	Stem	Burned and ash applied on teeth, ext.	Toothache	109595	0.27
		Young shoots	Decoction, int.	<u>Ulcer, hemorrhoids, pain killer</u>		
		Young shoots	Decoction, ext.	Wound healing		
		Fruit	Jam, int.	Bronchitis, snake bites, pain killer		
		Fruit	Decoction, int.	<u>Circulation problems, urinary system problems, kidney stone,</u>		
		Fruit	Compote, int.	<u>Diarrhea</u>		
<b>Cucurbitaceae</b>						
<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakaj *	Karpuz	Exocarp of fruit	Powdered and eaten, int.	<u>Ulcer</u>	E.Ö.26	0.09

<i>Ecballium elaterium</i> (L.) A.Rich.	Acı bostan, Acı dürlek,	Fruit	2 drops juice of fruit, put into the nostrils, int.	Sinusitis	109613, 109612	0.34
		Fruit	2 drops juice of fruit, put into the water, int.	Hepatitis		
		Fruit	Juice of fruit, as a massage, ext.	<u>Cancer pain</u>		
		Root	Grated and mixed with flour, cut into small pieces, int.	Joint pain, <u>itching</u> , <u>lung disease</u>		
		Root	2 drops juice of root, put into the nostrils, int.	<u>Liver inflammation</u>		
		Root	Decoction, int.	Hemorrhoids, <u>itching</u>		
<i>Cucumis melo</i> L. *	Kavun	Seed	Decoction, int.	<u>Carminative</u>	E.Ö.27	0.07
<i>Momordica charantia</i> L. *	Akçakız, Şevketibostan	Fruit	Kept in olive oil for 15 days, ext.	Wound healing	E.Ö.29	0.16
		Fruit	Kept in olive oil for 30 days, eaten int.	Ulcer		
<b>Dioscoreaceae</b>						
<i>Dioscorea communis</i> (L.) Caddick & Wilkin	Acı filiz	Fruit	Crushed, ext.	Wound healing, pain killer	109675, 109677	0.18
		Root	Decoction, int.	Hemorrhoids		
<b>Elaeagnaceae</b>						
<i>Elaeagnus angustifolia</i> L. *	İğde	Fruit	Decoction, int.	Kidney stone	E.Ö.31	0.14
<b>Fabaceae</b>						
<i>Astragalus angustifolius</i> Lam.	Diken otu, Top diken	Root	Decoction, int.	<b>Prostate</b>	109729	0.05
<i>Astragalus hamosus</i> L.	Pitrak	Fruit	Infusion, int.	<b>Urinary system problems, kidney stone, heel cracked</b>	109754	0.07
<i>Melilotus indica</i> (L.) All.	Sarı yonca	<b>Flower, leaf</b>	Infusion, int.	<b>Sedative</b>	109730	0.04
<i>Spartium junceum</i> L.	Katır kuyruğu, Piren	Stem	Decoction, int.	Bronchitis	109753, 109752	0.19
<i>Trifolium angustifolium</i> L.	Trifil	<b>Aerial part</b>	Decoction, int.	<b>Diarrhea</b>	109738	0.13
<i>Vicia tetrasperma</i> (L.) Schreb.	Mavi kantaron	<b>Aerial part</b>	Infusion, int.	<b>Sedative, pain killer</b>	109751	0.11
<b>Fagaceae</b>						



<i>Quercus cerris</i> L.						
	Ak gobak, Gobak, Kara kombalak, Kobak, Kombalak, Kubar	Root	Crushed and mixed with milk, ext.	Abscess	109685, 109690	0.29
		Cortex of stem	Decoction, int.	<u>Diarrhea</u>		
<i>Quercus infectoria</i> G.Olivier						
	Gobak, Meşe, Palamut	Cortex of stem	Decoction, int.	<u>Organ shape disorders</u>	109688	0.2
		Cortex of stem	Decoction, ext.	<u>Skin disease</u>		
		Fruit	Decoction, int.	<u>Circulation problems</u>		
<b>Geraniaceae</b>						
<i>Geranium asphodeloides</i> Burm.f.						
	Hıdır otu	Aerial part	Infusion, ext.	Wound healing	109698	0.09
		Leaf, flower	Infusion, int.	<u>Diarrhea</u>		
<b>Hypericaceae</b>						
<i>Hypericum montbretii</i> Spach						
	Kantaron	Aerial part	Infusion, int.	Stomach pain	109722, 109715	0.13
<i>Hypericum perforatum</i> L.						
	Boyalık otu, Kantarot, Kantar otu, Sarı kantaron	Aerial part	Infusion, int.	<u>Liver problems, kidney stone, stomach disease, diabetes, sedative, constipation</u>	109724, 109711, 109714	0.56
		Aerial part	Kept in olive oil for 45 days, ext.	Wound healing, pain killer, rheumatism		
<b>Juglandaceae</b>						
<i>Juglans regia</i> L.						
		Immature fruit	Taken as a pill for 7 days, int.	Antifungal, diabetes	109728	0.24
	Ceviz	Leaf	Decoction, ext.	Egzema, rheumatism		
		Leaf	Decoction as a gargle, ext.	Throat inflammation		
<b>Lamiaceae</b>						
<i>Ballota nigra</i> L.						
	Çay otu, Kanser otu	Aerial part	Infusion, int.	<u>Cold, stomach pain</u>	109821,	0.09
		Root	Decoction, int.	<u>Cancer</u>	109822	
<i>Clinopodium vulgare</i> L.						
	Ballıbaba	Aerial part	Infusion, int.	Cold	109853	0.05
<i>Lavandula stoechas</i> L.						
	Karabaş otu, Lavanta	Aerial part	Infusion, int.	Heart problems	109826	0.12
<i>Marrubium vulgare</i> L.						
	Bertik otu, Konyalı otu, Mayasıl otu	Aerial part	Infusion, int.	<u>Allergy, breathing problems, hemorrhoids, diabetes</u>	109830, 109848	0.14

<i>Melissa officinalis</i> L.	İliman, Oğulotu	Aerial part	Infusion, int.	Sedative, heart disease, <u>throat pain</u> , stops snoring	109803, 109802, 109851	0.18
		Leaf	Infusion, int.	<u>Improve memory, digestive system problems</u>		
<i>Mentha longifolia</i> (L.) L. subsp. <i>typhoides</i> (Briq.) Harley	Dere nanesi	Leaf	Infusion, int.	Gastrointestinal health	109834	0.24
<i>Mentha pulegium</i> L.	Nana, Nane	Leaf	Infusion, int.	Stomach disease, cough, cold	E.Ö.36	0.12
<i>Micromeria myrtifolia</i> Boiss. & Hohen.	Ayaklı kekik	Aerial part	Infusion, int.	Cold	109836, 109837	0.07
<i>Origanum vulgare</i> L. subsp. <i>hirtum</i> (Link) Letsw.	Uzun kekik	Aerial part	Infusion, int.	Abdominal pain, cold, cholesterol, nausea, <u>inflammation, cancer</u>	109829, 109814, 109813	0.54
<i>Prunella laciniata</i> (L.) L.	Horoz ibiği	Aerial part	Infusion, int.	<u>Cough</u>	109844, 109845	0.09
<i>Prunella vulgaris</i> L.	Sigil otu	Aerial part	For prayer, ext.	<u>Warts, headache, eye problems</u>	109842, 109843	0.06
<i>Rosmarinus officinalis</i> L.	Akıl otu	Aerial part	Infusion, int.	Inflammation, breathing problems, sedative, heart problems, constipation, fat burn	109839	0.22
		Leaf	Infusion, int.	Memory enhancer		
<i>Salvia fruticosa</i> Mill.	Adaçayı, Boşotu, Muşapla, Puşapla, Yakıotu	Leaf	Infusion, ext.	Wound healing	109805, 109792	0.8
		Leaf	Kept in vinegar, ext.	<u>Calcification</u>		
		Aerial part	Infusion, int.	Cold, abdominal pain, throat pain, <u>eczema</u> , stomach disease, cough, <u>kidney problems</u> , inflammation, wound healing		
<i>Salvia tomentosa</i> Mill.	Adaçayı	Leaf	Infusion, ext.	Wound healing	109793	0.24
		Aerial part	Infusion, int.	Cold, abdominal pain		
<i>Stachys cretica</i> L. subsp. <i>anatolica</i> Rech. fil. (Endemic)	Beyaz şabla	Aerial part	Infusion, int.	Pain killer, stomach disease, cold	109812, 109810, 109789	0.15
<i>Stachys obliqua</i> Waldst. & Kit.	Dağ çayı	Aerial part	Infusion, int.	<u>Cough</u>	109787	0.05
<i>Stachys thirkei</i> K.Koch	Minare otu, Tavşanak otu	<b>Aerial part</b>	Infusion, int.	<b>Cold, digestion problems, carminative, sedative</b>	109788	0.09

<i>Teucrium chamaedrys</i> L.	Bodur mahmut, Bodur otu, Kebir, Kısa mahmut	Aerial part	Infusion, int.	<u>Immune system tonic</u> , hemorrhoids, <u>tuberculosis</u>	109831, 109786, 109784, 109785, 109783	0.14
<i>Thymbra spicata</i> L.	Bayır kekiği, Karabaş otu, Kaya kekiği, Mercanköşk,	Aerial part	Infusion, int.	Diabetes, <u>rheumatism</u> , stomach disease, cough	109778, 109776	0.11
<i>Thymus longicaulis</i> subsp. <i>chaubardii</i> C.Presl subsp. <i>chaubardii</i> (Rchb.f.) J alas	Nuzlot	Aerial part	Infusion, int.	Abdominal pain	109832	0.09
<i>Thymus zygoides</i> Griseb.	Bayır çayı, Kekik, Nuzla otu, Taş kekiği	Aerial part	Infusion, int.	Cold, diabetes, <u>cancer</u> , abdominal pain, gastrointestinal problems	109819, 109818, 109817,	0.49
		Aerial part	Infusion as a gargle, ext.	<u>Gum inflammation</u>	109816, 109815, 109775	
		Leaf	Chewed in the mouth, int.	<u>Toothache</u>		
<i>Vitex agnus-castus</i> L.	Hayıt	Seed	Decoction, int.	Diarrhea	109828, 109774, 109773	0.08
<b>Lauraceae</b>						
<i>Laurus nobilis</i> L.	Defne	Leaf	Infusion, int.	Cold, constipation	109855	0.06
<b>Lythraceae</b>						
<i>Punica granatum</i> L. *	Nar	Exocarp of fruit	Decoction, ext.	Hemorrhoids, rheumatism, urinary system problems	E.Ö.38	0.14
<b>Malvaceae</b>						
<i>Abelmoschus esculentus</i> (L.) Moench *	Bamya	Fruit	Mashed with milk, applied on joints, ext.	<u>Knee pain</u> , <u>rheumatism</u> ,	E.Ö.39	0.07
		Seed	Eaten, int.	<u>Diabetes</u>		
		Flower	2-3 flowers taken with water, int.	<u>Ulcer</u>		
<i>Alcea pisidica</i> Hub.-Mor. (Endemic)	Fatmagül, Hatmi	Flower	Infusion, int.	<u>Cold, cough</u>	109770	0.12
		Seed	Decoction, int.	Breathing problems, enuresis		

<i>Malva sylvestris</i> L.	Evelik	Aerial part	Infusion, int.	Abdominal pain	109767, 109768	0.59
		Leaf, seed, stem	Immersed in hot water, applied on joints, ext.	<u>Edema</u>		
		Leaf	Infusion, int.	Cold, bronchitis		
		Leaf, flower	Freshly eaten, int.	Hemorrhoids		
		Leaf	Cooked as a meal, int.	Stomach pain, intestine cancer		
		Leaf	Kept on fire 30 sec. and applied, ext.	Abscess		
		Leaf	Mashed with milk and cooked, applied, ext.	Abscess		
		Leaf	Mashed with tarhana and cooked, applied, ext.	Wound healing, <u>acarid bites</u>		
Flower	Infusion, int.	Asthma				
<i>Tilia tomentosa</i> Moench	Ihlamur	Flower	Infusion, int.	Cold, stomach disease, anemia, blood detox	109961	0.28
<i>Tilia rubra</i> DC. subsp. <i>caucasica</i> (Rupr.) V.Engl.	Ihlamur	Flower	Infusion, int.	Cold	E.Ö.67	0.05
<b>Moraceae</b>						
<i>Ficus carica</i> L.	İncir	Latex	1,2 drops applied into the ear, int.	<u>Ear pain</u>	109771	0.16
<i>Morus alba</i> L.	Dut	Fruit	Decoction, int.	Eczema, <u>allergy</u>	109772	0.12
<i>Morus nigra</i> L. *	Kara dut	Fruit	Jam applied into the mouth, int.	Mouth ulcer, diabetes,	E.Ö.40	0.22
		Fruit	Applied, ext.	eczema, allergy		
		Leaf	Applied, ext.	Pain killer, joint health		
<b>Oleaceae</b>						



<i>Olea europaea</i> L. *	Zeytin	Leaf	Decoction, int.	Diabetes, abdominal pain, cholesterol	E.Ö.41	0.31
		Leaf	Infusion, int.	Cholesterol		
		Fruit	Crushed and mixed with salt, ext.	Joint health		
		Fruit oil	Applied in genital organ, int.	Easy delivery for animals		
		Fruit oil	Eaten, int.	Asthma		
		Fruit oil	1-2 drops put into the eyes, int.	Eyes worm		
		Fruit oil soup	Grated soap wiped on hot towel, applied on the chest, ext.	Cold		
<i>Phillyrea latifolia</i> L.	Akçakesme	Leaf	Eaten, int.	<u>Blood pressure problems</u>	109858, 109859, 109860	0.15
<b>Paeoniaceae</b>						
<i>Paeonia peregrina</i> Mill.	Tombak lale	Root	Decoction, ext.	<u>Scabies</u>		0.1
		Root	Crushed and applied on joints, ext.	<u>Rheumatism</u>	109863, 109862	
<b>Papaveraceae</b>						
<i>Papaver somniferum</i> L.	Afyon	Latex	Dried and powdered, mixed with olive oil, used as massage oil, ext.	Sedative, sleep problems	109867	0.06
<b>Plantaginaceae</b>						
<i>Plantago lanceolata</i> L.	Damarlı ot	Leaf	Applied, ext.	Wound healing	109874	0.12
		Leaf	Decoction, int.	Stomach disease, tuberculosis, asthma		
		Aerial part	Infusion, int.	Kidney stone, carminative		
<i>Plantago major</i> L.	Kirkdamar otu	Leaf	Infusion, int.	Asthma, bronchitis, cancer, edema	109876	0.29
		Leaf	Applied, ext.	Warts, wound healing, rheumatism, abscess, edema		

<i>Plantago major</i> L. subsp. <i>intermedia</i> (Gilib.) Lange	Beşparmak otu	Leaf	Mashed and applied, ext.	Abscess, wound healing, stomach disease, asthma, tuberculosis	E.Ö.43, 109875	0.07
		Leaf	Decoction, int.	Stomach disease		
		Leaf	Infusion, int.	Asthma, tuberculosis		
<b><i>Veronica pectinata</i> L.</b>	Bodur mahmut	<b>Aerial part</b>	Infusion, int.	<b>Abdominal pain, wound healing</b>	109956, 109955	0.07
<b>Platanaceae</b>						
<i>Platanus orientalis</i> L.	Çınar	Leaf	Decoction, int.	Calcification, <u>rheumatism</u> , diarrhea, <u>hepatitis</u> ,	109877	0.39
		Leaf	Leaf juice, int.	Hemorrhoids, <u>hepatitis</u> , <u>abdominal pain</u>		
		Leaf	Heated on the stove, applied on joints, ext.	<u>Pain killer</u>		
		Leaf	Applied, ext.	<u>Astringent</u>		
		Leaf	Dried and powdered, eaten with rice, int.	Diabetes		
		Fruit	Decoction, int.	Breathing problems, diarrhea, enuresis		
<b>Poaceae</b>						
<i>Avena sativa</i> L. *	Yulaf	Fruit	Powdered and mixed with water, ext.	Psoriasis	E.Ö.32	0.19
<i>Cynodon dactylon</i> (L.) Pers.	Ayrık otu, Eklem otu	Root	Infusion, int.	Leg pain, <u>calcification</u> ,	109707	0.17
		Root	Crushed, eaten, int.	Prostate, diuretic,		
<i>Hordeum vulgare</i> L. *	Arpa	Fruit	Crushed, ext.	<u>Skin disease</u>	E.Ö.33	0.08
		Fruit	Crushed and mixed with soup, int.	<u>Immune system tonic</u>		
<i>Zea mays</i> L. *	Darı	Stilus	Infusion, int.	Urinary system problems, kidney stone	109703	0.22
<b>Polygonaceae</b>						
<i>Rumex acetosella</i> L. *	Kuzukulağı	Seed	Eaten, int.	<u>Immune system tonic</u>	E.Ö.44	0.34
		Leaf	Infusion, int.	<u>Urinary system problems</u>		
		Leaf	Cooked as a meal, int.	<u>Hemorrhoids</u>		

<i>Rumex crispus</i> L.	Alabardağı, Eşek alabadası	Seed	Decoction, int.	<u>Enuresis</u>	109883	0.37
		Leaf	Cooked as a meal, int.	<u>Urinary system problems,</u>		
		Leaf	Decoction, int.	<u>Urinary system problems,</u>		
		Leaf	Cut into the small pieces, cooked with milk, applied on skin, ext.	<u>Wound healing</u>		
<i>Rumex patientia</i> L. *	Pazı	Leaf	Cooked as a meal, int.	Appetizer	E.Ö.46	0.15
<b>Primulaceae</b>						
<i>Primula vulgaris</i> subsp. <i>Huds. rubra</i> (Sm.) Arcang.	Dağ marulu, Karga basması, Marul	Leaf	Infusion, ext.	Rheumatism	109887	0.06
<b>Ranunculaceae</b>						
<i>Nigella sativa</i> L. *	Çörek otu	Seed	Eaten, int.	Diabetes	E.Ö.51	0.27
		Seed	Powdered and mixed with hoey, eaten, int.	Breathing problems, cough, carminative		
		Seed	Powdered and mixed with sugar, applied on baby pacifier, int.	Colic		
<i>Ranunculus arvensis</i> L.	Bağdırnağı, Pıtrak	Flower	Applied on skin, ext.	<u>Eczema, abscess, joint pain, allergy</u>	109890	0.15
		Fruit	Decoction, int.	<u>Stomach disease</u>		
		Aerial part	Applied on skin, ext.	Joint pain		
<i>Ranunculus repens</i> L.	Bağdırnağı, Yağlı lale, Yakı otu	Çiçek	Crushed and applied on the legs, ext.	Joint pain	109891	0.13
<b>Rhamnaceae</b>						
<i>Paliurus spina-christi</i> Mill.	Çaltı, Çaltı pulu	Fruit	Decoction, int.	Prostate	109893, 109895	0.14
		Root	Decoction, int.	Allergy, itching		
<b>Rosaceae</b>						
<i>Crataegus monogyna</i> Jacq.	Alıç, yemişen	Leaf	Infusion, int.	Heart problems	109942, 109896	0.12
		Fruit	Jam, int.	<u>Digestive system problems</u>		

<i>Cydonia oblonga</i> Mill. *	Ayva	Leaf	Infusion, int.	Stomach pain, cough, <u>urinary system</u> <u>problems,</u>	E.Ö.52	0.28
		Leaf	Decoction, int.	Diarrhea, breathing problems		
<i>Malus sylvestris</i> (L.) Mill.	Bayır elması	Fruit	Juice of fruit, int.	Bronchitis	109922	0.17
<i>Potentilla recta</i> L.	Aslan pençesi	Leaf	Infusion, int.	Wound healing	109921	0.05
<i>Prunus avium</i> (L.) L.	Kiraz	Fruit stalk	Decoction, int.	<u>Prostate</u> , urinary system problems, edema	109941	0.18
<i>Prunus divaricata</i> A. Sav. subsp. <i>divaricata</i>	Dağ eriği	Fruit	Dried fruits eaten, int.	<u>Constipation</u> , diabetes, blood pressure problems	E.Ö.54	0.16
<i>Prunus spinosa</i> L.	Karagüvem, Mamık	Fruit	Eaten, int.	Diabetes		0.2
		Fruit	Decoction, int.	Immune system tonic	109935, 109909, 109930	
		Fruit	Jam, int.	Diabetes		
<i>Pyrus amygdaliformis</i> Vill.	Deli armut	Fruit	Eaten, int.	Diarrhea	109911, 109936	0.11
<i>Pyrus elaeagnifolia</i> Pall.	Ahlat, Alfata, Geyik elması, Yabani armut	Fruit	Pickle, int.	Diabetes	109923	0.18
		Fruit	Eaten, int.	Abdominal pain, diabetes		
<i>Rosa canina</i> L.	Bayırgülü, İtgülü, Kuşburnu, Yabangülü	Fruit	Decoction, int.	Cold, breathing problems, itching, allergy, circulation problems, heart disease	109931	0.34
		Fruit	Jam, int.	Asthma		
		Seed	Decoction, int.	Diabetes		
<i>Rosa sempervirens</i> L.	Kuşburnu, Öküzgötü	Fruit	Decoction, int.	Cold	109901, 109905, 109906	0.1



<i>Rubus canescens</i> DC.	Böğürtlen, Karantı	Root	Immersed in hot water, applied on skin, ext.	<u>Abscess</u> , diabetes, <u>allergy</u>	109926	0.31
		Root	Decoction, int.	Hemorrhoids, diabetes, allergy, kidney stone		
		Leaf	Applied on skin, ext.	<u>Burn</u> , <u>scabrid</u>		
		Leaf	Burned and ash applied on skin, ext.	Wound healing		
		Fruit	Eaten, int.	<u>Cancer</u>		
<i>Rubus idaeus</i> L.	Karantı	Root	Decoction, int.	Diabetes	109925	0.07
<i>Rubus sanctus</i> Schreb.	Böğürtlen, Kırıntı	Root	Decoction, int.	<u>Rheumatism</u>	109899, 109929, 109939	0.15
		Fruit	Eaten, int.	<u>Headache</u> , abdominal pain		
		Fruit	Decoction, int.	Immune system tonic		
<i>Rubus ulmifolius</i> Schott	Karantı	Fruit	Decoction, int.	<u>Immune system tonic</u>	109927	0.06
<i>Sarcopoterium spinosum</i> (L.) Spach	Çtır pıtır	Aerial part	Decoction, int.	Urinary system problems, kidney stone	E.Ö.56	0.18
<b>Rubiaceae</b>						
<i>Galium verum</i> L.	Sünnetlice otu, Yoğurt otu	Aerial part	Infusion, int.	<u>Goitre</u>	109947	0.11
		Aerial part	Crushed and applied on the skin, ext.	Wound		
<b>Salicaceae</b>						
<i>Populus nigra</i> L. *	Deli kavak, Telli kavak	Cortex of stem	Decoction, int.	Breathing problems	E.Ö.59	0.09
<i>Salix alba</i> L.	Söğüt	Cortex of Stem	Decoction, int.	Pain killer	109949	0.23
		Cortex of Stem	Burned and mixed with vinegar, applied, ext.	<u>Warts</u>		
		Leaf	Freshly applied, ext.	<u>Warts</u>		
		Leaf	Freshly eaten, int.	Antiagregan		
<b>Santalaceae</b>						

<i>Viscum album</i> L. subsp. <i>album</i>	Aflat burcu, Ahlat burcu, Ahlat pürçüğü, Ardiç burcu, Armut burcu, Hurç	Leaf	Decoction, int.	Diabetes, breathing problems	E.Ö.61	0.14
<i>Viscum album</i> L. subsp. <i>austriacum</i> (Wiesb.) Vollm.	Burç, Çam burcu, Hurç, Ökse otu	Leaf	Infusion, int. Decoction, int.	Blood pressure problems, asthma, demans Breathing problems	E.Ö.62	0.09
<b>Scrophulariaceae</b>						
<i>Scrophularia scopolii</i> Hoppe ex Pers.	Basur otu	Flower	Kept in olive oil for 15 days, ext.	Wound healing, hemorrhoids	109953	0.08
<i>Verbascum mucronatum</i> Lam.	Balık otu, Siğir kuyruğu	Aerial part Leaf Root Flower Seed	Infusion, int. Infusion, int. Infusion, int. Infusion, int. Decoction, int.	Cold Hemorrhoids, rheumatism Hemorrhoids Hemorrhoids Diarrhea	109951	0.28
<i>Verbascum simavicum</i> Hub.-Mor. (Endemic)	Eşek kulağı, Siğir sidiği	Flower Seed	Infusion, int. Infusion, int.	Hemorrhoids Diarrhea	109950, 109952, E.Ö.63	0.13
<b>Solanaceae</b>						

<i>Hyoscyamus niger</i> L.							
	Diş otu	Seed	The seeds are thrown into the fire, the pot is turned over. The smoke of the seed penetrates into the pot. It is held for 30 minutes on the ground. Then fill the pot with boiling water and hold a cheesecloth on the head of the person with a problem in his eyes holding the face close to the steam of the water. Wait 30 minutes. Insect and fly fall into the water from eyes, ext.	Eye problems	109958, 109957	0.11	
<i>Lycopersicon esculentum</i> Mill. (E.Ö.64) *							
	Domates	Fruit	Cut the fruit in half, apply it on the skin where thorn came in	<u>To remove thorn</u>		0.07	
<i>Solanum tuberosum</i> L. *							
	Patates	Tuber	Remove the skin, cut into the pieces, apply on the eyes or skin, ext.	Eye problems, burn	E.Ö.66	0.14	
<b>Urticaceae</b>							

<i>Urtica dioica</i> L.	Kabarcık	Aerial part	Infusion, int.	Cancer, hemorrhoids, blood detox, goitre, allergy, abdominal pain, urinary system problems, diabetes, circulation problems	109962, E.Ö.68	0.93
		Aerial part	Decoction, int.	Cancer, tuberculosis, eczema, pain killer		
		Aerial part	Freshly applied on the skin, ext.	Rheumatism, circulation problems in legs		
		Aerial part	Cooked as a meal, int.	Liver problems, hemorrhoids, eczema, cancer		
		Aerial part	Kept in hot water and applied on skin	Leg sprain		
		Aerial part	Crushed and mixed with olive oil, ext.	Pain killer, circulation problems in legs		
		Leaf	Cooked as a meal, int.	Eczema, hemorrhoids, cancer		
		Root	Decoction, ext.	Leg pain		
	Seed	Mixed with honey eaten, int.	Cancer			
<i>Urtica membranacea</i> Poir. ex Savigny	Isırgan	Aerial part	Infusion, int.	<u>Cancer</u> ,	109964	0.121
		Aerial part	Cooked as a meal, int.	<u>Liver problems</u> ,		
		Aerial part	Freshly applied on the skin, ext.	Rheumatism		
		Leaf	Cooked as a meal, int.	<u>Hemorrhoids</u>		
<i>Urtica pilulifera</i> L.	Gidişken	Aerial part	Infusion, int.	Cancer	109963	0.08
<b>Verbenaceae</b>						
<i>Verbena officinalis</i> L.	Sultan otu	Aerial part	Crushed and mixed with milk, ext.	<u>Abscess</u>	109965	0.05
<b>Vitaceae</b>						

<i>Vitis vinifera</i> L. *						
	Üzüm	Fruit	Fruit molasses eaten, int.	Circulation problems, appetizer, milk enhancer for mothers	E.Ö.69	
		Fruit	Dried fruit powdered and mixed with piper nigrum powder and honey eaten one spoon at night, int.	Cough		0.18
		Tendrils	Juice of tendrils applied on hair, ext.	Hair extender		
<b>Xanthorrhoeaceae</b>						
<i>Asphodelus aestivus</i> Brot.						
	At otu, Yabani pırasa	Root	Grated and cooked with tarhana (Turkish soup mixture), applied on skin, ext.	Abscess	109969	0.13
		Leaf	Freshly applied on the skin, ext.	Wound healing		
<b>Zygophyllaceae</b>						
<i>Tribulus terrestris</i> L.						
	Sarı pıtrak	Aerial part	Decoction, int.	Edema, urinary system problems, <u>heel cracked</u> , hemorrhoids, kidney stone, <u>muscle and joint pain</u> , heart problems	E.Ö.71	0.24
		Aerial part	Crushed, ext.	Pain killer		

Bold taxa have been recorded for the first time as a medicinal plant in region. Underlined uses are different uses for the region.

\*: Cultivated plants.

#### 4. DISCUSSION

The results of our research showed that there are some different usages of the plants recorded. It has been compared with other ethnobotanical studies conducted around the study area and different uses of 79 taxa from previous records have been determined. These different uses are indicated in Table 4 as underlined uses (17-47). *Asphodelus aestivus* was commonly used for wound healing and abscess in Savaştepe. It was used against ulcer and wound healing in Edremit Gulf – Balıkesir (29). It was used for hemorrhoids, peptic ulcer, stomach ache in Marmaris (22). *Teucrium chamaedrys* was commonly used for hemorrhoids in Savaştepe. It was used for abdominal pain and kidney stones in Edremit Gulf/Turkey (29). *Arum elongatum* was commonly used for wound

healing, rheumatism, egzema, hemorrhoids in Savaştepe. It was used for hemorrhoids in Gönen-Balıkesir (48). *Ruscus aculeatus* was commonly used for prostate, heart problems, enuresis in Savaştepe. It was used for kidney stones, nephritis in Kırklareli province (26). *Micromeria myrtifolia* was commonly used for cold. It was used for abdominal pain in Manisa province. *Thymbra spicata* was commonly used for diabetes, rheumatism, stomach disease, cough in Savaştepe. It was used for cold and abdominal pain in Manisa (17). *Echium plantagineum* was commonly used as an expectorant in Savaştepe. It was used for stomachache in Marmaris (22).

When compared with previous studies in West Anatolia, the local names are different in other ethnobotanical studies (Manisa, Kırklareli, Marmaris). The local name used for

*Micromeria myrtifolia* is “Ayaklı kekik” in Savaştepe, but the local names of the same plant are “Boğumlu çay” and “Dağ çayı” in Edremit (29); the local names of the same plant are “Eşek kekiği” and “Kekik” in Manisa (17). The local names used for *Ballota nigra* is “Çay otu” and “Kanser otu” in Savaştepe, it is called as “Grip otu” in Kırklareli (26). It was recorded that 12 taxa have commercial value. The local people collect them from nature to cell medicine companies. These plants are; *Arum elongatum*, *Ruscus aculeatus*, *Centaurea benedicta* (L.) L., *Silybum marianum*, *Quercus cerris*, *Quercus infectoria*, *Paeonia peregrina*, *Primula vulgaris subsp. rubra*, *Cydonia oblonga*, *Prunus avium*, *Populus nigra* and *Urtica dioica*. Identifying the plants that are traded and cultivating them can be an important source for the local people in Savaştepe.

Endemic *Acanthus hirsutus* is very commonly used for the treatment of fever in Savaştepe. *Acanthus hirsutus* is widely used for constipation, for wound healing, as an expectorant, and also used to treat painful disorders in Anatolia. The major components of *Acanthus hirsutus* are; acteoside, hirsutusoide, luteolin-7-O-beta-D-glucuronide. Antinociceptive activity of *A. hirsutus* has been reported (13,14). Endemic *Ferulago macrosciadea* is very commonly used for stomach problems in Savaştepe. The main component of the essential oil of *F. macrosciadea* is caracrol methyl ether (78,1%) (15). *Onosma aucherana* is very commonly used for the treatment of wound healing in Savaştepe. *Onosma* species contain alkannin, shikonin, flavonoids, vanillic and ferulic acids. It is used for wound healing. It is analgesic, anti-inflammatory, and antibacterial (16).

## 5. CONCLUSIONS

As a result of this study medicinal uses of the plants in Savaştepe/ Balıkesir have been recorded for the first time. The mean age of the respondents was 55 years (within a range of 30–70 years). In the research area, local people were found to be using 163 medicinal plants from 53 families. Most commonly used plants were *Urtica dioica*, *Salvia fruticosa*, *Malva sylvestris*, *Matricaria chamomilla*, *Hypericum perforatum*, *Origanum vulgare subsp. hirtum*, *Thymus zygoides*, *Pinus brutia*, *Platanus orientalis*, *Raphanus raphanistrum*, *Rumex crispus*, *Rumex acetosella*. The cultivation of valuable medicinal plants will help to protect nature and environment. It will create a new job opportunity for the local people.

The use value of every taxa and FIC value of important disease groups were calculated. The most common disease were categorized into 12 group. The highest FIC value was 0.852 for hemorrhoids. It represents that the plants which had been used for hemorrhoids are presumed to be the most effective in Savaştepe/Balıkesir.

163 medicinal plant taxa used for medicinal purposes in Savaştepe district. Among 163 taxa, 12 taxa have been recorded for the first time as a medicinal plant and also the different medicinal uses of 79 taxa have been recorded in Savaştepe.

The vernacular names of the plants can be varied. Recording the vernacular names of medicinal plants in varied geographies is of great importance for us to realize the richness of our culture (47). This study was carried out to preserve informations about the medicinal plants of Savaştepe and their traditional uses. This study constitutes a database for studies on the production of new herbal products.

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