

Medicinal and Aromatic Wild Plants and Traditional Usage of Them in Mount Ida (Balıkesir/Turkey)

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Abstract

This study was performed in the remaining part of Mount Ida (Kazdağları) in the province of Balıkesir. The purpose of the study is to determine in the ethnobotanical aspects, for what purposes and in what ways the local people use the natural plants. For this purpose, this study was conducted between July 2014 and May 2015. During the field works, a total of 51 plant taxa of 24 families determined to be used in the region has been collected and the traditional use of them has been identified. The most commonly used taxa belonging to these 24 families are *Lamiaceae* (13 taxa), *Asteraceae* (4 taxa) and *Malvaceae* (4 taxa). These plants by local people have been found to be used mostly for colds, stomach ailments and as food. The most preferred form of use is infusion. With this study it has been concluded that *Sideritis trojana* CR, *Alchemilla hirsutiflora* VU which is in the group of plants that have ethnobotanical usage are endemic plants.

Keywords: Mount Ida, Ethnobotanic, Medicinal and Aromatic Plant, Traditional Usage

INTRODUCTION

The study area covers the settlements of Edremit, Havran and Burhaniye districts which are neighbors to the Gulf of Edremit located at the southern slope of Mount Ida. Geographically, it is located between the northern latitudes of 39°30'27'' - 39°40'48'' and the eastern longitudes of 27°19'03'' - 26°40'06''. The study area is neighbors to the north with Bayramiç, Yenice, to the west with Ayvacık, Edremit Körfezi, to the east with Balya, İvrindi and to the south with Gömeç, Bergama.

Mount Ida National Park is one of the rare locations in Turkey due to its rich flora. Especially the open areas on the forest belt are rich in terms of endemic and rare plants. There are 800 plant taxa spread out all over the region 78 of which are endemic and 30 of which are specific only to the Mount Ida. It has been declared as an Important Plant Area (IPA) since it is one of the most important centers in Turkey and Europe with significant biological diversity [1]. In addition, Mount Ida is also among the important natural areas category due to its natural resource richness as well as its historical, mythological and cultural resource values [2].

Even though it dates back a long time historically, studies on the human – plant relationship in the region have always been very weak. The first regular records on ethnobotany studies carried out in Turkey date back to 1928 [3]. The first study carried around Balıkesir and its environs was carried out by Tümen [4] on the medical plants of the *Lamiaceae* family. Afterwards, Tümen and Sekendiz, Uysal et al., Polat and Satıl [5-7] carried out various studies on the traditional uses of plants in the region.

Studies on ethnobotany cover data acquired as a result of one-on-one interviews carried out with the locals. Even though many different studies have been carried out in the region, such studies have to be repeated at areas that have

been home to different cultures and civilizations so that more people can be reached and the shortcomings in literature can be revealed. The main objective of this study is to find new data related with the plant taxa used by the locals.

MATERIALS AND METHODS

The material of the study includes plants that are used by the locals for different purposes which were collected between June 2014 - May 2015 from the districts of Edremit, Havran and Burhaniye of the city of Balıkesir as well as the villages and settlement areas in these regions. Visits were made during the study to the Edremit district in the city of Balıkesir and some of the settlement areas of this region (Narlı Village, Avcılar Village, Kızılköçü Village, Dereli Village, Yaşyer Village, Güre and Altınoluk) as well as the Karaoğlanlar Village of Havran district and the Kızıklı Village of Burhaniye district from where plant samples were collected from the nature during different vegetation periods (Figure 1).

Face-to-face interviews were made via snowballing method during the study to determine the plant species as a result of which the local names, parts used, usage objectives and usage types were determined for the plants that are used for ethnobotanic purposes in the region. The collected plant samples were pressed, dried and recorded in the KATO international herbarium so that they can be detected. Each plant used was photographed.

The study entitled "Flora of Turkey and the East Aegean Islands" Davis, Davis et al., Güner et al. [8-10] was used for the identification of plant samples. The scientific and Turkish names of plants were controlled according to List of Turkey Plants (Vascular Plants) [11].

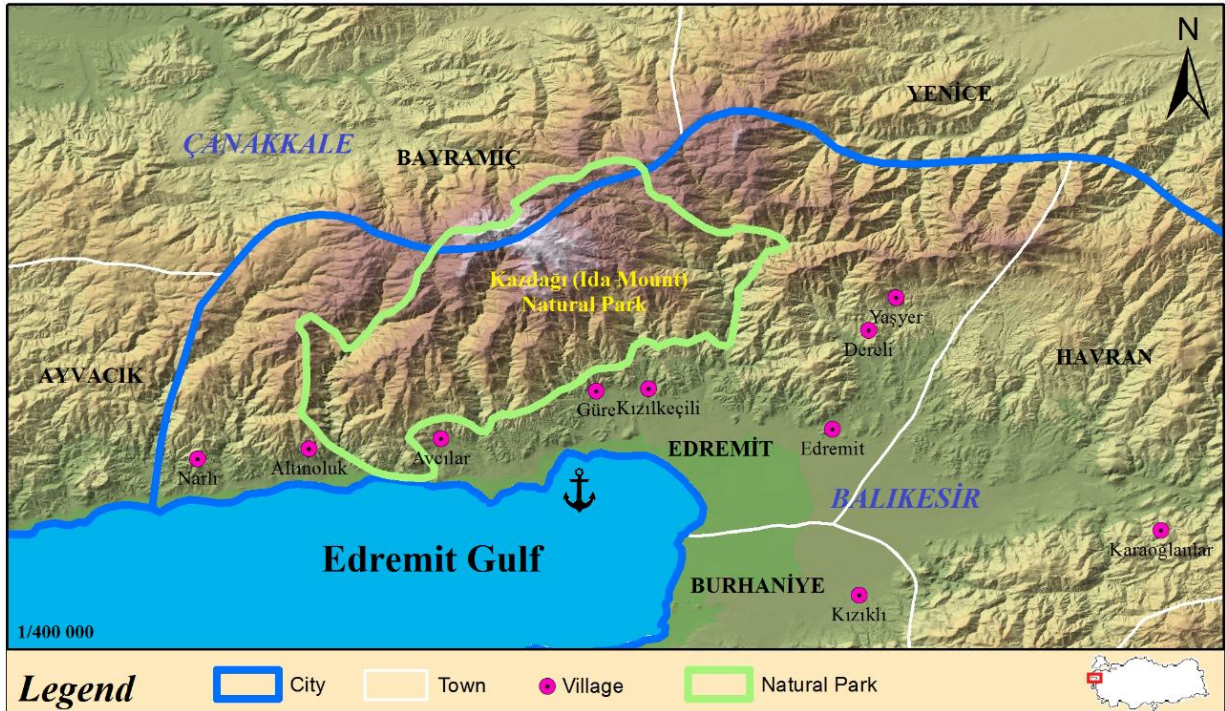


Figure 1. Geographical location of study area

RESULTS

51 plant taxa from 26 families determined to be used in the region were collected and their traditional uses were determined. The families from these taxa that are most frequently used are *Lamiaceae* (13 taxa), *Asteraceae* (4 taxa) and *Malvaceae* (4 taxa) respectively. It was determined that these plants were mostly used by the locals for the treatment of cold, stomach discomfort and for food purposes. It was determined that mostly the aerial part of the plants (23 taxa) were used which was followed respectively by leaf (16 taxa), plant (7 taxa), and fruit (4 taxa). The most preferred usage type was determined as infusion (35 taxa).

It was determined in the study that *Spartium junceum* was used to make brooms, *Vitex agnus-cactus* was used to make baskets and *Juncus effusus* was used to make threads (cord) by the locals.

It was determined in this study that of the plants that are used ethnobotanically, *Sideritis trojana* is endemic in CR category and *Alchemilla hirsutiflora* is endemic in VU category (according to IUCN). Ethnobotany information for these plants were listed in Table 1.

DISCUSSION

It was determined as a result of the study carried out that the plant types were most frequently used in cold, stomach discomfort and food purposes. The species used mostly for the treatment of cold were determined as *Anthemis pseudocotula*, *Sideritis athena*, *Sideritis trojana*, *Salvia tomentosa*, *Thymus longicaulis* subsp. *chaubardii*, *Thymbra spicata*, *Micromeria juliana*, *Origanum onites*,

Rosa canina. It is also observed in similar studies that these plants are used for the same purposes [7,13,25,30,60,66,72,73].

It was understood in this study that the plant species used for food purposes (*Foeniculum vulgare*, *Scolymus hispanicus*, *Anchusa hybrida*, *Anchusa azurea* var. *azurea*, *Raphanus raphanistrum*, *Campanula lyrata* subsp. *lyrata*, *Stellaria media*, *Asparagus aphyllus* subsp. *orientalis*) are also used for the same purposes in different regions of Turkey. However, the use of *Scorzoneroideis cichoriacea* for food purposes was recorded for the first time in this study [6,12,13,16,18,22-24,26,27,33-35,39,41,42,45,47-54,60,73,81,83,84,88,89, 91,95].

It was determined as a result of the study that the plant species used mostly for stomach disturbance were (*Hypericum olympicum* f. *olympicum*, *Hypericum perforatum*, *Melissa officinalis* subsp. *altissima*, *Salvia tomentosa*, *Sideritis athena*, *Lavandula stoechas* subsp. *stoechas*, *Mentha longifolia* subsp. *longifolia*, *Thymus longicaulis* subsp. *chaubardii*, *Thymbra spicata*, *Micromeria juliana*, *Origanum onites*). Similar studies carried out in Turkey and in the rest of the world also put forth that the same plants are used for the treatment of stomach disturbance. However, the use of *Hypericum olympicum* f. *olympicum* for the same purpose was recorded for the first time in this study [6,7,13,20,21,24,25,27,28,31,34,39,41,44,45,54-56,59,66, 72,78,87,95].

Similarly, *Teucrium lamiifolium* subsp. *lamiifolium* was ethnobotanically detected and recorded for the first time in this study. Various similarities can be seen when the usage objective and the part that is used are compared with the other species of *Teucrium* [6,12-14, 19,23,24,27, 28,30,32,37,39,40,43,45,46,56,65,69,70, 71,74,-80].

Table 1. Traditional usage of wild plants in the study area.

Family	Botanical name	KATO Herbarium Number	Local name	Plant part used	Preparation	Ethnomedical uses	Recorded literature uses
Apiaceae	<i>Daucus carota</i> L.	20974	Hazanbel	Aerial parts	Infusion	Hypoglycemia	[12-18]
Apiaceae	<i>Foeniculum vulgare</i> Mill.	20975	Rezen, Rezene	Shoots with leaves	Fresh	Food	[6,12-14,16,17,19,20,22-28]
Aspleniaceae	<i>Asplenium ceterach</i> L.	20976	Altınotu	Aerial parts	Infusion	Urinary tract disorders, kidney stone and sand, metritis	[13,18,24-33]
Aspleniaceae	<i>Asplenium adiantum-nigrum</i> L.	20977	Karabaldır Otu, Baldiran Otu	Aerial parts, Leaves	Infusion	Kidney diseases, urinary tract disorders	[13]
Asteraceae	<i>Scolymus hispanicus</i> L.	20978	Şevketibostan	Aerial parts	Cooked	Food	[6,13,16,25,34,35]
Asteraceae	<i>Tussilago farfara</i> L.	20979	Lapaza	Leaves	External	Wounds	[13,16,24,28,32,35-42]
Asteraceae	<i>Anthemis pseudocotula</i> Boiss.	20980	Papatya	Flower	Infusion	Cold, hair care	[30,43]
Asteraceae	<i>Scorzonoides cichoriacea</i> (Ten.) Greuter.	20981	Hindiba, Radika	Leaves, Aerial parts	Infusion	Food	-
Boraginaceae	<i>Anchusa hybrida</i> Ten.	20982	Sığırdili	Aerial parts	Cooked	Food	[44,45]
Boraginaceae	<i>Anchusa azurea</i> Mill. var. <i>azurea</i>	20983	Sığırdili	Aerial parts	Cooked	Food	[12,16,35,45-47]
Brassicaceae	<i>Raphanus raphanistrum</i> L.	20984	Yabani Turp Otu	Leaves	Cooked	Food	[13,16,31,41,48,49]
Campanulaceae	<i>Campanula lyrata</i> Lam. subsp. <i>lyrata</i>	21024	Keçimemesi	Aerial parts	Cooked	Food	[34,35,50]
Caryophyllaceae	<i>Stellaria media</i> (L.) Vill.	20985	Cicibici, Çıldır	Aerial parts	Cooked	Food	[1,13,35,41,49,51-53]
Cistaceae	<i>Cistus creticus</i> L.	20986	Pamukluk, Pamukla	Leaves, Flower	External	Burn, wound, apiculture	[1,6,13,22,28,31,32,34,35,41,50]
Cucurbitaceae	<i>Ecballium elaterium</i> (L.) A.Rich	20987	Delihışır Otu, Acı Kavun, Deli Bostan	Root, Fruit	Internal, External, Drug, Dropped	Sinusitis,, eczema, tongue wound, hemorrhoid, cracked skin	[6,12,13,23,25,28-30,32,34,35,39-41,43,54-60]
Ericaceae	<i>Erica arborea</i> L.	21023	Funda	Leaves	Infusion	Lose weight	[6,20,33,41,59]

Table 2. Traditional usage of wild plants in the study area (Continued).

Family	Botanical name	KATO Herbarium Number	Local name	Plant part used	Preparation	Ethnomedical uses	Recorded literature uses
Equisetaceae	<i>Equisetum telmateia</i> Ehrh.	20988	At kuyruğu	Aerial parts	Infusion	Kidney diseases, liver diseases, rheumatism pains, prostatitis	[22,28,41,43,55,56,58,59]
Fabaceae	<i>Cicer montbretii</i> Jaub. & Spach.	20989	Delinohut Otu	Aerial parts, Fruit	Fresh	Fodder to increase milk	[13,18]
Fabaceae	<i>Spartium junceum</i> L.	21022	Katırkuyruğu	Steam, Flower	Infusion	Making broom, diabetes	[1,13,30,41,50,54,62]
Gentianaceae	<i>Centaurium erythrae</i> Rafn. subsp. <i>erythrae</i>	20990	Pembe Kantaron	Flower	Infusion	Appetize	[17,41,43,56,59]
Hypericaceae	<i>Hypericum olympicum</i> f. <i>olympicum</i>	20991	Sarı kantaron, Kantaron	Flower	Infusion	Stomach disorders, wound, burn	-
Hypericaceae	<i>Hypericum perforatum</i> L.	20992	Sarı kantaron, Kantaron	Flower	Infusion, Oil	Stomach disorders, diuretic, wound, burn	[7,13,17,20,23,27,28,32,35-37,41-43,51,55-59,63-68]
Juncaceae	<i>Juncus effusus</i> L.	20993	Kova Otu	Aerial parts	Lace	Lace, making hat	[13,48]
Lamiaceae	<i>Teucrium flavum</i> L. subsp. <i>hellenicum</i> Rech.f.	20994	Mayasıl Otu, Egzama Otu	Aerial parts	Infusion	Hemorrhoid	[43,44,]
Lamiaceae	<i>Melissa officinalis</i> L. subsp. <i>altissima</i> (Sm.) Arcang.	20995	Oğulotu, Melisa Otu	Flower	Infusion	Stomach disorders, insomnia, stress, sedative, apiculture	[6,7,13,17,20,21,24,25,27,35,37,56-58,61,64,66,69,70-72]
Lamiaceae	<i>Sideritis trojana</i> Bornm. **	20996	Kazdağı Çayı	Aerial parts	Infusion	Cold	[13,16,66,73]
Lamiaceae	<i>Salvia tomentosa</i> Mill.	20997	Adaçayı, Boş Yaprığı, Moşabla	Leaves	Infusion	Stomach disorders, cold, upper respiratory infections	[13,24,30,34,54,66,73]
Lamiaceae	<i>Sideritis athoa</i> Papan. & Kokkini.	20998	Kandil Çayı	Flower	Infusion	Stomach disorders, flu and cold	[7,66,73]
Lamiaceae	<i>Teucrium polium</i> L.	20999	Kısamahmut Otu, Dalak Otu	Aerial parts	Infusion	Eczama, hemorrhoid, asthma, apnea	[6,12-14,19,23,24,27,28,30,32,37,39,40,43,45,46,56,65,69-71,74-80]
Lamiaceae	<i>Teucrium lamiifolium</i> d'Urv. subsp. <i>lamiifolium</i>	21000	Mayasıl Otu	Aerial parts	Infusion	Hemorrhoid	-

Table 3. Traditional usage of wild plants in the study area (Continued).

Family	Botanical name	KATO Herbarium Number	Local name	Plant part used	Preparation	Ethnomedical uses	Recorded literature uses
Lamiaceae	<i>Lavandula stoechas</i> L. subsp. <i>stoechas</i>	21001	Karabaş, Karabaşotu, Ebebört	Flower, Aerial parts	Infusion	Stomach disorders, cardiovascular disease, cholesterol lowering, apiculture	[6,7,13,18,20,21,24,25,27,31,32,35,54,60,66,72,81]
Lamiaceae	<i>Mentha longifolia</i> (L.) L. subsp. <i>longifolia</i>	21002	Filiskin	Aerial parts	Infusion	Stomach disorders, energizer, dyspepsia	[17,35,40,44,48,51,75,77,82-87]
Lamiaceae	<i>Thymus longicaulis</i> C.Presl. subsp. <i>chaubardii</i> (Rchb.f.) Jalas	21003	Limon Kekığı	Aerial parts	Infusion	Cold, stomach disorders	[13,39,42,50]
Lamiaceae	<i>Thymbra spicata</i> L.	21004	Delikekik	Aerial parts	Infusion	Spice, cold, stomach disorders	[13,21,23,24,27,28,32,35,39,45,58,60,62,66,95]
Lamiaceae	<i>Micromeria juliana</i> (L.) Benth. Ex Rchb.	21005	Taş Kekığı	Aerial parts	Infusion	Cold, stomach disorders	[13,50,66]
Lamiaceae	<i>Origanum onites</i> L.	21006	Dağ kekığı	Aerial parts	Infusion	Cold, stomach disorders, dyspepsia	[7,13,16,24,30,31,34,35,50,66,72,78]
Liliaceae	<i>Asparagus aphyllus</i> L. subsp. <i>orientalis</i> (Baker) P.H.Davis	21007	Isparça	Fresh shoots	Cooked	Food	[13,18,22,31,32,35,50,88-91]
Malvaceae	<i>Malva nicaeensis</i> All.	21008	Ebegümeçi, Develik	Leaves	Infusion	Cough, Food	[13,31,41,58]
Malvaceae	<i>Malva sylvestris</i> L.	21009	Develik	Leaves	Cooked	Food	[6,12,13,16,20,23-25,27,28,30,31,33-35,41,42,49,51,57-61,64,65,81,84]
Malvaceae	<i>Malva</i> sp.	21010	Ebegümeçi	Leaves	Infusion	Cough, apnea	[39,54,83]
Malvaceae	<i>Alcea biennis</i> Winterl.	21011	Gülhatmi	Flower	Infusion	Apnea	[30,32,38,39,50,61]
Myrtaceae	<i>Myrtus communis</i> L. subsp. <i>communis</i>	21021	Mersin	Branch with leaves, Leaves	Infusion	Hair care, heart disease	[6,13,14,16,23-25,27,30-32,35,39,43,54,62,63,78,92]
Papaveraceae	<i>Papaver rhoeas</i> L.	21019	Gelincik	Fruit, Flower	External	Cold, decoration plant	[6,13,16,27,30-32,36,37,41,42,56,57,59,61,69,73,81]
Plantaginaceae	<i>Plantago major</i> L. subsp. <i>major</i>	21012	Kırkdamar Otu, Sinirli Ot, Damar Otu	Leaves	External, Infusion	Bug bites, apnea, bronchitis, varicosis	[21,23,29,30,37,40,41,43,44,51-53,55,57-60,65,69,70,71,75,77,80,83,87,95]

Table 4. Traditional usage of wild plants in the study area (Continued).

Family	Botanical name	KATO Herbarium Number	Local name	Plant part used	Preparation	Ethnomedical uses	Recorded literature uses
Plantaginaceae	<i>Plantago lanceolata</i> L.	21020	Kırkdamar Otu, Sınırlı Ot, Damar Otu	Leaves	External, Infusion	Bug bites, apnea, bronchitis, varicosis	[6,16,28,32,39,44,51,52,56-58,68-70,77,79,82,95]
Rosaceae	<i>Alchemilla hirsutiflora</i> (Buser) Rothm.**	21013	Aslan Pençesi	Leaves	Infusion	Gynaecological diseases, mount sore	[26,37]
Rosaceae	<i>Rosa canina</i> L.	21014	Kuşburnu	Fruit	Decoction, Infusion	Diabetes, cold, food, tea	[12,13,17,21,24,25,27,29,30,32,34,39,40-42,46,53-59,65,66,68,69,71,77-80,83,86,93,95]
Rosaceae	<i>Rubus</i> sp.	21015	Böğürtlen	Aerial parts	Infusion	Urinary disease, hemorrhoid, faucial tonsil, urinary tract	[12,24,39,43,51]
Scrophulariaceae	<i>Verbascum lasianthum</i> Boiss	21016	Sığırkuyruğu	Flower	Infusion	Apnea, asthma, bronchitis, fishery	[30,43,50,81]
Urticaceae	<i>Urtica urens</i> L.	21017	Isırgan	Seed, Leaves	Infusion	Food, appetising, skin disease, hemorrhoid	[6,13,16,23,24,30,34,57,68,75,84]
Verbenaceae	<i>Vitex agnus-castus</i> L.	21018	Ayıt, Hayıt	Branch, Leaves	External	Making basket, antifebrile, fruit ripening	[13,23,24,25,27,31,32,34,35,39,50,54,72,73,94]

KATO: International Herbarium of Faculty of Forestry, Karadeniz Technical University.
 **: Endemic species

Whereas the aerial parts of *Scolymus hispanicus* are used for food purposes in the region, Doğan et al. [16] put forth in their studies that the root of the same plant is used for food purposes as well. It was determined that the flowers of *Anthemis pseudocotula* are used for the treatment of cold and to decolor the hair. Tuzlacı and Erol [30] stated that the aerial parts of the plant are used for the same purpose. Whereas the leaves of *Raphanus raphanistrum* are used for food purposes, Bulut, Gürdal and Kültür [13,31] state that the aerial parts of the same plant are used for the same purpose. It was determined that the flowers of *Centaureum erythrae* subsp *erythrae* are used via infusion as appetizer. Kızıllarlan [41] put forth in his study that the aerial parts of this taxon are used for the same purpose as decoction. Bulut [13] it was determined that the branches of *Vitex agnus-castus* are used for making baskets. It was recorded for the first time in this study that other than making baskets, the flowers of this species is used to make honey (Hayıt Honey) and that it is used to ripen raw fruits. Whereas the seeds of *Verbascum sineatum* are used for fishing at Ayvalık which is close to the study area Alınar [33], it is observed that the seeds of *Verbascum lasianthum* are used for the same purpose in and around Edremit. The use of the aerial parts of *Asplenium adiantum-nigrum* for the treatment of kidney and urinary tract discomforts via infusion was recorded for the first time in this study. Bulut [13] carried out a study in which it was expressed that the laves of this plant were used for hemorrhoid treatment as infusion.

It was also determined that *Cicer montbretii* is used to increase the milk and fat efficiency of livestock. It is known that different taxa from the same family are used for similar purposes in different regions [51,96].

The most common method for making use of plants in the region is infusion. Even though similar studies carried out in the Mediterranean, Black Sea and Central Anatolia regions put forth that infusion is the most commonly preferred method Özçelik and Balabanlı, Birinci, Güneş, Polat et al., Türkan et al., Keskin and Alınar, Tuzlacı and Şenkardeş, Elçi and Erik [24,26,32,37,42,62,68,83], the plants are used in Marmara, Aegean and Eastern Anatolia regions mostly in the form of decoction [28,31,34,38,41,44,56-60,65,71,77,86].

Two endemic taxa were determined in the study area (*Sideritis trojana*, *Alchemilla hirsutiflora*). Various informational studies such as protection/reuse of these species and sustainability should be carried out in these regions to ensure that these species never face the threat of extinction.

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