

TRADITIONAL USES OF WILD PLANTS IN THE VILLAGES AROUND ESENCE MOUNTAINS (EASTERN ANATOLIA-TURKIYE)

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Abstract

The purpose of this study was to determine the natural plants used traditionally by the local people for different ethnobotanical purposes in the villages around Esence (Keşiş) Mountains. Within the scope of the study, field trips to the villages were organized in the summer periods between 2010 and 2013. During my investigations face-to-face interviews were conducted with people living in the region and ethnobotanical features of the plants recorded. Our findings revealed that 139 plant taxa belonging to 107 genera and 40 families are distributed in the study area. The families with highest number of taxa were Rosaceae (19), Asteraceae (13), Fabaceae (11) and Lamiaceae (11). The plants collected were mostly used as food (95 taxa), spice (12 taxa) and animal fodder (12 taxa). The most commonly used plant organs were leaves (45 taxa) followed by fruits (27 taxa) and flowers (24 taxa). The most common way of consumption was raw (48 plants), cooked (32 plants), as salads (13 plants), spice (11 plants) and jam (11 plants). Our results also revealed that 9 endemic taxa were traditionally used in the area for a variety of ethnobotanical purposes.

Key words: Türkiye, East Anatolia, Erzincan, Ethnobotany, Traditional uses.

Introduction

The plants have been used traditionally for different purposes since the dawn of civilization. The wild plants grown in nature have been used for clothing as well as food, shelter, ornamentals, animal feed, dyes, manufacture of instruments and other equipment and for treatment of wide range of health problems (Gonenc *et al.*, 2020a,b; Ansari *et al.*, 2023; Gul *et al.*, 2023). According to Manoharachary & Nagaraju (2016) and Batool *et al.*, (2022). The plants are and have been a primary source of different nutrients and highly important for human survival (Ozturk *et al.*, 2016, 2017a,b, 2020). The traditional knowledge of plants has developed as trial and error from ancient ages and the knowledge has generally transmitted from generation to generation (Khan & Shinwari, 2016; Demir & Ayaz, 2022).

Ethnobotany deals with the studies on the interactions between plants and humans; such studies have been and are very important for health of living beings, as cultural heritage, and this knowledge has been passed down from generation to generation (Ozturk *et al.*, 2016, 2023 a,b; Malik *et al.*, 2021; Selvi *et al.*, 2022). According to Kendir & Guvenc (2010) the term ethnobotany was introduced for the first time in 1895 and was simply defined as "the use of plants by the local public" by John W. Harshberger, in 1895. Following the first use of this term many ethnobotanical studies have been conducted throughout the world to determine traditional uses of plants. Various countries have explained the use of plants for food and other purposes (Kays & Dias, 1995; Addis *et al.*, 2005; Liu *et al.*, 2014; Baydoun *et al.*, 2017; Younessi-Hamzekhanlu *et al.*, 2020).

Approximately 20.000 plants are reported to be used for ethnobotanical purposes worldwide (Baytop, 1999; Ozturk & Hakeem, 2018c, 2019a,b; Rahman *et al.*, 2022). The ethnobotanical culture of Türkiye is also very rich, nearly 600 medicinally important plants are found to grow naturally in Türkiye (Polat *et al.*, 2012). The inhabitants in Anatolia have used these plants for treatment, as food, fodder, fuel, dyes, ornamentals and construction materials all through the history (Ozturk & Ozcelik, 1991; Gençler Ozkan & Koyuncu, 2005; Ozgen *et al.*, 2012).

The Flora of Turkey and the East Aegean Islands" lists 795 species belonging to 87 families and 342 genera in the flora of Erzincan State and the number of endemic taxa is recorded as 276 (Davis, 1965-1985; Davis *et al.*, 1988; Güner *et al.*, 2000). Latest studies have revealed that there are 437 endemic plants distributed in Erzincan and out of these 46 are unique to the State. It is at the same time one of the most important areas of plant diversity in Türkiye (Kandemir & Türkmen, 2008; Korkmaz & İlhan, 2015). A number of studies have been conducted in order to determine the plant diversity in East Anatolia and Erzincan State (Ozturk & Ozcelik, 1991; Yıldırım, 1995; Kaya, 1996 Kandemir & Türkmen, 2008; Korkmaz & Turgut, 2014; Korkmaz, 2015; Ozturk *et al.*, 2018a,b, 2020). The data published for the province depicts that there are approximately 2500 natural plant taxa naturally distributed in the province, 500 being endemics to Türkiye.

The ethnobotanical studies undertaken in and around Erzincan include those carried out on the medicinal and economic plants of Köse Mountains (Gümüşhane), on the Ergan Mountains ethnobotanical features of some geophytes plants from Ergan Mountains (Erzincan), food plants of Üzümlü district as well as traditional uses of medicinal plants, plant taxa used for preparing Zetrin spice in Kemaliye (Erzincan), medicinal plants sold in Kelkit (Gümüşhane) district and traditional uses of natural food plants sold on the herbalist shops, together with the natural Rosa taxa distributed and evaluated around Erzincan State (Kandemir & Beyazoğlu, 2002; Korkmaz *et al.*, 2013; 2014 a,b, 2016; Korkmaz & Karakuş, 2014, 2015; Korkmaz & Karakurt, 2014, 2015).

Our aim here was to determine which plants local people living in the villages around Keşiş Mountain used for various ethnobotanical purposes.

Material and Methods

Study area: Erzincan is located on the western part of the Eastern Anatolia in the Upper Fırat basin of Türkiye. Çayırılı district with an area of approximately 33 km², lies at an altitude of 1500 meters, located in the east of Başköy

depression north of Keşiş (Esence) Mountains, extending in the east-west direction, the highest point is 3,546 m (Anon., 2021). According to Davis's grid system (Davis, 1965), the district is mostly located in the B7 square. The plain is surrounded by Esence Mountains in the west and southwest and Otlukbeli Mountains in the north. The Çayırılı and Balıklı streams are two important streams in the plain take which confluence with the Karasu river, depositing large amounts of alluvium on the plain. The Çayırılı depression, covers the most productive agricultural areas of the district (Fig. 1). Ethnobotany of food plants of Üzümlü (Cimin) district located on the south slopes of Keşiş Mountains have been investigated during 2010-2011. The province experiences a continental climate in general which is milder than all other provinces in the Eastern Anatolia the climate is of transitional type between the Eastern Anatolia and Central Anatolia varying locally according to the pressure zones, surface features and altitude of the province (Anon., 2021). The annual average temperature is 8.3°C, hottest month being July (34°C), coldest January (-11.7°C), snow covers the ground between December and March. The main soil groups encountered in the study area are; alluvial soils (most of these soils are found in the upper reaches, humid, soil rich in washed lime and organic matter), colluvial soils (soils formed by the accumulation of gravelly, sandy materials carried from the foothills and slopes), brown forest soils (soils that have main materials with have high lime content), reddish-brown soils (calcification plays a role in their formation, have moderate organic matter content, natural vegetation includes tall grasses and shrubs) and bare rocks and debris (have no soil cover, covered with hard rocks and stones, often devoid of vegetation).

Sugar beet, wheat, barley and beans are mostly cultivated in the district together with Ovine and bovine breeding, with approximately 37,761 hectares of pastures. Beekeeping, mining and fishing are the other basic elements of the district's economy (Anon., 2021).

Table 1. Demographic characteristics of informants.

Demographic features	Criteria	No. of people	Percent (%)
Gender	Men	71	78.9
	Women	19	21.1
Ages	Less than 40	9	10
	Between 41 and 50	21	23.3
	Between 51 and 59	17	18.9
	Over 60	43	47.8
Level of education	Illiterate	18	20
	Elementary school	49	54.4
	Secondary school	20	22.2
	High school	2	2.2
	University	1	1.1
Employment	Employed	21	23.3
	Retired	26	28.9
	Farmer	23	25.6
	Notworking or unemployed	20	22.2

Field studies: The plant samples were collected from the area around Keşiş Mountain during vegetation periods from 2010 to 2013. The local people were interviewed face to face in the villages, village coffees, villagers who migrated to the plateaus, including beekeepers and shepherds as well for

determining the ethnobotanical characteristics of the plants. The herbarium samples of the plants used for different purposes were collected and brought to the herbarium for identification; these were pressed and dried using known herbarium techniques. The collected specimens were identified using the volumes on the "Flora of Turkey and East Aegean Islands" (Davis, 1965-1985). The specimens were kept in the EBYU herbarium.

Demographic structure: Table 1 presents the demographic characteristics of the source persons following interviews of 90 informants during the field studies.

Statistical analyses

The ethnobotanical data was analyzed using quantitative indices including Use value (UV). Statistical analyses were carried out with Statistical Package for Social Science (SPSS) version 10 and Microsoft Excel 2019. The use value (UV) indicated the relative importance of plants known locally. It was calculated according to the following formula: $UV = U/N$ where U was the number of uses mentioned by each informant for a given species and N was the total number of informants.

Results and Discussion

The results of this study include ethnobotanical uses from the study area (Table 2), which includes family, scientific name, Turkish and local names, used parts, purpose of use and usage patterns of the plants as per the data from the interviewed persons. Our results revealed that in all 139 plant taxa belonging to 40 families and 107 genera are used in the study area; out of these 91 belong to 32 families and 71 genera in Çayırılı district and its villages and 48 taxa from 8 families and 36 genera in Üzümlü district and its villages.

The distribution of plants used for different purposes include the families as follows: Amaranthaceae (3), Amaryllidaceae (4), Apiaceae (8) Asteraceae (13), Berberidaceae (2), Betulaceae (1), Boraginaceae (7), Brassicaceae (4), Caryophyllaceae (1), Chenopodiaceae (3), Convolvulaceae (1), Crassulaceae (1), Cucurbitaceae (3), Cupressaceae (1), Dipsacaceae (1), Elaeagnaceae (1), Fabaceae (11), Geraniaceae (1), Iridaceae (2), Juglandaceae (1), Lamiaceae (11), Malvaceae (2), Moraceae (2), Papaveraceae (4), Plantaginaceae (1), Poaceae (4), Polygonaceae (7), Portulacaceae (1), Ranunculaceae (1), Rosaceae (19), Rubiaceae (1), Salicaceae (3), Scrophulariaceae (6), Solanaceae (3), Tamaricaceae (1), Ulmaceae (1) and Urticaceae (1), Vitaceae (1) and Xanthorrhoeaceae (1).

The largest families (with taxa numbers and ratios) are: Rosaceae 19 (13,7%), Asteraceae 13 (9,4%), Fabaceae 11 (7,9%) and Lamiaceae 11 (7,9%), Amaranthaceae 10 (7,9%), Apiaceae 8 (5,8%) and Boraginaceae 7 (5,0%) and Polygonaceae 7 (5,0%) (Fig. 2). These were followed by Scrophulariaceae (6), Brassicaceae (4) Papavearacea (4), Poaceae (4), Cucurbitaceae (3), Salicaceae (3), Solanaceae (3), Berberidaceae (2), Iridaceae (2), Malvaceae (2), Moraceae (2). The number of taxa for the other families was 1 each.

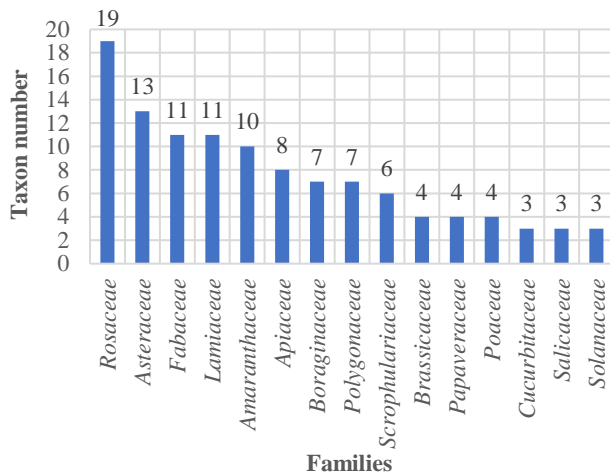


Fig. 2. Distribution of plant taxa on the basis of major families.

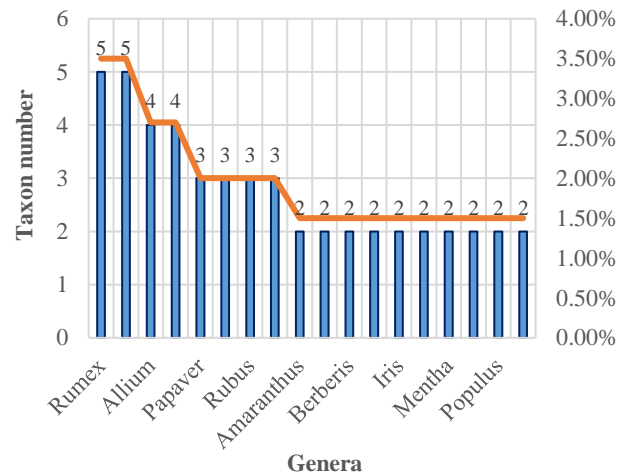


Fig. 3. Distribution of taxa on the basis of major genera.

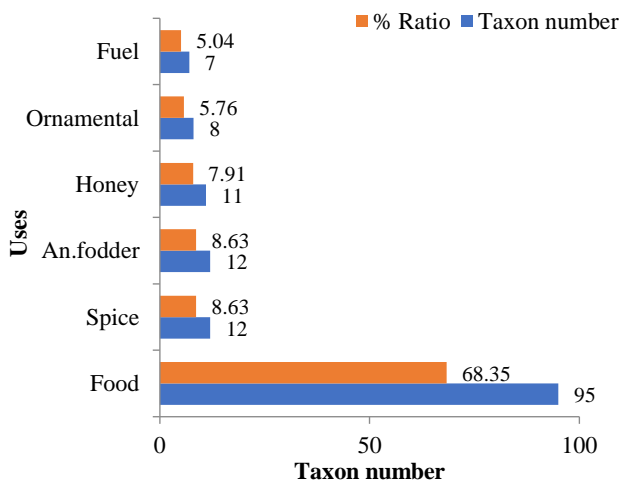


Fig. 4. Most common intended uses of the plant taxa.

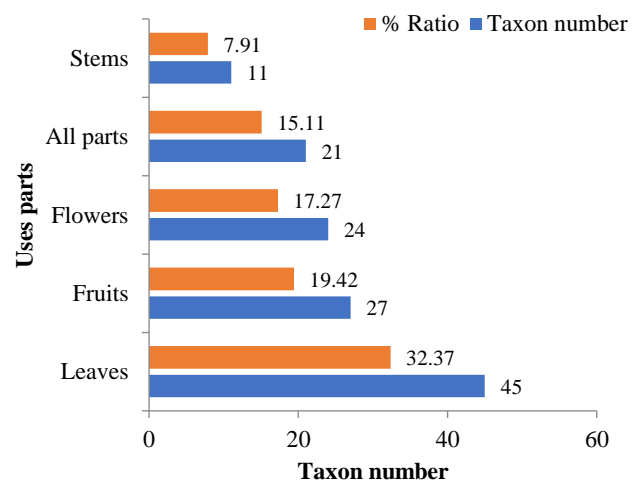


Fig. 5. Most common used parts of the plant taxa.

The methods for using the plants include the following data: 48 plants consumed raw (34,53%), 32 cooked (23,02%), 13 used in salads (9,35%), 11 as spice (7,91%), 11 as jam (7,91%), 10 as honey plant (7,19%), 8 as fodder for house animals (5,76%) which include *Astragalus eriocephalus* subsp. *elongatus*, *Melilotus officinalis*, *Securigera varia*, *Trifolium pratense*, *Trigonella foenum-graecum*, *Vicia cracca* subsp. *cracca*, *Avena futua*, *Hordeum vulgare*, *Melampyrum arvense* var. *arvense*): A total of 8 plants are used as ornamentals (5,76%), 7 as fuel (5,04%) (*Juniperus communis* var. *communis*, *Populus tremula*, *Verbascum trichostylum*, *Verbascum scamandri*, *Verbascum flavidum*, *Verbascum helianthemoides*, *Verbascum pyramidatum*) (Fig. 6), 5 as herbal tea (3,60%) (*Origanum acutidens*, *Rosa canina*, *Rubus caesius*, *Thymus sipyleus* subsp. *sipyleus* var. *sipyleus*, *Urtica dioca*), 5 cooked as stuffed food (3,60%), 5 for making paste with honey (3,60%), 4 cooked as soup (2,88%), 4 used as pickles (2,88%), 4 as extracting herbal juices (2,88%), 3 hung in houses to give off a good smell (2,16%) (*Artemisia austriaca*, *Helicrysum plicatum* subsp. *plicatum*, *Lallamentia canescens*), 3 for making cake and pies (2,16%), 2 for making dessert (1,44%), 2 for preparing sherbet and syrup (1,44%), 2 for making herbal gum (*Gundelia tournefortii* var. *tournefortii* and *Macrotomia densiflora*) (1,44%), 1 added to the herbal cheese, 1 for milk extraction, 1 cooked as mash, 1 hung on the door as an amulet and

ornament, and animal feeding for more skimmed milk (*Dipsacus laciniatus*), 1 for making kite (*Phragmites australis*), 1 for making crown at weddings by young girls (*Ranunculus dissectus* subsp. *huetii*), 1 for placing in vases (*Galium margaceum*), 1 for making crates, formwork and ladders (*Populus alba*), 1 for building roofs and making barn brooms and baskets (*Salix fragilis*), 1 for fishing extruding its flowers (*Verbascum trichostylum*), 1 as ornamental and making fence (*Tamarix tetrandra*), and flowers of 1 plant for blowing up as fun game (*Silene vulgaris* var. *vulgaris*).

Traditional consumption of some fruits as snacks is quite common in the area after drying. The dried mulberry (*Morus alba*) is very popular, known as Çemiç, its molasses are widely consumed in the region. *Armeniaca vulgaris* is an important fruit for Erzincan province; it is widely grown in the region and provides economic returns; a dessert known as Kasefe is made from the dried fruits which are consumed together with crushed walnuts. The grape (*Vitis vinifera*) is also important in the area, widely grown especially in Üzümlü district. The locally grown variety is known as Black Plum Grape, Cimin Grape and is quite famous in Eastern Anatolian region. Walnut kernels are placed between the dried fruits of the plant and stringed on a string, and it is called Saruç in the region. *Malus domestica* too is commonly used, local name of slices of apple is Gah and it is consumed dry or cooked as compost.

The plants most commonly used in different forms are as follows: *Urtica dioica* with 7 different uses; *Capsicum annum* 5 uses; *Lycopersicon esculentum*, *Rosa canina*, *Vitis vinifera* 4 uses; *Armenica vulgaris*, *Cichorium in tybus*, *Gundelia tournefortii* var. *tournefortii*, *Malus domestica*, *Malva neglecta*, *Morus alba*, *Prunus cerasus*, *Prunus persica*, *Rumex gracilescens* with 3 uses.

The resource persons consulted (Table 2) included people from different ages varying between 30 and 98. The age intervals and percentages were 3 persons (3,90%) between the ages of 16-30, 12 (15,59%) between the ages of 31-45, 30 (38,97%) between the ages of 46-60, 26 (33,76%) between the ages of 61-75, 5 (6,49%) between the ages of 76-90 and 1 person (% 1,29) between the ages of 91-105 (Fig. 7). Some of the women we interviewed on the ethnobotanical uses did not give their names and personal information. Of the 77 people interviewed, 33 were from Çayırılı district and its villages, and 44 from Üzümlü district and its villages. 20 (26%) from the district centers, 10 (13%) from the towns and 47 (61%) from the villages.

The data on some of the studies carried out previously in Erzincan and its surrounding are summarised in table 3. Out of these Mount Ergan (Erzincan) Korkmaz *et al.* (2014a) ranked the first with 122 plant taxa reported to be used for ethnobotanically. In terms of the number of plants used for food, the plants added to Zetrin spice in Kemaliye (Korkmaz *et al.* (2014b) ranked the second with 92 taxa. Zetrin spice is produced as a mixture prepared from all the plants mentioned above. Although there are few producers in the area, Mehmet BİRLER (known as Pala Dayı in and around the area) produced the richest mixture using different parts of nearly 90 plants collected from the highlands and marketed mostly in İstanbul. Kelkit (Gümüşhane) food plants (Korkmaz & Karakuş, 2015) rank as the third with 85 taxa.

Although Kelkit (Gümüşhane) district was affiliated to Gümüşhane province, it was more closely related to Erzincan commercially and economically, because of its closeness to the city center of Erzincan. In the ethnobotanical studies of Ergan Mountain (Erzincan) related to the geophytes Korkmaz *et al.* (2014a) nearly 25 taxa are generally used as food, ornamentals and for other purposes. In the Keşiş Mountain (Erzincan) Geophytes (Korkmaz & İlhan 2015) 50 taxa are used as food, ornamentals and forage plants. Out of the 91 plants listed here 57 taxa were determined in this study in Çayırılı district and villages located on the northern slopes of Keşiş Mountain and at an altitude between 2000 and 3000 m. These are used as food in the area. Other uses include spice, honey, forage, fuel, and ornamentals.

UV values were calculated in order to reveal the maximum use values of the plants by the informants. Species with the highest UV index included; *Allium cepa* (0.8%), *Allium sativum* (0.73%), *Lycopersicon esculentum* (0.72%), *Mentha x piperita* (0.56%) and *Solanum tuberosum* (0.54%) (Fig. 8).

The ethnobotanical characteristics of 10 taxa from the Rosaceae (Rosaceae) revealed that 4 natural *Rosa* taxa (*Rosa canina*, *R. damascena*, *R. boissieri* and *R. foetida*) are found in the area, revealing the natural rose richness of the study area (Korkmaz *et al.*, 2013).

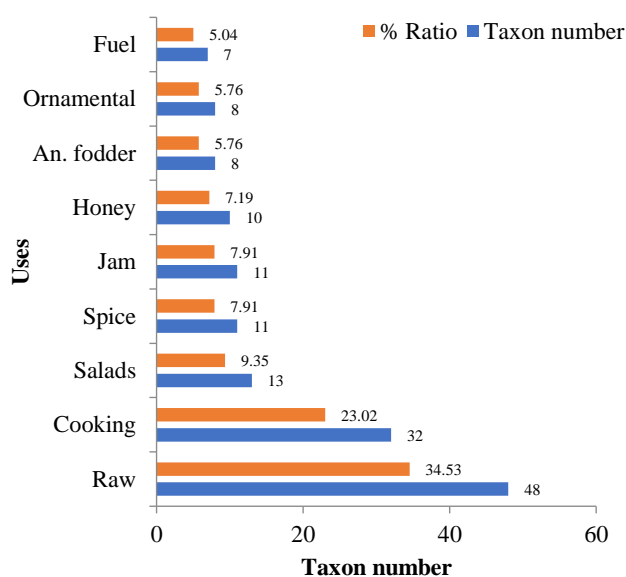


Fig. 6. Most common methods of use for the plant taxa.

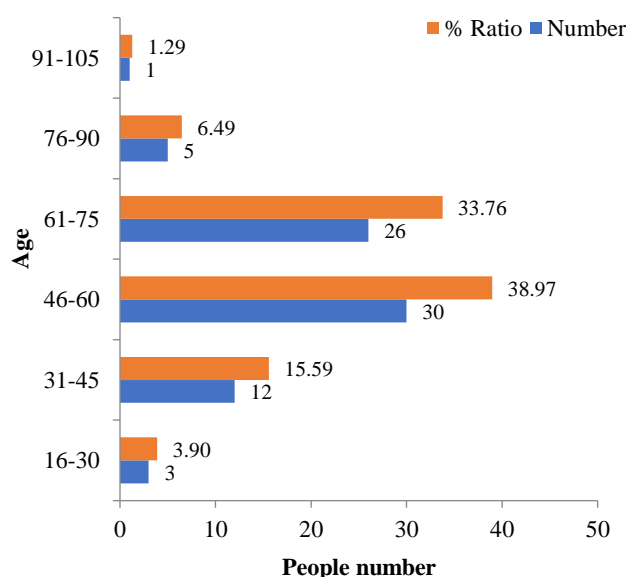


Fig. 7. Age intervals of resource persons.

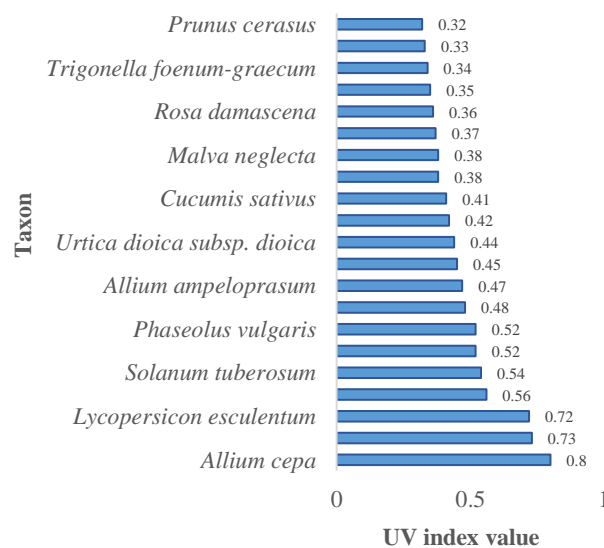


Fig. 8. The plants with the most uses and their UV values.

Table 2. Ethnobotanical features of the plants identified around Esence mountains.

No	Family	Taxon	Turkish name	Vernacular name	Used part/s	Using goal	Usage methods	UV	Source person(s)
1.	Amaranthaceae	<i>Amaranthus blitoides</i> S. Wats.	Mordarmancan	Horozbibiği	Leaf, Root	Food	Cooked like spinach	0.02	5-8
2.	Amaranthaceae	<i>Amaranthus retroflexus</i> L.	Tilkikuyruğu	Kırmızı pancar	Leaf	Food	Cooked like spinach	0.09	24
3.	Amaranthaceae	<i>Spinacia oleracea</i> L. ^s	İspanak	Pancar	Leaf	Food	Roasted with onion and eaten with yogurt	0.15	78
4.	Amaranthaceae	<i>Beta vulgaris</i> L. var. <i>vulgaris</i>	Yaban pancarı	Şekerpancarı	Leaf	Food	Roasted with onion and used in pies; Roasted with onions and cooked with joining a handful of bulgur	0.07	78
5.	Amaranthaceae	<i>Chenopodium album</i> L. subsp. <i>album</i> var. <i>album</i>	Aksirken	Sırmastık	Leaf	Food	Cooked like spinach	0.06	5-8
6.	Amaranthaceae	<i>Chenopodium foliosum</i> (Moench) Asch.	Cülek	Cülek	Fruit	Food	Red fruits are eaten	0.05	24
7.	Amaryllidaceae	<i>Allium ampeloprasum</i> L.	Pırasa	Pırasa	Leaf	Food	Used as meal	0.47	78
8.	Amaryllidaceae	<i>Allium cepa</i> L.	Soğan	Soğan	Leaf, Bulb	Food	Eaten fresh and male onion is used to make meal	0.8	47, 50, 51, 67, 68, 75
9.	Amaryllidaceae	<i>Allium sativum</i> L.	Sarımsak	Sarımsak	Bulb	Food	Eaten fresh	0.73	47, 50, 51, 67, 68, 76
10.	Amaryllidaceae	<i>Allium szovitsii</i> Regel	Yaylakörmeni	Kurat	All parts	Food	Joins to herby cheese	0.07	23
11.	Apiaceae	<i>Anethum graveolens</i> L. ^s	Dereotu	Dereotu	Leaf	Food	Salad	0.20	71, 72
12.	Apiaceae	<i>Astrodaucus orientalis</i> (L.) Drude	Havyıldız	Havyıldız	Leaf	Food	Meal known as Mıhlama	0.02	78
13.	Apiaceae	<i>Coriandrum sativum</i> L.	Kişniş	Kişniş	Leaf	Spice	Added to ayran-based soups	0.16	16-17
14.	Apiaceae	<i>Echinophora tenuifolia</i> L. subsp. <i>sibthorpiana</i> (Guss.) Tutin	Sançördük	Çortik	Leaf	Spice	Added to ayran-based soups	0.10	31
15.	Apiaceae	<i>Falcaria falcariaoides</i> (Bornm. & H.Wolff) H.Wolff	Hasarakotu	Kazayağı	Leaf	Food	Roasted and consumed with yogurt	0.02	46, 70, 74, 78
16.	Apiaceae	<i>Petroselinum crispum</i> (Mill.) A.W.Hill ^e	Maydanoz	Maydanoz	Leaf	Food, spice	Eaten fresh and used as a spice in cooking and salads	0.35	34-36, 47, 50, 51, 78
17.	Apiaceae	<i>Prangos ferulacea</i> (L.) Lindl.	Eşekçakşın	Çaşur	Above-ground	Food	Pickle is made	0.02	28
18.	Apiaceae	<i>Turgenia latifolia</i> (L.) Hoffm.	Karahacı	Geniş yapraklı pitrak	Leaf	Spice	Added to dishes like thyme	0.01	24
19.	Asteraceae	<i>Achillea schischkinii</i> Sosn. ^e	Delicivanperçemi	Civanperçemi	Flower	Spice	Added to soups	0.03	28
20.	Asteraceae	<i>Arctium minus</i> (Hill) Bernh.	Yavşan	Löşlek	Leaf	Food	Stuffed, Cooked like spinach	0.02	4
21.	Asteraceae	<i>Artemisia austriaca</i> Jacq.	Kavgalaz	Actıyom	Above-ground	Food, Aroma	Drink by soaking in water Hangs on the wall for a nice smell	0.03	24, 31
22.	Asteraceae	<i>Centaurea cardiiformis</i> DC.	Hindiba	Çakır diken	Flower	Food	Seeds are eaten	0.01	24
23.	Asteraceae	<i>Cichorium intybus</i> L.	Topuz	Yabani hindiba	Flower, Stem	Food	Eaten as raw, Salads	0.25	5-8
24.	Asteraceae	<i>Echinops spinosissimus</i> Turra	Kenger	Topbaş diken	Fruit	Food	Fruits are eaten	0.03	24
25.	Asteraceae	<i>Gundelia tournefortii</i> L. var. <i>tournefortii</i>	Mantıvar	Kenger	Root, Stem	Food, Gum	The roots are peeled when fresh, boiled with milk and bulgur pilaf is made. The roots are peeled and eaten, Gum is made from the roots	0.32	31
26.	Asteraceae	<i>Helichrysum plicatum</i> DC. subsp. <i>plicatum</i>	Ayçiçeği	Altınotu	Above-ground	Aroma	Hangs on the wall for a nice smell	0.05	31
27.	Asteraceae	<i>Helianthus annuus</i> L. ^s	Manul	Ayçiçeği	Seed	Food	Eaten as cookie	0.22	78
28.	Asteraceae	<i>Lactuca sativa</i> L. ^s	Galagan	Manul	Leaf	Food	Salads	0.21	41-43, 47, 50, 51, 67, 68, 75
29.	Asteraceae	<i>Onopordum acanthium</i> L.	Ayemliği	Galagan	Flower	Food	The stems are peeled and eaten	0.02	24, 28
30.	Asteraceae	<i>Tragopogon dubius</i> Scop.	Kağıtçiçeği	Yemlik	Leaf	Food	Eaten as salad	0.10	5-8
31.	Asteraceae	<i>Xeranthemum annuum</i> L.	Karamuk	Süprüge otu	Flower	Honey	Bees take nectar	0.03	31
32.	Berberidaceae	<i>Berberis crataegina</i> DC.	Karamuk	Karamuk	Fruit, Leaf	Food	Jam is made from fruits. Leaves are eaten with bread	0.13	24

Table 2. (Cont'd.).

No	Family	Taxon	Turkish name	Vernacular name	Used part/s	Using goal	Usage methods	UV	Source person(s)
33.	Berberidaceae	<i>Berberis vulgaris</i> L.	Kızılkaramuk	Karambuk	Fruit, Leaf	Food	Eaten fresh	0.11	39, 46, 53, 55, 69, 70, 73, 78
34.	Betulaceae	<i>Corylus avellana</i> L.	Fındık	Fındık	Seed	Food	Eaten fresh or dried as a snack and used in pastry, cakes and sweets	0.27	78
35.	Boraginaceae	<i>Alkanna orientalis</i> (L.) Boiss.	Sarıormuk	Tosbağaoğlu	Flower	Honey	Bees take nectar for honey	0.03	78
36.	Boraginaceae	<i>Anchusa azurea</i> Mill. var. <i>azurea</i>	Sığırdili	Büyük tekesakalı	Flower	Food, Honey	Flowers are absorbed by children. Bees take nectar	0.04	5-8
37.	Boraginaceae	<i>Anchusa pusilla</i> Guşul.	Kırkgörev	Kırkatran	Flower	Food, Honey	Flowers are absorbed by children. Bees take nectar	0.01	31
38.	Boraginaceae	<i>Cerithe minor</i> L. subsp. <i>auriculata</i> (Ten.) Domac	Livarotu	Hışış	Leaf	Food	Cooked with roasted onions	0.01	78
39.	Boraginaceae	<i>Lycopsis orientalis</i> L.	Öküzdili	Öküzdili	Flower	Food	Nectar is absorbed	0.02	78
40.	Boraginaceae	<i>Macrotonia densiflora</i> (Ledeb.) McBride	Kocaçğnik	Kocaçğnik	Root	Food	Gum is made from the milk in the root by boiling	0.01	31
41.	Boraginaceae	<i>Nonea pulla</i> (L.) DC.	Karasormuk	Karasormuk	Flower	Food, Honey	Flowers are absorbed. Bees take nectar	0.01	23
42.	Brassicaceae	<i>Brassica cretica</i> Lam. ^c	Brokoli	Brokoli	Flower	Food	Boiled flowers served as salad with adding on yogurt and butter	0.02	34-36, 47, 50, 51, 78
43.	Brassicaceae	<i>Capsella bursa-pastoris</i> (L.) Medik.	Çobançantası	Kuşkuş otu	Leaf	Food	Eaten as salad. The leaves are chopped and consumed by adding onions fried in oil	0.21	31
44.	Brassicaceae	<i>Lepidium latifolium</i> L. ^c	Nujdar	Tere	Leaf	Food	Eaten before flowering	0.26	57, 60, 61
45.	Brassicaceae	<i>Sinapis arvensis</i> L.	Hardal	Eşek turpu	Leaf	Food	Cooked by roasting. Eaten as raw with lemon	0.21	5-8
46.	Caprifoliaceae	<i>Dipsacus laciniatus</i> L.	Fesçitarğı	Fesçitarğı	Above-ground	Ornamental, Animal fodder	Hung on the doors as amulets and ornaments. Fed to animals to make their milk fat	0.02	28
47.	Caryophyllaceae	<i>Silene vulgaris</i> (Moench) Garcke var. <i>vulgaris</i>	Ecbüci	Gıvışkan	Flower	Food	Before flowering, it is eaten by roasting with its root. The flowers are exploded for game	0.04	5-8
48.	Convolvulaceae	<i>Convolvulus arvensis</i> L.	Tartaşmaşğı	Sarmaşık	Leaf	Food	Leaves are fried with eggs and eaten	0.02	24
49.	Crassulaceae	<i>Prometheum sempervivoides</i> (Fischer ex M. Bieb.) H. Ohba	Çoban ekmeğı	Çoban ekmeğı	Leaf	Food	Leaves are eaten as raw	0.01	24
50.	Cucurbitaceae	<i>Citrullus lanatus</i> (Thumb.) Matsum. & Nakai ^c	Karpuz	Karpuz	Fruit	Food	Eaten fresh	0.15	47, 50, 51, 78
51.	Cucurbitaceae	<i>Cucurbita pepo</i> L. ^c	Sakızkabğı	Kabak	Fruit	Food	Inside are carved and stuffed	0.12	54, 55, 78
52.	Cucurbitaceae	<i>Cucumis sativus</i> L. ^c	Hıyar	Salatalık	Fruit	Food	Eaten fresh and salad	0.41	34-36, 47, 50, 51, 78
53.	Cupressaceae	<i>Juniperus communis</i> L. var. <i>communis</i>	Ardıç	Çeken	Stem	Fuel	Used as fuel	0.12	23
54.	Elaeagnaceae	<i>Elaeagnus angustifolia</i> L.	İğde	İğde	Flower, fruit	Food	Fruit is eaten fresh or dried	0.12	21
55.	Fabaceae	<i>Securigera varia</i> (L.) Lassen	Körigen	Yabani korunga	All	Food, Animal fodder	Flowers are delicious, eaten, Animal feed	0.02	24, 28
56.	Fabaceae	<i>Astragalus eriocephalus</i> Willd. subsp. <i>elongatus</i> D.F. Chamb. & V.A. Matthews	Uzungeven	Geven	All	Animal fodder	Beaten and mixed with straw	0.06	31
57.	Fabaceae	<i>Colutea cilicica</i> Boiss. & Balansa	Patlangaç	Akasya	All	Ornamental	Garden ornamental plant	0.02	30
58.	Fabaceae	<i>Melilotus officinalis</i> (L.) Desr.	Kokuluyonca	Eşek yoncaısı	All	Animal fodder	Animal feed	0.06	24
59.	Fabaceae	<i>Onobrychis cornuta</i> (L.) Desv.	Kuşkaçran	Kuşkaçran	Flower	Honey	Bees collect pollen	0.02	28
60.	Fabaceae	<i>Ononis spinosa</i> L.	Kayışkran	Kekik	Flower	Spice	Used as spice in soups	0.05	24
61.	Fabaceae	<i>Phaseolus vulgaris</i> L. ^c	Fasulye	Fasulye	Fruit, Seed	Food	Meal as dried or fresh	0.52	78
62.	Fabaceae	<i>Pisum sativum</i> L. ^c	Bezelye	Fasulye	Fruit, Seed	Food	Meal as dried or fresh	0.15	34-36, 47, 50, 51, 78

Table 2. (Cont'd.).

No	Family	Taxon	Turkish name	Vernacular name	Used part/s	Using goal	Usage methods	UV	Source person(s)
63.	Fabaceae	<i>Trifolium pratense</i> L.	Çayır üçgülü	Kepenek otu	All	Animal fodder	Animal feed	0.03	24
64.	Fabaceae	<i>Trigonella foenum-graecum</i> L.	Çemenotu	Boy otu	All	Animal fodder	Fed to animals to develop well. Prevents mice from coming close	0.34	24
65.	Fabaceae	<i>Vicia cracca</i> L. subsp. <i>cracca</i>	Kuş fiği	Fiy	All	Animal fodder	Mowed after pouring its flower	0.20	5-8, 31
66.	Geraniaceae	<i>Geranium tuberosum</i> L.	Çakmuz	Gamut	Root	Food	Tubers eaten	0.04	23
67.	Iridaceae	<i>Iris caucasica</i> Hoffm. subsp. <i>caucasica</i>	Kafhavruzu	Sarı nevrüz	Flower	Food	Unopened flower buds are eaten	0.01	23
68.	Iridaceae	<i>Iris spuria</i> L. subsp. <i>musulmanica</i> (Fomin) Takht.	Yaylasiseni	Şişen	All	Ornamental	0.02	31	
69.	Juglandaceae	<i>Juglans regia</i> L. ^ε	Ceviz	Ceviz	Fruit	Food	Eaten as raw. Added to milk desserts and pastries	0.24	28
70.	Lamiaceae	<i>Lallemantia canescens</i> (L.) Fisch. & C.A.Mey.	Topajdarbaşı	Kekik	All, flower	Honey, Aroma	Bees made honey, Hangs in homes for fragrance	0.02	24, 27
71.	Lamiaceae	<i>Lamium garganicum</i> L.	Bolbalıcaık	Dağcıllıballıbababa	Flower	Honey	Bees take nectar to make honey	0.03	78
72.	Lamiaceae	<i>Mentha longifolia</i> (L.) L.	Pünk	Nane	Leaf	Spice	Used as spice in soups and salads	0.02	46, 53, 56, 64, 65, 69, 70, 77, 78
73.	Lamiaceae	<i>Mentha x piperita</i> L.	Nane	Nane	Leaf, Aerial plant	Spice	Used as spice in soups and salads	0.56	78
74.	Lamiaceae	<i>Origanum acutidens</i> (Hand.-Mazz.) Ietsw.**	Zemul	Kum anuğu	Leaf, flower	Spice	Before flowering, the leaves are dried and used as a spice, Tea is brewed, Added to Zetrin spice.	0.12	1-3, 16, 24, 28, 31
75.	Lamiaceae	<i>Salvia sclarea</i> L.	Paskulak	Adaçayı	Flower	Honey	Bees take nectar	0.03	24
76.	Lamiaceae	<i>Salvia verticillata</i> L.	Dadırak	Adaçayı	Flower	Honey	Bees take nectar	0.04	27
77.	Lamiaceae	<i>Thymus fallax</i> Fisch. & C.A.Mey	Catri	Dağ kekliği	All	Spice	Added to soups	0.07	31
78.	Lamiaceae	<i>Thymus leucotrichus</i> Hal. subsp. <i>leucotrichus</i>	Dağkekliği	Çay kekliği	Flower	Honey	Bees take nectar	0.10	10-15
79.	Lamiaceae	<i>Thymus siphyleus</i> Boiss.	Sipilkekliği	Annuk	All	Spice, Tea	Used as a spice, Tea is made	0.11	24
80.	Lamiaceae	<i>Ziziphora clinopodioides</i> Lam.	Dağreyhanı	Kekik	Above-ground	Spice	Added to soups	0.05	24
81.	Malvaceae	<i>Hibiscus esculentus</i> L. ^ε	Bamya	Bamya	Fruit	Food	Used as fresh or dried for meals	0.21	34, 47, 50, 51, 67, 68, 75
82.	Malvaceae	<i>Malva neglecta</i> Wallr. ^ε	Çobançöreği	Ebeimgimeci	Branch, Leaf, flowers	Food	Fresh parts used in salad, Used for fritters, Used as meal	0.38	46, 52, 53, 56, 64, 65, 69, 70, 77
83.	Moraceae	<i>Morus alba</i> L. ^ε	Beyazdut	Dut	Leaf, fruit	Food	Used for stuffed dish, Fruits are eaten, Dried fruits are called as Çemiş and eaten as the cookie	0.17	36, 40-43
84.	Moraceae	<i>Morus nigra</i> L. ^ε	Karadut	Siyahdut	Fruit	Food	Eaten fresh	0.15	36, 40-43
85.	Papaveraceae	<i>Glaucium leiocarpum</i> Boiss.	Gaavurhaşası	Gelincik	Stem, Leaf	Food	Juicy food is prepared	0.03	30
86.	Papaveraceae	<i>Papaver dubium</i> L. subsp. <i>dubium</i>	Köpekyacağı	Haşhaş	Flower, Fruit	Food	Flowers and fruits are eaten	0.02	31
87.	Papaveraceae	<i>Papaver lateritium</i> K.Koch subsp. <i>lateritium</i> ^ε	Potot	Hışışık	Leaf	Food	Leaves collected before blooming are eaten raw. Cooked by roasting	0.02	5-8
88.	Papaveraceae	<i>Papaver rhoeas</i> L.	Gelincik	Haşhaş	Flower, Capsule	Food	Eaten before flowering	0.17	24
89.	Plantaginaceae	<i>Plantago major</i> L. subsp. <i>major</i>	Sinirotu	Evelik	Leaf	Food	Wrap meal is done	0.06	22
90.	Poaceae	<i>Avena fatua</i> L.	Delilyulaf	Yulaf	All	Animal fodder	Used as animal feed	0.03	31

Table 2. (Cont'd.).

No	Family	Taxon	Turkish name	Vernacular name	Used part/s	Using goal	Usage methods	UV	Source person(s)
91.	Poaceae	<i>Hordeum vulgare</i> L. ^e	Arpa	Arpa	Seed	Food, Animal fodder	Barley flour is used to make village bread, Used as animal feed	0.03	34-36, 40-43
92.	Poaceae	<i>Triticum aestivum</i> L. ^e	Buğday	Buğday	Seed	Food	Wheat flour is used to make village bread	0.13	77-78
93.	Poaceae	<i>Phragmites australis</i> (Cav.) Trin. ex Steud.	Kamış	Saz otu	Stem	Toy	Kite is made	0.03	24
94.	Polygonaceae	<i>Polygonum cognatum</i> Meissn.	Madımak	Ebemekmeği	Leaf	Food	In early spring, young shoots are collected for food, Roasted and added to pilaf, Added to soups, Food is made	0.42	4, 24, 28, 31
95.	Polygonaceae	<i>Rheum ribes</i> L.	İşgım	Uşgun	Stem, leaf, stalk	Food	Eaten fresh after stripping the barks.	0.37	28, 34-36, 40-43, 78
96.	Polygonaceae	<i>Rumex acetosella</i> L.	Kuzukulağı	Kuzukulağı	Leaf	Food	Roasted with onion, tomato paste and egg, Used in the fritters	0.12	78
97.	Polygonaceae	<i>Rumex crispus</i> L.	Labada	Evelik	Leaf	Food	Wrap meal is made	0.21	28
98.	Polygonaceae	<i>Rumex graciliscens</i> Rech.f. ^e	Gütyeyik	Tırsıkağa	Leaf	Food	Fresh leaves are pickled. Eaten as raw. Soup is made	0.04	5-8
99.	Polygonaceae	<i>Rumex ponticus</i> E.H.L. ^e	Boçu	Evelik	Leaf	Food	Food is made, Eaten mixed with honey	0.01	4
100.	Polygonaceae	<i>Rumex tuberosus</i> L. subsp. <i>horizontalis</i> (K.Koch) Rech.f.	Kömetürşusu	Kuzukulağı	Leaf	Food	Salad is done	0.10	31
101.	Portulacaceae	<i>Portulaca oleracea</i> L.	Semizotu	Pirpirim otu	Stem, branch, leaf	Food	Used in salad with red pepper, yoğurt, onion and olive oil	0.33	62-65, 76
102.	Ranunculaceae	<i>Ranunculus dissectus</i> M.Bieb. subsp. <i>huettii</i> (Boiss.) P.H.Davis ^e	Kayakebikçeği	Düğün çiçeği	Stem, flower	Ornamental	Young girls make a crown at weddings	0.02	31
103.	Rosaceae	<i>Amygdalus orientalis</i> Mill. ^e	Payam	Badem	Fruit	Food	Fresh fruits are eaten, Seeds are eaten as cookie after roasted	0.25	46, 53, 56, 69, 70, 77, 78
104.	Rosaceae	<i>Armeniaca vulgaris</i> Lam. ^e	Kayısı	Kayısı	Fruit	Food	Eaten as dry or fresh; Jam is produced from the fruits, Dry fruits are boiled with sugar and consumed after adding butter and walnut. This sweet is called Kasefe	0.14	62-65, 76, 78
105.	Rosaceae	<i>Crataegus monogyna</i> Jacq. subsp. <i>monogyna</i>	Yemişen	Alıç	Fruit	Food	Ripe fruits are eaten	0.38	5-8
106.	Rosaceae	<i>Cotoneaster nummularius</i> Fisch. & C.A.Mey.	Dağmuşması	Kuş elması	Fruit	Food	Red fruits are eaten	0.08	23
107.	Rosaceae	<i>Cydonia oblonga</i> Mill. ^e	Ayya	Ayya	Fruit	Food	Eaten fresh, Apricot jam	0.31	46, 53, 56, 69, 70, 78
108.	Rosaceae	<i>Fragaria vesca</i> L. ^e	Çilek	Çilek	Fruit	Food	Eaten fresh, Strawberry jam	0.17	34-36, 41-43
109.	Rosaceae	<i>Malus domestica</i> Borkh. ^e	Elma	Elma	Fruit	Food	Decayed fruits are thrown into a container and filled with water, after 1 week the water is filtrated to obtain vinegar, Dried fruits called Gah are consumed as the cookie, Eaten fresh	0.27	78
110.	Rosaceae	<i>Malus sylvestris</i> Mill. subsp. <i>orientalis</i> (A. Uglitzk.) Browicz var. <i>orientalis</i>	Acelma	Yabani elma	Fruit	Food	Pickle is made, Fruits are eaten	0.10	24,31
111.	Rosaceae	<i>Prunus avium</i> (L.) L. ^e	Kiraz	Kiraz	Fruit	Food	Eaten fresh and dried	0.32	78
112.	Rosaceae	<i>Prunus cerasus</i> L. ^e	Vişne	Vişne	Fruit	Food	Jam, marmalade and cherry juice are produced	0.32	37, 38, 44, 59, 66
113.	Rosaceae	<i>Prunus persica</i> (L.) Batsch. ^e	Şeftali	Şeftali	Fruit	Food	Eaten fresh; Jam, marmalade and peach juice are produced	0.23	37, 38, 44, 59, 66
114.	Rosaceae	<i>Rosa canina</i> L.	Kuşburnu	İt gülü	All, Fruit, root	Food, tea, hedge	Compote, jam, Tea, Sherbet are made, Used as hedge plant, Tea is made from the root	0.45	5-8, 21, 29
115.	Rosaceae	<i>Rosa damascena</i> Mill. ^e	İspartagülü	Yağ gülü	All, Fruit	Food, ornamental	Jam and syrup are made, Grown for ornament	0.36	4

Table 2. (Cont'd.).

No	Family	Taxon	Turkish name	Vernacular name	Used part/s	Using goal	Usage methods	UV	Source person(s)
116.	Rosaceae	<i>Rosa boissieri</i> Crep.	Hasgül	Kuşburnu	Fruit	Food	Compoite is made	0.02	24
117.	Rosaceae	<i>Rosa foetida</i> J. Herm.	Acemsarı	Koyun gözü	Fruit	Food	Leaf and fruit are eaten	0.03	24
118.	Rosaceae	<i>Rubus caucasicus</i> L.	Büküzümü	Böğürtlen	Fruit	Food, tea	Eaten as raw, Jam, Compoite are made, Tea is made	0.28	4-8
119.	Rosaceae	<i>Rubus idaeus</i> L. ^ε	Ahucludu	Böğürtlen	Fruit	Food	Jam	0.07	48, 49, 78
120.	Rosaceae	<i>Rubus sanctus</i> Schreb.	Böğürtlen	Böğürtlen	Fruit	Food	Fruits are eaten	0.11	28
121.	Rosaceae	<i>Sorbus umbellata</i> (Desf.) Fritsch var. <i>cretica</i> (Lindl.) C.K.Schneid.	Geyikelməsi	Gireş	Fruit	Food	Fruits are eaten after ripened	0.12	23
122.	Rubiaceae	<i>Gallium margaceum</i> Ehrend. & Schönb.-Tem. ^ε	Samaniplikçığı	Samaniplikçığı	Inflorescence	Ornamental	Flowering branches are placed in a vase	0.01	22
123.	Salicaceae	<i>Populus alba</i> L. var. <i>alba</i>	Akkavak	Kavak	Stem, branch	Tool	Used in the production of vegetable and fruit crates, construction formwork and stairs	0.03	27
124.	Salicaceae	<i>Populus tremula</i> L. subsp. <i>tremula</i>	Titrekkavak	Kavak	Stem, branch, leaf	Fuel	Dried parts are used as fuel	0.03	31
125.	Salicaceae	<i>Salix x fragilis</i> L.	Gevreksöğüt	Söğüt	Stem, branch	Timber; broom, tool	used in the construction of roofs. Bam broom is made, Used for knitting baskets	0.05	23, 31
126.	Scrophulariaceae	<i>Melampyrum arvense</i> L. var. <i>arvense</i>	İnek buğdayı	Pişmez	All	Animal fodder	Animal feed ignite firewood,	0.02	24
127.	Scrophulariaceae	<i>Verbascum trichostylum</i> Hub.-Mor. ^ε	Topalsıgırkuyruğ u	Sıgır kuyruğu	All, Flower	Fuel, Fishing	Used as fuel and ignite firewood, Crushed and used for fishing	0.02	1, 2, 24, 26
128.	Scrophulariaceae	<i>Verbascum scamandri</i> Murb. ^ε	Kazdağısıgırkuyruğ u	Sıgır kuyruğu	All	Fuel	Used as fuel	0.01	1-3, 33
129.	Scrophulariaceae	<i>Verbascum flavidum</i> (Boiss.) Freyn & Bornm.	Altunisıgırkuyruğ u	Sıgır kuyruğu	All	Fuel	Used as fuel	0.04	1-3, 33
130.	Scrophulariaceae	<i>Verbascum helianthenoides</i> Hub.-Mor. ^ε	Çoraksıgırkuyruğ u	Sıgır kuyruğu	All	Fuel	Used as fuel	0.01	31
131.	Scrophulariaceae	<i>Verbascum pyramidatum</i> M.Bieb.	Arsızsıgırkuyruğ u/	Sıgır kuyruğu	All	Fuel	Used as fuel	0.03	24
132.	Solanaceae	<i>Capsicum annuum</i> L. ^ε	Biber	Biber	Fruit	Food	Used in salads and in meals, eaten fresh or as frying, Eaten as pickle, Crushed, boiled and waited in the sun to make paste	0.52	78
133.	Solanaceae	<i>Lycopersicon esculentum</i> Mill. ^ε	Domates	Domates	Fruit	Food	Eaten fresh and consumed in yogurt	0.72	34-36
134.	Solanaceae	<i>Solanum tuberosum</i> L. ^ε	Patates	Kartol	Tuber	Food	Used for meals and salads	0.54	34-36, 40-43, 78
135.	Tamaricaceae	<i>Tamarix tetrandra</i> Pall. ex M.Bieb.	Gezik	Yılgin ağacı	All	Ornamental, hedge	Planted for ornament and hedge at the border of fields	0.04	24
136.	Ulmaceae	<i>Ulmus glabra</i> Huds	Dağkaraağacı	Karaağaç	All	Ornamental	Planted for ornament in gardens and road sides	0.03	29
137.	Urticaceae	<i>Urtica dioica</i> L. subsp. <i>dioica</i>	Isrgan	Drnke	Leaf	Food, Tea	Pastry is made. Tea is made, Cooked like spinach when fresh or eaten after boiled, Soup and porridge are made, Eaten with mixed honey	0.44	6-8, 24, 31, 225
138.	Vitaceae	<i>Vitis vinifera</i> L.	Asma	Cimin üzümü	Fruit, Leaf	Food	Fruits are used to produce molasses, fruit syrup and vinegar; Saruç is obtained from dry grape and walnut nut	0.48	58, 62-65, 78
139.	Xanthorrhoeaceae	<i>Eremurus spectabilis</i> M.Bieb.	Çiriş	Kiriş	Leaf, stem	Food	Meal, Cooked like spinach	0.31	28, 47, 50, 51, 67, 68, 75

^ε : Cultivated plants, ^ε : Endemic plants

Table 3. A comparison of the results with other studies carried out in the vicinity of study area.

Studies	Total	Food	Spice	Honey	Anim. fodder	Fuel	Ornament	Good	Other
Present study	139	95	12	11	12	7	8	2	28
Ergan Mountain (Korkmaz & Alparslan, 2014)	122	82	-	-	22	6	3	4	-
Zetrin Spice (Korkmaz <i>et al.</i> , 2014b)	92	92	-	-	-	-	-	-	-
Ergan Mountain Geophytes (Korkmaz <i>et al.</i> , 2014a)	25	13	-	1	-	-	16	-	6
Keşiş Mountain Geophytes (Korkmaz & İlhan, 2015)	50	10	-	-	3	-	18	-	-
Kelkit (Korkmaz & Karakurt, 2015)	85	77	8	-	-	-	-	-	-

Table 4. Threat categories of the endemic taxa determined in the study area.

Taxon	Family	Used part	Use type	Threat category
<i>Achillea schischkinii</i>	Asteraceae	Leaf	Spice	LC
<i>Origanum acutidens</i>	Lamiaceae	Leaf & flower	Spice	LC
<i>Rumex gracilescens</i>	Polygonaceae	Leaf	Food & spice	NT
<i>Rumex ponticus</i>	Polygonaceae	Leaf	Food	LC
<i>Ranunculus dissectus</i> subsp. <i>huetii</i>	Ranunculaceae	Stem & flower	Ornamental	LC
<i>Galium margaceum</i>	Rubiaceae	Inflorescence	Ornamental	LC
<i>Verbascum trichostylum</i>	Scrophulariaceae	All part & flower	Fuel & fishing	EN
<i>Verbascum scamandri</i>	Scrophulariaceae	All part	Fuel	EN
<i>Verbascum helianthemoides</i>	Scrophulariaceae	All part	Fuel	VU

In all 9 endemic plant taxa are traditionally used in the area for various purposes. The threat categories of these taxa are shown in (Table 4). The distribution of endemic taxa among the families is as follows: Asteraceae (1), Lamiaceae (1), Polygonaceae (2), Ranunculaceae (1), Rubiaceae (1), and Scrophulariaceae (3). Threat categories of 2 taxa (*Verbascum trichostylum*, *V. Scamandri*) is as EN (Endangered), 1 taxon (*V. helianthemoides*) as VU (Vulnerable), 1 taxon (*Rumex gracilescens*) as NT (Near Threatened) and 5 taxa (*Achillea schischkinii*, *Origanum acutidens*, *Rumex ponticus*, *Ranunculus dissectus* subsp. *huetii*, and *Galium margaceum*) as LC (Least Concern) (Ekim *et al.*, 2000).

Despite their endemic status, uncontrolled harvesting of these plants poses a great threat because these are generally consumed raw or cooked, as spices, as fuels, or as ornamentals. Utilizing these species by taking them into culture rather than harvesting them from nature will contribute to their protection.

The results of other studies in areas near Erzincan province (Table 3) showed that ethnobotanical plants of Elazığ province include 251 plant taxa used for different purposes. The medicinal and economic plants growing in the Köse Mountains (Gümüşhane) (Kandemir & Beyazoğlu, 2002) points out that 195 species are used whereas in Narman (Erzurum) and its surrounding villages 71 plants are reported to be used for medicinal purposes.

In all 147 ethnobotanical studies have been carried out in the Eastern Anatolian region up to 2012 (Polat *et al.*, 2012). The ethnobotanical uses of 87 species have been conducted by Sezik *et al.*, (1997) in some provinces (Erzurum, Erzincan, Ağrı, Kars, Iğdır and Ardahan) of the region. According to Ozturk and Ozcelik (1991) and Ozgokce & Ozcelik (2004) there are over 52 plants evaluated in the area, 43 of these are consumed as food and 6 as fodder in the region. Gunes & Ozhatay (2011) have reported 95 plants used for different ethnobotanical purposes in Kars province, out of these 46 are consumed as

food in the area. Approximately 120 food plants are reported to be consumed in the province of Van by Sancak *et al.*, (2011). According to Kaval *et al.*, (2015) 84 food plants from 30 families are used in Geçitli district (Hakkari). Nadiroğlu & Behçet (2018) investigated traditional uses of wild food plants in Karlıova district (Bingöl) and report that 53 food plants from 25 families are evaluated. In the study conducted in the Esence mountains, 3 biggest families are Rosaceae, Apiaceae, and Lamiaceae. The raw and cooked consumption of plants is the most popular type of use reported. 74 wild edible taxa are documented from Yesilli (Mardin) by Yesil *et al.*, (2019), many taxa in the area are consumed as vegetables. The ethnobotanical characteristics of *Ziziphora* L. (Lamiaceae) taxa in Turkey were investigated by Satil & Selvi (2020). *Ziziphora clinopodioides* is reported to be used as a spice in the villages around the Esence mountains, but local people in Erzurum used it for colds and stomach disorders. Yalçın *et al.*, (2021) have reported 88 plant species sold by herbalists in Suruç district of Sanlıurfa. In the province of Erzincan, some of the plants in this study are used in a similar manner. In both the studies Lamiaceae family is the largest and most well-known.

Some ethnobotanical studies have been carried out in West Azerbaijan (Northwestern Iran) (Younessi-Hamzekhanlu *et al.*, 2020; Salter & Amani, 2023). They report 82 plants from 31 families used as medicine, food, spices, and for other traditional purposes and *Asteraceae*, *Lamiaceae* and *Fabaceae* are the largest families reported in these studies. Mohammadi & Azar (2012) have identified wild plant taxa used for medicinal and dietary purposes in the same area and have reported 149 species used for the same purpose. *Asteraceae*, *Fabaceae*, and *Lamiaceae* constituted the largest families, and 10 endemic species have been identified. The traditional uses of *Crataegus* spp., *Rumex acetosella* and *Viburnum opulus* too have been reported together with wild *Ornithogalum* spp. The most noticeable cultural markers in some groups

are wild *Allium*, *Prangos*, *Smyrniums*, and *Tragopogons*. In the present investigation *Crataegus monogyna*, 5 *Rumex* species, 4 *Allium* species, *Prangos ferulacea* and *Tragopogon dubius* are consumed as food, raw, pickles, and spice in villages on the Esence mountains (Turkiye).

According to the Flora of Turkey and The East Aegean Islands, Turkey has had a very rich flora with 1251 genera belonging to 174 families, more than 12.000 species and subspecies (Davis, 1965-1985; Davis *et al.*, 1988; Guner, 2000). The wild forms of many recently cultivated plants are naturally distributed all around our country. Although the exact number of medicinally used plants in Turkey has not been determined exactly, it is estimated to be lie around 1000, with over 200 having reasonably good export potential. The total number of plant species used for medicinal purposes globally too is unknown but the estimates are said to lie between 20,000-70,000 (Baytop, 1999; Kendir & Güvenç, 2010; Korkmaz *et al.*, 2016). There are nearly 147 ethnobotanical studies conducted in the Eastern Anatolia region of Turkiye (Polat *et al.*, 2012), but only 8 mention about those used as food (Ozturk & Ozcelik, 1991). The collection of information on wild plants used as food in Turkiye and the world is very important the reason is that due to migration of families from the villages to the city centers, the culture of traditional uses of wild plants is getting lost in the East Anatolian region which includes Erzincan province as well. For maintaining the precious knowledge of the traditional culture, more studies are needed before it is too late (Sezik *et al.*, 1997).

Conclusion

Türkiye with an enormous plant diversity has the potential of meeting the medicinal and food plant needs of its population. Studies on the ethnobotanical use of plants by the locals is an important way to bridge the gap before we loose this information with the death of older people. These people have kept all useful information in their memory for decades which should be recorded as a treasure from our past to the present. It needs to be transferred to our new generations. The number of ethnobotanical studies is increasing rapidly as a result of deeper relationships between humans and plants at present. We have to face the problems caused by global warming, environmental pollution and habitat destruction. Older people always used to seek solutions from plants for hunger, malnutrition and diseases. During the Covid-19 pandemic that affected the whole world, people have tried to take advantage of traditional uses of plants in order to be protected from this pandemic. The herbal richness has become the only source of reference in cases where modern medicine cannot find a cure or in cases where support from traditional practices is required. All these reveal the importance of natural plants once again and make it necessary to reveal the data on traditional uses and transfer them to future generations.

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