



Research paper

An ethnobotanical study of medicinal plants in Acipayam (Denizli-Turkey)

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ABSTRACT

A comprehensive ethnobotanical study was conducted in Acipayam, situated in the western part of Turkey. This paper includes details of plants used in folk medicine and ethnopharmacological information obtained during this study. The aim of the authors was to collect and identify plants used by local people for therapeutic purposes and to present information about traditional herbal medicine. Plant specimens collected during field-work form the subject of this investigation. Information was obtained by means of open and semi-structured interviews with local people. In addition, cultural importance index (CI) and use report (UR) values were calculated. Ninety-one taxa of plants used in folk medicine and belonging to 38 families were identified in this study. Of these, 82 species were wild, and 9 species were cultivated. The most common families were Lamiaceae (18.7%), Asteraceae (14.3%) and Rosaceae (6.6%). Consequently, 191 medicinal uses (remedies) of 91 taxa were recorded. According to the use reports (UR), the most important medicinal plants were *Cydonia oblonga* (99 UR), *Juniperus oxycedrus* subsp. *oxycedrus* (99 UR), *Pinus brutia* (98 UR), *Hypericum perforatum* (90 UR), *Viscum album* subsp. *austriacum* (82 UR) and *Salvia tomentosa* (80 UR). Infusion (38.2%) was the most common preparation method used within the research area. The ethnomedicinal capabilities of eight species (*Amelanchier parviflora* var. *dentata*, *Echinops viscosus* subsp. *bithynicus*, *Onopordum sibthorpiatum*, *Origanum hypericifolium*, *Quercus trojana*, *Salvia adenophylla*, *Sideritis montana* subsp. *remota* and *Tamarix smyrnensis*) have been recorded for the first time in Turkey.

1. Introduction

Ethnobotany is briefly defined as studies involving an interaction between people and plants in a given environment. Apart from collecting information relating to human cultural heritage, this multidisciplinary science also facilitates the discovery of new drugs (Agelet and Vallès, 2003). Ethnobotanical surveys have played an important role in bringing to light lost information from the past, thus enabling the possible future discovery and use of novel, effective, therapeutic compounds.

Since 3000 B.C., Acipayam was an important settlement area, strategically located at the intersection of the Aegean, the Mediterranean and the West Anatolian regions. It is rich both in flora and cultural diversity, having been occupied by a diverse range of different civilizations over the centuries (<http://www.acipayam.bel.tr>). Extensive use of medicinal plants in Turkey is directly related to the current composition of the local flora, comprising some 9500 species, 33% of which are endemic (Ozhatay et al., 2012).

Ethnobotanical studies had been carried out for many years,

especially in the last decade. Various surveys have been conducted throughout Turkey in order to collect information on the use of plants as a source of folklore medicine. In Denizli province, areas such as Buldan, Cameli and Honaz have previously been investigated for traditional medicine use (Ertug et al., 2003; Honda et al., 1996; Kargiöglu et al., 2010; Tuzlacı, 1977). However, to the best of the authors knowledge, this is the first report to address the use of medicinal plants in Acipayam. The area of the study distinguishes from other regions of Turkey due to its geographical and climatic variations building up a great floral and cultural diversity. The aim of this study was to present information about the use of traditional herbal medicine in Acipayam.

2. Materials and methods

2.1. Study area

Acipayam is a district of the Denizli province, southwest Anatolia, located at a latitude of 37° 25.2' north and a longitude of 29° 19.8' east, and covering an area of 1609 km², with a population of 56.330 (<http://>

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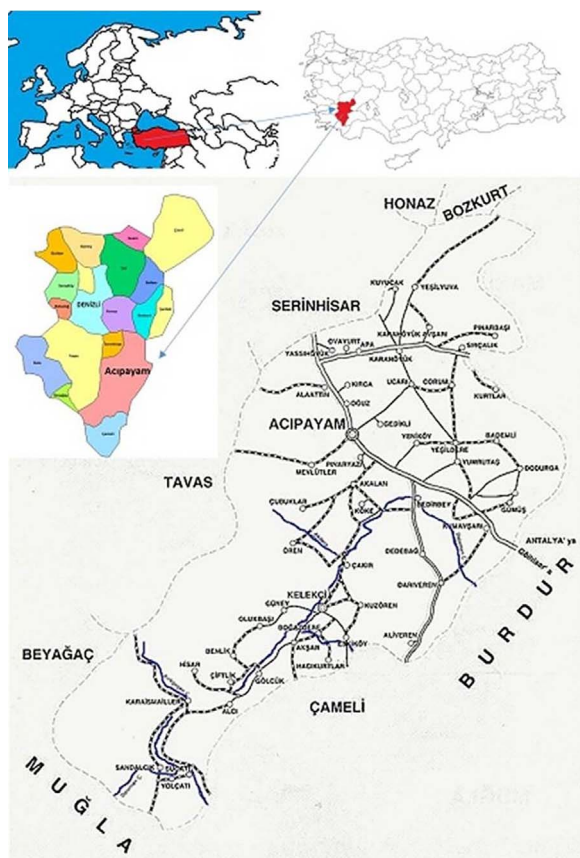


Fig. 1. Geographical location of the study area.



Fig. 2. General view of Acıpayam.

www.tuik.gov.tr) (Fig. 1). Most of the population (75%) lives in rural areas. The centre of the region is located at an altitude of 850 meters above sea level, and the highest point in the investigated area is the mountain Bozdag (2421 m asl). An ethnobotanical survey was conducted for all 52 localities (38 villages, 14 neighborhoods) of Acipayam; situated at an altitude of between 600 m and 1450 m (Fig. 2). Acipayam is surrounded by Serinhisar, Honaz, Bozkurt and Cardak (Denizli) to the north, Golhisar and Cameli (Burdur) to the south, Yesilova, Tefenni and Karamanlı (Burdur) to the east, and Dalaman, Koycegiz (Muğla) and Beyagac and Tavas (Denizli) to the west. The mountains encircling this area are Honaz Mountain (2,528 m), Bozdag (2,421 m), Eseler Mountain (2254 m) and Elmadagı (1805 m). The Acipayam plain covers an area of 725 km², bounded by Honaz Mountain to the north and Eseler Mountain to the east (<http://www.acipayam.bel.tr>).

creates a passage between the Aegean, the Mediterranean and the Central Anatolia regions of Turkey. The mean annual temperature is 16.2°C, with a mean annual rainfall of 47.3 kg/m² (<http://www.mgm.gov.tr>).

Historically, Acipayam is derived from a Turkish word meaning ‘bitter almond’ and almond trees still grow there, mainly on the plains. The main crops cultivated at Acipayam are melon, cherry, anise, tobacco and poppy (Acipayam Belediyesi, 2015 <http://www.acipayam.bel.tr>).

The vegetation of Acipayam district presented here is based on the authors own observations and field records. The vegetation of the northern part of Acipayam is similar to that characteristic of stepic communities and contains Irano-Turanian elements. The trees and shrubs occupying the northern mountain slopes (900–1850 m) include: *Pinus nigra* F.J. Arnold subsp. *nigra* var. *caramanica* (Loudon) Rehder, *Juniperus excelsa* Bieb., *J. foetidissima* Willd., *J. oxycedrus* L. subsp. *oxycedrus*, *Quercus coccifera* L., *Q. infectoria* Olivier, *Q. trojana* P.B. Webb., *Amelanchier parviflora* Boiss., *Rosa pulverulenta* Bieb., *Crataegus monogyna* Jacq., *Berberis crataegina* DC., *Pyrus amygdaliformis* Vill. and *Astragalus condensatus* Ledeb.

The southern mountain slopes are covered with more extensive forest areas than their northern counterparts. Some Mediterranean trees and shrubs, such as *Pinus brutia* Ten., *Styrax officinalis* L., *Spartium junceum* L., *Cotinus coggyria* Scop., *Cistus creticus* L., *Sarcopoterium spinosum* (L.) Spach, *Liquidambar orientalis* Miller and *Cedrus libani* A. Rich. are characteristic of this area. Furthermore, some plants mentioned above, and occurring on the northern slopes, such as *Pinus nigra* subsp. *nigra* var. *caramanica*, *Juniperus excelsa*, *J. foetidissima*, *J. oxycedrus* subsp. *oxycedrus*, *Quercus coccifera*, *Crataegus monogyna* and *Pyrus amygdaliformis* were also found in this part of Acipayam district. There were no trees above an altitude of approximately 2000 m. The vegetation of such habitats consisted of low shrubs and herbaceous plants that are generally characteristic of scrub (Fig. 3).

Some plants of Acipayam are endemic to Turkey, e.g. *Achillea phrygia* Boiss. et Bal., *Amelanchier parviflora* Boiss. var. *dentata* Browicz, *Astragalus condensatus*, *Origanum hypericifolium* O. Schwarz et P.H. Davis, *Onopordum anatolicum* (Boiss.) Eig., *Salvia adenophylla* Hedge et Hub., *Salvia cadmica* Boiss., *Sideritis leptoclada* O. Schwarz et P.H.Davis, *Teucrium sandrasicum* O. Schwarz and *Verbascum cheirantifolium* Boiss. var. *asperulum* (Boiss.) Murb. One rare Acipayam plant, *Liquidambar orientalis*, is a relict endemic species found mainly in southwest Anatolia (Davis, 1965–1985; Davis et al., 1988; Guner et al., 2000).

2.2. Data collection

Ethnobotanical data was collected by means of open and semi-structured interviews (Alexiades, 1996; Cotton, 1996; Martin, 1995) with local people in the Turkish language (Fig. 4). The Acipayam area was visited several times between 2013 and 2014. The interviews took the form of general conversations and a structured questionnaire (Appendix A). Plant vouchers were collected, mostly in collaboration with the informants.

A total of 136 people were interviewed. The age of informants varied from 36 to 91, the mean age being 66 years.

The informants included farmers, housewives, shepherds, mukhtar (headmen of villages), labourers (forestry workers) and cafe owners. Interviews were undertaken at various places (coffee houses, gardens, houses and fields). Experienced adults and patients and two local healers were the sources of information and data (local names, part(s) of plants used, ailments treated, therapeutic effects, methods of preparation and methods of administration). Furthermore, some adverse effects of folk medicines were also recorded using a questionnaire.

The collected plants were identified by the authors, using *The Flora of Turkey and East Aegean Islands* (Davis, 1965–1985; Davis et al., 1988; Guner et al., 2000). Voucher specimens were deposited at the Herbarium of the Faculty of Pharmacy, Marmara University (MARE).



Fig. 3. Some views from Acipayam district.



Fig. 4. Ethnobotanical interviews.

2.3. Calculations

The Cultural Importance Index (CI) (Tardío and Pardo de Santayana, 2008) is a comparative measure of the importance of the most commonly used species, according to informants. It was calculated by using the following formula: $CI = UR_c/N$; UR (Use Report) = the total number of uses recorded for each species; N = the total number of informants participating in the research. Each taxon referred to by a respondent under the medical use category (detailed in Tables 1 and 2) was counted as a use report (UR). Popular therapeutic use (POPUP) values were calculated using the POPUP formula (Bulut and Tuzlaci, 2015), (POPUP = NURIT/TUR; NURIT = the number of use reports for each illness or therapeutic effect; TUR = total number of use reports).

3. Results and discussion

3.1. Demographic characteristics of respondents

The demographic characteristics of the respondents were recorded during the face-to-face interviews. The age of the participants taking part were as follows: age 30–40 (9); 41–54 (21); 55–59 (42) and over 72 (64) making a total of 136 participants. All of the respondents were native to Acipayam and were living in the villages. Of the respondents, 91 were male and 45 were female. Approximately, 75 percent of respondents had not completed secondary school education.

3.2. Medicinal plants and related knowledge

The plants used for medicinal purposes in Acipayam are presented in Table 1 (human uses) – Table 2 (veterinary uses) and arranged alphabetically according to their botanical names, together with any further relevant information. Taxonomical changes to The Plant List (<http://www.theplantlist.org>) are shown in parentheses in Table 1, together with scientific names. During this study, 214 plant specimens

were collected within the research area. Of these, 91 medicinal plant species belonging to 38 families were identified, of which 82 species were wild and 9 species were cultivated. The most common medicinal plant families were Lamiaceae (18.7%), Asteraceae (14.3%) and Rosaceae (6.6%).

Of the medicinal plants used for veterinary purposes, (Table 2), only *Acanthus spinosus* and *Platanus orientalis* are used exclusively for treating animals.

Centaurea solstitialis L. subsp. *solstitialis*, *Juniperus oxycedrus* L. subsp. *oxycedrus*, *Lactuca serriola* L., *Papaver somniferum* L., *Quercus coccifera* L., *Salvia tomentosa* Miller and *Verbascum pycnostachyum* Boiss. et Heldr. are used for treating both humans and animals.

Amelanchier parviflora var. *dentata*, *Astragalus condensatus*, *Liquidambar orientalis*, *Origanum hypericifolium*, *Salvia adenophylla*, *Salvia cadmica*, *Sideritis leptoclada* and *Verbascum cheirantifolium* var. *asperulum* are endemic species with therapeutic uses (presented in Table 1).

3.2.1. Plant parts used and methods of preparation

“Based on a total of 2966 use reports, the parts of plants mainly used for treating different ailments comprised aerial parts (32.5%), leaves (15.7%), fruit (9.9%), subterranean parts (4.2%) and other parts such as latex, resin, bark of stem (37.7%). During the study, a total of 191 medicinal uses were recorded. The main methods for preparing remedies were infusion (38.2%), decoction (25.7%) and others (36.1%). Remedies were mainly taken internally (67%) (Tables 1 and 2).

Additional ingredients, such as olive oil, milk and paraffin oil are also used to prepare remedies.

Some medicinal plants are also used in multitherbal recipes containing two or more species. These are presented in Table 3.

3.2.2. Plant names

Participants were asked the local names of the medicinal plants they used. In some cases, the same vernacular name was used for more than

Table 1
Folk medicinal plants of Acipayam (Denizli, Turkey).

Botanical name, Family and Specimen number	Local name	Plant part used	Ailments treated/ Therapeutic effect	Preparation	Adm.	Rpt	CI	Ethnobotanical records from Turkey	Ethnobotanical records from Mediterranean Region
<i>Alcea pallida</i> Waldst. et Kit. (Malvaceae, MARE17151)	Devegülli, Fatmacıçöğü, Gülfatma	Flowers and Fruits	Mycosis	Infusion	Int.	3	0.29	Antifungal (12)	
<i>Anelanchier parviflora</i> Boiss. var. <i>dentata</i> (Rosaceae, MARE16100)	Kurt agacı	Branches	Diuretic	Decoction	Int.	7	0.05		
<i>Anthemis altissima</i> L. [<i>Cota altissima</i> (L.) J.Gay] (Asteraceae, MARE 17135)	Akçabubac, Papatya	Capitulum Capitulum Capitulum	Stomach ailments Sore throat Cough	Infusion Infusion Infusion	Int. Int. Int.	11 11 15	0.27		
<i>Anthemis tinctoria</i> L. var. <i>tinctoria</i> [<i>Cota tinctoria</i> (L.) J.Gay] (Asteraceae, MARE 16006, 16136, 16150)	Akbubac, Papacya, Papatya	Capitulum (fresh) Capitulum Capitulum	Gingivitis Menstrual pain Stomach ailments	Crushed Infusion Infusion	Ext. Int. Int.	5 12 20	0.27	Stomach ailments (2, 29, 45, 52, 69, 89) Antispasmodic (17, 56, 57) (4, 13, 15, 16, 18, 31, 44, 49, 66, 82) ^b	
<i>Asplenium trichomanes</i> L. (Aspleniaceae, MARE 17234)	Eğrelti, Yanık otu	Aerial parts	Burn	Crushed	Ext.	13	0.07		(102, 111) ^b
<i>Berberis crataegina</i> DC. (Berberidaceae, MARE 16102, 16149, 16193)	Karamak, Karamuk	Branches	Urinary system diseases	Decoction	Int.	15	0.11	Urinary system diseases (28, 37)	
<i>Cardopatum corymbosum</i> (L.) Pers. (Asteraceae, MARE 17070)	Cayırdikeni	Root	Intestinal worm	Decoction	Int.	6	0.04	(11) ^b	
<i>Cedrus libani</i> A. Rich. (Pinaceae, MARE 16172, 16202)	Andız, Sedir	Bark of stem Resin	Skin diseases Wound healing	Decoction –	Int. Ext.	8 10	0.13	Skin disease (20, 57) (34, 48) ^b	
<i>Centaurea solstitialis</i> L. subsp. <i>solstitialis</i> (Asteraceae, MARE 15874, 15914, 16053)	Konugoz, Sarı diken	Spine of involucreal bracts Spine of involucreal bracts	Boil Wart	Crushed –	Ext. Pricked	9 9	0.13	Wart (71, 72) (5, 11, 12, 13, 25, 29, 34, 43, 77, 79, 80, 81, 82) ^b	
<i>Centaurea depressa</i> Bieb. [<i>Cyanus depressus</i> (M.Bieb.) Soják] (Asteraceae, MARE 15998, 16124, 16687, 17108)	Kadın diğmesi	Capitulum Capitulum	Cough Haemorrhoids	Decoction Decoction	Int. Int.	10 6	0.12	Expectorant (32) (66) ^b	
<i>Centaurea urvillei</i> DC. subsp. <i>stepposa</i> (Asteraceae, MARE 16773, 16987)	Cobankalküdan	Leaves (fresh)	Boil	Crushed	Wrapped in a cloth, ext.	6	0.04	(56, 57) ^b	

(continued on next page)

Table 1 (continued)

Botanical name, Family and Specimen number	Local name	Plant part used	Aliments treated/ Therapeutic effect	Preparation	Adm.	Rpt	CI	Ethnobotanical records from Turkey	Ethnobotanical records from Mediterranean Region
<i>Ceterach officinarum</i> DC. (Aspleniaceae, MARE 17048)	–	Aerial parts	Kidney stones	Infusion	Int.	5	0.04	Kidney stones (13, 18, 34, 53, 71, 74, 76, 78, 92)	(97, 100, 107, 111, 112, 118, 120) ^b
<i>Cistus creticus</i> L. (Cistaceae, MARE 15881, 16058)	Dag gülü	Leaves	Diabetes	Decoction	Int., before breakfast	11	0.08	Diabetes (54, 56) (13, 25, 28, 34, 43, 44, 57, 77, 80, 86) ^b	
<i>Cnicus benedictus</i> L. var. <i>kotschyi</i> Boiss. [<i>Centaurea benedicta</i> (L.) L.] (Asteraceae, MARE 15967, 16904)	Bodur ot, Karadiken	Aerial parts	Diabetes	Decoction	Int., before breakfast	35	0.26	(13, 25, 48, 53, 79) ^b	
<i>Coriandrum sativum</i> L. ^a (Apiaceae, MARE 16050)	Yumurcak	Aerial parts	Abdominal pain	Infusion	Int.	11	0.08	(29, 7, 55, 56, 83) ^b	(121) ^b
<i>Crataegus monogyna</i> Jacq. subsp. <i>monogyna</i> (Rosaceae MARE 15883, 16005)	Alic	Flowers Branches	Antihypertensive Toothache	Decoction Decoction	Int. Gargled	38 11	0.36	Antihypertensive (5, 13, 23, 28, 37) (4, 11, 12, 16, 17, 19, 23, 24, 25, 39, 43, 45, 49, 53, 55, 56, 57, 69, 44, 48, 51, 76, 78, 80, 82, 83) ^b	Antihypertensive (97, 98, 100, 105, 110, 122) (109, 112, 121) (115, 119) ^b
<i>Cydonia oblonga</i> Miller ^a (Rosaceae, MARE 15828, 16072)	Ayva	Leaves Leaves Leaves	Antihypertensive Abdominal pain Diarrhea	Decoction Decoction Decoction	Int. Int. Int.	5 24 35	0.73	Abdominal pain (10, 12, 26, 34, 37, 53, 80) Diarrhea (4, 12, 36, 38, 45, 57, 61, 62, 93) Cough (4, 10, 12, 13, 19, 23, 26, 27, 29, 38, 45, 48, 62, 69, 75, 76, 77, 80, 82, 93) (48, 55, 68, 76, 78, 79, 86, 88, 89, 90) ^b	Diarrhea (104, 109, 118) Antihypertensive (106) (97, 100, 103, 116, 117) ^b
<i>Cynodon dactylon</i> (L.) Pers. var. <i>dactylon</i> (Poaceae, MARE 16146)	Ayrık koku	Whole plants Root	Rheumatism Prostate ailments	Infusion Decoction	Int. Int.	9 21	0.22	Rheumatism (67) (2, 4, 12, 17, 18, 25, 36, 37, 38, 39, 42, 43, 44, 45, 52, 53, 60, 77, 79, 82, 83, 84, 85, 93) ^b	Rheumatism (100, 112) Urinary complaints (113) (103, 107, 110, 111, 115, 118, 122) ^b
<i>Daphne oleoides</i> Schreber subsp. <i>oleoides</i> (Thymelaeaceae, MARE 16194)	Ezelteri, Ezeltere	Leaves	Wound healing	Crushed	Wrapped in a cloth, wait for 10 min, ext.	10	0.07	Wound (63) (39, 48) ^b	
<i>Dracunculus vulgaris</i> Schott (Araceae, MARE 15893, 16725)	Yılanbıçağı, Yılanburçığı, Yılanıstırgac	Fruits (fresh) Fruits Fruits	Rheumatism Haemorrhoids Prostate ailments	Crushed – –	Wrapped in a cloth, ext. Eaten Eaten	15 20 9	0.32	Rheumatism (12, 13, 34, 48, 55, 56, 78, 85) Haemorrhoids (12, 13, 48, 55, 71, 72, 84) (39, 92) ^b	(119) ^b
<i>Ecballium elaterium</i> (L.) A. Rich. (Cucurbitaceae, MARE 16799)	Ackavun, Mayasıl otu	Fruit juice (fresh) Fruit juice (fresh)	Haemorrhoids Sinusitis	– –	Ext. Dropped into the nostrils	12 15	0.2	Haemorrhoids (2,11, 23, 38, 45, 53, 56, 62, 63, 75, 76, 77, 79, 80, 85) Sinusitis (4, 5, 10, 11, 12, 13, 18, 19, 23, 26, 27, 28, 34, 37, 39, 42, 44, 45, 48, 53, 55, 56, 57, 62, 71, 72, 74, 75, 77, 78, 79, 80, 83, 84, 85, 86, 88, 92, 93, 96) (25, 29, 70) ^b	(106, 116, 122) ^b
<i>Echinophora tenuifolia</i> L. subsp. <i>sibthorpiana</i> (Guss.) Tutin	Cörtük	Aerial parts	Shortness of breath	Decoction	Int.	4	0.02	(15,28) ^b	

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Table 1 (continued)

Botanical name, Family and Specimen number	Local name	Plant part used	Ailments treated/ Therapeutic effect	Preparation	Adm.	Rpt	CI	Ethnobotanical records from Turkey	Ethnobotanical records from Mediterranean Region
(Apiaceae, MARE 15925)									
<i>Echinops viscosus</i> DC. subsp. <i>bithynicus</i> (Boiss.) Rech. fil. (Asteraceae, MARE 17021) [<i>Echinops spinosissimus</i> Turra]	Gengel diken	Capitulum	Boil	Heated then crushed	Ext.	4	0.02		
<i>Equisetum telmateia</i> Ehrh. (Equisetaceae, MARE 17190)	Eklice ot	Aerial parts	Oedema	Infusion	Int.	16	0.12	(2, 10, 23, 27, 42, 43, 45, 54, 76, 87, 90) ^b	(100, 105, 108, 109, 116, 121) ^b
<i>Euphorbia rigida</i> Bieb. (Euphorbiaceae, MARE 15856, 15976)	Sitlegen	Aerial parts (fresh)	Rheumatism	Cut into small pieces then heated in paraffin oil and a cloth put into this mixture	Applied on kness for 3–4 hours in a day, for 15 days, ext.	3	0.39	Wart (27, 49, 56, 57)	
<i>Ficus carica</i> L. subsp. <i>carica</i> (Moraceae, MARE 15968, 16079)	İncir	Latex	Wart	–	Ext.	50		(26, 74) ^b	
		Latex	Wart	–	Ext.	50	0.53	Wart (10, 11, 12, 13, 19, 23, 25, 38, 48, 53, 55, 56, 58, 71, 72, 74, 75, 79, 80, 81, 83, 84)	Wart (98, 100, 104, 107, 109, 110, 112, 113, 115, 118, 121)
		Latex	Haemostatic	–	Ext.	22		(3, 4, 13, 14, 16, 25, 29, 33, 34, 36, 37, 44, 54, 61, 64, 76, 89, 90, 91, 93) ^b	(102, 103, 111, 114, 120, 121) ^b
<i>Foeniculum vulgare</i> Miller (Apiaceae, MARE 15848, 15901, 15903, 16054, 16071)	Sıra	Aerial parts	Abdominal pain (baby)	Infusion	Int.	60	0.44	Stomach ache (85)	(98, 100, 102, 104, 106, 107, 109, 110, 112, 113, 115, 116, 117, 118, 120, 121, 122, 121) ^b
								Carminative (2, 44, 83, 87) Digestive (53, 79) Gastrointestinal disease (55) (6, 11, 22, 28, 39, 48) ^b	
<i>Glaucium leiocarpum</i> Boiss. (Papaveraceae, MARE 15904, 15938, 16025, 16095, 16184, 16199)	Ak gelincik, Devegülli	Flowers (fresh)	Wound healing	Crushed with olive oil	Ext.	15	0.11	Wound (57) (81) ^b	
<i>Helichrysum plicatum</i> DC. subsp. <i>plicatum</i> (Asteraceae, MARE 16137, 16201)	Geyikmisi	Aerial parts	Urinary system diseases	Infusion	Int.	11	0.08	Urinary system diseases (15, 37) Kidney stone (8, 18, 49, 51, 52, 92) (16, 29, 32, 34, 46, 61, 62, 69) ^b	Stomach ache (8)
<i>Hypericum perforatum</i> L. (Hypericaceae, MARE 15939, 15978)	Seker otu	Flowering branches Flowering branches Flowering branches	Stomach ailments Prostate ailments Cancer Wound healing	Oleat (macération with olive oil) Oleat Oleat Oleat	Int. Int. Int. Ext.	32 10 6 38	0.66	Stomach ailments (2, 5, 8, 10, 12, 13, 18, 23, 27, 32, 39, 42, 43, 44, 45, 49, 51, 52, 53, 54, 55, 56, 57, 60, 62, 64, 76, 77, 78, 79, 83, 85, 87, 88, 92) Prostate ailments (4, 77) Cancer (43, 55, 56, 77)	Wound (108, 110, 111, 112, 119, 122) (100, 102, 106, 107, 116, 120, 121) ^b

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Table 1 (continued)

Botanical name, Family and Specimen number	Local name	Plant part used	Aliments treated/ Therapeutic effect	Preparation	Adm.	Rpt	CI	Ethnobotanical records from Turkey	Ethnobotanical records from Mediterranean Region
<i>Juglans regia</i> L. ^a (Juglandaceae, MARE 15898, 16001)	Ceviz	Flowering branches	Diabetes	Infusion	Int.	4		Wound (8, 12, 13, 15, 19, 23, 28, 37, 39, 42, 43, 44, 45, 48, 53, 54, 55, 56, 57, 60, 62, 75, 76, 77, 79, 80, 82, 83, 89, 92) Diabetes (4, 10, 12, 45, 80, 81) (2, 16, 17, 25, 26) ^b	
		Leaves (fresh) Mesocarp	Toothache Shortness of breath	Crushed Decoction	Ext. Int.	6 11	0.14	Strengthen teeth (49) (2, 5, 7, 12, 13, 16, 17, 19, 20, 22, 23, 24, 26, 27, 29, 28, 33, 34, 36, 37, 44, 47, 48, 51, 53, 54, 55, 56, 57, 58, 61, 62, 63, 68, 69, 71, 74, 75, 76, 77, 78, 80, 81, 82, 83, 86, 87, 89, 90, 91, 92, 93) ^b	Dental antiseptic (102) (103, 107, 109, 112, 113, 114, 115, 116, 118, 121) ^b
<i>Juniperus excelsa</i> Bieb. (Cupressaceae, MARE 16174)	Boz ardıc, Küllü ardıc	Leaves (fresh) Cones	Sprain Shortness of breath	Crushed (olive oil) Decoction	Wrapped in a cloth, ext. Int.	3 30	0.22	Shortness of breath (49) Asthma (4) Bronchitis (29) Cough (44, 45) (17, 57, 69) ^b	(121) ^b
<i>Juniperus foetidissima</i> Willd. (Cupressaceae, MARE 16097, 16177, 16173, 16171)	Dikenliardıc, Karaardıc, Kozaliardıc, Kokarardıc	Cones	Shortness of breath	Decoction	Int.	30	0.22	(13, 34, 48, 57, 63, 74) ^b	
<i>Juniperus oxycedrus</i> L. subsp. <i>oxycedrus</i> (Cupressaceae, MARE 15990, 16195, 16176, 16032, 16116, 16808, 17247, 17340)	Ardıc, Kızıl ardıc, Kızılçık	Terebinthine (oleoresine; obtained from stem) Resin Cones Cones (fresh) Cones	Cough Wound healing Shortness of breath Abdominal pain Heart diseases Stomach ache	– Heated Decoction Decoction Crushed Decoction	Int. Ext. Int. Int. Eaten Int.	10 12 45 10 10 12	0.73	Cough (12, 18, 29, 30, 34, 52, 74, 83, 93) Wound (13, 28, 37, 45, 53, 56, 92, 93) Shortness of breath (13, 25, 30, 38, 47) Asthma (55, 56, 74, 76, 82) Abdominal pain (5) Stomachache (23, 56, 57, 74, 83, 88, 92) Digestive (12) Heart diseases (20) (8, 15, 16, 26, 28, 32, 39, 43, 49, 51, 60, 61, 62, 63, 75, 77, 78, 79, 84, 85, 89, 94) ^b	(100, 103, 110, 112) ^b
<i>Lactuca serriola</i> L. (Asteraceae, MARE 17122)	Karakavuk, Keklik otu, Meyrilli	Latex	Wound healing	–	Ext.	9	0.06	(15, 19, 69) ^b	(118) ^b
<i>Leonice leontopetalum</i> L. (Berberidaceae, MARE 17175)	Mayasıl otu	Tuber	Haemorrhoids	Decoction	Int., for 1 week	15	0.11	Haemorrhoids (84) (48, 51, 55, 56, 76) ^b	
<i>Liquidambar orientalis</i> Miller var. <i>orientalis</i> (Hamamelidaceae, MARE 16880, 17257)	Gunluk ağacı	Resin (fresh)	Stomach ulcer	–	Eaten 1 teaspoon before breakfast	21	0.15	Stomach ulcer (28, 34) (33) ^b	
<i>Marubium vulgare</i> L. (Lamiaceae, MARE 15868, 16017)	Bozpamukluk, Koybozan otu	Aerial parts	Abdominal pain	Crushed	Wrapped in a cloth, ext.	16	0.12	Abdominal pain (37, 76, 79) Carminative (53) (25, 28, 66) ^b	(97, 100, 103, 106, 109, 112, 113, 117, 121, 122) ^b

(continued on next page)

Table 1 (continued)

Botanical name, Family and Specimen number	Local name	Plant part used	Ailments treated/ Therapeutic effect	Preparation	Adm.	Rpt	CI	Ethnobotanical records from Turkey	Ethnobotanical records from Mediterranean Region
<i>Mentha longifolia</i> (L.) Hudson subsp. <i>typhoides</i> (Briq.) Harley var. <i>typhoides</i> (Lamiaceae, MARE 15855, 15870, 16013, 16081, 16121, 16141, 16187)	Arknasani, Narpiz, Su narpizi, Yarpiz	Leaves Leaves Leaves Leaves Leaves Aerial parts	Cough Shortness of breath Rheumatism Antipyretic Nausea Common cold	Infusion Infusion – Crushed Crushed Decoction	Int. Int. Wrapped in a cloth, ext. Ext. Wrapped in a cloth, ext. Int.	13 15 22 10 10 10	0.59	Cough (26, 43, 61) Shortness of breath (78) Asthma (32, 80) Rheumatism (13, 24, 46, 56) Nausea (31, 48) Stomach ailments (26, 29, 30, 32, 37, 42, 45, 49, 53, 61, 87) Cold (6, 26, 39, 42, 48, 51, 56, 66) (12, 15, 16, 17, 18, 34, 36, 45, 62, 70, 82, 91, 92, 93) ^b	Cough (121) (121) ^b
<i>Mentha spicata</i> L. subsp. <i>spicata</i> (Lamiaceae, MARE 15921, 15979, 15987, 16012, 16046, 16141a)	As nana, Nane	Aerial parts	Stomach ailments	Infusion	Int.	18	0.13	Stomach ailments (10, 11, 13, 15, 16, 19, 33, 42, 53, 64, 74, 80, 81, 90, 92) Antispasmodic (17) (28, 49, 68, 69, 76, 78, 79, 89) ^b	Stomach ailments (100, 104, 109, 117, 121)
<i>Morus alba</i> L. ^a (Moraceae, MARE 15985)	Dut	Young shoots Fruits Fruits	Diabetes Thrush Stomach ache	Infusion – –	Int. Eaten Eaten	5 30 9	0.32	Diabetes (4, 17, 71, 77, 82, 89, 90, 93) Thrush (39) Stomach ache (62) (10, 13, 19, 23, 37, 45, 55, 69, 79, 80, 82) ^b	(115, 121) ^b
<i>Myrtus communis</i> L. subsp. <i>communis</i> (Myrtaceae, MARE 16948)	Mersin	Leaves Leaves Leaves	Diabetes Abdominal pain (baby) Skin redness in children	Infusion Infusion Boiled	Int. Int. Ext.	6 12 15	0.23	Diabetes (4, 12, 18, 22, 49, 58, 79, 85) (12, 20, 25, 28, 33, 49, 55, 56, 57, 64, 71, 74, 78, 83) ^b	Skin redness in children (110) (103) ^b
<i>Nigella sativa</i> L. ^a (Ranunculaceae, MARE 15886)	Cörek otu	Seed Seed Seed	Common cold Abdominal pain Stomach ulcer	Heated Heated –	Inhaled Wrapped in a cloth, ext. Eaten	10 10 2	0.16	Cold (28, 62) Ulcer (51) (7, 22, 34, 63) ^b	
<i>Onopordium sibthorpianum</i> Boiss. et Heldr. (Asteraceae, MARE 15957, 16022, 16204)	Kenger	Young shoots Young shoots Capitulum	Shortness of breath Tooth care Kidney stones	– Peeled Infusion	Eaten Ext. Int.	12 10 4	0.19		
<i>Origanum hypericifolium</i> O. Schwarz et P.H. Davis (Lamiaceae, MARE 15862, 16042, 16151)	Acumik, Kekik, Kozali kekik	Aerial parts Aerial parts	Abdominal pain Common cold	Infusion Infusion	Int. Int.	14 14	0.19		
<i>Origanum majorana</i> L. (Lamiaceae, MARE 15923, 16078)	Mercankosk	Aerial parts Aerial parts	Cough Sedative	Infusion Infusion	Int. Int.	30 11	0.28	Cough (86) Sedative (51, 79) (13, 55, 56, 57, 64, 71, 85, 92) ^b	(107, 120) ^b
<i>Origanum onites</i> L. (Lamiaceae, MARE 15928, 15965, 15991, 16048, 16077, 16662, 17039)	Dag kekigi, Kekik	Aerial parts Aerial parts Aerial parts	Abdominal pain Cough Stomach ailments	Infusion Infusion Infusion	Int. Int. Int.	24 20 24	0.5	Abdominal pain (13, 34, 53, 71, 72, 78) Stomach ailments (12, 25, 33, 55, 56, 71, 74, 79, 92) (8, 28, 37, 78, 48, 83, 84) ^b	
<i>Origanum vulgare</i> L. subsp. <i>hirtum</i> (Link.) Ietswaart (Lamiaceae, MARE 15920, 15964, 16911)	Kekik	Aerial parts	Stomach ailments	Infusion	Int.	20	0.15	Stomach ailments (13, 25, 45, 51, 56, 60, 76, 80, 89) (17, 23, 28, 42, 43, 49, 53, 54, 66, 68, 81, 109, 112, 118, 121) (100, 109, 110, 111, 117, 120) ^b	Stomach ailments (104, 109, 112, 118, 121) (100, 109, 110, 111, 117, 120) ^b (continued on next page)

Table 1 (continued)

Botanical name, Family and Specimen number	Local name	Plant part used	Aliments treated/ Therapeutic effect	Preparation	Adm.	Rpt	CI	Ethnobotanical records from Turkey	Ethnobotanical records from Mediterranean Region
<i>Papaver somniferum</i> L. ^a (Papaveraceae, MARE 15876, 16861)	Afyon, Hashas	Fruits Fruits	Diarrhoea Sedative	Decoction Decoction	Int. Int.	12 12	0.18 92) ^b 12 Sedative (21) (7, 25, 28, 34, 36, 38, 93) ^b		Sedative (103, 107, 122) (100, 120) ^b
<i>Picnemon acarna</i> (L.) Cass. (Asteraceae, MARE 15849, 15864, 15943)	Cakurdiken, Sarı diken, Karadiken	Capitulum Capitulum	Wound healing Wound healing	Crushed Roasted then crushed	Ext. Wrapped in a cloth, ext.	10 10	0.07 (48) ^b		
<i>Pimpinella anisum</i> L. ^a (Apiaceae, MARE 16128)	Anason	Aerial parts	Abdominal pain	Infusion	Int.	12	0.09 (83, 63) ^b		(100, 103, 113, 123) ^b
<i>Pinus brutia</i> Ten. (Pinaceae, MARE 15858, 15889, 15992)	Akcam, Cam	Immature cones Tar Tar	Shortness of breath Wound healing Rheumatism	Decoction Heated Mixed (salt, olive oil)	Int. Ext. Ext.	40 40 9	0.72 Shortness of breath (11, 25, 48, 71) Wound (13, 18, 20, 28, 53, 57, 62, 64) Abdominal pain (4, 13, 18, 20, 25, 56, 62, 76, 79, 84, 92) (1, 4, 12, 19, 33, 34, 37, 39, 47, 55, 56, 57, 74, 79, 83, 92) ^b		
<i>Pinus nigra</i> F.J. Arnold subsp. <i>nigra</i> var. <i>caramanica</i> (Loudon) Rehder (Pinaceae, MARE 15999, 16035, 16147, 16203, 16817, 17224)	Cam	Immature cones Tar	Shortness of breath Itch	Decoction Heated	Int. Ext.	20 20	0.29 Shortness of breath (13, 48) (17, 26, 28, 29, 34, 39, 44, 48, 54, 55, 62) ^b		(100, 123) ^b
<i>Pistacia terebinthus</i> L. subsp. <i>palaestina</i> (Boiss.) Engler (Anacardiaceae, MARE 16798, 17206)	Menevis, Menengec	Young shoots	Rheumatism	Decoction	Int.	8	0.06 (12, 15, 16, 17, 18, 20, 28, 34, 37, 44, 45, 48, 51, 55, 56, 57, 62, 64, 69, 71, 76, 77, 83, 84, 85, 87) ^b		(100, 103) ^b
<i>Plantago lanceolata</i> L. (Plantaginaceae, MARE 15929, 15986 a)	Buzagidili, Mayasıl otu, Su out	Leaves Leaves	Haemorrhoids Wound healing	Infusion Crushed	Int. Wrapped in a cloth, ext.	6 35	0.3 Haemorrhoids (23, 30, 44, 46) Wound (12, 19, 26, 28, 31, 43, 45, 46, 49, 51, 53, 54, 62, 68, 71, 76, 82, 90) (5, 20, 39, 48, 69, 75, 80, 83, 85) ^b		Wound (103, 109, 110, 111, 118) (98, 100, 107, 112, 113, 115, 120, 121) ^b
<i>Plantago major</i> L. subsp. <i>intermedia</i> (Gilib.) Lange (Plantaginaceae, MARE 15986)	Damar otu, Sınırlıot, Su out	Leaves Leaves	Haemorrhoids Wound healing	Infusion Crushed	Int. Wrapped in a cloth, ext.	6 35	0.3 Haemorrhoids (17, 62, 93) Wound (2, 13, 18, 26, 27, 29, 30, 32, 37, 40, 42, 43, 45, 46, 51, 52, 53, 54, 55, 56, 57, 61, 66, 68, 75, 76, 79, 81, 82, 87, 89, 90, 91, 92, 93) (24, 28, 34, 38, 48, 77, 78, 80) ^b		Wound (98, 103, 106, 110, 118) (112, 115, 116, 120, 121) ^b
<i>Portulaca oleracea</i> L. (Portulacaceae, MARE 15826, 15969)	Semiz otu	Aerial parts Aerial parts	Wart Constipation	Crushed Cooked	Ext. Eaten	3 34	0.27 Constipation (20, 56, 69) (4, 5, 15, 28, 36, 48, 54, 55, 57, 80, 86) ^b		(105, 107) ^b
<i>Prunus divaricata</i> Ledeb subsp. <i>divaricata</i> [<i>Prunus cerasifera</i> Ehrh.] (Rosaceae,	Erik	Fruits	Constipation	Boiled (sugar)	Eaten	34	0.25 Constipation (39) (45, 48, 53, 55, 56, 57, 69) ^b		(continued on next page)

Table 1 (continued)

Botanical name, Family and Specimen number	Local name	Plant part used	Aliments treated/ Therapeutic effect	Preparation	Adm.	Rpt	CI	Ethnobotanical records from Turkey	Ethnobotanical records from Mediterranean Region
MARE 17261)									
<i>Punica granatum</i> L. ^a (Punicaceae, MARE 15885)	Nar	Seed	Diarrhoea	–	Eaten	40	0.29	Diarrhoea (33, 62) (14, 29, 36, 48, 53, 55, 64, 78, 85, 90) ^b	Diarrhoea (103, 107) (100, 120) ^b
<i>Pyrus amygdaliformis</i> Vill. var. <i>amygdaliformis</i> (Rosaceae, MARE 15886)	Boz armut, Covur armudu	Leaves	Expectorant	Infusion	Int.	13	0.18	(13, 19, 78, 79) ^b	
		Leaves	Stomach ache	Infusion	Int.	13			
<i>Quercus coccifera</i> L. (Fagaceae, MARE 15961, 16002, 16175, 16677, 16807, 17343, 17217)	Kara cali, Pelit, Plynar	Young shoots Stem bark Root	Diabetes Burn Burn	Infusion Heated Decoction	Int., for 1 month Ext. Ext.	6 16 16	0.28	Diabetes (41, 55, 56, 74) Burn (4, 49, 55, 56, 57, 64, 74) (19, 34, 71, 78, 84) ^b	(97) ^b
<i>Quercus trojana</i> P.B. Webb. (Fagaceae, MARE 16806)	Pelit	Fruits (fresh)	Wound	Crushed	Ext.	2	0.02		
<i>Rosa canina</i> L. (Rosaceae, MARE 16015)	Itburnu, Itgili	Fruits	Diuretic	Infusion	Int.	17	0.4	Cold (10, 12, 13, 15, 17, 20, 27, 56, 19, 28, 32, 38, 42, 43, 45, 46, 48, 49, 52, 53, 54, 56, 69, 74, 77, 79, 80, 82, 83, 91)	Cold (98, 100)
		Fruits	Common cold	Infusion	Int.	38		(2, 14, 16, 18, 23, 24, 26, 29, 30, 48, 51, 55, 57, 58, 61, 62, 68, 75, 76, 84, 87, 89, 93) ^b	Diuretic (100, 112) (97, 102, 107, 108, 112, 118, 122) ^b
<i>Rubus sanctus</i> Schreber [<i>Rubus ulmifolius</i> Schott subsp. <i>sanctus</i> (Schreb.) Sudre] (Rosaceae, MARE 16003)	Bogurtlen, Orman dutu	Root	Diarrhoea	Decoction	Int.	6	0.54	Diarrhoea (20)	Diarrhoea (98, 109, 116)
		Root	Aphrodisiac	Decoction	Int.	3		Haemorrhoids (27, 34, 74, 93)	Mouth diseases (98, 112, 118)
		Root	Haemorrhoids	Decoction	Int.	15		Stomachache (2, 4, 33, 56, 93)	Wound (102, 113, 122)
		Young shoot	Stomach ache	Decoction	Int.	15		Wound (42, 44, 56, 75, 93)	Haemorrhoids
		Leaves (fresh)	Wound	Crushed	Ext.	22		Mouth diseases (27, 82)	– 122
		Fruits	Mouth diseases	–	Eaten	12		(10, 11, 12, 16, 17, 22, 23, 28, 29, 44, 53, 55, 57, 64, 70, 76, 77, 78, 79, 80, 92) ^b	(97, 106, 107, 111, 116, 118, 120) ^b
<i>Rumex crispus</i> L. (Polygonaceae, MARE 15975)	Labada, Ilabada, Ilibidi	Leaves (fresh)	Headache	Crushed	Wrapped in a cloth, ext.	6	0.18	Diabetes (69, 82)	(103, 110, 113, 116, 118, 121, 122) ^b
		Leaves	Diabetes	Decoction	Int.	6		Rheumatism (51, 83)	
		Leaves (fresh)	Rheumatism	Crushed	Wrapped in a cloth, ext.	12		(10, 13, 19, 23, 26, 46, 52, 56, 57, 65, 80, 93) ^b	
<i>Rumex patientia</i> L. (Polygonaceae, MARE 16055, 16073)	Ilabada	Leaves (fresh)	Wound healing	Crushed	Wrapped in a cloth, ext.	12	0.09	Wound (30, 32) (25, 81, 83) ^b	(121) ^b
<i>Salix alba</i> L. (Salicaceae, MARE 16802)	Sogut	Leaves	Rheumatism	Infusion	Int., for 3 months	10	0.07	Rheumatism (28, 68, 74, 76) (10, 12, 26, 27, 31, 43, 45, 48, 49, 52, 54, 55, 69, 89, 93) ^b	(100, 121) ^b
<i>Salvia adenophylla</i> Hedge et Hub. (Lamiaceae, MARE 16119)	Dag cayı	Aerial parts	Abdominal pain	Infusion	Int.	8	0.06		
<i>Salvia cadmica</i> Boiss. (Lamiaceae, MARE)	–	Aerial parts	Abdominal pain	Infusion	Int.	2	0.02	(49) ^b	(continued on next page)

Table 1 (continued)

Botanical name, Family and Specimen number	Local name	Plant part used	Ailments treated/ Therapeutic effect	Preparation	Adm.	Rpt	CI	Ethnobotanical records from Turkey	Ethnobotanical records from Mediterranean Region
<i>Salvia tomentosa</i> Miller (Lamiaceae, MARE 15854, 16909, 17192, 17357)	Calba, Hava otu, Sabala	Aerial parts	Abdominal pain	Infusion	Int.	20	0.59	Abdominal pain	
		Aerial parts	Menstrual pain	Infusion	Int.	8		(12, 13, 34, 56, 70, 74, 76)	
		Aerial parts	Common cold	Infusion	Int.	25		Cold (19, 28, 53, 56, 74, 76)	
		Aerial parts	Expectorant	Infusion	Int.	13		Expectorant (74)	
		Aerial parts	Nausea	Infusion	Int.	14		(25, 29, 36, 38, 48, 55, 74) ^b	
<i>Sanguisorba minor</i> Scop. subsp. <i>muricata</i> (Spach) Briq. (Rosaceae, MARE 16727, 16942, 17069, 17361)	Otu kesme otu	Aerial parts (fresh)	Skin diseases	Crushed	Ext.	22	0.13	Skin diseases (12, 30) (37, 74, 92) ^b	Skin diseases (103, 112) (100, 106, 111, 119) ^b
<i>Satureja cuneifolia</i> Ten. (Lamiaceae, MARE 16185)	Dag kekigi, Inci kekik, Kekik	Aerial parts	Stomach ailments	Infusion	Int.	8	0.06	(5, 20, 22, 48, 55, 56, 62) ^b	
<i>Sideritis leptoclada</i> O. Schwarz et P.H. Davis (Lamiaceae, MARE 16197)	Elduran	Aerial parts	Sedative	Infusion	Int.	5	0.17	Cold (33, 38)	
		Aerial parts	Common cold	Infusion	Int.	9		(48) ^b	
		Aerial parts	Shortness of breath	Infusion	Int.	9			
<i>Sideritis montana</i> L. subsp. <i>remota</i> (d'Urv) P.W. Ball (Lamiaceae, MARE 15900)	Tepeli cay	Aerial parts	Stomach ailments	Infusion	Int.	16	0.12	Stomach ailments (49) (2, 45) ^b	
<i>Sideritis perfoliata</i> L. (Lamiaceae, MARE 16721, 16912)	Cavva	Aerial parts	Common cold	Infusion	Int.	18	0.4	Cold (13, 18, 28),	
		Aerial parts	Stomach ailments	Infusion	Int.	18		Stomach ailments (13, 28)	
		Aerial parts	Sore throat	Infusion	Int.	18		Sore throat (28)	
<i>Tamarix smyrnensis</i> Bunge (Tamaricaceae, MARE 15888)	Ilgin	Stem bark	Cardiovascular system diseases	Decoction	Int.	12	0.09		
<i>Tamus communis</i> L. subsp. <i>communis</i> [<i>Dioscorea communis</i> (L.) Caddik et Wilkin] (Dioscoreaceae, MARE 15894)	Dolasik ot, Kopekuzumu, Sarmasik	Root (fresh)	Rheumatism	Grated	Wrapped in a cloth, ext.	23	0.17	Rheumatism (12, 13, 20, 53, 76, 79)	Rheumatism (102, 103, 122) (112, 113, 119) ^b
<i>Teucrium chamaedrys</i> L. subsp. <i>chamaedrys</i> (Lamiaceae, MARE 15994, 15970, 16152, 16906)	Bodurca mahmut, Kinin otu	Aerial parts	Haemorrhoids	Infusion	Int.	32	0.36	Haemorrhoids	(97, 107, 110, 118, 120, 121) ^b
		Aerial parts	Heart diseases	Infusion	Int.	11		(15, 18, 23, 29, 30, 49, 92)	
		Aerial parts (fresh)	Malaria	Crushed	Int.	6		Heart diseases – 80	
								(5, 13, 25, 28, 34, 37, 39, 45, 51, 53, 57, 58, 62, 66, 74, 76, 80, 87) ^b	
<i>Teucrium polium</i> L. (Lamiaceae, MARE 15869, 15911, 16037, 16148, 16178, 16118, 16766, 16905, 17022, 17035)	Cay kekigi, Kekikmisi, Oglan otu, Yaparatavsan	Aerial parts	Diabetes	Infusion	Int.	4	0.56	Diabetes (3, 4, 12, 15, 16, 17, 18, 22, 46, 48, 49, 53, 57, 69, 74, 91)	(103) ^b
		Aerial parts	Abdominal pain	Infusion	Int.	42		Abdominal pain (4, 15, 17, 18, 29, 34, 45, 51, 52, 57, 62, 68, 69, 74, 85, 91)	
		Aerial parts	Lice	Decoction	Bath	12		Appetizer (30, 37, 57, 87)	
		Aerial parts	Appetizer	Infusion	Int.	18		(2, 3, 10, 13, 25, 26, 32, 39, 43, 55, 58, 61, 80,	(continued on next page)

Table 1 (continued)

Botanical name, Family and Specimen number	Local name	Plant part used	Ailments treated/ Therapeutic effect	Preparation	Adm.	Rpt	CI	Ethnobotanical records from Turkey	Ethnobotanical records from Mediterranean Region
<i>Thymbra spicata</i> L. var. <i>spicata</i> (Lamiaceae, MARE 15910, 15947, 15963, 15993, 16908)	Cay kekigi, Esek kekigi, Kara kekik, Kekik, Tas kekigi, Yer kekigi	Aerial parts	Abdominal pain	Infusion	Int.	20	0.29	Stomach ailments (2, 13, 79, 87)	81, 92, 93, 94) ^b
<i>Tilia argentea</i> Desf. ex DC. ^a [<i>Tilia tomentosa</i> Moench] (Tiliaceae, MARE 15847, 15972, 16067)	Ihlamur	Flowers	Common cold	Decoction	Int.	55	0.4	Kidney stone (4) Abdominal pain (12, 55, 56, 57) (20, 25, 28, 34, 44, 48, 51, 53, 75, 76, 83) ^b Cold (10, 13, 23, 42, 43, 48, 53, 75, 76, 77)	
<i>Tribulus terrestris</i> L. (Zygophyllaceae, MARE 15941, 16051)	Demirdiken, Demirpitrak, Demirpitrak	Aerial parts Aerial parts Aerial parts	Kidney stones Urinary system diseases Rheumatism	Decoction Decoction Infusion	Int. Int. Ext.	12 34 10	0.41	Kidney stones (2, 12, 18, 28, 36, 53, 56, 57, 71, 78, 79, 82, 85, 92) Urinary system diseases (19, 37, 39, 45, 48, 70, 77, 79) (17, 25, 43, 48, 61, 66, 69, 84) ^b	(103) ^b
<i>Tussilago farfara</i> L. (Asteraceae, MARE 16771, 17188)	Ayikulagi	Leaves	Common cold	Decoction	Int.	28	0.21	Cold (57) Antitussive (43, 54, 69, 86) Expectorant (15, 16, 18, 43, 83) (13, 17, 28, 49, 76, 93) ^b	(97, 119, 121) ^b Cough (113, 121) Expectorant (120) Cold (121)
<i>Urtica dioica</i> L. (Urticaceae, MARE 16049, 17001)	Dalgan, Isrgan	Aerial parts	Rheumatism	Crushed	Wrapped in a cloth, ext.	25	0.38	Rheumatism (5, 8, 10, 12, 15, 17, 23, 24, 26, 27, 29, 30, 32, 37, 38, 40, 42, 45, 46, 51, 52, 56, 60, 61, 62, 66, 68, 71, 74, 75, 76, 79, 81, 83, 84, 86, 87, 89, 90, 91, 92, 93) Kidney stone (43, 45, 6, 76, 81, 8, 9)	Antalgic (97)
		Aerial parts	Kidney stones	Infusion	Int.	6			Rheumatism (98, 100, 103, 104, 108, 109, 111, 112, 115, 118, 121) Weak hair (98) Loss of hair (100, 112, 115, 118)
		Aerial parts Aerial parts	Shortness of breath Loss of hair	Decoction Decoction	Int. Bath	6 4		Shortness of breath (26, 30, 68, 89) Asthma (32, 45, 66, 75, 77)	
		Aerial parts	Haemorrhoids	Decoction	Int., one teacup in the morning	10		Bronchitis (43, 43, 45, 54, 77, 83)	(99, 100, 102, 103, 104, 105, 110, 119, 120) ^b Renal ailment (121) Asthma (121)
<i>Xeranthemum annuum</i> L. (Asteraceae, MARE 15913, 15949, 16045, 16179)	Gur supurgesi, Sakaresek supurgesi, Supurge otu	Capitulum (fresh)	Wart	Crushed	Ext.	9	0.07	Hair loss (4, 19, 45, 53, 56, 66) Haemorrhoids (4, 10, 13, 26, 29, 30, 45, 53, 56, 62, 63, 66, 69, 75, 76, 77, 89, 90, 93) (3, 10, 16, 18, 20, 27, 28, 36, 44, 48, 49, 58, 64, 78, 80, 82, 85) ^b (81) ^b	
<i>Verbascum cheirantifolium</i> Boiss. var. <i>asperulum</i> (Boiss.) Murb. (Scrophulariaceae, MARE 16190)	Ayikulagi, Sığırkulagi	Flowering branches Flowers	Haemorrhoids Shortness of breath	Decoction Infusion	Int. Int.	10 10	0.15	Haemorrhoids (46, 74) Shortness of breath (26, 53) (30, 81) ^b	

(continued on next page)

Table 1 (continued)

Botanical name, Family and Specimen number	Local name	Plant part used	Aliments treated/ Therapeutic effect	Preparation	Adm.	Rpt	CI	Ethnobotanical records from Turkey	Ethnobotanical records from Mediterranean Region
<i>Verbascum pycnostachyum</i> Boiss. et Heldr. (Scrophulariaceae, MARE 16041)	Ayıkulagi, Sigirkulagi	Leaves (fresh)	Rheumatism	Crushed	Ext.	12	0.09		
<i>Viscum album</i> L. subsp. <i>album</i> (Loranthaceae, MARE 16666)	Burc, Okse otu, Purc	Whole plants	Shortness of breath	Decoction	Int.	26	0.19	Shortness of breath (19, 52) Asthma (54) Bronchitis (57, 74, 83, 84) Cough (37) (12, 13, 18, 20, 24, 27, 28, 29, 34, 36, 38, 39, 43, 47, 48, 49, 53, 62, 76, 77, 81, 82, 91) ^b	Anticatatarrhal –97 (121) ^b
<i>Viscum album</i> L. subsp. <i>austriacum</i> (Wiesb.) Vollm. (Loranthaceae, MARE 16131, 16189, 16816)	Burc, Kara campurcu, Okse otu, Purc	Whole plants	Diabetes	Decoction	Int.	9	0.60	Diabetes (55, 56)	Anticatatarrhal (97, 120)
		Whole plants	Vasodilator	Decoction	Int.	9		Shortness of breath (19)	(109) ^b
		Whole plants	Shortness of breath	Decoction	Int.	50		Asthma (23, 46, 55, 56)	
		Whole plants	Heart diseases	Decoction	Int.	14		Heart diseases (12, 17, 23, 55, 56) (25, 28, 30, 34, 36, 48) ^b	

Int.; Internal use. Ext.; External use. Adm.: Administration, Reports: Rpt, ^aCultivated plant. ^b Different usage; the new plant uses were marked as bold. The language of local names are in Turkish.

(1) Abay and Kilic, 2001, (2) Akalin and Alpınar, 1994, (3) Akan et al., 2008, (4) Akaydin et al., 2013 (5) Akcecek and Vural, 2003, (6) Akgul, 2007, (7) Asil et al., 1984 (8) Aslan et al., 2007 (9) Bagci, 2000, (10) Bulut, 2011, (11) Bulut and Tuzlaci, 2009, (12) Bulut and Tuzlaci, 2013, (13) Bulut et al., 2015, (14) Cakicioglu and Turkoglu, 2007, (15) Cakicioglu et al., 2010, (16) Cakicioglu et al., 2011, (17) Cakicioglu et al., 2011, (18) Demirci and Ozhatay, 2012, (19) Deniz et al., 2010, (20) Duran, 1998, (21) Duran et al., 2001, (22) Durmuskahya and Ozturk, 2013, (23) Ecevit Genc and Ozhatay, 2006, (24) Elci and Erik, 2006, (25) Ertug et al., 2003, (26) Ezer and Avci, 2004, (27) Ezer and Arsan, 2006, (28) Fakir et al., 2009, (29) Fujita et al., 1995, (30) Gencler Ozkan and Koyuncu, 2005, (31) Gumus, 1994, (32) Gunes and Ozhatay, 2011, (33) Gurdal and Kultur, 2013, (34) Honda et al., 1996, (35) Isik et al., 1995, (36) Kahraman and Tatli, 2004, (37) Karaman and Kocabas, 2001, (38) Kargioglu et al., 2008, (39) Kargioglu et al., 2010, (40) Keskin, 2008, (41) Keskin and Alpınar, 2002, (42) Kizilarslan and Ozhatay, 2012, (43) Kocuyigit and Ozhatay, 2006, (44) Koyuncu et al., 2009, (45) Kultur, 2007, (46) Mukemre et al., 2015, (47) Ozelik, 1987, (48) Ozelik and Balabanlı, 2005, (49) Ozdemir and Alpınar, 2015, (50) Ozgen et al., 2004, (51) Ozgokce and Sezik et al., 1997, (62) Sezik et al., 2001, (63) Sar and Asil, 1988, (64) Şenkardeş and Tuzlaci, 2014, (65) Şimsek et al., 2001, (66) Şimsek et al., 2004, (67) Tabata et al., 1988, (68) Tabata et al., 1994, (69) Tetik et al., 1992, (61) Tuzlaci, 1977, (71) Tuzlaci, 2005, (72) Tuzlaci, 2011; (74) Tuzlaci and Erol, 1999, (75) Tuzlaci and Tolon, 2000, (76) Tuzlaci and Alpınar, 2007, (78) Tuzlaci and Alpınar, 2007, (79) Tuzlaci and Bulut, 2007, (80) Tuzlaci et al., 2010, (81) Tuzlaci and Dogan, 2010, (82) Yazıcıoğlu and Tuzlaci, 1996, (91) Yeşil and Secmen, 2008, (85) Uysal et al., 2010, (86) Uzun et al., 2004, (87) Unsal et al., 2010, (88) Vural et al., 1997, (89) Yazıcıoğlu and Alpınar, 1993, (90) Yazıcıoğlu and Dogan, 2010, (82) Tuzlaci and Senkardeş, 2011, (83) Ugulu et al., 2009, (84) Ugulu and Secmen, 2008, (85) Uysal et al., 2010, (86) Uzun et al., 2004, (87) Unsal (96) Yucel and Tulukoglu, 2000, (97) Agelet and Vallès, 2003, (98) Akerreta et al., 2007a, (99) Akerreta et al., 2007b, (100) Benítez et al., 2010, (101) Benítez et al., 2012, (102) Blanco et al., 1999, (103) Bruni et al., 1997, (104) Calvo et al., 2011, (105) Caverro and Calvo, 2014, (106) Camejo-Rodríguez et al., 2003, (107) Carrió and Vallès, 2012, (108) Caverro et al., 2011a, (109) Caverro et al., 2011b, (110) Cornara et al., 2009, (111) De Natale and Pollio, 2007, (112) González et al., 2010, (113) Guarrera et al., 2005, (114) Martínez et al., 1996, (115) Menale and Muio, 2014, (116) Novais et al., 2009, (118) Pieroni, 2000, (119) Rigat et al., 2007, (120) Rigat et al., 2013, (121) Šarić-Kundalić et al., 2010, (122) Tuttolomondo et al., 2014

Table 2
The plants used in veterinary medicine in Acipayam (Denizli-Turkey).

Botanical name, Family and Specimen number	Local name	Plant part used	Ailments treated/ Therapeutic effect	Preparation	Administration	Reports	CI	Similar usage in literature
<i>Acanthus spinosus</i> L. (Acanthaceae, MARE 15981)	Karadiken	Aerial parts	Diarrhoea	Decoction	Int.	8	0.06	
<i>Centaurea solstitialis</i> L. subsp. <i>solstitialis</i> (Asteraceae, MARE 15874, 15914, 16053)	Korugo, Sarıdiken	Aerial parts	Common cold	Boiled	Inhaled	6	0.04	
<i>Juniperus oxycedrus</i> L. subsp. <i>oxycedrus</i> (Cupressaceae, MARE 15990, 16032, 16116, 16176, 16195, 16808, 17247, 17340)	Ardic, Kızıl ardic Kızılcık	Cones	Appetizer	Crushed	Eaten	15	0.11	(19, 25, 39, 53, 61, 93, 103, 105) ^b
<i>Lactuca serriola</i> L. (Asteraceae, MARE 17122)	Karakavuk, Keklikotu, Meyrilli	Latex	Increasing milk secretion	-	Int.	16	0.12	(12) ^b
<i>Papaver somniferum</i> L. ^a (Papaveraceae, MARE 15876, 16861)	Afyon, Hashas	Fruits	Analgesic	Decoction	Int.	10	0.18	
<i>Platanus orientalis</i> L. (Platanaceae, MARE 15861, 16040) 17173, 16877, 17199)	Kavak	Immature Fruits	Diarrhoea	-	Eaten	15		
<i>Quercus coccifera</i> L. (Fagaceae, MARE 15961, 16002, 16175, 16677, 16807, 17343, 17217)	Kara çali, Pıynar, pelit	Fruits	Diarrhoea	Decoction	Int.	13	0.08	(12, 56) ^b
<i>Salvia tomentosa</i> Miller (Lamiaceae, MARE 15854, 16909, 17192)	Calba, Hava otu, Sabala	Stem bark	Diarrhoea	Decoction	Int.	12	0.09	
<i>Verbascum pycnostachyum</i> Bolss. et Heldr. ((Scrophulariaceae, MARE 16190)	Ayıkulagi, Sığırkulagi	Aerial parts	Urinary system diseases	Infusion	Int.	4	0.03	(29) ^b
		Leaves	Diarrhoea	Decoction	Int.	6	0.04	

Int.; Internal use. Ext.; External use. The language of local names are in Turkish. ^aCultivated plant. ^bNew Plant usage. The language of local names are in Turkish.

one plant species that could create confusion and compromise the safe use of the plant; and these are presented in Table 4.

3.2.3. Comparison with previous studies

The authors compared their findings with other comprehensive ethnobotanical studies carried out in neighbouring areas (Akçicek and Vural, 2003; Bulut and Tuzlaci, 2013; Deniz et al., 2010; Durmuskahya and Ozturk, 2013; Fakir et al., 2009; Gurdal and Kultur, 2013; Honda et al., 1996; Kahraman and Tatlı, 2004; Kargiöglu et al., 2008, 2010; Özcelik and Balabanlı, 2005; Sargin et al., 2013; Tuzlaci, 1977, 2005, 2006; Tuzlaci and Sadikoglu, 2007). The species *Ecballium elaterium* and *Juglans regia* were found to be the most commonly used medicinal plants and were recorded at eleven localities in Acipayam and surrounding districts in accordance with previous studies Table 1.

To the best of our knowledge; *Amelanchier parviflora* var. *dentata*, *Echinops viscosus* subsp. *bithynicus*, *Onopordum sibthorpiatum*, *Origanum hypericifolium*, *Quercus trojana*, *Salvia adenophylla*, *Sideritis montana* subsp. *remota* and *Tamarix smyrnensis* are recorded for Turkey for the first time as plants traditionally used in herbal medicine. Moreover, new medicinal uses for 24 species are printed in bold in Table 1.

Plants which have also been recorded in various other ethnobotanical studies of Turkey and other Mediterranean countries are presented with Tables 1 and 2. According to these tables, *Crataegus monogyna* (hypertension), *Cydonia oblonga* (diarrhoea), *Cynodon dactylon* (rheumatism), *Ficus carica* (wart), *Foeniculum vulgare* (abdominal pain), *Hypericum perforatum* (wound), *Myrtus communis* (skin redness in children), *Papaver somniferum* (sedative), *Plantago lanceolata*, *P. major* (wound), *Punica granatum* (diarrhoea), *Rosa canina* (diuretic), *Tamus communis* (rheumatism), *Tussilago farfara* (cold) and *Urtica dioica* (rheumatism) have similar uses.

Plants most commonly used in herbal medicine in Acipayam, including *Hypericum perforatum*, *Pinus brutia*, *Viscum album*, *Cydonia oblonga*, *Juniperus oxycedrus*, *Salvia tomentosa*, have also been reported in other studies (Akaydin et al., 2013; Bulut and Tuzlaci, 2013; Sargin et al., 2013). In Marmaris, an area close to Acipayam, mostly Mediterranean elements of the flora, such as *Salvia fruticosa*, *Origanum onites*, *Lavandula stoechas*, *Mentha pulegium* and *Satureja thymbra*, are used as medicine (Gurdal and Kultur, 2013), whereas near Honaz Mountain, species such as *Hypericum perforatum*, *Viscum album* and *Salvia tomentosa* (Kargiöglu et al., 2010) are used. These species have been reported to have various medicinal properties e.g *Cydonia oblonga* has antihypertensive, anti-inflammatory and anti-ulcerogenic properties (Zhou et al., 2014), *Juniperus oxycedrus*, has been used for the treatment of inflammatory and infectious diseases, such as bronchitis, colds, coughs, fungal infections, haemorrhoids, gynaecological diseases, and wound healing (Kupeli Akkol et al., 2009); *Pinus brutia* was shown to have wound healing properties (Cetin et al., 2013), *Viscum album* is well known as an immunostimulant and is used for the treatment of cancer (Braedel-Ruoff, 2010; Kienle and Kiene, 2010), *Salvia tomentosa* demonstrates antibacterial and antioxidant activity (Haznedaroglu et al., 2001) and *Hypericum perforatum* is predominantly used for treating depression, wounds and ulcers (WHO, 2002).

3.2.4. Harmful effects of medicinal plants

The informants stated that, *Ecballium elaterium*, *Daphne oleoides* subsp. *oleoides* and *Tamus communis* subsp. *cretica* should be used carefully owing to their serious side effects and contra-indications such as oedema, irritation of nasal cavity and redness.

3.3. Data analysis

The species having the greatest UR values (in parentheses) were *Cydonia oblonga* (99 UR), *Juniperus oxycedrus* subsp. *oxycedrus* (99 UR), *Pinus brutia* (98 UR), *Hypericum perforatum* (90 UR), *Viscum album* subsp. *austriacum* (82 UR) and *Salvia tomentosa* (80 UR). This order also reflects the CI index value for these species, namely: 0.73, 0.72, 0.66,

Table 3
Multierbal recipes used as folk medicine in Acipayam (Denizli-Turkey).

Recipe	Plant	Plant part used	Aliments treated, therapeutic effect	Preparation	Administration
1	<i>Salvia tomentosa</i> ; <i>Pinus brutia</i>	Aerial parts (fresh) Tar	Abdominal pain	Crushed then mixed	Ext.
2	<i>Teucrium polium</i> ; <i>Juniperus oxycedrus</i> subsp. <i>oxycedrus</i>	Aerial parts Cones	Abdominal pain	Boiled then crushed	Ext.
3	<i>Quercus coccifera</i> ; <i>Pinus brutia</i>	Root Terebentine (oleo resin; obtained from stem)	Wound	Boiled in milk	Ext.

Table 4
The same vernacular name was used for more than one plant species.

Local name	Botanical names, Family and Specimen numbers
Papatya	<i>Anthemis altissima</i> L. [Cota <i>altissima</i> (L.) J. Gay] (Asteraceae, MARE 17135)
Kekik	<i>Origanum onites</i> L. (Lamiaceae, MARE 15928, 15965, 15991, 16048, 16077, 16662, 17039)
Çam	<i>Pinus brutia</i> Ten. (Pinaceae, MARE 15858, 15889, 15992)
Su otu	<i>Plantago lanceolata</i> L. (Plantaginaceae, MARE 15929, 15986 a)
Cay kekigi	<i>Teucrium polium</i> L. (Lamiaceae, MARE 15869, 15911, 16037, 16148, 16178, 16118, 16766, 16905, 17022, 17035)
Dag kekigi	<i>Origanum onites</i> L. (Lamiaceae, MARE 15928, 15965, 15991, 16048, 16077, 16662, 17039)
	<i>Anthemis tinctoria</i> L. var. <i>tinctoria</i> [Cota <i>tinctoria</i> (L.) J. Gay] (Asteraceae, MARE 16006, 16136, 16150) <i>Origanum vulgare</i> L. subsp. <i>hirtum</i> (Link) J. E. S. W. (Lamiaceae, MARE 15920, 15964, 16911) <i>Pinus nigra</i> F. J. Arnold subsp. <i>nigra</i> var. <i>caramanica</i> (Loudon) Rehder (Pinaceae, MARE 15999, 16035, 16147, 16203, 16817, 17224) <i>Plantago major</i> L. subsp. <i>intermedia</i> (Gilib.) Lange (Plantaginaceae, MARE 15986) <i>Thymbra spicata</i> L. var. <i>spicata</i> (Lamiaceae, MARE 15910, 15947, 15963, 15993, 16908) <i>Satureja cuneifolia</i> Ten. (Lamiaceae, MARE 16185)

0.60 and 0.59, respectively (for the values of the remaining medicinal species, see Table 1).

The most frequent types of medicinal use recorded were shortness of breath (318 UR), abdominal pain (285 UR), wound healing (244 UR) and gastrointestinal ailments (215 UR).

POPUP values for various ailments include: shortness of breath 0.11, abdominal pain 0.10, wound 0.08 and stomach ailments 0.07.

To date, only one study (Bulut and Tuzlaci, 2015) has calculated popular use in therapy (POPUP) values for western Anatolia. When ailments were compared relative to popular use in therapy (POPUP) values, stomach ailments came out on top with a POPUP value of 0.14, followed by common cold (0.06 POPUP), cough (0.05 POPUP), eczema and rheumatism (0.04 POPUP) (Bulut and Tuzlaci, 2015).

4. Conclusion

With the rapid development of mobile communication tools ethnic values are diminishing every day. Besides younger generations are less interested in folkloric values including traditional medicines. In addition, the improvement in the health system helps people to access doctors more frequently. These reasons create the risk of losing valuable ethnomedicinal information. Carrying out ethnobotanical studies is thus becoming more important in order to collect ancient knowledge about the use of traditional medicinal plants from communities which otherwise would be lost over time.

This is the first comprehensive study of the traditional use of medicinal plants in the Acipayam district, an area located in a passage between the Aegean, the Mediterranean and the Central Anatolian regions of Turkey. The region was explored in various visits over the course of the study whereby eight species (*Amelanchier parviflora* var. *dentata*, *Echinops viscosus* subsp. *bithynicus*, *Onopordum sibthorpiatum*, *Origanum hypericifolium*, *Quercus trojana*, *Salvia adenophylla*, *Sideritis montana* subsp. *remota* and *Tamarix smyrnensis*) were reported for the first time to have medicinal uses. Furthermore, ninety-one species from thirty-eight families were also used in herbal medicine. This study, thus records for the first time, and for posterity, presents the ethnobotany of that remarkable region.

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Appendix A

Questionnaire Form

1. Name and surname of the participant
2. Age and sex of the participant
3. Telephone and address of the participant
4. Educational level of the participant
5. Date of interview
6. Place of residence of the participant
7. Duration of residence of the participant
8. Local name of the plant
9. Human health or Animal health
10. Ailments treated/therapeutic effect.
11. Plant part used.
12. Preparation.
13. Administration.
14. Dosage.
15. Duration of treatment.
16. Age group of patients (baby, child, adult).
17. Side effects.
18. Different ethnobotanical use.

References

- Abay, G., Kilic, A., 2001. Purenbeleni ve Yaniktepe (Mersin) yörelerindeki bazı bitkilerin yöresel adları ve etnobotanik özellikleri. *Herb. J. Syst. Bot.* 8, 97–104.
- Acipayam Belediyesi (<http://www.Acipayam.bel.tr>) (Accessed 26.05.15).
- Agelet, A., Vallès, J., 2003. Studies on pharmaceutical ethnobotany in the region of Pallars (Pyrenees, Catalonia, Iberian Peninsula) Part II. New or very rare uses of previously known medicinal plants. *J. Ethnopharmacol.* 84, 211–227.
- Akalın, E., Alpınar, K., 1994. Tekirdağ'ın tıbbi ve yenen bitkileri hakkında bir araştırma. *Ege Üniversitesi Eczacılık Fakültesi Dergisi* 2, 1–11.
- Akan, H., Korkut, M.M., Balos, M.M., 2008. Arat Dağı ve çevresinde (Birecik, Sanlıurfa) etnobotanik bir araştırma. *Fırat Üniv. Fen ve Müh. Bil. Dergisi* 20 (1), 67–81.
- Akaydin, G., Simsek, I., Arituluk, Z.C., Yesilada, E., 2013. An ethnobotanical survey in selected towns of the Mediterranean subregion (Turkey). *Turk. J. Biol.* 37, 230–247.
- Akcecek, E., Vural, M., 2003. Kumalar dağı (Afyon) ve çevresindeki bazı bitkilerin yöresel adları ve etnobotanik özellikleri. *Herb. J. Syst. Bot.* 10, 151–162.
- Akerreta, S., Caverro, R.Y., Calvo, M.I., 2007a. First comprehensive contribution to medical ethnobotany of Western Pyrenees. *J. Ethnobiol. Ethnomed.* 3, 26.
- Akerreta, S., Caverro, R.Y., López, V., Calvo, M.I., 2007b. Analyzing factors that influence the folk use and phytonomy of 18 medicinal plants in Navarra. *J. Ethnobiol. Ethnomed.* 3, 16.
- Akgül, G., 2007. Cıldır (Ardahan) ve çevresinde bulunana bazı doğal bitkilerin yerel adları ve etnobotanik özellikleri. *Herb. J. Syst. Bot.* 14, 75–88.
- Alexiades, M.N., 1996. Selected Guidelines for Ethnobotanical Research: A Field Manual. New York Botanical Garden, New York.
- Aslan, A., Mat, A., Ozhatay, N., Sarıyar, G., 2007. A contribution to traditional medicine in west Anatolia. *İstanbul Ecz. Fak. Derg.* 39, 73–84.
- Bagci, Y., 2000. Aladaglar (Yahyalı, Kayseri) ve çevresinin etnobotanik özellikleri. *Herb. J. Syst. Bot.* 7, 89–94.
- Benítez, G., González-Tejero, R., Molero-Mesa, J., 2010. Pharmaceutical ethnobotany in the western part of Granada province (southern Spain): Ethnopharmacological synthesis. *J. Ethnopharmacol.* 129, 87–105.
- Benítez, G., González-Tejero, R., Molero-Mesa, J., 2012. Knowledge of ethnobotanical medicine in the Province of Granada, Andalusia, Spain. *J. Ethnopharmacol.* 139, 429–439.
- Blanco, E., Macía, M.J., Morales, R., 1999. Medicinal and veterinary plants of el caurel (Galicia, northwest Spain). *J. Ethnopharmacol.* 65, 113–124.
- Braedel-Ruoff, S., 2010. Immunomodulatory effects of Viscum album extracts on natural killer cells: review of clinical trials. *Forsch. Komplementmed.* 17 (2), 63–73.
- Bruni, A., Ballero, M., Poli, F., 1997. Quantitative ethnopharmacological study of the campidano valley and urzulei district sardinia, Italy. *J. Ethnopharmacol.* 57, 97–124.
- Bulut, G., Tuzlaci, E., 2009. Bozcaada'nın Cicekleri ve Yararlı Bitkileri. Bozcaada Kaymaklığı, İstanbul.
- Bulut, G., Tuzlaci, E., 2013. An ethnobotanical study of medicinal plants in Turgutlu (Manisa-Turkey). *J. Ethnopharmacol.* 149, 633–647.
- Bulut, G., Tuzlaci, E., 2015. An ethnobotanical study of medicinal plants in Bayramic (Canakkale-Turkey). *Marmara Pharm. J.* 19, 269–282.
- Bulut, G., 2011. Folk medicinal plants of silivri (İstanbul-Turkey). *Marmara Pharm. J.* 5, 25–29.
- Cakılcıoğlu, U., Turkoglu, İ., 2007. Plants used for cholesterol treatment by the folk in Elazığ. *Phytol. Balcan.* 13, 239–245.
- Cakılcıoğlu, U., Sengun, M.T., Turkoglu, İ., 2010. An ethnobotanical survey of medicinal plants of Yazikonak and Yurtbaşı districts of Elazığ province, Turkey. *J. Med. Plants Res.* 4, 567–572.
- Cakılcıoğlu, U., Khatun, S., Turkoglu, İ., Hayta, Ş., 2011. Ethnopharmacological survey of medicinal plants in Maden (Elazığ-Turkey). *J. Ethnopharmacol.* 137, 469–486.
- Calvo, M.I., Akerreta, S., Caverro, R.Y., 2011. Pharmaceutical ethnobotany in riverside of navarra (Iberian Peninsula). *J. Ethnopharmacol.* 135, 23–33.
- Camejo-Rodrigues, J.S., Ascensão, L., Bonet, M.À., Vallès, J., 2003. An ethnobotanical study of medicinal and aromatic plants in the Natural Park of Serra de S. Mamede (Portugal). *J. Ethnopharmacol.* 89, 199–209.
- Carrió, E., Vallès, J., 2012. Ethnobotany of medicinal plants used in Eastern Mallorca (Balearic islands, Mediterranean Sea). *J. Ethnopharmacol.* 14, 1021–1040.
- Caverro, R.Y., Calvo, M.I., 2014. Medicinal plants used for cardio vascular diseases in Navarra and their validation from Official sources. *J. Ethnopharmacol.* 157, 268–273.
- Caverro, R.Y., Akerreta, S., Calvo, M.I., 2011a. Pharmaceutical ethnobotany in Northern Navarra (Iberian Peninsula). *J. Ethnopharmacol.* 133, 138–146.
- Caverro, R.Y., Akerreta, S., Calvo, M.I., 2011b. Pharmaceutical ethnobotany in the Middle Navarra (Iberian peninsula). *J. Ethnopharmacol.* 137, 844–855.
- Cetin, E.O., Yesil-Celiktas, O., Cavusoglu, T., Demirel-Sezer, E., Akdemir, O., Uyanikgil, Y., 2013. Incision wound healing activity of pine bark extract containing topical formulations: a study with histopathological and biochemical analyses in albino rats. *Pharmazie* 68 (1), 75–80.
- Cornara, L., La Rocca, A., Marsili, S., Mariotti, M.G., 2009. Traditional uses of plants in the Eastern Riviera (Liguria, Italy). *J. Ethnopharmacol.* 125, 16–30.
- Cotton, C.M., 1996. Ethnobotany: Principles and Applications. JohnWiley and sons Ltd., West Sussex, UK.
- Davis, P.H. (Ed.), 1965, 1985. Flora of Turkey and the East Aegean Islands vol.1–9. Edinburgh University Press, Edinburgh.
- Davis, P.H., Mill, R.R., Tan, K. (Eds.), 1988. Flora of Turkey and the East Aegean Islands, vol.10 Edinburgh University Press, Edinburgh.
- De Natale, A., Pollio, A., 2007. Plants species in the folk medicine of Montecorvino Rovella (Inland Campania, Italy). *J. Ethnopharmacol.* 109, 295–303.
- Demirci, S., Ozhatay, N., 2012. An ethnobotanical study in Kahramanmaraş (Turkey); wild plants used for medicinal purpose in Andırın, Kahramanmaraş. *Turk. J. Pharm.*

- Sci. 9 (1), 75–92.
- Deniz, L., Serteser, A., Kargiöglu, M., 2010. Usak üniversitesi vey akın çevresindeki bazı bitkilerin mahalli adları ve etnobotanik özellikleri. *AKÜ Fen Bilimleri Dergisi* 01, 57–72 (3).
- Duran, A., Satıl, F., Tumen, G., 2001. Balıkesir Yöresinde Yenen Yabancı Meyveler ve Etnobotanik Özellikleri. *Herb. J. Syst. Bot.* 8, 87–94.
- Duran, A., 1998. Akseki (Antalya) ilçesindeki bazı bitkilerin yerel adları ve etnobotanik özellikleri. *Herb. J. Syst. Bot.* 5, 72–92.
- Durmuskahya, C., Öztürk, M., 2013. Ethnobotanical survey of medicinal plants used for the treatment of diabetes in Manisa, Turkey. *Sains Malays* 42, 1431–1438.
- Ecevit Genc, G., Özhatay, N., 2006. An ethnobotanical study in catalca (European part of İstanbul) II. *Türk. J. Pharm. Sci.* 3, 73–89.
- Elci, B., Erik, S., 2006. Gülü (Ankara) ve çevresinin etnobotanik özellikleri. *Hacettepe Üniversitesi Eczacılık Fakültesi Dergisi* 26, 57–64.
- Ertug, F., Tümen, G., Celik, A., 2003. **Buldan (Denizli) etnobotanik alan araştırma raporu. Türkiye Bilimler Akademisi, TUBA-TUKSEK Türkiye Kültür Envanteri Pilot Bölge Çalışmaları, İstanbul, pp. 76–87.**
- Ezer, N., Arisan, O.M., 2006. Folk medicines in Merzifon (Amasya, Turkey). *Türk. J. Bot.* 30, 223–230.
- Ezer, N., Avci, K., 2004. Cerkes (Cankırı) yöresinde kullanılan halk ilaçları. *Hacettepe Üniversitesi Eczacılık Fakültesi Dergisi* 24, 67–80.
- Fakir, H., Korkmaz, M., Güller, B., 2009. Medicinal plant diversity of western Mediterranean Region in Turkey. *J. Appl. Biol. Sci.* 3 (2), 30–40.
- Fujita, T., Sezik, E., Tabata, M., Yesilada, E., Honda, G., Takeda, Y., Tanaka, T., Takaishi, Y., 1995. Traditional folk medicine in Turkey VII. Folk medicine in middle and west black sea regions. *Econ. Bot.* 49, 406–422.
- Gencler Ozkan, A.M., Koyuncu, M., 2005. Traditional medicinal plants used in Pınarbaşı area (Kayseri-Turkey). *Türk. J. Pharm. Sci.* 2, 63–82.
- González, J.A., García-Barriuso, M., Amich, F., 2010. Ethnobotanical study of medicinal plants traditionally used in the Arribes del Duero, western Spain. *J. Ethnopharmacol.* 131, 343–355.
- Guarrera, P.M., Forti, G., Marignoli, S., 2005. Ethnobotanical and ethnomedicinal uses of plants in the district of Acquapendente (Latium, Central Italy). *J. Ethnopharmacol.* 96, 429–444.
- Gumus, İ., 1994. Ağrı yöresinde yetişen bazı faydalı bitkilerin yerel adları ve kullanılışları. *Türk. J. Bot.* 18, 107–112.
- Guner, A., Özhatay, N., Ekim, T., Baser, K.H.C., 2000. The Flora of Turkey and the East Aegean Islands, vol. 11 Edinburgh University Press, Edinburgh.
- Gunes, F., Özhatay, N., 2011. An ethnobotanical study from kars (Eastern) Turkey. *Biol. Divers. Conserv.* 4, 30–41.
- Gurdal, B., Kultur, S., 2013. An ethnobotanical study of medicinal plants in Marmaris (Muğla, Turkey). *J. Ethnopharmacol.* 146, 113–126.
- Haznedaroğlu, M.Z., Karabay, N.U., Zeybek, U., 2001. Antibacterial activity of *Salvia tomentosa* essential oil. *Fitoterapia* 72, 829–831.
- Honda, G., Yesilada, E., Tabata, M., Sezik, E., Fujita, T., Takeda, Y., Takaishi, Y., Tanaka, T., 1996. Traditional Medicine in Turkey VI. Folk Medicine in West Anatolia Afyon, Kütahya, Denizli, Muğla, Aydın provinces. *J. Ethnopharmacol.* 53, 75–87.
- İşık, S., Gönöz, A., Arslan, Ü., Öztürk, M., 1995. Afyon (Türkiye) ilindeki bazı türlerin etnobotanik özellikleri. *Herb. J. Syst. Bot.* 2, 161–166.
- Kızıllarslan, Ç., Özhatay, N., 2012. Wild plants used as medicinal purpose in the south part of İzmit (Northwest Turkey). *Türk. J. Pharm. Sci.* 9, 199–218.
- Kahraman, A., Tatlı, A., 2004. Umurbaba dağı (Esme-Usak) ve çevresindeki bazı bitkilerin mahalli adları ve etnobotanik özellikleri. *Herb. J. Syst. Bot.* 11, 147–154.
- Karaman, S., Kocabas, Y.Z., 2001. Traditional medicinal plants of Kahramanmaraş (Turkey). *Sciences* 1, 125–128.
- Kargiöglu, M., Cencki, S., Serteser, A., Evliyaoglu, N., Konuk, M., Kok, M.S., Bağci, Y., 2008. An ethnobotanical survey of inner-west Anatolia, Turkey. *Hum. Ecol.* 36, 763–777.
- Kargiöglu, M., Cencki, S., Serteser, A., Evliyaoglu, N., Konuk, M., Kok, M.S., Bağci, Y., 2010. Traditional uses of wildplants in the middle Aegean Region of Turkey. *Hum. Ecol.* 38, 429–450.
- Keskin, M., Alpınar, K., 2002. Kışlak (Yayladağı-Hatay) hakkında etnobotanik bir araştırma. *Herb. J. Syst. Bot.* 9, 91–100.
- Keskin, M., 2008. Kavak (Samsun) ilçesine bağlı bazı köylerde etnobotanik bir araştırma. *Herb. J. Syst. Bot.* 15, 141–150.
- Kienle, G.S., Kiene, H., 2010. Review article: influence of *Viscum album* L (European mistletoe) extracts on quality of life in cancer patients: a systematic review of controlled clinical studies. *Integr. Cancer Ther.* 9 (2), 142–157.
- Kocuyigit, M., Özhatay, N., 2006. Wild plants used as medicinal purpose in Yalova (Northwest Turkey). *Türk. J. Pharm. Sci.* 3, 91–103.
- Koyuncu, O., Yaylacı, O.K., Tokur, S., 2009. Geyve (Sakarya) ve çevresinin etnobotanik açıdan incelenmesi. *Herb. J. Syst. Bot.* 16, 123–142.
- Kultur, S., 2007. Medicinal plants used in Kırklareli province (Turkey). *J. Ethnopharmacol.* 111, 341–364.
- Kupeli Akkol, E., Güvenc, A., Yesilada, E., 2009. A comparative study on the anti-nociceptive and anti-inflammatory activities of five *Juniperus* taxa. *J. Ethnopharmacol.* 125 (2), 330–336.
- Martínez, M.J., González-Tejero, M.R., Molero-Mesa, J., 1996. Ethnobotanical resources in the province of Almería, Spain: Campos de Níjar. *Econ. Bot.* 50, 40–56.
- Martin, G.J., 1995. *Ethnobotany: A Methods Manual*. Chapman and Hall, London.
- Menale, B., Muoio, R., 2014. Use of medicinal plants in the South-Eastern area of the Partenio Regional Park (Campania, Southern Italy). *J. Ethnopharmacol.* 153, 297–307.
- Mukemre, M., Behcet, L., Cakılcıoğlu, U., 2015. Ethnobotanical study on medicinal plants of Çatak (Van-Turkey). *J. Ethnopharmacol.* 166, 361–374.
- Novais, M.H., Santos, I., Mendes, S., Pinto-Gomes, S.C., 2004. Studies on pharmaceutical ethnobotany in Arrabida Natural Park (Portugal). *J. Ethnopharmacol.* 93, 183–195.
- Özcelik, H., Balabanlı, C., 2005. Burdur ilinin tıbbi ve aromatik bitkileri. 1. Burdur Sempozyumu, vol. 2. pp. 1127–1136.
- Özcelik, H., 1987. Akseki Yöresinde Doğal olarak yetişen bazı faydalı bitkilerin yerel adları ve kullanılışları. *Doğa Türk Botanik Dergisi* 11, 316–321.
- Özdemir, E., Alpınar, K., 2015. An ethnobotanical survey of medicinal plants in western part of central Taurus Mountains: aladaglar (Niğde – Turkey). *J. Ethnopharmacol.* 166, 53–65.
- Ozgen, U., Kaya, Y., Houghton, P., 2004. Folk medicines in the villages of ilıca district (Erzurum, Turkey). *Türk. J. Biol.* 36, 93–106.
- Ozgokce, F., Özcelik, H., 2004. Ethnobotanical aspects of some taxa in East Anatolia (Turkey). *Econ. Bot.* 58, 697–704.
- Özhatay, N., Kocuyigit, M., Bona, M., 2012. İstanbul'un balılı bitkileri. *BAL-DER, İstanbul* (pp 18).
- Ozudogru, B., Akaydin, G., Erik, S., Yesilada, E., 2011. Inferences from an ethnobotanical field expedition in the selected locations of Sivas and Yozgat provinces (Turkey). *J. Ethnopharmacol.* 137 (1), 85–98.
- Parada, M., Bonet, M.À., Carrió, E., Vallès, J., 2009. Ethnobotany of the Alt Empordà region (Catalonia, Iberian peninsula): Plants used in human traditional medicine. *J. Ethnopharmacol.* 124, 609–618.
- Pieroni, A., 2000. Medicinal plants and food medicines in the folk traditions of the upper Lucca Province, Italy. *J. Ethnopharmacol.* 70, 235–273.
- Polat, R., Satıl, F., 2012. An ethnobotanical survey of medicinal plants in Edremit Gulf (Balıkesir-Turkey). *J. Ethnopharmacol.* 139, 626–641.
- Polat, R., Cakılcıoğlu, U., Kaltalıoğlu, K., Ulsan, M.D., Türkmen, Z., 2015. An ethnobotanical study on medicinal plants in Espiye and its surrounding (Giresun-Turkey). *J. Ethnopharmacol.* 163, 1–11.
- Rigat, M., Bonet, M.À., Garcia, S., Garnatje, T., Vallès, J., 2007. Studies on pharmaceutical ethnobotany in the high river Ter valley (Pyrenees, Catalonia, Iberian Peninsula). *J. Ethnopharmacol.* 113, 267–277.
- Rigat, M., Vallès, J., Iglésias, J., Garnatje, T., 2013. Traditional and alternative natural therapeutic products used in the treatment of respiratory tract infectious diseases in the eastern Catalan Pyrenees (Iberian Peninsula). *J. Ethnopharmacol.* 148, 411–422.
- Şar, S., Asil, E., 1988. İç anadolu Bölgesi'nde hemoroid tedavisinde kullanılan halk ilaçları. *Ankara Eczacılık Fakültesi Dergisi* 18, 8–23.
- Şenkardes, I., Tuzlacı, E., 2014. Some ethnobotanical notes from Gündoğmuş district (Antalya/Turkey). *MÜSBED* 4 (2), 63–75.
- Şarić-Kundalić, B., Dobeš, C., Klatte-Asselmeyer, V., Saukel, J., 2010. Ethnobotanical study on medicinal use of wild and cultivated plants in middle, south and west Bosnia and Herzegovina. *J. Ethnopharmacol.* 131, 33–55.
- Sargin, S.A., Akcicek, E., Selvi, S., 2013. An ethnobotanical study of medicinal plants used by the local people of Alaşehir (Manisa) in Turkey. *J. Ethnopharm.* 150, 860–874.
- Sargin, S.A., Selvi, S., López, V., 2015. Ethno medicinal plants of sarıgöl district (Manisa), Turkey. *J. Ethnopharmacol.* 171, 64–84.
- Sargin, S.A., 2015. Ethnobotanical survey of medicinal plants in Bozyazi district of Mersin, Turkey. *J. Ethnopharmacol.* 173, 105–126.
- Sarper, F., Akaydin, G., Şimşek, I., Yeşilada, E., 2009. An ethnobotanical field survey in the Haymana district of Ankara province in Turkey. *Türk. J. Biol.* 33, 79–88.
- Sayar, A., Güvenc, A., Özdemir, F., Öztürk, M., 1995. Muğla (Türkiye) ilindeki bazı türlerin etnobotanik özellikleri. *Herb. J. Syst. Bot.* 2, 151–160.
- Sezik, E., Zor, M., Yeşilada, E., 1992. Traditional medicine in Turkey II. folk medicine in kastamonu. *Int. J. Pharm.* 30, 233–239.
- Sezik, E., Yesilada, E., Tabata, M., Honda, G., Takaishi, Y., Tetsuro, F., Tanaka, T., Takeda, Y., 1997. Traditional Folk Medicine in Turkey VIII. Folk Medicine in East Anatolia; Erzurum Erzincan, Ağrı, Kars, Iğdır Provinces. *Econ. Bot.* 51, 195–211.
- Sezik, E., Yesilada, E., Honda, G., Takaishi, Y., Takeda, Y., Tanaka, T., 2001. Traditional medicine in Turkey X: folk medicine in central anatolia. *J. Ethnopharmacol.* 75, 95–115.
- Simsek, I., Aytekin, F., Yesilada, E., Yıldırım, S., 2001. Ankara, Gölbaşı'nda yabancı bitkilerin kullanılış amaçları ve şekilleri üzerinde bir araştırma. *Herb. J. Syst. Bot.* 8, 105–120.
- Simsek, I., Aytekin, F., Yesilada, E., Yıldırım, S., 2004. An Ethnobotanical Survey of the Belpazarı, Ayas and Gülü District towns of Ankara Province (Turkey). *Econ. Bot.* 58, 705–720.
- Tabata, M., Honda, G., Sezik, E., 1988. A Report on Traditional Medicine and Medicinal Plants in Turkey. Faculty of Pharmaceutical Sciences, Kyoto University.
- Tabata, M., Sezik, E., Honda, G., Yesilada, E., Fukui, H., Goto, K., Ikeshiro, Y., 1994. Traditional medicine in Turkey III. folk medicine in east Anatolia: Van and Bitlis Provinces. *Int. J. Pharm.* 32, 3–12.
- Tardío, J., Pardo de Santayana, M., 2008. Cultural importance indices: a comparative analysis based on the useful wild plants of Southern Cantabria. *Econ. Bot.* 62, 24–39.
- Tetik, F., Civelek, Ş., Cakılcıoğlu, U., 2013. Traditional uses of some medicinal plants in Malatya (Turkey). *J. Ethnopharmacol.* 146, 331–346.
- The Plant List** (<http://www.theplantlist.org>) (Accessed 29.05.15).
- Tuttolomondo, T., Licata, M., Leto, C., Savo, V., Bonsangue, G., Gargano, M.L., Venturella, G., La Bella, S., 2014. Ethnobotanical investigation on wild medicinal plants in the Monti Sicani Regional Park (Sicily, Italy). *J. Ethnopharmacol.* 153, 568–586.
- Tuzlacı, E., Alparslan, D.F., 2007. Turkish folk medicinal plants, part V: Babaeski (Kırklareli). *İstanbul Ecz. Fak. Derg.* 39, 11–23.
- Tuzlacı, E., Aymaz, P.E., 2001. Turkish folk medicinal plants, part IV: Gönen (Balıkesir). *Fitoterapia* 72, 323–343.
- Tuzlacı, E., Bulut, E.G., 2007. Turkish folk medicinal plants, part VII: ezine (Canakkale). *İstanbul Ecz. Fak. Derg.* 39, 39–51.
- Tuzlacı, E., Dogan, A., 2010. Turkish folk medicinal plants, IX: ovacık (Tunceli). *Marmara Pharm. J.* 14, 136–143.
- Tuzlacı, E., Erol, M.K., 1999. Turkish folk medicinal plants, Part II: Eğirdir (Isparta).

- Fitoterapia 70, 593–610.
- Tuzlaci, E., Sadikoglu, E., 2007. Turkish Folk Medicinal Plants, Part VI: Koçarlı (Aydın). İstanbul Ecz. Fak. Derg. 39, 25–37.
- Tuzlaci, E., Senkardes, İ., 2011. Turkish folk medicinal plants, X: urgup (Nevşehir). Marmara Pharm. J. 15, 58–68.
- Tuzlaci, E., Tolon, E., 2000. Turkish folk medicinal plants, part III: sile (İstanbul). Fitoterapia 71, 673–685.
- Tuzlaci, E., Alparaslan Isbilen, D.F., Bulut, G., 2010. Turkish folk medicinal plants, VIII: Lalapaşa (Edirne). Marmara Pharm. J. 14, 47–52.
- Tuzlaci, E., 1977. Honaz Dağının bitkileri II. J. Fac. Pharm. İstanbul 13, 47–61.
- Tuzlaci, E., 2005. Bodrum'da Bitkiler ve Yaşam. Güzel Sanatlar Matbaası, İstanbul.
- Tuzlaci, E., 2006. Şifa Niyetine Türkiye'nin Bitkisel Halk İlaçları. Alfa Yayınları, İstanbul.
- Tuzlaci, E., 2011. Türkiye Bitkileri Sözlüğü 'A Dictionary of Turkish Plants', second ed. Alfa Yayınları, İstanbul.
- Ugulu, E., Secmen, Ö., 2008. Medicinal plants populary used in the villages of Yunt Mountain (Manisa-Turkey). Fitoterapia 79, 126–131.
- Ugulu, İ., Baslar, S., Yorek, N., Dogan, Y., 2009. The investigation and quantative ethnobotanical evaluation of medicinal plants used around İzmir province, Turkey. J. Med. Plants Res. 3, 345–367.
- Unsal, C., Vural, H., Sariyar, G., Ozbek, B., Otük, G., 2010. Traditional medicine in Bilecik province (Turkey) and antimicrobial activities of selected species. Turk. J. Pharm. Sci. 7, 139–150.
- Uysal, I., Onar, S., Karabacak, E., Celik, S., 2010. Ethnobotanical aspects of Kapıdağ Peninsula (Turkey). Biol. Divers. Conserv. 3, 15–22.
- Uzun, E., Sariyar, G., Adersen, A., Karakoc, B., Otuk, G., Oktayoglu, E., Pırlidar, S., 2004. Traditional medicine in Sakarya province (Turkey) and antimicrobial activities of selected species. J. Ethnopharmacol. 95, 287–296.
- Vural, M., Karaveliogulları, A., Polat, H., 1997.. Cicekdagi (Kırşehir) ve çevresinin etnobotanik özellikleri. Herb. J. Syst. Bot. 4, 117–124.
- WHO, 2002. Monographs on Selected Medicinal Plants, vol. 2 Publications of the World Health Organization, Geneva.
- Yıldırım, Ş., 1985. Munzur Dağları'nın yerel bitki adları ve bunlardan bazılarının kullanışları. Doğa Bilim Dergisi 9, 593–597.
- Yıldırım, Ş., 1994. Local names of some plants from Munzur Dağları (Erzincan-Tunceli) and the uses of a few of them (II). Herb. J. Syst. Bot. 1, 43–46.
- Yazıcıoğlu, E., Alpınar, K., 1993. Trabzon'un tıbbi ve yenen bitkileri hakkında bir araştırma. Ege Üniversitesi Eczacılık Fakültesi Dergisi 1, 89–98.
- Yazıcıoğlu, A., Tuzlaci, E., 1996. Folk medicinal plants of trabzon (Turkey). Fitoterapia 67, 307–318.
- Yeşil, Y., Akalın, E., 2009. Folk medicinal plants in Kürecik area (Akçadağ/Malatya/Turkey). Turk. J. Pharm. Sci. 6, 207–220.
- Yeşilada, E., Honda, G., Sezik, E., Tabata, M., Goto, K., Ikeshiro, Y., 1993. Traditional medicine in Turkey IV. Folk medicine in Mediterranean subdivision. J. Ethnopharmacol. 39, 31–38.
- Yeşilada, E., Sezik, E., Honda, G., Takaishi, Y., Takeda, Y., Tanaka, T., 1999. Traditional medicine in Turkey IX. Folk medicine in northwest Anatolia. J. Ethnopharmacol. 64, 195–210.
- Yucel, E., Tulukoglu, A., 2000. Plants used as folk medicine in and around Gediz (Kütahya). Ekoloji 9, 12–14.
- Zhou, W., Abdurahman, A., Abdusalam, E., Yiming, W., Abliz, P., Aji, Q., Issak, M., Iskandar, G., Moore, N., Umar, A., 2014. Effect of *Cydonia oblonga* Mill: leaf extracts or captopril on blood pressure and related biomarkers in renal hypertensive rats. J. Ethnopharmacol. 153 (3), 635–640.