

Medicinal Plants Traditionally Used for Pain Alleviation in Antalya Province, Turkey

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ABSTRACT In Turkey, even if people have easy access to government and private health services, usage of plant remedies have continued to play important role in fulfilling human healthcare needs. Herbal treatment is considered relatively cheap and easy in some cases especially for low pains. The main purpose of this study was to determine how people traditionally use plant remedies for pain alleviation. The study was carried out over a period of approximately four years from 2011 to 2014, in some districts of Antalya province, situated in the Western Anatolian part of Turkey. The majority of the data sets were built up, inquiry studies with consumers and sellers. Additional information was collected through interviews with local consumers, sellers, herdsman, village headmen, and midwives. As a result, a simplified list was created containing information on scientific names, vernacular names and plants are used for the pain alleviation of 87 plant taxa belonging to 72 genera, and 36 families. The surveys revealed that the dominant families were *Lamiaceae*, *Asteraceae* and *Apiaceae*. It was found that *Salvia* sp. *Hypericum* sp. and *Achillea* sp. were the most common genera. The use of above ground plant parts was higher than below ground part. Particularly, leaves and flowers were the most commonly used parts of plants. General preparation ways were infusion and decoction. The mentioned medicinal plants have been traditionally used to manage or lessen pain in particular stomach ache, throat ache, toothache and abdominal pain. The results of these ethnobotanical surveys are important to find out indigenous ethnobotanical knowledge of this area.

INTRODUCTION

Benefit from the plants for medical purposes are as old as humanity. The level of utilization of medicinal plants globally has increased dramatically in the last two decades (Yirga 2010). Today, it continues to use the information from the past in the form of light and is important in terms of local knowledge to be converted to medical and industrial information.

Turkey, located in the Mediterranean Basin, has high medical and aromatic plant biodiversity. Although, the exact number of medicinal plants used is unknown in Turkey, it is estimated to be around 500 and also approximately 200 medicinal and aromatic plant have export potential (Baser 2000). A great majority of medical and aromatic plants are obtained from nature (Coskun and Özkan 2005). Antalya province of Turkey, is floristically the richest region in the Southwestern Anatolia with a mountainous geography. It has warm Mediterranean climate on the southern aspects of Taurus Mountains and the climate shifts rapidly to cold continental in the

inlands, creating very diverse ecological condition in between. The diversity in ecological condition provides a rich source of medicinal plants in this region.

People generally use medical and aromatic plants for preventive and therapeutic purpose. A small number of ethnobotanical studies have been published in Antalya (Arıcan et al. 2013; Senkardes and Tuzlaci 2014) and much more has been conducted about medicinal plants in Western and Eastern Mediterranean region (Akbulut 2015; Sargin 2015; Sargin et al. 2015; Güzel et al. 2015).

The main purpose of this study, was to determine how people traditionally use plant remedies for pain alleviation of some districts of Antalya province. No previous medicinal plants traditionally used for pain alleviation studies are reported to have been conducted in the Antalya province. In this study, list was created containing information on scientific names, vernacular names, endemic state, parts of plants and preparations. Plants are used for pain alleviation and recorded literature, uses of 87 plant taxa belonging to 72 genera, and 36 families.

MATERIAL AND METHODS

Study Area

The study was carried out in Antalya, located on the Mediterranean coast of south-west Turkey between the Taurus Mountains and the Mediterranean Sea (Fig. 1). It has improved production of both agricultural production and industrial production of medicinal and aromatic plants that led to the development of the industrial and domestic use in Antalya, which is the largest province of the western Mediterranean region.

In addition, as the host city about 30 percent of foreign tourists who visited Turkey (TUIK 2015), Antalya is the center of the tourism industry. Therefore, medicinal and aromatic plants are sold in density.

Consumer Survey

The content of questionnaire applied was in order to determine which plants were preferred

by the consumer living in the city center. It was ordered as: a) preferred plant species; b) consumption patterns; c) the factors and influential in the formation of habits of consumption and d) supply type.

In order to determine the consumer, 10 percent sampling error, the sampling size, was calculated by the formula below (Karasar 2005):

$$n = \frac{Z^2 Npq}{ND^2 + Z^2 pq} \quad (1)$$

Where:

n: sampling size

Z: safety coefficient (for 95% safety level

Z=1.96)

N: population size

p, q: probability of availability of the mass to be measured in the main mass

D: sampling error accepted (10%)

Based on the above formula, it was calculated that it was necessary to provide 96 questionnaires. However, in this study, 144 questionnaire forms were filled and analyzed to increase the reliability of the study. Some demographic char-

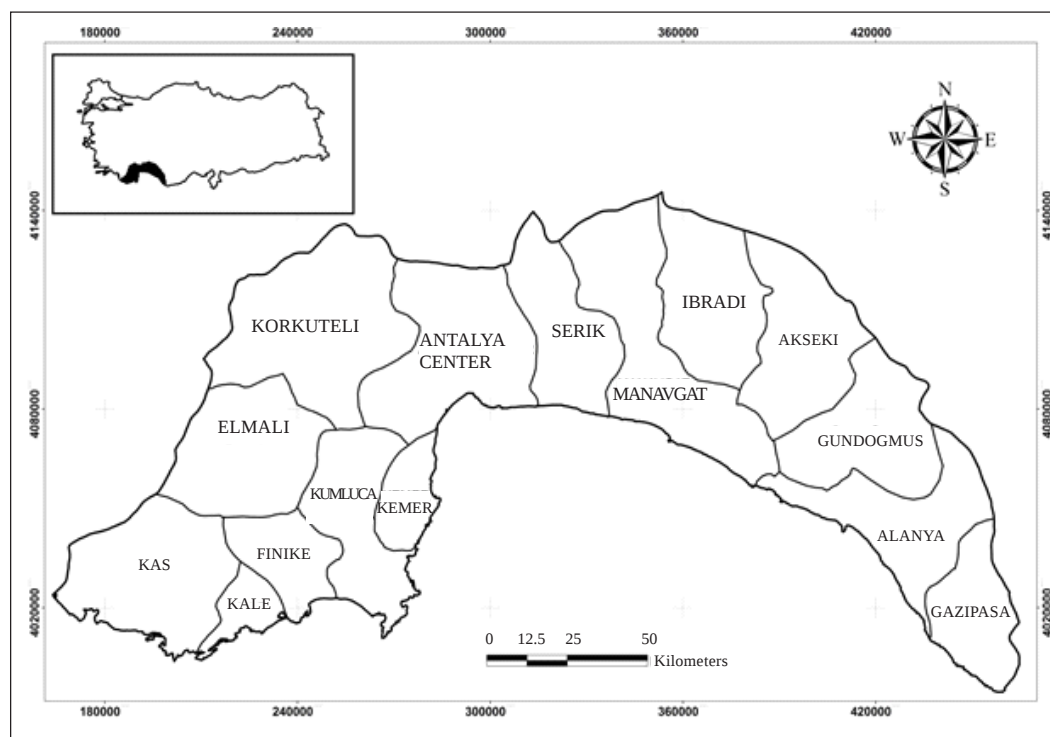


Fig. 1. Study area: Antalya District (A map showing the location of Antalya in Turkey)

acteristics of consumers surveyed are shown in Table 1. The age groups of consumers predominate as middle age group (45%). In terms of gender balance is concerned.

Table 1: Demographic characteristics of consumers and sellers

Demographical characteristics	Consumers		Sellers	
	Number	%	Number	%
Age				
18-25	49	34	13	52
26-45	65	45	9	36
46-65	25	17	3	12
>65	5	4	-	-
Sex				
Male	70	49	18	72
Female	74	51	7	28
Education Level				
Elementary school	44	31	3	12
High school	61	42	17	68
University (UG)**	34	24	4	16
University (G)***	5	3	1	4

UG: Under Graduate, *G: Graduate

Seller Survey

The seller surveys were conducted to determine consumer use. The reason for this was to provide complete findings of the survey to support and the ability to make comparisons. Retailers in grocery stores and neighborhood markets were evaluated as sellers. Interview was made by 25 sellers. Demographic characteristics of some surveyed sellers are shown in Table 1. Fifty-two percentage of the dealer group is young. Unlike a majority of consumers, seller in terms of gender is male. Most of the sellers were high school and university graduates (Table 1).

Interview with local people

Medicinal plants as intense in rural areas outside urban centers are used for ethnobotany. Structural interviews were made with people over the age of 50, mid-wives, village headmen and shepherds for obtaining of local data about traditional usage of palliative plants.

Plant Materials

This study was conducted between 2011 and 2014. During this period, a total of 87 vascular

plant specimens were collected from the locality. The researchers pressed the plants in the field and prepared them for identification. The collected specimens were identified by using "Flora of Turkey and the East Aegean Islands" (Davis 1965-1985; Davis et al. 1988; Güner et al. 2000) and the other flora; Flora Europaea (Tutin et al. 1964-1980). The collected plant materials were deposited as herbarium samples at Gül Herbarium in Isparta. The names of plant families were listed in alphabetic order (Table 2).

RESULTS AND DISCUSSION

As a result, a simplified list was created containing information on scientific names, vernacular names and plants which are used for the pain alleviation of 87 plant taxa belonging to 72 genera, and 36 families (Table 2). The dominant families were *Lamiaceae*, *Asteraceae*, *Apiaceae*, *Rosaceae* and *Malvaceae*. It was found that *Salvia* sp., *Hypericum* sp., *Achillea* sp., and *Anthemis* sp. were the most common genera. It was found that *Matricaria chamomilla* L., *Origanum minutiflorum* O. Schwarz & P. H. Davis, *Origanum onites* L., *Salvia tomentosa* Mill., *Salvia fruticosa* Miller, *Teucrium polium* L., *Malva sylvestris* L., *Pinus brutia* Ten., *Tilia platyphyllos* Scop., *Urtica dioica* L. as the mostly used species. The most frequently used parts of plants were: leaves (58), flowering branches and flowers (54), fruits (12), roots (10). The most common preparations were infusion (60) and decoction (27). The traditional medicinal plants traditionally have been mostly used for pain alleviation stomach ache (40), painkiller (21), throat ache (11), toothache (11), abdominal pain (11), headache (10) and rheumatic pain. The results of these ethnobotanical surveys, were important to find out the present situation of pain alleviation in this area.

In the study area, twelve endemic medicinal plants have been recorded. As presented in Table 2; *Achillea kotschy* subsp. *canescens*, *Achillea phrygia*, *Achillea teretifolia*, *Anthemis wiedemanniana*, *Helichrysum pamphylicum*, *Glycyrrhiza asymmetrica*, *Liquidambar orientalis* var. *integriloba*, *Marrubium globosum* subsp. *globosum*, *Origanum minutiflorum*, *Sideritis condensata*, *Sideritis libanotica* subsp. *linearis* and *Stachys aleurites* are endemic and medicinal plants growing in Antalya province. *O. minutiflorum*, *S. condensata*, *S. libanotica*

Table 2: List of the medicinal plants traditionally used for pain alleviation in Antalya Province

Family	Species	Vernacular name	Endemic state	Threat categories	Plant Part(s) ^a	Preparations ^b	Medicinal uses	Recorded literature uses ^b
Anacardiaceae	<i>Pistacia terebinthus</i> L. subsp. <i>palaestina</i> (Boiss.) Engler	Çitlik	-	-	FR	Dec.	Stomach ache	Not reported
Apiaceae	<i>Ammi visnaga</i> (L.) Lam.	Dis otu	-	-	FL, LE	Inf.	Throat ache	Throat ache (9)
	<i>Conium maculatum</i> L.	Baldiran	-	-	LE, RO	Dec.	Rheumatic pain	Rheumatic pain (13)
	<i>Eryngium bourgatii</i> Gouan subsp. <i>heldreichii</i> (Boiss.) Davis	Boga dikenii	-	-	SH, FL, LE	Inf.	Stomach ache	Not reported
	<i>Heracleum humile</i> Sm.	Kaya ögrek Otu	-	-	FL	Dec.	Headache	Not reported
Araceae	<i>Acorus calamus</i> L.	Eğir otu	-	-	RO	Inf.	Headache and Toothache	Headache and Toothache (13)
Araliaceae	<i>Hedera helix</i> L.	Orman sarmasıgı	-	-	LE, FR	Inf., Dec.	Rheumatic pain	Not reported
Aristolochiaceae	<i>Aristolochia paecilantha</i> Boiss.	Acı kök	-	-	RO	Inf.	Stomach ache	Not reported
Asteraceae	<i>Achillea kotschyi</i> Boiss. subsp. <i>canescens</i> Basler	Topar yavsan	E	LR (lc)	FL, LE	Inf.	Hemorrhoid pain	Not reported
	<i>Achillea phrygia</i> Boiss. & Bal.	Ayvadana	E	LR (lc)	FL, LE	Inf.	Stomach ache and menstrual pain	Stomach ache, menstrual pain (7)
	<i>Achillea teretifolia</i> Ledeb.	Boz yavsan	E	LR (lc)	FL, LE	Inf.	Abdominal-ache	Not reported
	<i>Anthemis cretica</i> L. subsp. <i>anatolica</i> (Boiss.) Grierson	Papatya	-	-	FL, LE	Inf.	Stomach ache and painkiller	Stomach ache (20)
	<i>Anthemis pesudocotula</i> Boiss.	Papatya	-	-	FL, LE	Dec., Gr., Inf.	Throat ache and Painkiller	Not reported
	<i>Anthemis wiedemanniana</i> Fisch. & Mey.	Papatya	E	LR (lc)	FL, LE	Dec., Gr.	Stomach ache	Not reported
	<i>Artemisia absinthium</i> L.	Acı yavsan	-	-	FL, LE	Inf.	Headache and stomach ache	Headache and toothache (18)
	<i>Chondrilla juncea</i> L. var. <i>juncea</i>	Çengel sakızı	-	-	LE, LT	Gum, Inf.	Stomach ache and abdominal ache	Stomach ache (7), Abdominal ache (24)
	<i>Cichorium pumilum</i> Jacq.	Sakız otu Dünök	-	-	FL, LE, RO	Dec.	Stomach ache	Not reported

Table 2: Contd....

Family	Species	Vernacular name	Endemic state	Threat categories	Plant Part(s) ^y	Preparations ^b	Medicinal uses	Recorded literature uses ^b
	<i>Helichrysum pampphylicum</i> Davis & Kupicha	Altın otu	E	LR (Ic)	FL, LE	Inf.	Earache	Not reported
	<i>Scorzonera cana</i> (C. A. Meyer) Hoffm. var. <i>cana</i>	Dag sakızı	-	-	LT	Fresh	Backache	Not reported
	<i>Senecio vernalis</i> Waldst. & Kit.	Kanarya otu	-	-	FL, LE	Inf.	Menstrual pain	Menstrual pain (7)
	<i>Matricaria chamomilla</i> L. var. <i>chamomilla</i>	Papatya	-	-	FL	Inf.	Headache and stomach ache	Headache (26,13,4), stomach ache (7,14,13,30,17,32,8,27,24,28)
	<i>Silybum marianum</i> (L.) Gaertner	Deve diken	-	-	FL, LE	Inf.	Rheumatic pain	Rheumatic pain (9)
	<i>Taraxacum bithynicum</i> D.C.	Kara hindiba	-	-	FL, LE	Inf.	Stomach ache and toothache	Not reported
	<i>Tripleurospermum parvi florum</i> (Willd.) Pobed.	Ak papatya	-	-	FL	Dec.	Migraine pain	Migraine pain (29)
	<i>Xanthium strumarium</i> L. subsp. <i>strumarium</i>	Pitrak	-	-	SD	Dec.	Kidney pain	Not reported
Brassicaceae	<i>Capsella bursa-pastoris</i> (L.) Medik.	Kuskus otu, Çoban çantası	-	-	-	LE, FL	Inf.	Peptic pain (13)
	<i>Thlaspi perfoliatum</i> L.	Kuskus ekmeği	-	-	Fresh	Fresh	Painkiller	Not reported
Berberidaceae	<i>Berberis crataegina</i> DC.	Kadin tuzlugu	-	-	LE, RO	Inf.	Painkiller	Not reported
Boraginaceae	<i>Anchusa azurea</i> Miller. var. <i>azurea</i>	Sigir dili	-	-	LE	Inf.	Stomach ache	Stomach ache (18)
	<i>Capparis spinosa</i> L. var. <i>inermis</i> Turra	Gebere	-	-	Bud	Pic.	Painkiller	Painkiller (13)
Adoxaceae	<i>Sambucus ebulus</i> L.	Mürver	-	-	FL	Inf.	Stomach ache	Not reported
Convolvulaceae	<i>Convolvulus arvensis</i> L.	Tarla sarmasığı	-	-	RO	Inf., Mush	Rheumatic pain and headache	Rheumatic pain (13)
Cupressaceae	<i>Cupressus sempervirens</i> L.	Servi	-	-	CN	Dec.	Toothache	Toothache (26)
Ephedraceae	<i>Ephedra campylopoda</i> C. A. Meyer	Deniz üzüümü	-	-	TW	Inf.	Rheumatic pain	Rheumatic pain (13)
Equisetaceae	<i>Equisetum ramossissimum</i> Desf.	Atkıyruğu	—	-	WP	Inf., Dec.	Rheumatic pain	Rheumatic pain (9,13)
Fabaceae	<i>Ceratonia siliqua</i> L.	Keçiyoynuzu	-	-	FR	Dec.	Toothache	Toothache (3)
	<i>Glycyrrhiza asymmetrica</i> Hub.-Mor.	Meyan kökü	E	VU	RO	Dec.	Stomach ache	Not reported
	<i>Melilotus indica</i> (L.) All.	Yonca	-	-	FL, LE	Inf.	Rheumatic pain	Not reported

Table 2: Contd....

Family	Species	Vernacular name	Endemic state	Threat categories	Plant Part(s) ^a	Preparations ^b	Medicinal uses	Recorded literature uses ^b
Gentianaceae	<i>Centaureum erythraea</i> Rafn. subsp. <i>erythraea</i>	Kırmızı kantaron	-	-	FL, LE	Waiting in Honey Waiting in olive oil	Stomach ache and waist pain	Stomach ache, waist pain (24)
Altingiaceae	<i>Liquidambar orientalis</i> Miller var. <i>integriloba</i> Fiori	Günlük agaci	E	VU	BR	Balsam	Painkiller for insect bites and stomach ache	Stomach ache (14,11), Painkiller for insect bites (13)
Hypericaceae	<i>Hypericum confertum</i> Choisy var. <i>stenobotrys</i> (Boiss.) Holmboe <i>Hypericum lanuginosum</i> Lam. <i>lanuginosum</i> <i>Hypericum scabrum</i> L.	Kantaron	-	-	FL, LE	Inf.	Peptic pain	Peptic pain (13)
		Kantaron	-	-	FL, LE	Inf.	Stomach ache	Not reported
		Karahasan çayı	-	-	SH, FL, LE	Dec. Waiting in Olive oil	Stomach ache	Stomach ache (18,25)
Lamiaceae	<i>Ajuga chamaepitys</i> (L.) Schreber subsp. <i>chia</i> (Schreber) Arcangeli var. <i>chia</i> <i>Marrubium globosum</i> (Montbret & Aucher ex Benth.) subsp. <i>globosum</i> <i>Melisa officinalis</i> L. subsp. <i>altissima</i> (Sm.) Arcangeli <i>Mentha pulegium</i> L.	Yer çami	-	-	FL, LE	Inf.	Painkiller	Painkiller (13)
		Boz ot	E	LR (1c)	FL, LE	Inf.	Painkiller	Not reported
		Limon otu, ari otu	-	-	FL, LE	Inf.	Stomach ache and ear ache	Stomach ache (24,9,13), Ear ache (3)
		Yarpuz	-	-	FL, LE	Inf.	Stomach ache	Stomach ache (24,14,30,4,1,35,11, 10)
	<i>Origanum minutiflorum</i> O. Schwarz & P. H. Davis <i>Origanum onites</i> L.	Sütçüler Kekigi	E	LR (nt)	FL, LE	Inf.essential oil	Abdominal ache and waist pain	Not reported
		Bilyali kekik	-	-	FL, LE	Inf.essential oil	Abdominal ache, toothache and headache	Abdominal ache, toothache, headache (24,14,11)
	<i>Phlomis lycia</i> D. Don	Salba, çalba	-	-	LE	Inf.	Stomach ache	Stomach ache (14,13)

Table 2: Contd....

Family	Species	Vernacular name	Endemic state	Threat categories	Plant Part(s) ^a	Preparations ^b	Medicinal uses	Recorded literature uses ^b
	<i>Phlomis pungens</i> Willd. var. <i>laxiflora</i>	Salba, çalba	-	-	FL, LE, SH	Inf.	Stomach ache	Stomach ache (9)
	<i>Salvia fruticosa</i> Miller	Elma çayı		-	FL, LE	Inf. Essential oil	Stomach ache	Stomach ache (14,30,35,11,15)
	<i>Salvia tomentosa</i> Miller	Salba		-	FL, LE	Inf.	Throat ache and stomach ache	Throat ache (26)
	<i>Salvia sclarea</i> L.	Misk ada çayı		-	FL, LE	Inf.	Throat ache	Throat ache (9)
	<i>Sideritis condensata</i> Boiss. & Heldr. Apud Benth.	Dag ada çayı	E	LR (cd)	FL, LE	Inf.	Stomach ache and painkiller	Not reported
	<i>Sideritis libanotica</i> Labill. subsp. <i>linearis</i> (Benth.) Bornm	Tüylü dag ada çayı	E	LR (lc)	FL, LE	Inf.	Stomach ache and painkiller	Stomach ache (9,13)
	<i>Stachys aleurites</i> Boiss. & Heldr. apud Benth.	Tokali çay	E	LR (cd)	FL, LE	Inf.	Stomach pain and painkiller	Stomach pain, painkiller (13)
	<i>Stachys lavandulifolia</i> Vahl. var. <i>lavandulifolia</i>	Tüylü çay	-	-	FL, LE	Inf.	Headache and throat ache	Not reported
	<i>Teucrium chamaedrys</i> L. subsp. <i>chamaedrys</i>	Kisamahmut otu	-	-	FL, LE	Inf.	Gastric pain abdominal pain and painkiller	Gastric pain (13)
	<i>Teucrium polium</i> L.	Aci yavsan	-	-	FL, LE	Inf., Dec.	Waist and foot pain, stomach ache, headache and toothache	Stomach ache (18,20,13), Waist and foot pain, headache (9,13), toothache (9,13)
Lauraceae Loranthaceae	<i>Thymus zygoides</i> Griseb. var. <i>lycaonicus</i> (Celak.) Ronniger	Kekik	-	-	FL, LE	Inf.	Throat and stomach ache, abdominal pain	Throat and stomach ache (7)
	<i>Thymus cilicicus</i> Boiss. & Bal.	Kekik	-	-	FL, LE	Inf.	Stomach ache	Stomach ache (14)
	<i>Ziziphora capitata</i> L.	Nane ruhu	-	-	FL, LE	Inf.	Stomach ache and toothache	Not reported
	<i>Laurus nobilis</i> L.	Tehnel	-	-	FR	Oil	Rheumatic pain	Not reported
	<i>Viscum album</i> L. subsp. <i>album</i>	Gövelek	-	-	LE, FR	Dec., Plas	Stomach ache, Rheumatic pain and headache	Headache (26), Stomach ache (20), Rheumatic pain (13)

Table 2: Contd....

Family	Species	Vernacular name	Endemic state	Threat categories	Plant Part(s) ^a	Preparations ^b	Medicinal uses	Recorded literature uses ^b
Liliaceae	<i>Asparagus acutifolius</i> L. <i>Asphodelus aestivus</i> Brot.	Kuskonmaz Deve sogani	- -	- -	RO, FR RO	Dec. Dec.	Painkiller Stomach ache and abdominal pain	Painkiller (13) Stomach ache (24,14), abdominal pain (24) Not reported
Malvaceae	<i>Alcea striata</i> (DC.) subsp. <i>striata</i> (DC.) Alef. <i>Althea cannabina</i> L.	Gül hatun Gül fatma	- -	- -	RO FL, LE	Dec. Inf.Gr.	Stomach ache Stomach ache and throat ache	Not reported
	<i>Malva sylvestris</i> L.	Ebe Gümeçi	-	-	FL, LE	Mush, Inf.	Lesion pain throat ache	Throat ache (26,9), toothache (26,9,27,22,17), Lesion pain (13) Gastric pain (18), Throat ache (7), Stomach ache (6,12), abdominal pain (12,29)
	<i>Malva neglecta</i> L.	Ebe Gömeçi	-	-	FL, LE	Inf., Gr., Dec., Gr.	Throat ache stomach ache, gastric pain and abdominal pain	Throat ache (7) Stomach ache (6,12), abdominal pain (12,29)
Papaveraceae	<i>Papaver dubium</i> L. subsp. <i>dubium</i>	Gelincik	-	-	FL, LE	Inf., Gr.	Throat ache and painkiller	Throat ache (7)
Pinaceae	<i>Pinus brutia</i> Ten.	Kızılcım	-	-	TR	Res.	Stomach ache	Stomach ache (24,14,1,35, 33,1,31, 34)
Plantaginaceae	<i>Plantago lanceolata</i> L.	Sinir otu	-	-	LE	Dec.	Stomach ache and gastric pain	Gastric pain (18)
Oleaceae	<i>Olea europaea</i> L. var. <i>sylvestris</i> (Miller) Leht.	Delice	-	-	LE, FL	Dec.	Stomach ache	Stomach ache (24,27,28,23,21)
Rhamnaceae	<i>Paliurus spina-christii</i> Miller	Karaçali	-	-	BR, FR	Inf., Dec.	Stomach ache	Stomach ache (24,13,17,34, 16,2)
Rosaceae	<i>Cydonia oblonga</i> Miller	Ayva	-	-	LE, FR	Inf., Dec.	Abdominal ache	Abdominal ache (24)
	<i>Cotoneaster nummularia</i> Fisch. & C.A.Mey. <i>Potentilla recta</i> L.	Dag musmulasi Bes Parmak otu	- -	- -	LE, FL RO	Dec. Inf., chew	Joint pain Tonsil and throat ache, toothache	Joint pain (18) Toothache (7)
	<i>Crataegus aronia</i> (L.) Bosc. ex DC. var. <i>aronia</i> <i>Mandragora autumnalis</i> Bertol.	Aliç Adam Otu	- -	- -	FL, LE RO	Inf. Inf.	Headache Painkiller	Headache (14) Painkiller (13)

Table 2: Contd....

Family	Species	Vernacular name	Endemic state	Threat categories	Plant Part(s) ^a	Preparations ^b	Medicinal uses	Recorded literature uses ^b
	<i>Solanum nigrum</i> L. subsp. <i>nigrum</i> <i>Hyoscyamus niger</i> L.	It Üzüümü Çanak Çömlek Otu	-	-	LE, FL FR, SD	Inf. Dec.	Painkiller Earache Toothache, Headache, painkiller Painkiller for rheumatism	Painkiller (13) Earache (26), Toothache (24), Headache, painkiller (9,13) Painkiller for rheumatism (13)
Salicaceae	<i>Salix alba</i> L.	Ak Söğüt	-	-	BR	Dec.	Throat ache	Not reported
Tiliaceae	<i>Tilia platyphyllos</i> Scop.	Ihlamur	-	-	FL	Inf.	Stomach ache	Stomach ache
Urtiaceae	<i>Urtica dioica</i> L.	Isırgan Otu	-	-	FL, LE	Inf.	rheumatic pain, toothache and painkiller	(18), painkiller (6,19,9,13)
Verbenaceae	<i>Vitex agnus-castus</i> L.	Hayit	-	-	LE, FL	Plas., Inf.	Headache, menstrual pain and abdominal pain	Headache (24)

Part/s used^a: BR, bark; CN, cone; FL, flowers; FR, fruits; LE, leaves; LT, Latex; RO, root; SD, seeds; SH, Shoot; TR, Trunk; TW, twig; WP, Whole plant
 Preparations^b: Dec. Decoction; Inf. Infusion; Gr. Gargle; Pic. Pickle; Plas. Plaster; Res: Resine
 Recorded literature uses^b: (1)Abay and Kiliç (2001); (2)Akalin and Alpinar (1994); (3) Akbulut and Bayramoglu (2014); (4)Benitez et al.(2010); (5)Çakilioglu and Turkoglu (2010); (6) Çakilioglu et al. (2010); (7)Deniz et al. (2010); (8)De Natale and Pollio (2007); (9)Doganoglu et al. (2006); (10)Ecevit-Genç and Özhataş (2006); (11)Ertug (2004); (12) Ezer and Arisan (2006); (13)Fakir et al. (2009); (14)Giudal and Kültür (2013); (15)Honda et al.(1996); (16)Kargioglu et al.(2008); (17)Kültür (2007); (18)Mükemre et al. (2015); (19) Özdemir and Alpinar (2015); (20) Özudogru et al. (2011); (21)Palmeşe et al. (2001); (22)Passalacqua et al. (2007); (23)Pieroni and Quave (2005); (24)Polat and Satil (2012); (25)Polat et al. (2013); (26)Sargin et al. (2013); (27)Scherer et al.(2005); (28)Savoa et al. (2011); (29) Sarper et al. (2009); (30)Tuzlaci (2005); (31)Tuzlaci and Eryasar-Aymaz (2001); (32)Tuzlaci and Tolon (2000); (33)Ugulu et al.(2009); (34)Ugurlu and Seçmen (2008); (35)Uysal (2008)
 Threat categories : LR, Lower risk; (cd), conservation dependent; (nt), Near threatened; (lc), Least concern; VU: vulnerable

subsp. *linearis* are sold as herbal tea in herbal markets, bazaar and public market. In the literature analysis of the plants used in our study, 87 plants were found already being used for medical purposes, whereas 29 plants presented no literature records. The medicinal plants traditionally used for pain alleviation of *Pistacia terebinthus* subsp. *palaestina*, *Eryngium bourgatii* subsp. *heldreichii*, *Heracleum humile*, *Acorus calamus*, *Hedera helix*, *Aristolochia paecilantha*, *Achillea kotschyi* subsp. *canescens*, *Achillea teretifolia*, *Anthemis pseudocotula*, *Anthemis wiedemanniana*, *Cichorium pumilum*, *Helichrysum pamphylicum*, *Scorzonera cana* var. *cana*, *Taraxacum bithynicum*, *Xanthium strumarium* subsp. *strumarium*, *Thlaspi perfoliatum*, *Berberis crataegina*, *Glycyrrhiza asymerica*, *Melilotus indica*, *Hypericum lanuginosum* var. *lanuginosum*, *Marrubium globosum* subsp. *globosum*, *Origanum minutiflorum*, *Sideritis condensata*, *Stachys lavandulifolia* var. *lavandulifolia*, *Ziziphora capitata*, *Laurus nobilis*, *Alcea striata* subsp. *striata*, *Althea cannabina*, *Tilia platyphyllos* which were found being used in this study area were recorded for the first time.

CONCLUSION

Turkey is considered as one of the most biodiversity hot spots and it is also important for medicinal plants. In this research, the researchers investigated some of medicinal plants traditionally used for pain alleviation in Antalya Province in the Western Anatolian part of Turkey. This region is under extensive threats from natural and anthropogenic disturbances. Wildfire, drought and climate change can be listed among the natural factors. In addition to anthropogenic factors, such as land clearing and overgrazing, industrialization, agricultural practices, tourism, mining and road construction activities and illegal collection of medicinal plants also have significant effects on sustainability of these plants. Loss of species is still a serious problem in natural landscape. Therefore, sustainability of these medicinal plant resources depends largely on conservation of these natural resources and stricter regulation of collection activities. Cultivation of these species under artificial conditions may also play a beneficial role in reducing demand for the collection from nature.

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