



Ethnobotanical Study of Medicinal Plants in Aziziye District (Erzurum, Turkey)

Aziziye (Erzurum, Türkiye) İlçesindeki Tıbbi Bitkilerin Etnobotanik Çalışması

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ABSTRACT

Objectives: The present research was conducted to document the usage of medicinal plants, plant parts utilized, and methods of preparation by the people living in Aziziye district, situated in the western part of Erzurum.

Materials and Methods: The medicinal plant species utilized by local public for remedial aims were collected and identified. The related knowledge about conventional herbal medicine was collected, herbarium materials were prepared, and they were deposited in the Herbarium of the Faculty of Science, Atatürk University.

Results: A total of 77 medical plants pertaining to 30 families were defined in this research. Amongst these, 62 species grew naturally and 15 species were cultivated. The most widespread medicinal plant families were Asteraceae (14), Rosaceae (7), Lamiaceae (5), and Apiaceae (5). The most widespread preparation was decoction.

Conclusion: The ethnobotanical outcomes documented in this study provide practical evidence about the use of medicinal plants among the inhabitants of Aziziye District. Furthermore, the results revealed that the medicinal plants of the region are a major source of herbal drugs for primary healthcare utilized among the rural communities. This study can be utilized as baseline knowledge for further scientific research to improve new plant-based commercial drugs, and may transfer the traditional information as regards usage of medicinal herbs to new generation.

Key words: Aziziye, ethnobotany, Erzurum, medicinal plants, Turkey

ÖZ

Amaç: Sunulan bu araştırma, Erzurum'un batı kesiminde yer alan Aziziye ilçesinde yaşayan insanların kullandıkları tıbbi bitkilerin kullanımı, kullanılan bitki kısımları ve hazırlama yöntemlerini belgelemek amacıyla yapılmıştır.

Gereç ve Yöntemler: Yerel halkın tedavi amaçları için kullandığı tıbbi bitkiler toplanıp, tanımlandı. Geleneksel bitkisel ilaçlarla ilgili bilgiler toplandı; herbaryum materyalleri hazırlandı, Atatürk Üniversitesi Fen Fakültesi Herbaryumu'na konuldu.

Bulgular: Araştırmada 30 familyaya ait toplam 77 tıbbi bitki tanımlanmıştır. Bu türlerin 62'si doğal olarak yetişmekte, 15 tür ise ekilmektedir. En yaygın tıbbi bitkiler Asteraceae (14), Rosaceae (7), Lamiaceae (5) ve Apiaceae (5) familyalarına aittir. En yaygın hazırlama şekli dekoksiyondur.

Sonuç: Bu çalışmada elde edilen etnobotanik sonuçlar, tıbbi bitkilerin Aziziye ilçesi sakinleri arasında kullanımı hakkında pratik veriler sunmaktadır. Dahası, bu sonuçlar kırsal topluluklar arasında kullanılan, bölgedeki tıbbi bitkilerin, birinci basamak sağlık hizmetleri için önemli bitkisel ilaç kaynağı olduğunu ortaya koymaktadır. Bu araştırma, bitki esaslı yeni ticari ilaçların iyileştirilmesinde daha fazla bilimsel araştırma için temel bilgi kaynağı olarak kullanılabilir ve genç nesillerde tıbbi bitkilerin geleneksel kullanımı ile ilgili bilgi aktarılmasına olanak sağlayacaktır.

Anahtar kelimeler: Aziziye, etnobotanik, Erzurum, tıbbi bitkiler, Türkiye

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INTRODUCTION

Herbs have been invariable sources of both protective and therapeutic traditional medicine preparations for people since ancient times.¹ The World Health Organization forecasted that about 60% of the world's inhabitants in developing countries trust herbs for curing a variety of illnesses, owing to the lack of modern healthcare resources.²

Turkey's flora is very rich, comprising about 11,000 species, 33% of which are endemic and Turkish people have utilized these herbs for diversified aims. Along with its rich flora, a wide diversity of habitats also exist in Turkey.^{3,4} The flora of Turkey is rich owing to its different ecological zones, geographical variations, and diversified climates. This variation in flora has contributed a rich source of medicinal herbs, which has long been utilized by Anatolian people, and therefore there has been an accumulation of valuable folk medicinal information in the district.⁵

In Turkey ethnobotanical research has been performed since the Republican period began in 1923 and the effects and names of plants have been documented; these studies have increased in recent years in particular.⁵

The flora of East Anatolia in Turkey is also rich owing to its different ecological zones, geographical variations, and diversified climates. Erzurum is a medium-size city in eastern Turkey. The province is located in the upper basin of Karasu, the source of the River Euphrates, around the edge of Mount Ereğli in the Palandöken mountain range in the southeast of Erzurum plain, and situated on a curved plateau 1850 to 1980 m above sea level. The province of Erzurum is a local center in whose zone of effect there are all of the provinces of Erzurum, Kars, Iğdır, Ardahan, and Ağrı; but not Refahiye, İliç, and Kemaliye districts, all in Erzincan Province; Bayburt and Yusufeli district; Varto, Bulanık, and Malazgirt districts of Muş Province; Karlıova District of Bingöl Province; and Pulumur District of Tunceli Province.⁶

The purpose of the present research was to introduce information about the utilization of conventional herbal medicine and other uses of the plants in these districts and was conducted to document the usage of medicinal plants, plant parts utilized, and methods of preparation by the people living in Aziziye, situated in western Erzurum.

MATERIALS AND METHODS

Investigation region

The largest geographical area of Turkey is Eastern Anatolia and it is far from the effect of the sea owing to its being surrounded by coastal mountain ranges.⁷ Erzurum is established in the Upper Euphrates section of the Eastern Anatolian region. It is the largest city in Eastern Anatolia, with a population of 780,847 and an area of 25,066 km², and it is an old settlement. It lies between 40°15' and 42°35' eastern longitudes and 40°57' and 39°10' northern latitudes (Figure 1). Erzurum neighbors Rize, Artvin, and Ardahan in the north, Kars and Ağrı in the east, Bingöl and Muş in the south, and Erzincan and Bayburt in

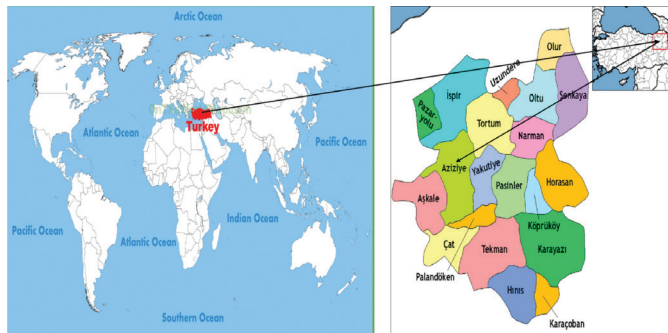


Figure 1. Geographical location of the investigation region

the west. Mean daily temperature is 19.6 in summer and -8.6°C in winter. Annual rainfall is 453 mm and the count of days on which it snows is 50. The duration of snow cover is 114 days.⁸

Data collection

The field research was conducted through collecting ethnobotanical knowledge using structured and semistructured interviews with all knowledgeable people native to 5 villages, namely Söğütlü (1), Çıkıklı (2), Sorkunlu (3), Kapılı (4), and Beyınarı (5). This study is a project of the Ministry of Forestry and so they decided to study these villages. Midwives, shepherds, woodsmen, farmers, healers, beekeepers, housewives, teachers, mukhtars, and people collecting plants, a total of 98 people, were interviewed face to face. While 56 of the informants were women (57.14%), the remaining 42 were men. For each recorded plant one questionnaire was filled out during the conversations and videos, photos, and records were obtained from these people with their permission. The interviews were conducted in a diversity of places (tea houses, farms, mosques, houses, gardens, fields, etc.). Conversant adults, patients, and local healers were the resources of knowledge and data (local names, therapeutic effects, part (s) of plants utilized, and methods of preparation and administration). Patient consent was not required for the study.

Plant materials

The plants were collected in 2017 and 2018 from the villages. The collected herbs were pressed and described by the author Özkan Aksakal using *Flora of Turkey and the East Aegean Islands* and *Türkiye Bitkiler Listesi (Damarlı Bitkiler)*.⁹⁻¹¹ The plant family names were organized in alphabetical order. The scientific names of the herb species were given with reference to the plant list.¹² Voucher specimens were stored at the Herbarium of the Faculty of Science, Atatürk University.

Statistical analysis

The data are presented as mean \pm standard error and variation analysis was performed through one-way ANOVA determined via Bonferroni complementary analysis, which was conceived to represent statistical significance.

RESULTS

The demographic characteristics of the research participants were recorded through face-to-face interviews. A total of 98 participants (56 female, 42 male) were interviewed (9 persons

aged between 27 and 36 years, 18 persons aged between 37 and 46, 26 persons aged between 47 and 56, 23 persons aged between 57 and 66, and 22 persons aged over 66). All of the informants were native and they were living in the villages. Forty-three of the participants had never received education (Table 1).

A total of 77 medicinal plant taxa were collected in Aziziye District (Erzurum, Turkey) and they belong to 30 plant families. Amongst them, 62 species are wild and 15 species are cultivated plants. The 77 herbs defined in the area prepared in alphabetical order of their family and botanical names are presented in Table 2. *Anthemis calcarea*, *Scorzonera tomentosa*, *Tragopogon aureus*, *Cephalaria anatolica*, and *Quercus macranthera* are endemic species and therapeutic (Table 2). The most widespread medicinal plant families were Asteraceae (14), Rosaceae (7), Lamiaceae (5), and Apiaceae (5).

The most widely utilized plant organs to prepare remedies were the aerial parts (27), leaves (16), fruits (13), flowers (12), roots (11), seeds (9), and barks (6), although branches, bulbs, stems, and tubers were also utilized in some remedies. On occasion, local people also utilized other components, such as butter, lemon, soap, olive oil, beeswax, egg, or honey to prepare remedies.

Table 1. Demographic characteristics of the participants

Demographic characteristics	Number
Age	
27-36	9
37-46	18
47-56	26
57-66	23
Above 66	22
Sex	
Female	56
Male	42
Educational level	
Illiterate	43
Primary school	38
Secondary school	12
High school	4
University	1
Employment status	
Housewife	56
Farmer	35
Pensioner	4
Shepherd	1
Other jobs	2
Total	98

The major methods for preparing remedies were decoction, infusion, fresh, chewing, boiling, crushing, and cooking. Decoction (34), crushing (28), infusion (6), and cooking (6) are the methods generally utilized for the preparation of remedies (Table 2).

DISCUSSION

Plant sources have a long history of being utilized as medicinal necessities. It is frequently mentioned that 80% of the world's population still relies on conventional medicines to meet their primary healthcare needs and almost 25% of modern medicines are derived from nature, many of which were derived from traditional utilizations. The utilization of traditional medicines is usually affected by the accessibility, availability, and admissibility of healthcare services. Especially in distant regions of developing countries, medicinal plants may form the only existing source of healthcare.

It was seen that some medicinal plant taxa were widely utilized for commercial aims owing to the research conducted in study regions. A large part of the people in the villages of the area mentioned that *Cephalaria* spp. have been utilized as a hemostatic and for wound healing. Moreover, *Alkanna orientalis*, *Plantago* spp., and *Malva* spp. have been utilized for wounds as an antiinflammatory.

As a result of the study of the plant names, it was determined that most of them were derived from Turkish. Gümüşhane, Erzincan, Kars, Bingöl, Muş, and Ağrı are close to our research area. However, the names of some local plants utilized in these areas varied, such as *Plantago major* (pel hewes, omulwaş, sinirli ot, sinirotu), *Malva neglecta* (dolik, tollık), *Rosa canina* (gül tonik, şilan), *Urtica dioica* (gezgezok, gerzinik), *Gundelia tournefortii* (kinger, kereng), *Eremurus spectabilis* (yelig, gulik), *Alkanna orientalis* (gelzun, havajo), and *Rheum ribes* (ribes, riwes, rewas).¹³⁻¹⁸

The informants utilized medical plants mainly for the treatment of wounds and skin conditions, digestive system diseases, respiratory diseases, kidney and urinary system disorders, and diabetes mellitus. It has been determined that the number of plants used for cardiovascular problems is the lowest.

The species *Plantago* spp., *Malva neglecta*, *Rheum ribes*, and *Rumex crispus* were the most widely utilized medicinal plants and were recorded in Erzurum in the literature. With respect to that literature, *Prangos ferulacea* (diabetes), *Achillea biebersteinii* (wounds), *A. millefolium* (wounds), *Anthemis* spp. (stomachache), *Cichorium intybus* (wounds), *Alkanna* spp. (wounds), *Cephalaria* spp. (wounds), *Malva* spp. (wounds), *Rheum ribes* (diabetes), *Ranunculus* spp. (rheumatism), and *Rosa pimpinellifolia* (hemorrhoids) have similar uses.¹¹⁻¹⁶

Usages of members of the families Acanthaceae, Amaryllidaceae, Aristolochiaceae, Capparaceae, Caryophyllaceae, Cistaceae, Corylaceae, Crassulaceae, Cuscutaceae, Ephedraceae, Ericaceae, Gentianaceae, Geraniaceae, Illecebraceae, Loranaceae, Onagraceae, Orchidaceae, Paeoniaceae, Papaveraceae, Plumbaginaceae, Polygalaceae, Portulacaceae, Primulaceae, Resedaceae, Thymelaeaceae, Tiliaceae,

Table 2. Traditional uses of medicinal plants in Aziziye (west of Erzurum, Turkey)

No.	Family	Plant species, voucher specimen, endemism, and location	Local name	Plant part (s) used ^a	Preparation ^b	Adm. ^c	Use
	Amaryllidaceae	<i>Asphodelus aestivus</i> Brot., ATA 10097, 2	Çiriş, ciriş	Aer	Raw	Eat	Digestive, constipation
	Amaryllidaceae	<i>Eremurus spectabilis</i> M.Bieb., ATA 10098, 3	Çiriş, ciriş	Aer	Raw	Eat	Digestive
	Amaryllidaceae	<i>*Allium cepa</i> L., ATA 10100, 1-5	Soğan	Bul	Coo	Ext	Antiinflammatory, scar, wounds
Raw					Eat	Galactagogue	
Boi					Ext	Toothache, gingivitis	
Cru					Ext	Ecchymosis	
	Amaryllidaceae	<i>*Allium sativum</i> L., ATA 10101, 1-5	Sarımsak	Bul	Cru mix with honey	Int	Cardiac disorders, antihypertensive, antiinflammatory
	Apiaceae	<i>Eryngium campestre</i> L., ATA 10019, 1, 2	Boğa dikeneni	Roo	Cru with onion and add green soap, milk	Ext Ps	Antiinflammatory, furuncle
	Apiaceae	<i>Prangos ferulacea</i> (L.) Lindl., ATA 10021, 1, 3	Çaşır, çağşır, çakşır	Roo	Dec	Int	Diabetes
	Apiaceae	<i>Anthriscus nemorosa</i> (M.Bieb.) Spreng., ATA 10023, 2	Hırhindik, hrhındok	Aer	Dec	Ext	Carminative
	Apiaceae	<i>Ferula orientalis</i> L., ATA 10025,1-5	At çaşırı, çağşır, çakşır	Roo	Dec	Int	diabetes
	Apiaceae	<i>Zosima absinthifolia</i> Link, ATA 10026, 3	Peynir otu	Aer with Flo	Inf	Int	hemorrhoid
	Asteraceae	<i>Achillea millefolium</i> var <i>millefolium</i> L., ATA 10028, 1-5	Civanperçemi, kılıç otu, sarı çiçek	Lea	Cru	Ext	Wounds, hemostatic
Flo				Dec	Int	Menstrual pain, menstrual irregularity	
				Cru and mix with honey	Eat	Antitussive	
	Asteraceae	<i>Cichorium intybus</i> L., ATA 10030, 2, 4	Çatlangoz çatlangos, çatlankuş, çatlankuz, çatlangaz	Aer with flo	Ps, burnt and mix with butter	Ext	Wounds
Flo				Burnt butter	Ext	Wounds, scar	
Roo				Burnt and mix with butter	Ext	Eczema	
	Asteraceae	<i>Achillea biebersteinii</i> Hub.-Mor., ATA 10031, 1-5	Kılıç otu, sarı civan perçemi, kırk kilit	Lea	Cru	Ext	Wounds, hemostatic
Aer				Boi Ps	Ext	Hemostatic, eczema	
	Asteraceae	<i>Anthemis cretica</i> L., ATA 10032, 3	Papatya	Aer with flo	Dec	Int	Sore throat, expectorant, antiinflammatory
	Asteraceae	<i>**Anthemis calcarea</i> Sosn., ATA 10034, 4	Papatya	Flo	Inf	Int	Stomachache
					Dec	Int	Sore throat, expectorant, antiinflammatory

Asteraceae	<i>Helichrysum plicatum</i> DC., ATA 10035, 1-5	Altın otu, sarı çiçek	Flo	Inf	Int	Kidney stone, diuretic
Asteraceae	<i>Gundelia tournefortii</i> L., ATA 10039, 1-5	Kenger, kelenk	Roo	Raw	Ext chewing gum	Stomach disorders, against nausea
Asteraceae	<i>Scorzonera latifolia</i> (Fisch. & C.A.Mey.) DC., ATA 10040, 1-5	Yakıotu, sakız	Lea	Raw	Ext juice of roots used as gum	Plaster, against nausea
Asteraceae	** <i>Scorzonera tomentosa</i> L., ATA 10041, 1-5	Yakıotu, sakız	Roo	Raw	Eat	Hemostatic
Asteraceae	<i>Tragopogon reticulatus</i> Boiss. et Huet, ATA 10042, 1-5	Yemlik	Aer	Cru	Ext	Plaster, wounds, hemostatic
Asteraceae	<i>Tragopogon buphthalmoides</i> (DC.) Boiss., ATA 10044, 1-5	Yemlik	Aer	Cru	Ext	Plaster, wounds, hemostatic
Asteraceae	** <i>Tragopogon aureus</i> Boiss., ATA 10045, 4	Yemlik	Aer	Cru	Ext	Plaster, wounds, hemostatic
Asteraceae	<i>Artemisia absinthium</i> L., ATA 10047, 4, 5	Acı yavşan otu	Aer with flo	Raw	Ext Chewing	Stomachache
Asteraceae	<i>Artemisia campestris</i> L., ATA 10049, 5	Yavşan	Aer	Cru	Ext Chewing	Stomachache
Asteraceae	<i>Artemisia santonicum</i> L., ATA 10050, 5	Yavşan, süpürge otu	Aer with Fru	Cru	Int only juice	Stomachache
			Aer	Dec	Int	Shortness of breath
Amaranthaceae	<i>Beta lomatogona</i> Fisch. & C.A.Mey., ATA 10061, 1, 4	Kızılca	Aer	Dec	Int	Constipation, digestive
Amaranthaceae	<i>Beta trigyna</i> Waldst. & Kit., ATA 10062, 4	Kızılca	Aer	Dec	Int	Constipation, digestive
Berberidaceae	<i>Berberis crataegina</i> DC., ATA 10051, 3, 4	Kızambuk, karambuk	Roo	Boi	Ext Bathing with yellow juice	Jaundice in children
Betulaceae	<i>Betula alba</i> L., ATA 10002, 3, 5	Huş ağacı, kayın	Bar	Dec	Ext, Gar	Sore throat, antiseptic
Boraginaceae	<i>Alkanna orientalis</i> (L.) Boiss., ATA 10054, 1-5	Havaciva, havajo, hevajo	Roo	Cru coo with butter	Ext	Wounds, burns, scar, antiinflammatory
				Cru with olive oil, added beeswax	Ext	Wounds, burns, scar, antiinflammatory, ulcer
				Dec	Ext	Wounds, scar, antiinflammatory
				Boi and add butter	Int before breakfast	Asthma, bronchitis, shortness of breath, ulcer
Brassicaceae	* <i>Brassica napus</i> L., ATA 10058, 3, 4	Şalgam	Roo	Raw, mix with egg and lemon	Int	Kidney stone, flu

Caprifoliaceae	<i>Cephalaria tchihatchewii</i> Boiss., ATA 10072, 1-5	Gevreik, gevreyik, gevrek	Aer	Raw Cru	Ext	Hemostatic, wounds, scar
Caprifoliaceae	** <i>Cephalaria anatolica</i> Shkhiyan, ATA 10073, 1-5	Gevreik, gevreyik, gevrek	Aer	Raw Cru	Ext	Hemostatic, wounds
Cornaceae	* <i>Cornus mas</i> L., ATA 10066, 2	Kızılıçık	Fru	Dec Raw	Int, Eat Eat	Diarrhea Diarrhea
Cucurbitaceae	* <i>Cucurbita pepo</i> L., ATA 10067, 1-5	Kabak	See	Cru mix with honey	Eat 1 tablespoon before breakfast	Anthelmintic
Cucurbitaceae	* <i>Cucumis sativus</i> L., ATA 10070, 1-5	Salatalık	Per	Raw	Ext	Headache
Cupressaceae	<i>Juniperus communis</i> L., ATA 10071, 1-5	Ardıç	Ste, Bar	Tar	Ext	Skin disorders, eczema, wounds
Elaeagnaceae	<i>Hippophae rhamnoides</i> L., ATA 10075, 3	Ekşi, yabani iğde	Lea Fru	Inf Dec	Int Int	Diabetes Diabetes
Elaeagnaceae	<i>Elaeagnus angustifolia</i> L., ATA 10076, 4	iğde	Lea	Dec	Int	Diabetes
Euphorbiaceae	<i>Euphorbia stricta</i> ATA 10078, 1, 2	Sütlücan	Lat	Ps	Ext	Antihemorrhagic
Euphorbiaceae	<i>Euphorbia oblongifolia</i> (K.Koch) K.Koch, ATA 10079, 3	Sütlücan, sütleğen	Lat	Ps	Ext	Antihemorrhagic
Fabaceae	* <i>Lens culinaris</i> Medik. ATA 10081, 1-5	Yeşil mercimek	See	Coo	Int before breakfast	Anthelmintic
Fabaceae	* <i>Lathyrus sativus</i> L., ATA 10107, 3	Küşne	See	Boi with salt and sugar	Eat for 10 days before breakfast	Anthelmintic
Fabaceae	<i>Astragalus microcephalus</i> Willd., ATA 10082, 1-5	Geven	Roo	Gum	Ext	Hand cracks, emollient
Fagaceae	** <i>Quercus macranthera</i> Fisch. & C.A.Mey. ex Hohen., ATA 10085, 3	Palut, pelit	Ped	Burnt and mix with butter	Ext	Wounds, edema
Lamiaceae	<i>Mentha longifolia</i> (L.) L., ATA 10088, 3,4	Yarpuz	Aer	Dec	Ext Ps	Headache
Lamiaceae	<i>Mentha aquatica</i> L., ATA 10089, 2,3	Su nanesi	Lea	Dec	Int	Sore throat, against nausea
Lamiaceae	<i>Salvia verticillata</i> subsp. <i>amasiaca</i> (Frey & Bornm.) Bornm., ATA 10090, 5	Adaçayı	Aer	Dec	Ext Gar	Toothache
Lamiaceae	<i>Origanum rotundifolium</i> Boiss., ATA 10095, 3	Dağ kekiği, anık	Aer	Inf	Int	Cough, sedative, stomachache

Lamiaceae	<i>Micromeria fruticosa</i> (L.) Druce, ATA 10096, 2	Çemen, dağ kekiği	Aer	Dec	Int	Cough, stomachache
Linaceae	* <i>Linum usitatissimum</i> L. ATA 10103, 4	Zegerek	See	Coo	Ext	Wounds, scar
Juglandaceae	* <i>Juglans regia</i> L., ATA 10105, 3	Ceviz	Bar, Per	Dec	Int	Diarrhea, hair loss
Malvaceae	<i>Malva neglecta</i> Wallr., ATA 10106, 1-5	Ebegümeci, ebekömeci, ebegümeci	Aer with flo	Boi	Int	Expectorant, bronchitis, asthma, sore throat
			Lea	Boi	Ext use pulp	Wound healing, antiinflammatory, stomachache, prostate
			Aer	Raw Cru	Ext	Rheumatism
				Dec	Int before breakfast	Cold, expectorant, bronchitis, asthma, urinary system disorders
				Gar		Sore throat
			Lea	Dec with leaf of <i>Plantago major</i>	Int	Antiinflammatory, edema
	Coo with flour	Ext	Edema			
Malvaceae	<i>Malva sylvestris</i> L., ATA 10107, 1-5	Ebegümeci, ebekömeci, ebegümeci	Aer with flo	Dec	Inh	Cold, expectorant, bronchitis, asthma, mouth sore
			Lea	Dec	Ext	Wounds, scar, antiinflammatory, edema
Moraceae	* <i>Morus alba</i> L., ATA 10111, 1-5	Dut	Dried Fru	Dec	Int	Sore throat, expectorant, stomachache
Moraceae	* <i>Morus nigra</i> L., ATA 10112, 3	Kara Dut	Fru	Cru	Ext	Eczema
Pinaceae	<i>Pinus sylvestris</i> L., ATA 10116, 1-5	Çam, sarı çam	Bra, Ste	Res	Ext	Hand cracks, emollient, skin disorders
				Dry distillation Tar Boi with butter	Ext Ps	Ecchymosis, tubercle, crack, wounds, emollient
				Dry distillation Tar	Ext	Eczema, skin disorders, wounds
Poaceae	* <i>Triticum vulgare</i> Vill., ATA 10117, 1-5	Den, buğday	See	Cru mix with egg white	Ext	Fracture, tubercle, paronychia
Poaceae	* <i>Hordeum vulgare</i> L., ATA 10120, 1-5	Arpa	Tes	Cru mix with olive oil	Ext	Wounds, hand cracks, emollient
			See	Dec	Int	Kidney stone, urinary system diseases, diuretic, prostate ailments

Polygonaceae	<i>Rumex crispus</i> L., ATA 10121, 1-5	Evelik	Lea	Boi	Ext Use pulp	Sore throat, stomachache
				Dec	Int	kidney stone, urinary system diseases, diuretic, hemorrhoid, constipation
Polygonaceae	<i>Rheum ribes</i> L., ATA 10123, 1-5	Eşgin, ışgın	Roo	Dec	Int	Diabetes
			See	Cru mix honey	Int	Hemorrhoids, constipation
Plantaginaceae	<i>Plantago major</i> L., ATA 10125, 1-5	Bağa yaprağı, bağa otu	Lea	Raw	Ext	mastitis, mammalgia, slipped disc, furuncle, wounds
				Dec	Ext	Sore throat, urinary system diseases, wounds, hemostatic
Plantaginaceae	<i>Plantago lanceolata</i> L., ATA 10126, 1-5	Bağa yaprağı, bağa otu, pelheves	Lea	Raw	Ext	Mastitis, mammalgia, slipped disc, furuncle, wounds, edema
				Dec	Int	Hemorrhoid
Ranunculaceae	<i>Ranunculus kotschyi</i> Boiss., ATA 10128, 1-5	Katır tırnağı, mayıs çiçeği, düğün çiçeği	Flo or Lea	Cru	Ext Applied only 2-3 minutes	Rheumatism
			Aer with flo	Cru mix with honey	Ext Applied on knees for 1-2 minutes	Rheumatism
Rosaceae	<i>Rosa canina</i> L., ATA 10131, 1-5	Kuşburnu	Fru	Dec	Int	Diuretic, urinary system diseases, cold, flu
Rosaceae	<i>Cotoneaster integerrimus</i> Medik., ATA 10134, 5	Girgit, gıvgıt	Fru	Dec	Int	Antidiarrheal
Rosaceae	<i>Rosa pimpinellifolia</i> Bunge, ATA 10133, 1-5	Karakara, koyun gözü	Fru	Dec	Int	Hemorrhoids
Rosaceae	<i>Malus sylvestris</i> (L.) Mill., ATA 10137, 1-5	Ekşi elma, yabani elma	Fru	Dec	Int Before breakfast	Diabetes
				Coo, wrapped in a cloth	Ext	Earache
Rosaceae	<i>Crataegus azarolus</i> var. <i>pontica</i> (K.Koch) K.I.Chr., ATA 10140, 3	Alıç, aluç	Fru	Raw, mix with lemon and honey	Int	Cardiac diseases, hypertension
Rosaceae	<i>Crataegus orientalis</i> Pall. ex M.Bieb., ATA 10141, 2	Alıç, aluç	Fru	Raw	Int	Cardiac diseases, hypertension
Rosaceae	<i>Pyrus elaeagnifolia</i> Pall., ATA 10144, 1-5	Yabani armut, ahlat	Fru	Raw	Int Eat	Diarrhea

Salicaceae	<i>Populus nigra</i> L., ATA 10146, 1-5	Kara kavak	Bar	Cru mix with egg and soap	Ext	Fracture, dislocation, wounds
Salicaceae	<i>Populus alba</i> L., ATA 10147, 1-5	Ak kavak	Bar	Cru, mix with white and soap	Ext	Fracture, dislocation, wounds
Salicaceae	<i>Salix alba</i> subsp. <i>alba</i> L., ATA 10148, 1-5	Söğüt	Bar	Dri and Cru	Ext	Antiinflammatory, wounds
			Lea	Cru	Ext	Antipyretic, heat prostration
Scrophulariaceae	<i>Verbascum oreophilum</i> C. Koch, ATA 10151, 1	Siğir kuyruğu, girç	Lea	Boi	Inh	Hemorrhoids
Solanaceae	* <i>Solanum tuberosum</i> L., ATA 10153, 1-5	Kartol	Tub	Raw, Cut into small pieces, add salt then applied the head and foot	Ext	Headache
Solanaceae	<i>Hyoscyamus niger</i> L., ATA 10154, 1-5	Batbat, patpat, deli batbat	See	Hea	Inh into mouth	Toothache
Urticaceae	<i>Urtica dioica</i> subsp. <i>dioica</i> L., ATA 10156, 1-5	Isırgan	Aer	Dec	Int	Diuretic, urinary system diseases, shortness of breath
			See	Raw, mix with honey	Int Before breakfast	Arthritis, asthma

*Cultivated plants, **Endemic plants, *Plant part (s) used: Aer: Aerial parts, Bar: Bark, Bra: Branches, Bul: Bulb, Flo: Flowers, Fru: Fruits, Lat: Latex, Lea: Leaves, Ped: Peduncle, Res: Resin, Roo: Roots, Ste: Stem, See: Seeds, Per: Pericarp, Tub: Tuber, Who: Whole plant, *Preparations: Boi: Boiled, Cooked: Coo, Cru: Crushed, Dec: Decoction, Hea: Heated, Inf: Infusion, Mixed: Mix, Ps: Paste, Adm: Administration, Int: Internal use, Ext: External use, Eat: Eaten as meal, Gar: Gargle, Inh: Inhalation, ATA: Atatürk University

Typhaceae, Valerianaceae, and Violaceae were found in other studies but were not recorded in the nearby areas.

The informants stated that *Ranunculus* spp. should be utilized with care owing to their serious side effects such as edema, irritation, and redness and so these species must not be held on the skin for more than 1-2 min.

Furthermore, during this research we detected that some medicinal plants are utilized as spices and this is more prevalent in rural areas. *Mentha longifolia*, *Mentha aquatica*, *Origanum rotundifolium*, and *Micromeria fruticosa* are consumed as spices. Especially members of the family Lamiaceae are utilized as spices. In the area, some of the wild edible plants such as *Anthemis cretica*, *Anthemis calcarea*, *Mentha longifolia*, *Mentha aquatica*, *Salvia verticillata* subsp. *amasiaca*, *Origanum rotundifolium*, *Micromeria fruticosa*, *Rosa canina*, *Rosa pimpinellifolia*, *Crataegus pontica*, and *Crataegus orientalis* are utilized as herbal tea.

CONCLUSION

With the rapid improvement in mobile communication tools, deforestation through anthropogenic activities, and migration of the younger generations to urban areas leaving a gap in the cultural faiths and practices of indigenous society, ethnic values are being diminished from day to day. Furthermore, the younger generations are not interested in folkloric values including traditional medicines. Additionally, the improvement in the health system and easy access to doctors reduced the

utilization of medicinal herbs. These factors increase the risk of losing valuable ethnomedicinal knowledge. Hereby, conducting ethnobotanical research is becoming more important as gathering ancient knowledge from people is very difficult.

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