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

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 amaçlar için kullandığı tıbbi bitkiler toplanıp, tanımlandı. Geleneksel bitkisel ilaçlarla ilgili bilgiler toplandı; herbaryum materyalleri hazırlandı, Atatürk Üniversitesi Fen Fakültesi Herbaryumu’na konuldu.

Bulgular: Araştırmaarda 30 familyaya ait toplam 77 tıbbi bitki tanımlanmıştır. Bu türlerin 62’si doğal olarak yetiştirilirken, 15 tür ise ekilmiştir. En yaygın tıbbi bitkiler Asteraceae (14), Rosaceae (7), Lamiaceae (5), ve Apiaceae (5) familyalarına aittir. En yaygın hazırlık yöntem decoction olarak tespit edilmiştir.

Sonuç: Araştırma sonuçları, tıbbi bitkilerin Erzurum ilçesi sakinlerinde kullanımı hakkında pratik veriler sunmaktadır. Dahası, bu sonuçlar karsılama süreçlerinde kullanılır, bölgedeki tıbbi bitkilerin, birincil basamak sağlık hizmetleri için önemli bitkisel ilaç kaynağı olduğunu ortaya koymaktadır. Bu araştırma, tıbbi esaslı yeni ticari ilaçların iyileştirilmesinde daha fazla bilimsel araştırma için temel bilgi kaynağı olarak kullanılabilir ve genç nesillerde tıbbi bitkilerin geleneksel kullanım ile ilgili bilgi aktarılmasına olanak sağlayacaktır.

Anahtar kelimeler: Aziziye, etnobotanik, Erzurum, tıbbi bitkiler, Türkiye
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. 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, Bulank, and Malazgirt districts of Muş Province; Karslova District of Bingöl Province; and Pulumur District of Tunceli Province.⁵ 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 and administration. The purpose of this study 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 and administration.

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.⁶ 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 the west. Mean daily temperature is 19.6°C 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

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. Patient consent was not required for the study. 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), Çıkrıklı (2), Sorkunlu (3), Kapılı (4), and Beypinari (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).⁹,¹⁰ 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 ± standard error and variation analysis was performed through one-way ANOVA determined via Bonferroni complementary analysis, which was conceived to represent statistical significance.
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 calicarea*, *Scorzoner a 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), Cistaceae (6), 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. 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* (yelik, 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.13-18

Usages of members of the families Acanthaceae, Amaranthaceae, Aristolochiaceae, Capparaceae, Caryophyllaceae, Cistaceae, Corylaceae, Crassulaceae, Cucurbitaceae, Ephedraceae, Eriaceae, Gentianaceae, Geraniaceae, Illiciaceae, Loranthaceae, Onagraceae, Orchidaceae, Papaveraceae, Plumbaginaceae, Portulacaceae, Primulaceae, Resedaceae, Thymelaeaceae, Tiliaceae,

### 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     |
### 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<sup>a</sup> | Preparation<sup>b</sup> | Adm.<sup>c</sup> | Use                                      |
|-----|-----------------|----------------------------------------------------------|------------|---------------------------------|-------------------------|--------------|------------------------------------------|
|     | Amaryllidaceae  | *Asphodelus aestivus* Brot., ATA 10097, 2              | Çiriş, çiriş | Aer Raw                        | Eat                     | Digestive, constipation |
|     | Amaryllidaceae  | *Eremurus spectabilis* M.Bieb., ATA 10098, 3           | Çiriş, çiriş | Aer Raw                        | Eat                     | Digestive |
|     | Amaryllidaceae  | *Allium cepa* L., ATA 10100, 1-5                       | Soğan      | Bul Coo                        | Ext                     | Antiinflammatory, scar, wounds |
|     | Amaryllidaceae  | *Allium sativum* L., ATA 10101, 1-5                    | Sarımsak    | Bul Cru mix with honey         | Int                     | Cardiac disorders, antihypertensive, antiinflammatory |
|     | Apiaceae        | *Eryngium campestre* L., ATA 10019, 1, 2              | Boğa dikeni | Roo Cru with onion and add green soap, milk | Ext Ps                  | Antiinflammatory, furuncle |
|     | Apiaceae        | *Prangos ferulacea* (L.) Lindl., ATA 10021, 1, 3      | Çaşır, çağşır, çağşır | Roo Dec                        | Int                     | Diabetes |
|     | Apiaceae        | *Anthriscus nemorosa* (M.Bieb.) Spreng., ATA 10023, 2 | Hırhindik, hrhındok | Aer Dec                        | Ext                     | Carminative |
|     | Apiaceae        | *Ferula orientalis* L., ATA 10025, 1-5                | At çaşırı, çağşır, çağşır | Roo Dec                        | Int                     | diabetes |
|     | Apiaceae        | *Zosima absinthifolia* Link, ATA 10026, 3             | Peynir otu  | Aer with Flo Inf                | Int                     | hemorrhoid |
|     | Asteraceae      | *Achillea millefolium* var. *millefolium* L., ATA 10028, 1-5 | Civanperçemi, kılıç otu, sarı çiçek | Lea Cru                       | Ext                     | Wounds, hemostatic |
|     | Asteraceae      | *Anthemis calcarea* Sosn., ATA 10034, 4               | Papatya     | Aer with Flo                    | Ext                     | Wounds, hemostatic |
|     | Asteraceae      | *Anthemis cretica* L., ATA 10032, 3                    | Papatya     | Aer with Flo Dec                | Int                     | Sore throat, expectorant, antiinflammatory |
|     | Asteraceae      | *Achillea biebersteinii* Hub.-Mor., ATA 10031, 1-5    | Kılıç otu, sarı civan perçemi, kırk kilit | Lea Cru                       | Ext                     | Hemostatic, eczema |
|     | Asteraceae      | *Cichorium intybus* L., ATA 10030, 2, 4               | Çaşlangoz çaşlangos, çaşlankuş, çaşlankuž, çaşlangaz | Aer with Flo Ps, burnt and mix with butter | Ext                     | Wounds |
|     | Asteraceae      | *Anthemis cretica* L., ATA 10032, 3                    | Papatya     | Aer with Flo Dec                | Int                     | Sore throat, expectorant, antiinflammatory |
|     | Asteraceae      | *Anthemis calcarea* Sosn., ATA 10034, 4               | Papatya     | Flo Inf                         | Int                     | Stomachache |
|     | Asteraceae      | *Anthemis cretica* L., ATA 10032, 3                    | Papatya     | Flo Dec                         | Int                     | Sore throat, expectorant, antiinflammatory |
| Family          | Species                                | Common Name | Part | Use          | Condition                           |
|-----------------|----------------------------------------|-------------|------|--------------|-------------------------------------|
| Asteraceae      | *Helichrysum plicatum* DC., ATA 10035, 1-5 | Altın otu, sarı çiçek | Flo  | Inf          | Kidney stone, diuretic              |
| Asteraceae      | *Gundelia tournefortii* L., ATA 10039, 1-5 | Kenger, kelenk | Roo  | Raw          | Stomach disorders, against nausea   |
| Asteraceae      | *Scorzonera latifolia* (Fisch. & C.A.Mey.) DC., ATA 10040, 1-5 | Yakıotu, sakız | Lea   | Raw          | Ext juice of roots used as gum       |
| Asteraceae      | *Scorzonera tomentosa* L., ATA 10041, 1-5 | Yakıotu, sakız | Roo  | Raw          | Plaster, against nausea             |
| Asteraceae      | *Tragopogon reticulatus* Boiss. et Huet, ATA 10042, 1-5 | Yemlik | Aer  | Cru          | Ext Plaster, wounds, hemostatic     |
| Asteraceae      | *Tragopogon buphthalmoides* (DC.) Boiss., ATA 10044, 1-5 | Yemlik | Aer  | Cru          | Ext Plaster, wounds, hemostatic     |
| Asteraceae      | **Tragopogon aureus** Boiss., ATA 10045, 4 | Yemlik | Aer  | Cru          | Ext Plaster, wounds, hemostatic     |
| Asteraceae      | *Artemisia absinthium* L., ATA 10047, 4, 5 | Acı yavşan otu | Aer with flo | Raw | Ext | Chewing | Stomachache |
| Asteraceae      | *Artemisia campestris* L., ATA 10049, 5 | Yavşan | Aer  | Cru          | Ext Chewing | Stomachache |
| Asteraceae      | *Artemisia santonicum* L., ATA 10050, 5 | Yavşan, süpürge otu | Aer with Fru | Cru | Int only juice | Stomachache |
| Asteraceae      |                                              |             | Aer Dec | Int only juice | Shortness of breath |
| Amaranthaceae   | *Beta lomatogona* Fisch. & C.A.Mey., ATA 10061, 1, 4 | Kızılda | Aer  | Dec          | Int | Constipation, digestive |
| Amaranthaceae   | *Beta trigyna* Waldst. & Kit., ATA 10062, 4 | Kızılda | Aer  | Dec          | Int | Constipation, digestive |
| Berberidaceae   | *Berberis crataegina* DC., ATA 10051, 3, 4 | Kizambuk, karambuk | Roo | Boi          | Ext Bathing with yellow juice | Jaundice in children |
| Betulaceae      | *Betula alba* L., ATA 10002, 3, 5 | Huş ağacı, kayın | Bar  | Dec          | Ext, Gar | Sore throat, antiseptic |
| Boraginaceae    | *Alkania orientalis* (L.) Boiss., ATA 10054, 1-5 | Havaciva, havojo, hevajo | Roo  | Cru with butter | Ext | Wounds, burns, scar, antiinflammatory |
| Boraginaceae    |                                              |             | Cru with olive oil, added beeswax | Ext | Wounds, burns, scar, antiinflammatory, ulcer |
| Boraginaceae    |                                              |             | Cru Dec | Ext | Wounds, scar, antiinflammatory |
| Brassicaceae    | *Brassica napus* L., ATA 10058, 3, 4 | Şalgam | Roo  | Raw, mix with egg and lemon | Int | Kidney stone, flu |

*Note: Cru = upper part of the plant, Roo = root, Lea = leaf, Aer = aerial part, Bar = bark, Flo = flower, Int = internal use, Dec = decoction, Inf = infusion, Boi = boiled, Ext = external use.*
| Family              | Species                                      | Common Names                     | Parts | Uses                          | Constipation |
|---------------------|----------------------------------------------|----------------------------------|-------|-------------------------------|--------------|
| Caprifoliaceae      | *Cephalaria tchatchewii* Boiss., ATA 10072, 1-5 | Gevreik, gevreyik, gevrek        | Aer   | Raw Cru                       | Ext          |
| Caprifoliaceae      | **Cephalaria anatolica** Shkhiyan, ATA 10073, 1-5 | Gevreik, gevreyik, gevrek        | Aer   | Raw Cru                       | Ext          |
| Cornaceae           | *Cornus mas* L., ATA 10066, 2               | Kızılçık                         | Fru   | Dec                           | Int, Eat     |
| Cucurbitaceae       | *Cucurbita pepo* L., ATA 10067, 1-5          | Kabak                           | See   | Cru mix with honey            | Eat          |
| Cucurbitaceae       | *Cucumis sativus* L., ATA 10070, 1-5         | Salatalık                        | Per   | Raw                           | Ext          |
| Cupressaceae        | *Juniperus communis* L., ATA 10071, 1-5      | Ardıç                           | Ste, Bar | Tar                           | Ext          |
| Elaeagnaceae        | *Hippophae rhamnoides* L., ATA 10075, 3     | Ekşi, yabani iğde               | Lea   | Inf                           | Int          |
| Elaeagnaceae        | *Elaeagnus angustifolia* L., ATA 10076, 4   | Iğde                             | Lea   | Dec                           | Int          |
| Euphorbiaceae       | *Euphorbia stricta* ATA 10078, 1, 2          | Sütlücan                        | Lat   | Ps                            | Ext          |
| Euphorbiaceae       | *Euphorbia oblongifolia* (K.Koch) K.Koch, ATA 10079, 3 | Sütlücan, sütleğen               | Lat   | Ps                            | Ext          |
| Fabaceae            | *Lens culinaris* Medik. ATA 10081, 1-5       | Yeşil mercimek                  | See   | Coo                           | Int before breakfast |
| Fabaceae            | *Lathyrus sativus* L., ATA 10107, 3          | Kuşne                           | See   | Boi with salt and sugar       | Eat for 10 days before breakfast |
| Fabaceae            | Astragalus microcephalus Willd., ATA 10082, 1-5 | Geven                           | Roo   | Gum                           | Ext          |
| Fabaceae            | **Quercus macranthera** Fisch. & C.A.Mey. ex Hohen., ATA 10085, 3 | Palut, petit                    | Ped   | Burnt and mix with butter     | Ext          |
| Lamiaceae           | Mentha longifolia (L.) L., ATA 10088, 3,4   | Yarpuz                          | Aer   | Dec                           | Ext          |
| Lamiaceae           | Mentha aquatica (L.) L., ATA 10089, 2,3      | Su nanesi                       | Lea   | Dec                           | Int          |
| Lamiaceae           | Salvia verticillata subsp. amasiaca (Freyn & Bornm.) Bornn., ATA 10090, 5 | Adaçayı                         | Aer   | Dec                           | Ext Gar      |
| Lamiaceae           | Origanum rotundifolium Boiss., ATA 10095, 3 | Dağ kekiği, anik                | Aer   | Inf                           | Int          |

The table lists various plants from different families, along with their parts and uses. The uses range from hemostatic properties, wounds, scars, diarrhea, headache, diabetes, antihemorrhagic, anthelmintic, and treatment for skin disorders, eczema, wounds, among others. The table also includes herbal uses for conditions such as cough, sedative, stomachache, and treatment for specific symptoms like burns, edema, headache, sore throat, and against nausea.
| Family       | Species                        | Common Names                  | Part(s) | Mode of Use | Body Part(s) or Condition                                      |
|--------------|-------------------------------|-------------------------------|---------|-------------|---------------------------------------------------------------|
| Lamiaceae    | *Micromeria fruticosa* (L.) Druce, ATA 10096, 2 | Çermen, dağ kekiği            | Aer     | Dec         | Cough, stomachache                                            |
| Linaceae     | *Linum usitatissimum* L., ATA 10103, 4 | Zegerek                       | See     | Coo         | Wounds, scar                                                  |
| Juglandaceae | *Juglans regia* L., ATA 10105, 3 | Ceviz                          | Bar, Per| Dec         | Diarrhea, hair loss                                           |
| Malvaceae    | *Malva neglecta* Wallr., ATA 10106, 1-5 | Ebemgümeci, ebekömüeci, eбегüмeci | Aer with flo | Boi         | Expectorant, bronchitis, asthma, sore throat                  |
|              |                               |                               | Lea     | Boi         | Wound healing, antiinflammatory, stomachache, prostate       |
|              |                               |                               | Aer     | Raw Cru     | Rheumatism                                                    |
|              |                               |                               | Dec     | Int before breakfast | Cold, expectorant, bronchitis, asthma, urinary system disorders |
|              |                               |                               | Gar     | Sore throat  |                                                              |
|              |                               |                               | Lea     | Dec with leaf of *Plantago major* | Antinflammatory, edema                                      |
|              |                               |                               | Coo with flour | Ext         | Edema                                                         |
| Moraceae     | *Morus alba* L., ATA 10111, 1-5 | Dut                           | Dried Fru| Dec         | Sore throat, expectorant, stomachache                        |
| Moraceae     | *Morus nigra* L., ATA 10112, 3 | Kara Dut                      | Fru     | Cru         | Eczema                                                        |
| Pinaceae     | *Pinus sylvestris* L., ATA 10116, 1-5 | Çam, sari çam                | Bra, Ste| Res         | Hand cracks, emollient, skin disorders                       |
|              |                               |                               | Dry distillation Tar with butter | Ext Ps       | Ecchymosis, tubercle, crack, wounds, emollient               |
|              |                               |                               | Dry distillation Tar          | Ext         | Eczema, skin disorders, wounds                                |
| Poaceae      | *Triticum vulgare* Vill., ATA 10117, 1-5 | Den, buğday                  | See     | Cru mix with egg white | Fracture, tubercle, paronychia                                 |
| Poaceae      | *Hordeum vulgare* L., ATA 10120, 1-5 | Arpa                          | Tes     | Cru mix with olive oil | Wounds, hand cracks, emollient                                |
|              |                               |                               | See     | Dec         | Kidney stone, urinary system diseases, diuretic, prostate ailments |
| Family          | Species                                      | Usage    | Type  | Uses                                                                                     |
|-----------------|----------------------------------------------|----------|-------|------------------------------------------------------------------------------------------|
| Polygonaceae    | *Rumex crispus* L., ATA 10121, 1-5           | Lea      | Boi   | Use pulp, stomachache, diuretic, hemorrhoid, constipation                                |
| Polygonaceae    | *Rheum ribes* L., ATA 10123, 1-5             | Roo      | Int   | Diabetes                                                                                 |
| Plantaginaceae  | *Plantago major* L., ATA 10125, 1-5          | Lea      | Ext   | applied only 2-3 minutes, rheumatism                                                     |
| Plantaginaceae  | *Plantago lanceolata* L., ATA 10126, 1-5     | Lea      | Int   | Hemorrhoids                                                                              |
| Ranunculaceae   | *Ranunculus kotschyi* Boiss., ATA 10128, 1-5 | Flo or Lea| Cru   | Applied on knees for 1-2 minutes, rheumatism                                           |
| Rosaceae        | *Rosa canina* L., ATA 10131, 1-5             | Kuşburnu | Fru   | Dec, antidiarrheal, urinary system diseases, cold, flu                                  |
| Rosaceae        | *Cotoneaster integerrimus* Medik., ATA 10134, 5 | Girgit, givgıt | Fru   | Antidiarrheal                                                                               |
| Rosaceae        | *Rosa pimpinellifolia* Bunge, ATA 10133, 1-5 | Karakara, koyun gözü | Fru   | Hemorrhoids                                                                                |
| Rosaceae        | *Malus sylvestris* (L.) Mill., ATA 10137, 1-5 | Ekişi elma, yabani elma | Fru   | Diarrhea                                                                                  |
| Rosaceae        | *Crataegus azarolus* var. pontica (K.Koch) K.I.Chr., ATA 10140, 3 | Aliç, aluç | Fru   | Cardiac diseases, hypertension                                                            |
| Rosaceae        | *Crataegus orientalis* Pall. ex M.Bieb., ATA 10141, 2 | Aliç, aluç | Fru   | Cardiac diseases, hypertension                                                            |
| Rosaceae        | *Pyrus elaeagnifolia* Pall., ATA 10144, 1-5 | Yabani armut, ahlat | Fru   | Diarrhea                                                                                  |
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. *amasica*, *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 ethno-botanical research is becoming more important as gathering ancient knowledge from people is very difficult.

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