Research Article

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Folk medicines of Bafra (Samsun-Turkey)

Bafra'nın (Samsun-Türkiye) halk ilaçları

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Abstract

Objective: In this study, determination and documentation of folk medicines that are being used by indigenous people in Bafra was aimed.

Materials and methods: Scientific trips were organised to the region and folk medicines were identified by interviewing individuals which have knowledge of folk medicine. One hundred and fifty-five plant samples were collected during the study. Obtained data were statistically analysed by using four quantitative indices; "informant consensus factor", "use value", "relative frequency of citation" and "cultural importance index".

Results: Fifty-three genera and 62 taxa belonging 33 families were recorded to be used in the treatment of different diseases. The usage of five species (*Anthemis coelopoda* var. *coelopoda*, *Tanacetum corymbosum*, *Quercus frainetto*, *Salvia forskahlei* and *Lavatera punctate)* as folk medicine was previously undocumented in Turkey. In addition, new usages of 13 folk medicines [*Allium porrum*, *Brassica oleracea*, *Corylus maxima*, *Foeniculum vulgare*, *Helianthus annuus*, *Melissa officinalis* subsp. *altissima*, *Petroselinum crispum*, *Plantago major* subsp. *intermedia*, *Prunus avium*, *Punica granatum*, *Sedum pallidum*, *Vitis sylvestris* and *Zea mays*] in Turkey were also detected. Folk medicines are mostly used for muscle-skeletal (F_{IC} = 0.6935), respiratory (F_{IC} = 0.6909) and dermatological system disorders (F_{IC} = 0.5555). In addition, *Cydonia oblonga* (UV value = 0.23), *Urtica dioica* (UV value = 0.19), *Sambucus ebulus* (UV value = 0.18) and *Allium cepa* (UV value = 0.16) were the most cited species in Bafra.

Conclusion: Once again, the present investigation has highlighted the gradual reduction in the use of folk medicines, and ethnobotanical knowledge has been falling into oblivion rapidly. Therefore, ethnobotanical inventory surveys should be undertaken throughout Turkey before this important cultural heritage becomes lost.

Keywords: Folk medicine; Medicinal plants; Bafra; Ethnobotany; Turkey.

Özet

Amaç: Bu çalışmada Bafra'da yerel halk tarafından kullanılan halk ilaçlarının belirlenmesi ve belgelenmesi amaçlanmıştır.

Materyal ve metod: Bölgeye bilimsel geziler düzenlenmiş ve halk ilacı konusunda bilgi sahibi kişilerle görüşülerek halk ilaçları tespit edilmiştir. Çalışma esnasında 155 bitki örneği toplanmıştır. Elde edilen veriler 4 kantitatif indeks kullanılarak istatiksel olarak analiz edilmiştir: "Fikir birliği faktörü", "Kullanım değeri", "Bağıl alıntılanma sıklığı" ve "Kültürel önem indeksi".

Bulgular: 33 familyadan 53 cins ve 62 taksonun çeşitli hastalıkların tedavisinde kullanıldığı kaydedilmiştir. 5 türün (*Anthemis coelopoda* var. *coelopoda*, *Tanacetum corymbosum*, *Quercus frainetto*, *Salvia forskahlei* ve *Lavatera punctate*) Türkiye'de halk ilacı olarak kullanımına daha önce rastlanılmamıştır. Ayrıca, 13 halk ilacı için [*Allium porrum*, *Brassica oleracea*, *Corylus maxima*, *Foeniculum vulgare*, *Helianthus annuus*, *Melissa officinalis* subsp. *altissima*, *Petroselinum crispum*, *Plantago major* subsp. *intermedia*, *Prunus avium*, *Punica granatum*, *Sedum pallidum*, *Vitis sylvestris* ve *Zea mays*] Türkiye'de daha önce kaydedilmeyen yeni kullanımlar da tespit edilmiştir. Halk ilaçları en çok iskelet-kas (F_{IC} = 0.6935), solunum (F_{IC} = 0.6909) ve dermatolojik sistem hastalıklarında (F_{IC} = 0.5555) kullanılmaktadır. Ayrıca, *Cydonia oblonga* (UV değeri = 0.23), *Urtica dioica* (UV değeri = 0.19), *Sambucus ebulus* (UV değeri = 0.18) ve *Alium cepa* (UV değeri = 0.16) Bafra'da en çok rapor edilen türlerdir.

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Sonuç: Bu çalışmayla halk ilaçlarının kullanımındaki azalma ve etnobotanik bilginin hızla kaybolmaya yüz tutması bir kez daha vurgulanmıştır. Bu nedenle bu önemli kültürel miras yok olmadan önce etnobotanik envanter çalışmalarının tüm Türkiye'de yapılması gerekmektedir.

Anahtar Kelimeler: Halk ilacı; Tıbbi bitkiler; Bafra; Etnobotanik; Türkiye.

Introduction

Since the ancient times, plants have been an indispensable source on issues like material production, food, remedy etc. for humankind with their rich chemical and biological diversity. Plant samples that have been found in a Neanderthal grave (Shanidar Cave, at southern of Hakkari, Turkey) support this hypothesis [1, 2]. Developments on the medicine and phytochemistry in the recent past, thereby better understanding the healing potential of plants, attention to traditional and herbal medicine is increasing in the whole world. Following these improvements, a new science named ethnopharmacognosy, ethnopharmacology, ethnobotany has emerged by the efforts for documentation and inventory taking of folk medicines after 1980s [1]. These studies are extremely important in terms of the basis for new drug discovery. Antiarrhythmic agent digoxin (from *Digitalis* sp.), narcotic analgesic morphine (from *Papaver somniferum* L.), antimalarial drug quinine (from *Cinchona* sp.), analgesic, antipyretic drug aspirin (from *Salix* sp.), another antimalarial drug artemisinin (*Artemisia annua* L.) are only a few examples of these discoveries that are based on ethopharmacological investigations [3].

Due to its strategic location, Anatolian Peninsula has been the host for a high number of civilizations such as Hittites, Ionians, Greeks, Romans, Persians, Arabs and Turks. Each civilization has played an important role in the formation of this culture blend [4]. Plant sourced remedies were mentioned on achieved records from Sumerians, Hittites, Greeks. Hippocrates and Dioscorides described several herbal medicines; especially, most of these 600 plants mentioned in the "de Materia Medica" of Dioscorides originate from Anatolian Peninsula [2, 5]. In addition to its cultural richness, Anatolia is one of the regions which lies under the influence of three different phytogeographical regions (Euro-Siberian, Mediterranean and Irano-Turanian phytogeographical regions). According to latest records, there are 11707 taxa belong to 1320 genera and 167 families in the flora of Turkey; and the rate of endemism is also quite high (31.12%) [6, 7]. Combination of cultural wealth and rich flora could be accepted as the main reasons of richness of Anatolia's traditional medicine culture.

Despite its cultural wealth and rich flora; organized and comprehensive ethnobotanical investigations could not be carried out in Anatolian Peninsula (Turkey) until the mid of 1980s, due to lack of attention of the official authorities. First organized and comprehensive ethnobotanical investigation in Turkey was conducted by Ekrem Sezik, Erdem Yeşilada and their research group in 1986 [1, 4, 8, 9]. Subsequently, this surveys attracted the attention of Turkish researchers and folk medicine surveys has gained acceleration.

As mentioned above, ethnobotanical surveys have been performed in some parts of Turkey, however there are still too many regions that have not been studied in terms of folk medicine. Due to modernism, fast-urbanisation, easy access to physicians and pharmacies, folk medicine knowledge has been disappearing [10]. Therefore, ethnobotanical documentation surveys should be carried out rapidly throughout Turkey, before this precious heritage disappears.

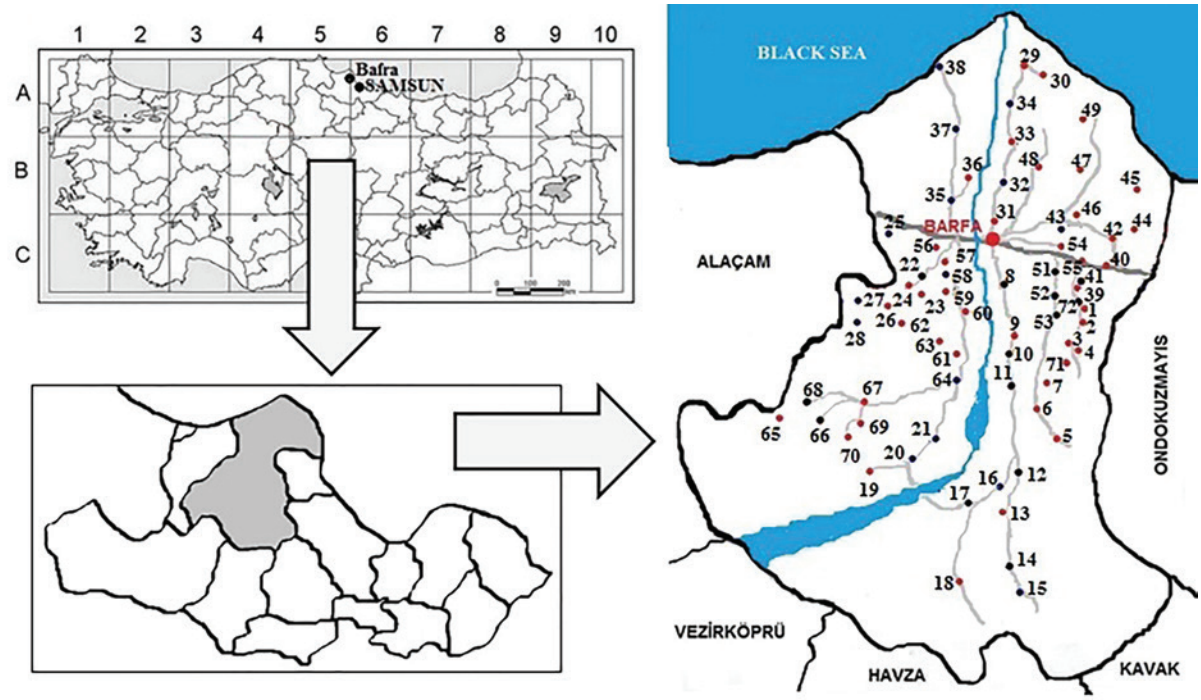
According to our literature survey, an ethnobotanical research that focused on Bafra (Samsun, Turkey) could not be found, hence, we aimed to determined and document folk medicines that are being used in Bafra district with the present study. By comparing our results with previous folk medicine investigations, finding new folk medicines and new usages of plants that have previously been determined as folk medicines were aimed as well. Additionally, in order to increase the reliability of results, obtained data was evaluated quantitatively with different statistical methods.

Materials and methods

Study area

Bafra district (Samsun), is surrounded Black Sea in the north; Kavak, Havza, Vezirköprü districts in the south; 19 Mayıs district in the east; and Alaçam district in the west (Figure 1). The district is situated at A5 square (Figure 1) in Davis's grid system [11]. Its total area is 1750 km^2 and distance from city centre is 51 km. The most important stream of region is Kızılırmak and it generates a lot of lakes (e.g. Balık, Karaboğaz, Dutdibi, Liman, Hayırlı, Çernek, Uzun, Tombul and İnce Lakes). Summers are hot and winters are wet in the region [12]. Mean yearly temperature is 13.6°C [13], mean humidity is 73%, mean

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1. Evrenuşağı
2. Sürmeli
3. Çalköy
4. Yeşilköy
5. Dikencik
6. Darboğaz
7. İkizpınar Town
8. Doğankaya
9. Seyhulaş
10. Gazibeyli
11. Tosköy
12. Ozan
13. Dereler
14. Büyükyeraltı
15. Ağaçalan
16. Düzköy
17. Yeniköy
18. İnözü
19. Tepebaşı
20. Asarköy
21. Kolav Town
22. Barış
23. Azay
24. Gökceağaç
25. Göltepe
26. Çataltepe
27. Keresteci
28. Paşaşeyh
29. Koşu
30. Yeşilyazı
31. Ağıllar
32. Türtepe
33. Karpuzlu
34. Karıncak
35. Kuşçular
36. Ada
37. Kaygusuz
38. Sahilkent
39. Lengerli
40. Osmanbeyli
41. Tütüncüler
42. Taşköprü
43. Gerzeliler
44. Üçpınar
45. sarıköy
46. Kahramandere
47. Sarıkaya
48. Şeyhören
49. Doğanca Town
50. Bakırpınar
51. Dededağı
52. Sarıçevre
53. Tepecik
54. Yakıntas
55. Gümüşyaprak
56. Çetinkaya
57. Yağmurca
58. Dedeli
59. Yörgüç
60. Örencik
61. Hacıoğlu
62. Gökçesu
63. Ortadurak
64. Kozağı
65. Yiğitalan
66. Kamberli
67. Türkköyü
68. İlyaslı
69. Kuşluğan
70. Terzili
71. Uluağaç
72. Çatak

Figure 1: The position of Bafra district (Samsun) in Turkey and visited locations.

annual absolute humidity is 5.0 g, and annual rainfall is about 700 mm [14].

There are 115 villages in the district. According to 2010 records, population of Bafra is 144.465 and most of this population resides in the centre of the district (86.569) [15].

In Bafra, half of the land is cultivable and livelihood mainly depends on agriculture. Tobacco is the major agricultural product. Though the industry is not well developed, confection, flour, sunflower oil and forest products factories are found among the industrial branches [16].

Forty percent of the surface is covered with forests and these forests mainly consist of beech, oak, pine and fir trees. At the lowlands fruit trees are dominant, while reeds and shrubberies are the major vegetation around the lakes [16]. Floristic researches that embrace whole of the district could not be found. However, in an investigation that was carried out on the flora of Nebyan Mountain, 611 taxa belonging to 331 genera and 90 families were recorded [17].

Ethnobotanical survey

Data were collected by face-to-face interviews during scientific trips that were organised to 72 villages and four towns in July 2010 and June 2011. These locations were labelled on a map given in Figure 1. In every settlement area, in order to identify experts in the use of medicinal plants, mukhtars (the head of a village or neighbourhood in Turkey) or elders were consulted and interviews were carried out with suggested individuals. The interview methodology followed in the field studies was described by Sezik et al. and direct survey applications were avoided during face-to-face interview. Open and semi-structured questionnaire were used to obtain information related to folk medicines [9]. Questions included

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data on plants utilised medically, purpose of usage, used parts, preparation and application methods, collection sites. In addition, demographic information of participants was obtained during these interviews. After each interview, the plants that are being used as folk medicine were collected from their locations under guidance of informants or samples were received from the dried plant materials which are found at their homes. Botanical identification of obtained plant specimens was performed by Prof. Dr. Galip Akaydın using the "Flora of Turkey and the East Aegean Islands" [11, 18, 19]. After botanical identification, herbarium specimens were prepared and preserved in GUE (Gazi University Faculty of Pharmacy Herbarium).

Statistical analyses and quantitative indices

To assess the reliability of results, four ethnobotanical indices were calculated: "informant consensus factor (F_{IC})", "use value (UV)", "relative frequency of citation (RFC)" and "cultural importance index (CI)". "F_{IC}" indicates the agreement among the informants concerning the use of a plant for each use category. Disorders were grouped into 12 categories (Table 1) and F_{IC} was calculated for each category by using the following formula:

$$F_{IC} = (\eta_{ur} - \eta_t)/(\eta_{ur} - 1).$$

η_{ur} is the total number of use reports for each pharmacological category and η_t is the number of taxa used in that pharmacological category. Increase at F_{IC} value (close to 1) represents the acceptance of a taxon in the treatment of particular illness by the participants; while low degrees (close to 0) indicates the disagreement on which plants to use [20–22].

The "UV" demonstrates the relative cultural importance of each folk medicines known locally and is calculated as follow:

$$UV = \Sigma(U/n).$$

"*U*" refers to the number of use-reports cited by each participant for a taxon and "*n*" refers to the number of informants taking part in the survey. High use value displays that the mentioned folk medicine is more preferred in the studied population [22, 23].

To assess the local importance of folk medicines, "RFC" was calculated as follow:

$$RFC = FC/N.$$

"*FC*" is the number of informants that cited a specific folk medicine; while "*N*" is the total number of informants [24].

"CI" was another index that has been calculated for estimating the cultural significance of each taxon with the following formula:

$$CI = \sum_{i=1}^{i=NU} \left(\frac{URi}{N} \right)$$

here, *N* stands for number of informants; while URi stands for the use report in each pharmacological category [24].

Table 1: Pharmacological categories and F_{IC} value of folk medicines used in Bafra.

Pharmacological categories	Number of taxa and percentage in all species		Number and percentages of citation		F_{IC} value
	n	%	n	%	
Musculoskeletal system disorders	20	32	63	26	0.6935
Respiratory system disorders	18	29	56	23	0.6909
Dermatological system disorders	21	34	46	19	0.5555
Gastrointestinal system disorders	18	29	37	15	0.5277
Genitourinary system disorders	9	14	10	4	0.1111
Central nervous system disorders	3	5	9	3	0.7500
Eye-ear disorders	4	6	7	3	0.5000
Metabolic disorders	4	6	4	2	0.0000
Cardiovascular disorders	4	6	4	2	0.0000
Immunity disorders	2	3	3	1	0.5000
Mouth and tooth disorders	2	3	2	1	0.0000
Animal disorders	1	2	2	1	1.0000

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Results

Eighteen scientific trips were conducted in 72 settlements in June and July between 2010 and 2011. During these scientific trips, interviews were conducted with 95 residents. Information about folk medicines, as well as demographic properties of the participants were obtained. Collected data is presented in Table 2. As could be seen in Table 2, 32.0% of participants are emigrant; while the 18.0% of them were Laz. Considering the age distribution, 43.2% of persons who are knowledgeable about folk medicine are older than 66 years old. 33.7% of the participants are 51–65 years old, 20.0% of participants 36–50 years old; while persons under the age of 35 only constitute 3.1% of the participants. Approximately one third of participants were male (62 females, 33 males). When we consider the educational status, 79.7% of the individuals were primary school graduates or less. Most of the participants were farmer (89.0%). Interviewed people expressed that they have learnt folk medicines from their elderly relatives (61.0%), their society (17.9%) or media (13.7%). To prevent contamination of traditional knowledge, media sourced folk medicines are not included in this paper. 54.8% of interviewed people firstly consult a doctor in the case of an illness. In addition, 87.3% of the participants expressed that they use plants as medicine and food, but number of people who declare that they use plants as only medicine or as only food is few (1.1% and 11.6%, respectively).

After identification of 155 specimens collected during scientific trips, 53 genera and 53 species (62 taxa) in 33 families were determined to be used in the treatment of different disorders. In the Table 3, folk medicines are presented with their localities, local names, the parts used as medicine, therapeutic uses etc. As it could be understood from Table 3, Rosaceae (eight taxa), Lamiaceae (seven taxa) and Asteraceae (five taxa) are the most referred families in our study area. Folk medicines are mainly used after being processed like decoction, infusion or maceration (91%). Decoction is the most preferred method for preparing folk medicines (34 taxa are used with this type of preparation). Eighty-five percent of the plants are used alone, while the remaining take part in polyherbal medicines or are used with animal products like yoghurt. Considering the used plant parts, folk medicines are mainly prepared from leaves (32%) and followed by fruits (19%) and aerial parts (13%) (Figure 2). Sixty-two percent of folk medicines are herbs; 8% are shrubs and 29% are trees. Evaluation of folk medicines according to pharmacologic categories revealed that plants are mostly used for dermatological disorders (21 taxa, 34%), musculoskeletal disorders (20 taxa, 32%), respiratory and gastrointestinal system disorders (18 taxa, 29%). However, considering the F_{IC} values, this order is different; animal disorders is located at the first place (F_{IC}=1.0); and followed by central nervous system (F_{IC}=0.75), musculoskeletal and respiratory system disorders (F_{IC}=0.69) (Table 1). The highest UV are observed with *Cydonia oblonga* Mill., *Urtica dioica* L., *Sambucus ebulus* L. and *Allium cepa* (0.23;

Table 2: Demographic characteristics and some other statistics about the habits of using folk medicines.

	Female	Male	Total	%
Age (n=95)				
≤35	3	0	3	3.1
36–50	11	8	19	20.0
51–65	23	9	32	33.7
66≤	25	16	41	43.2
Education (n=94)				
Illiterate	11	1	12	12.8
Literate	12	6	18	19.1
Primary school	31	14	45	47.8
Middle school	6	10	16	17.0
High school	0	1	1	1.1
University	1	1	2	2.2
Employment (n=90)				
Farmer	53	27	80	89.0
Housewife	2	0	2	2.2
Retired	2	3	5	5.5
Other	0	3	3	3.3
Inhabitancy (n=50)				
Native born	10	7	17	34.0
Laz	5	4	9	18.0
Emigrant	10	6	16	32.0
Albanian	3	2	5	10.0
Other	7	4	11	>22.0
Other	4	4	8	16.0
Whom the folk medicines have been learned from? (n=95)				
From elderly relatives	43	15	58	61.0
Society	10	7	17	17.9
Media	7	6	13	13.7
Not remembered	2	4	6	6.3
Other	0	1	1	1.1
Which purposes are the plants used for? (n=95)				
Medicine	1	0	1	1.1
Food	7	4	11	11.6
Medicine and food	53	30	83	87.3
Where are the plants that are used as folk medicine supplied from? (n=92)				
Around the village	16	12	28	30.4
Market place	8	12	20	21.7
Town	15	10	25	27.2
Around the village and market place	10	8	18	19.6
Other	0	1	1	1.1
In the case of illness, firstly … (n=93)				
He/she goes to the doctor	30	21	51	54.8
He/she searches his/her own remedy	0	0	0	0.0
He/she goes to the doctor and searches his/her own remedy	30	12	42	45.2

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Table 3: Folk medicines used by indigenous people in Bafra district (Samsun, Turkey).

Family and scientific name (GUE no)	Local name	Loc.[b]	Used part[c]	Utilisation, preparation and application method[c]	Previously recorded folk medicine usages	RFC	UV	CI
Apiaceae								
Foeniculum vulgare Mill. (3085)	Dereotu, doruk otu	26	A.p.	For decreasing high blood glucose level: d. with lemon fruit juice[a]	For gastrointestinal diseases, obesity, rheumatism, urinary system disorders, as analgesic, anti-inflammatory, antilithic, diuretic, antiseptic, antitussive, hearth stimulant, galactogogue and sedative [25–28]	0.01	0.01	0.01
Petroselinum crispum (Mill.) Nyman (3123, 3124)	Maydanoz	39	L.	For sore throat; roasted with F.o. of *Helianthus annuus*, wrapped on neck[a]	For eczema, eye health, haemorrhoids, stomach-ache, infection, kidney diseases, shortness of breath, sore in mouth, urethral inflammation, urinary system infections, vaginitis and as diuretic [28–33]	0.02	0.02	0.02
		45	A.p.	For constipation; d.[a]				
Apocynaceae								
Nerium oleander L. (3112)	Zakkum	39	L.	For itching on feet; d., feet are kept on it	For abscess, scabies, rheumatism and cancer [28, 34, 35]	0.01	0.01	0.01
Asteraceae								
Anthemis coelopoda Boiss. var. *coelopoda* (3046)	Papatya	39	F.	For sinusitis; d.	N.r.	0.01	0.01	0.01
Crepis foetida L. subsp. *rhoeadifolia* (Bieb.) Celak (3060, 3061)	Sütlü ot, süt düven	4, 8	H.	For increasing milk supply of cow; cows are fed with it[a]	N.r.	0.02	0.02	0.02
Helianthus annuus L. (3086)	Ay çiçeği	1	F.o.	For abscess and whitlow in finger; *Allium cepa* B. were scooped up and put on ember. White soap and F.o. obtained from *Helianthus annuus* are put inside of it. a.a.a.[a]	For respiratory tract diseases and fever [25]	0.06	0.07	0.06
		3	F.o.	For alopecia; F.s. of *Punica granatum* crushed, *Helianthus annuus* F.o. is added, a.a.a.[a]				
		9	F.o.	For burns; boiled with white soap and white fax, a.a.a.[a]				
		29	F.o.	For sore throat; *Allium porrum* L. are roasted with F.o. obtained from *Helianthus annuus*, wrapped on throat				
		39	F.o.	For sore throat; as described for *Petroselinum crispum*				
		61	F.o.	For earache; dripped on ear[a]				
Tanacetum corymbosum (L.) Sch. Bip. (3162)	Papatya	1	F.	For abdominal pain, dyspepsia and as carminative; d.	N.r.	0.01	0.03	0.01
Tanacetum parthenium Sch. Bip. (3163)	Papatya	51	F.	For inflammation; d.	For cough and tonsillitis [36]	0.01	0.01	0.01
Betulaceae								
Corylus maxima Mill. (3059)	Fındık	39	L.	For kidney stone; as tea[a]	For itching, snake bite, tuberculosis, as aphrodisiac [37]	0.01	0.01	0.01
Boraginaceae								
Trachystemon orientalis D. Don (3175)	Deve pancarı	45	L.	For constipation and as expectorant; d.	For breast cancer, flatulence, stomach-ache, inflamed wounds, and rheumatism [37]	0.01	0.02	0.02

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Table 3 (continued)

Family and scientific name (GUE no)	Local name	Loc.[b]	Used part[c]	Utilisation, preparation and application method[c]	Previously recorded folk medicine usages	RFC	UV	CI
Brassicaceae								
Brassica oleracea L.	Kara kelem, kara lahana, siyah lahana	6 26 54 67	L. L. L. L.	For rheumatism: warmed up, a.a.a. or d. For varicosis; boiled in water, wrap on leg[a] For sore throat; warmed up, applied on throat[a] For boil; warmed up, a.a.a.	For abscess, hordeolum, cough, high fever, pneumonia, headache, hoarseness, stomach-ache, ulcer, as digestive [33, 34, 37–39]	0.04	0.05	0.04
Caprifoliaceae								
Sambucus ebulus L. (3148, 3149, 3150, 3151, 3152, 3153, 3154)	Yivdin, sultan otu	1 7 24, 48, 49, 67 66	L., F. L. L. L.	For rheumatism and leg pain; p.w., a.a.a. For bruises and injuries; roasted with flour, a.a.a. For bruises and injuries; warm up, a.a.a. For rheumatism and leg pain; warmed up, a.a.a.	For abscess, burns, eczema, fungal diseases, wounds, urticaria, asthma, common cold, cough, high fever, sore throat, sunstroke, bee bite, scorpion bite, snake bite, bruises, oedema, inflammation, malaria, mastitis, rheumatic pain, expelling worms, haemorrhoids, stomach-ache, sterility, as analgesic, diuretic, tonic [8, 26, 31, 34, 37, 40, 41]	0.09	0.18	0.09
Cornaceae								
Cornus mas L. (3057, 3058)	Kiren, kızılcık	24	Fr. Fr., L.	For diarrhoea; int., d. For cough; int., d.	For abdominal pain, diarrhoea, bronchitis, common cold, cough, flu, cardiac diseases, hyperglycaemia, nephritis, urinary inflammation, sun stroke, as antifungal, antipyretic [26, 28, 30, 32, 35, 37, 39–43]	0.02	0.02	0.02
Crassulaceae								
Sedum sp. (3055)	Temro çiçeği	39	Lt.	For earache; crushed and obtained juice is dropped to ear For 'temro' (erythema and wet wounds on hands); a.a.a.	–	0.01	0.02	0.01
Sedum pallidum M. Bieb. (3155)	Kedi otu	3	L.	For wound healing; crushed, a.a.a.[a]	For heat rash in foot [44]	0.01	0.01	0.01
Equisetaceae								
Equisetum telmateia Ehrh. (3081)	Çam otu	3	L.	For rheumatismal pain: d.	For acne, chronic eczema, arteriosclerosis, cardiac deficiency, asthma, cystitis, dysuria, kidney disorders, prostatic hypertrophy, expelling worms, stomach-ache, haemorrhoids, mouth infection, rheumatism, as expectorant, antifungal agent [26, 27, 30, 31, 34, 40, 41, 43, 45]	0.01	0.01	0.01
Fabaceae								
Phaseolus vulgaris L. (3125)	Kuru fasülye	11	Fr.	For dog bite; a.a.a.	For bruises, nausea, wounds [33, 36, 38]	0.01	0.01	0.01
Fagaceae								
Quercus frainetto Ten. (3138)	Pelit ağacı	1	T.	As antiseptic for wounds; heated, a.a.a.	N.r.	0.01	0.01	0.01

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Table 3 (continued)

Family and scientific name (GUE no)	Local name	Loc.[b]	Used part[c]	Utilisation, preparation and application method[c]	Previously recorded folk medicine usages	RFC	UV	CI
Gentianaceae								
Centaurium erythraea Rafn (3053, 3054)	Mayasıl otu	1	A.p.	For haemorrhoids; mixed with honey, eaten on empty stomach	For bronchitis, cut, eczema, diabetes, gastrointestinal diseases, haemorrhoids, hypercholesterolemia, goitre, malaria, as anti-inflammatory, appetizer, stomachic [25, 31, 41, 45]	0.02	0.02	0.02
		26	A.p.	For haemorrhoids; d. with *Juglans regia* L. and *Mentha* sp. L., as sitz bath				
Hypericaceae								
Hypericum perforatum L. (3087, 3088, 3089)	Sarı kantaron, bronşit otu	8	F., L.	For bronchitis; d.	For abdominal pain, constipation, enteritis, expelling worms, stomach diseases, antihypertensive, arteriosclerosis, anti-inflammatory, asthma, bronchitis, chest diseases, common cold, pharyngitis, shortness of breath, tuberculosis, cancer, eczema, herpes labialis, wound healing, cardiac diseases, dermal diseases, earache, urinary diseases, diabetes, facial paralysis, insomnia, internal haemorrhage, osteoporosis, rheumatism, toothache, as antifungal, antihaemorrhagic, antipyretic, appetizer, diaphoretic, sedative [25–31, 33–35, 38, 40–46]	0.03	0.04	0.03
		13	F.	As bronchodilator in influenza; i.				
		26	F.	For arthritis and rheumatismal pain; i.				
Juglandaceae								
Juglans regia L. (3090, 3091)	Ceviz	1	L.	For rheumatism and leg pain; d., feet are kept in it	For abscess, acne, bee bite, eczema, oedema, cancer, cardiac disorders, cholesterol lowering, vasodilator, expelling worms, digestive problems, haemorrhoids, headache, vaginitis, goitre, kidney diseases, osteoporosis, rheumatic pain, respiratory tract problem, skin diseases, sunstroke, as analgesic, antifungal, astringent, appetizer, hypoglycaemic, tonic [8, 25, 27, 29–36, 38–44, 46, 47]	0.02	0.03	0.02
		26	L.	For haemorrhoids; as described for *Centaurium erythraea*				
Lamiaceae								
Melissa officinalis L. subsp. *altissima* (Sm.) Arcangeli (3100)	Melisa, oğul otu	26	L.	For arthritis; int., i.[a]	For cardiac problems, insomnia, as sedative [26]	0.01	0.01	0.01
Mentha longifolia (L.) Huds. subsp. *typhoides* (Briq.) Harley var. *typhoides* (3190)	Kedi nanesi	6	L.	For abdominal pain and as carminative; int., d.	For abdominal pain, diarrhoea, haemorrhoids, digestive problems, intestinal ailments, stomach disorders, cough, common cold, flu, tonsillitis, halitosis, headache, lumbago, sunstroke, skin ailments, as carminative [8, 26, 27, 29, 32, 35, 40, 42, 48]	0.01	0.02	0.01

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Table 3 (continued)

Family and scientific name (GUE no)	Local name	Loc.[b]	Used part[c]	Utilisation, preparation and application method[c]	Previously recorded folk medicine usages	RFC	UV	CI
Mentha piperita L. (3101, 3102, 3103, 3104)	Nane	1	L.	For nausea; int., d. For stomach-ache and abdominal pain; int., d.	For cold, cough, flu, shortness of breath, gastrointestinal diseases, as cardio tonic, vasodilator [25, 28, 33, 36]	0.06	0.08	0.06
		45, 53, 57	L.	For nausea; int., d. with lemon Fr.				
		57	L.	As carminative; int., d.				
		69	L.	For abdominal pain; int., d.				
Origanum vulgare L. subsp. *vulgare*	Grip otu, adaçayı	8, 13	A.p.	For relaxing and as bronchodilator in influenza; int., d.	For cold, flu, abdominal pain, stomach-ache, stomach diseases, diabetes, kidney stone, wound healing, as stomachic [34, 40, 41, 45, 47]	0.02	0.04	0.02
Salvia forskahlei L. (3147)	Karadeniz adaçayı	4	A.p.	For influenza and as expectorant; int., d.	N.r.	0.01	0.02	0.01
Teucrium polium L. (3164)	Ağrı otu	8	A.p.	For rheumatic pains; int., d.	For anorexia, common cold, flu, constipation, diarrhoea, nausea, loss of appetite, diabetes, cardiac disorders, eczema, wound healing, abdominal ailments, haemorrhoids, indigestion, stomach-ache, cancer, coronary failure, goitre, headache, menstrual pain, internal diseases, malaria, rheumatic pain, toothache, as analgesic, antipyretic, blood stopper, bronchodilator, carminative [8, 26–29, 32, 34–40, 42–48]	0.01	0.01	0.01
Thymus sp. (3165, 3166, 3167)	Kekik, kesik otu	19	A.p.	For cough; int., i. with *Tilia rubra* subsp. *caucasica* Inf.	–	0.03	0.03	0.03
		44	L.	For wound healing; a.a.a.				
		62	A.p.	For haemorrhoids; int., d.				
Lauraceae								
Laurus nobilis L. (3093, 3094)	Defne	6	L.	For eczema; int., d.	For abdominal pain, gastrointestinal diseases, asthma, bronchitis, cold, cough, sore throat, bee bite, cracked skin, scorpion bite, snake bite, cardiac diseases, diabetes, dermal disorders, kidney diseases, myalgia, rheumatic pain, toothache, as expectorant, sedative [8, 25, 28, 31, 35, 37, 41, 44]	0.02	0.02	0.02
		39	Fr.	For avoiding arthritis; crushed and eaten				
Liliaceae								
Allium cepa L. (3036, 3037, 3038, 3039)	Kuru soğan, soğan	1	B.	For abscess and whitlow; scooped up and put on ember. Oil and white soap are put inside of it, a.a.a.	For abdominal pain, gastrointestinal diseases, abscess, bee bite, burns, wounds, scabies, arteriosclerosis, bronchitis, common colds, cough, dysmenorrhea, dysuria, urinary inflammation, uterus inflammation, woman infertility, oedema, fracture, rheumatic pain, headache, paralysis, as abortifacient, analgesic, laxative, expectorant [8, 25, 29, 30, 32–34, 36–40, 42, 48]	0.11	0.16	0.11
		5	B.	For cough; int., crushed and put in water				
		24, 47, 59	B.	For abscess and whitlow; warmed up, a.a.a.				
		48	B.	As panacea; int., d.				

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Table 3 (continued)

Family and scientific name (GUE no)	Local name	Loc.[b]	Used part[c]	Utilisation, preparation and application method[c]	Previously recorded folk medicine usages	RFC	UV	CI
		51	B.	For fracture or dislocations; pounded with *Olea europaea* S. and *Vitis sylvestris* Fr., a.a.a.				
		54	B.	For injuries with sharp objects; chopped up, roasted with butter, a.a.a.				
		55	B.	For bruises; warmed up, a.a.a.				
		62	B.	For pain in arm or leg; warmed up, a.a.a.				
Allium porrum L.	Pırasa	29	L.	For sore throat: roasted with oil, wrapped on throat[a]	For earache and woman infertility [38, 40]	0.03	0.03	0.03
			S.	For haemorrhoids: int., i[a]				
		54	W.p.	For earache; crushed, the obtained water dripped to ear				
Allium sativum L. (3043, 3044, 3045)	Sarımsak	1, 56	B.	For sunstroke; crushed, mixed with yoghurt and applied on head	For alopecia, eczema, inflamed wounds, insect bite, snake bite, scorpion bite, pustule, tinea barbae, cold, flu, diabetes, high cholesterol, expelling worms, food intoxication, haemorrhoids, poisoning, earache, erectile dysfunction, halitosis, hordeolum, hydrophobia, lumbago, rheumatism, poultry diseases, sunstroke, as hypotensive [9, 25, 28–34, 36–38, 40, 42]	0.08	0.08	0.08
		4	B.	For sunstroke; crushed in vinegar, mixed with yoghurt, applied on head				
		31	B.	For decreasing high blood pressure; eaten on empty stomach				
		47, 61, 67	B.	For earache; warmed up, placed in to ear				
		59	B.	For earache; crushed, obtained water mixed with urine and dripped to ear				
Malvaceae								
Lavatera punctata All. (3095, 3096)	Ebegümeci	1	L.	For stomach-ache; int., i.	N.r.	0.02	0.02	0.02
		66	L.	For stomach-ache; cooked with onion, rice and tomato paste, eaten				
Malva neglecta Wallr. (3098)	Ebegümeci	4	L., R.	For rheumatism and arthritis; boiled and eaten with yoghurt	For abscess, acne, eczema, psoriasis, wound healing, bruises, broken bone or dislocated bones, muscular pains, rheumatism, common cold, respiratory problems, sinusitis, cancer, diabetes, hearth disorders, hematoma, gastrointestinal diseases, gynaecological diseases, infertility, mastitis, kidney pain, menstrual pains, miscarriage, renal diseases, urinary infection, vaginitis, vaginal candidiasis, hypercholesterolemia, immune stimulant, internal infection, liver diseases, pain in mouth, wound, as abortifacient, analgesic, anti-inflammatory, diuretic, bronchodilator [9, 25, 27–30, 32–35]	0.01	0.02	0.01

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Table 3 (continued)

Family and scientific name (GUE no)	Local name	Loc.[b]	Used part[c]	Utilisation, preparation and application method[c]	Previously recorded folk medicine usages	RFC	UV	CI
Moraceae								
Ficus carica L. (3082, 3083, 3084)	Incir	7, 33, 60	Lt.	For wart: a.a.a.	For abscess, callus, eczema, mastitis, scorpion bite, wart, asthma, cough, flu, cancer, constipation, diarrhoea, gastric ulcer, stomach-ache, earache, hepatitis, infertility, toothache, as expectorant [8, 25, 27, 28, 31, 32, 34, 35, 37, 39, 41, 43]	0.03	0.03	0.03
Morus nigra L. (3111)	Kara dut	39	Fr.	For oral aphthae; chewed and a.a.a.	For amenorrhea, dysmenorrhea, anaemia, asthma, sore throat, diabetes, eczema, herpes infection, haemorrhoids, hepatitis, gout, kidney diseases, mouth diseases, as abortifacient [27, 29, 30, 34, 35, 37, 38, 40–42]	0.01	0.01	0.01
Oleaceae								
Olea europaea L. (3120)	Zeytin, siyah zeytin	7	F.o.	For burns and avoiding burn marks; boiled egg is roasted with F.o. Then the filtrate a.a.a.	For abscess, oral wounds, removing nail/slivers from skin, scorpion bite, wound healing, cardio tonic, tachycardia, vasodilator, carminative, constipation, gastrointestinal cancers, haemorrhoids, common cold, cough, diabetes, high cholesterol, earache, eye diseases, foot swelling, hypertension, nodule, fractured or dislocated bones, muscular or rheumatic pain, sore throat [8, 25, 28, 31, 35–40]	0.05	0.11	0.05
		22	F.o.	For burns and avoiding burn marks; mixed with beeswax, a.a.a.				
		24	Fr., F.o.	For bruises and sprains; crushed, with F.o., a.a.a.				
		51	Fr.	For bruises and sprains; as described for *Allium cepa*				
		61	Fr.	For broken and dislocated bones; crushed with *Vitis sylvestris* Fr., a.a.a.				
Pinaceae								
Pinus sp. (3126)	Kozalak	6	S.	For urinary incontinence (in children); int., d.	–	0.02	0.02	0.02
		10	Rs.	For wrong healed bones; a.a.a., bone is broken again. Then broken bones are wrapped for proper healing				
Plantaginaceae								
Plantago lanceolata L. (3127, 3128)	Sünitka, damar otu	36	L.	For embolism; int., i.	For abscess, bee bites, eczema, wart, wound healing, asthma, bronchitis, cough, tuberculosis, atherosclerosis, diarrhoea, haemorrhoids, parasites in animals, stomach disorders, urinary tract inflammation, embolism, as antipyretic, haemostatic, sedative [26, 27, 29, 31, 32, 34, 35, 38, 40–42, 46–48]	0.02	0.02	0.02
		55	L.	For maturation of abscess; a.a.a.				
Plantago major L. subsp. *intermedia* (Gilib.) Pilg. (3129, 3130, 3131, 3132)	Sünitka, damarotu, sinir otu, siğilotu, yılan dili	1	L.	For maturation of abscess; crushed and a.a.a.	For abscess, eczema, wound healing, cancer, intrauterine inflammation, lung diseases, sore throat, haemorrhoids, stomach-ache, ulcer, tuberculosis, rheumatism, toothache, as anti-inflammatory [8, 26, 34, 36, 37, 39, 40, 45, 48]	0.05	0.05	0.05
		30	W.p.	For wrong healed bones; boiled with milk to prepare a poultice, a.a.a., bone is broken again. Then broken bone is wrapped for proper healing[a]				

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Table 3 (continued)

Family and scientific name (GUE no)	Local name	Loc.[b]	Used part[c]	Utilisation, preparation and application method[c]	Previously recorded folk medicine usages	RFC	UV	CI
		60	L.	For warts; a.a.a.				
		66	L.	For pain on knee; int., d.				
Plantago major L. subsp. *major* (3133)	Damar otu	9	L.	As bronchodilator for influenza; int., d.	For abscess, eczema, erysipelas, rash, wound healing, urticaria, asthma, bronchitis, cold, dyspnea, flu, cancer, diabetes, diarrhoea, haemorrhoids, embolism, oedema, goitre, kidney stone, urinary inflammation, rheumatism, vaginitis, as analgesic, sedative [8, 27, 29–32, 34, 36, 39–42, 46, 49]	0.01	0.01	0.01
Poaceae								
Cynodon dactylon (L.) Pers. (3079, 3080)	Ayrık out	31	R.	For kidney stone: int., d.	For gonorrhoea, rheumatoid arthritis, shortness of breath, kidney stone, sterility, urinary antiseptic, as anti-inflammatory, diuretic [26–28, 35, 37, 40, 45, 49]	0.02	0.02	0.02
		68	A.p.	For pain in legs: int., d.				
Triticum sp. (3176)	Buğday	1	S.	For diarrhoea; int., flour obtained from S. mixed with yoghurt and water As blood stopper; leavened dough obtained from seed floor mixed with sugar, a.a.a.	–	0.03	0.05	0.04
		7	S.	For bruises and injuries; as described for *Sambucus ebulus*				
		59	S.h.	As bronchodilator in influenza; mixed with water to prepare a poultice, applied on chest				
Zea mays L. (3188, 3189)	Mısır	3	S.	For ringworm; heated on an iron surface, obtained oil a.a.a.	For abdominal pain, haemorrhoids, intestinal worms, stomach-ache, cough, sore throat, dysmenorrhea, dysuria, oedema, kidney stone, prostatitis, urinary inflammation, goitre, as diuretic [29, 31, 32, 34, 36–40, 42, 44, 46]	0.03	0.03	0.03
		4	S.	For whitlow; flour obtained from seed is mixed with yoghurt and a.a.a.[a]				
		24	St.	For rheumatic pain; int., d.[a]				
Polygonaceae								
Rumex sp. (3139)	Efelik pancarı	8	A.p.	As carminative; int., roasted with tomato paste and onion	–	0.01	0.01	0.01
Punicaceae								
Punica granatum L.	Acı nar	3	F.s.	For baldness; as described for *Helianthus annuus*[a]	For gastrointestinal diseases, stomach disorders, wounds on tongue, as hypoglycaemic [25, 38]	0.01	0.01	0.01
Ranunculaceae								
Clematis sp. (3056)	Ham tevek	29	Sm.	For rheumatism: peeled Sm. is wrapped on affected area	–	0.01	0.01	0.01

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Table 3 (continued)

Family and scientific name (GUE no)	Local name	Loc.[b]	Used part[c]	Utilisation, preparation and application method[c]	Previously recorded folk medicine usages	RFC	UV	CI
Rosaceae								
Cydonia oblonga Mill. (3062, 3063, 3064, 3065, 3066, 3067, 3068, 3069, 3070, 3071, 3072, 3073, 3074, 3075, 3076, 3077, 3078)	Ayva	9	F.st.	For cough: int., d.	For breast feeding nipple wound, psoriasis, cancer, cardiac diseases, common cold, sore throat, respiratory tract problem, cystitis, dysuria, kidney stone, urinary disorders, sterility, gastrointestinal diseases, stomach-ache, headache, hypoglycaemic, as antihypertensive, appetizer, diuretic, tranquiliser [8, 25, 27–31, 33, 35–43, 47]	0.23	0.23	0.23
		45	L.	For cough: int., m.				
		49, 69	L.	For cough; int., i.				
		52	L.	For constipation: int., d.				
		57	L.	For common cold and flu: int., i.				
				For cough; int., d.				
		63	T.	For cough: int., d.				
		1, 40, 47, 51, 53, 57, 60, 61, 65, 66, 71, 72	L.	For cough; int., d.				
Laurocerasus officinalis Roemer (3092)	Karayemiş	6	Fr.	For reducing high blood glucose levels; e.d.	For headache, haemorrhoids, stomach-ache, hypertension, sore throat, as analgesic, antidiabetic, antipyretic [26, 37]	0.01	0.01	0.01
Mespilus germanica L. (3105, 3106, 3107, 3108, 3109, 3110)	Töngel, muşmula	6, 7	L.	For diarrhoea; int., i.	For abdominal pain, anthelmintic, diarrhoea, haemorrhoids, asthma, bronchitis, colds, cough, flu, tuberculosis, diabetes, eczema, hypertension [31, 37, 40, 43]	0.06	0.06	0.06
		31	L., Fr.	For diarrhoea; int., d.				
		40	L.	For diarrhoea; int., d.				
		61	Fr.	For cough; int., d.				
		63	L.	For cough; int., d.				
Prunus sp. (3134, 3135)	Çakal eriği, kırmızı erik	7	Fr.	For bronchitis; int., d.	–	0.02	0.02	0.02
		39	Fr.	As blood glucose regulatory; e.d.				
Prunus avium (L.) L. (3136)	Kiraz	5	S.	Abdominal pain and as carminative (for babies); warmed up and wrapped on abdomen[a]	For dysuria, kidney stone [34, 38, 44]	0.02	0.03	0.02
		6	F.st.	For kidney stone; int., d. with *Rosa canina* Fr.				
Rosa canina L. (3141, 3140, 3142)	Kuşburnu, yaban gülü	6	Fr.	For kidney stone and as diuretic; as described for *Prunus avium*	For abdominal pain, diarrhoea, gallstones, haemorrhoids, inflamed gall bladder, intestinal disorders, stomach disorders, abscess, burns, eczema, itching, rash, wart, wound healing, allergy, common cold, dyspnoea, flu, respiratory tract disorders, cancer, cystitis, intrauterine inflammation, kidney disorders, diabetes, eye strain, heart diseases, hypertension, hepatitis, internal diseases, malaria, rheumatism, as aphrodisiac, immunotonic, tonic, vasodilator, panacea [8, 25–27, 29–38, 40–43, 45–49]	0.03	0.04	0.03
		9	Fr.	For healthy living; as marmalade, eaten				
		40	Fr.	For enhancing immunity in influenza; int., d.				

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Table 3 (continued)

Family and scientific name (GUE no)	Local name	Loc.[b]	Used part[c]	Utilisation, preparation and application method[c]	Previously recorded folk medicine usages	RFC	UV	CI
Rubus sp. (3143, 3144)	Böğürtlen	8	Fr.	For aphthae; crushed, a.a.a.	-	0.02	0.03	0.03
		39	R.	For inflammation and reducing high glucose levels; int., d.				
Rubus discolor Weihe & Nees (3145)	Böğürtlen	66	R.	For haemorrhoids; int., d.	For anaemia, asthenopia, bronchitis, diabetes, diarrhoea, haemorrhoids, infertility, kidney stones, nephritis, prostatitis, wounds, as antiemetic and haemostatic [31, 37, 40, 41]	0.01	0.01	0.01
Salicaceae								
Salix babylonica L. (3146)	Söğüt	26	L.	For rheumatic pain; int., i.	For bronchitis, cough, headache, sunstroke [8, 31, 43]	0.01	0.01	0.01
Solanaceae								
Lycopersicum esculentum Mill. (3097)	Domates	1	Fr.	For whitlow; scoop out, fingers are kept in it	For abscess, burns, scorpion bite, blood forming [33, 34, 36, 38]	0.01	0.01	0.01
Nicotiana tabacum L. (3113, 3114, 3115, 3116, 3117, 3118, 3119)	Tütün	1	L.	As antiseptic for incisions; crushed, a.a.a.	For wound healing, as haemostatic [40, 47]	0.07	0.07	0.07
		3, 7, 54, 69	L.	As blood stopper; a.a.a.				
		61	L.	As blood stopper; with sugar, a.a.a.				
Solanum tuberosum L. (3156, 3157, 3158, 3159, 3160, 3161)	Patates	1	Tb.	For headache; sliced, red pepper is added and wrapped on forehead	For bloodshot eyes, burns, eczema, oedema, headache, fever, swelling, as analgesic [33, 36, 38–40, 48]	0.06	0.06	0.06
		7	Tb.	For headache; sliced, salt is added and wrapped on forehead				
		39	Tb.	For sun burn; sliced, a.a.a.				
		54	Tb.	For headache in sunstroke; sliced, wrapped on forehead				
		54, 61	Tb.	For headache; sliced, wrapped on forehead				
Tiliaceae								
Tilia rubra DC. subsp. *caucasica* (Rubr.) V. Engler (3168, 3169, 3170, 3171, 3172, 3173, 3174)	Ihlamur, sünik	4, 40, 47, 63, 66	Inf.	For common cold and cough; int., d.	For cough, common cold, flu [28, 29, 37]	0.07	0.13	0.07
		13	Inf.	For softening throat in influenza; int., d.				
		19	Inf.	For cough; as described for *Thymus* sp.				
Urticaceae								
Urtica dioica L. (3177, 3178, 3179, 3180, 3181, 3182, 3183, 3184, 3185)	Sırgan, ısırgan	1, 52	L.	For stomach-ache; int., d.	For abdominal pain, constipation, diarrhoea, enteritis, gallbladder stones, haemorrhoids, inflammatory bowel, intestinal regulatory, stomach disorders, abscess, alopecia, eczema, fungal infection, itching, psoriasis, wounds, anaemia, cardiovascular diseases, common cold, respiratory diseases, cancer, urinary system diseases, diabetes, oedema, goitre, gynaecological	0.13	0.19	0.14
		2	L.	For reducing high blood pressure; applied on hands				
		9	A.p.	For rheumatism and leg pain; boiled in water and wrapped on knees				
		29	A.p.	As local anaesthetic during piercing ears; applied on ear				

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Table 3 (continued)

Family and scientific name (GUE no)	Local name	Loc.[b]	Used part[c]	Utilisation, preparation and application method[c]	Previously recorded folk medicine usages	RFC	UV	CI
		39	L.	For rheumatism and leg pain; roasted with salt, wrapped on knees	disorders, infertility, internal diseases, obesity, prostatitis, urinary system infection, liver disorders, osteoporosis, rheumatism, paralysis, sciatica, as abortifacient, aphrodisiac, analgesic, anthelmintic, anticoagulant, appetizer, bronchodilator, diuretic, expectorant, haemostatic, tonic, panacea, prophylactic [8, 26–33, 36–44, 46–49]			
		48	S.	For rheumatism and leg pain; eaten				
		51	L.	For jaundice; crushed, obtained juice is drunk				
		60	A.p.	For haemorrhoids; int., d.				
		60	R.	As abortive; int., d.				
		61	L.	For bruises and injuries; boiled in water, a.a.a., or crushed and a.a.a.				
		68	L.	For rheumatism and leg pain; mixed with salt and wrapped on knees				
Vitaceae								
Vitis sylvestris C.C. Gmel. (3186, 3187)	Üzüm, kara üzüm	6	B.s.	For kidney stone; sap obtained from incised braches is drunk[a]	For anaemia, baldness, as blood stopper hair tonic [26, 40]	0.04	0.06	0.04
		9	Fr.	For high fever; 'pekmez' (Fr. are crushed, filtrated and boiled) obtained from Fr. is mixed with water and drunk[a]				
		51	Fr.	For broken and dislocated bones; as described for *Allium cepa*[a]				
		61	Fr.	For broken and dislocated bones; as described for *Olea europaea*[a]				

[a]Newly detected usages in Turkey.

[b]The localities that are expressed as number could be seen in Figure 1.

[c]a.a.a., applied on affected are; A.p., aerial parts; B., bulb; B.s., branch sap; d., decoction; e.d., eaten directly; F., flower; F.o., fixed oil; Fr., fruit; F.s., fruit shell; F.st., fruit stalk; H., herb; i., infusion; Inf., inflorescence; int., internally; L., leaf; Lt., latex; m., maceration; N.r., no record has been found; p.w., poultice with water; R., root; Rs., resin; S., seed; S.h., seed husk; Sm., stem, St., stylus; T., twig; Tb., tuber; W.p., whole plant.

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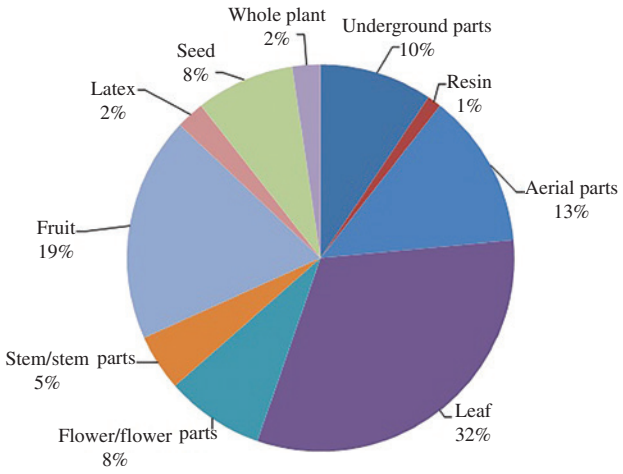


Figure 2: Percentage distribution chart of plant parts used in the treatment of ailments.

0.19; 0.18 and 0.16, respectively). There is a little difference on this order according to RFC and CI: *C. oblonga* is at the first place (RFC = 0.23; CI = 0.23), *U. dioica* is at the second order (RFC = 0.13; CI = 0.14) and *Allium cepa* is at the third order (RFC = 0.11; CI = 0.11) (Table 3).

Discussion

In Bafra, mostly referred plant families are Rosaceae, Lamiaceae and Asteraceae in many studies that have been conducted in Turkey [29, 48]. *Allium* and *Plantago* are the most cited genera (three taxa), while the most referred species is *C. oblonga* (22 citations). *Allium* is the genus that is widely being used as food stuff, and *Plantago* is a cosmopolite genus that grows naturally in whole Anatolia, so coming across with these genera as the most cited ones is simply expected. Similarly, *C. oblonga* grows almost in every garden and in villages and it is actually easily accessible.

Easily accessible plant parts like leaves, aerial parts and fruits are encountered once again as similar to our previous study [36]. Dermatological, musculoskeletal, respiratory and gastrointestinal disorders are determined to be the mostly cited health problems in Bafra district. Considering village life and participants age range (77% of participant are older than 50 years old), these findings are acceptable. Highest UV, RFC and CI values are observed on *C. oblonga* and *U. dioica*. As mentioned before *C. oblonga*, likewise *U. dioica*, are wildly grows almost in every garden, hence prominence of these plant species is expected.

As it could be seen in Table 3, we compered our findings with previous studies and noticed that five folk medicines (*Anthemis coelopoda* var. *coelopoda*, *Tanacetum corymbosum*, *Quercus frainetto*, *Salvia forskahlei* and *Lavatera punctata*) have not been recorded as folk medicine in Turkey before. In addition, new usages of 13 folk medicines in Turkey were also detected [*Allium porrum*, *Brassica oleracea*, *Corylus maxima*, *Foeniculum vulgare*, *Helianthus annuus*, *Melissa officinalis* subsp. *altissima*, *Petroselinum crispum*, *Plantago major* subsp. *intermedia*, *Prunus avium*, *Punica granatum*, *Sedum pallidum*, *Vitis sylvestris* and *Zea mays*].

Anthemis coelopoda is used for sinusitis as decoction in our study area. Anti-bacterial activity of chloroform extract of *A. coelopoda* root and stem against *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli* and *Salmonella typhi* were investigated by disc diffusion, well diffusion and microdilution methods. The results revealed MIC values between 0.187 and 1.5 mg/mL and strongest antibacterial activity was observed against *B. subtilis* [50]. According to our literature survey, anti-bacterial activity of various other *Anthemis* species or compounds that isolated from *Anthemis* species were studied in detail and determined to have strong antimicrobial activity [51–62]. Hence, according to these findings, usage of *A. coelopoda* for sinusitis could possibly be thought to be based on its antimicrobial activity.

Tanacetum corymbosum is used for abdominal pain and as carminative in Bafra and best of our knowledge, its gastro-preventive activity has not been studied yet. Nevertheless, anti-ulcerogenic activity of *T. vulgare* L. and *T. larvatum* (Griseb. ex Pant.) Kanitz's have been previously investigated. Chloroform extract of *T. vulgare* and parthenolide that isolated from chloroform extract, showed significant dose dependent ulcer inhibition (27% to 100% ulcer inhibition ratio) with ethanol-induced gastric ulcer method [63]. Similarly, *T. larvatum*'s chloroform extract decreased gastric damage on indomethacin-induced gastric ulcer in vivo [64].

It is known that some oak species have antimicrobial activity. For example, ethanol extract and some substances [4,5-di-O-galloyl(+) protoquercitol and 3,5-di-O-galloyl protoquercitol] isolated from ethanol extracts of *Quercus acuta* Thunb. trunk were determined to have antibacterial activity against *Bacillus brevis*, *B. coagulans*, *B. stearothermophilus*, *Escherichia coli*, and *Pseudomonas aeruginosa* (inhibition zones were in the range of 11 and 23 mm) [65]. *Quercus frainetto* is being used as antiseptic in Bafra and antimicrobial effect is likely to be found as other *Quercus* species.

Salvia forskahlei is utilised as folk medicine in our study area in the influenza. According to literature

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survey, antimicrobial activity of different *Salvia* species has been studied, except *S. forskahlei*. In a study by Chung et al. [66], antiviral effect of six compounds that have been isolated from *S. miltiorrhiza*, were evaluated against *Enterovirus* 71 and only rosmarinic acid and magnesium lithospermate B were reported to demonstrate important anti-*Enterovirus* 71 activity. Antimicrobial effects of *S. limbata* C.A. Mey. and *S. sclarea* L. methanol extract and essential oil were examined on 35 bacteria, 19 fungi and a yeast with disk diffusion, micro-well dilution, and MIC agar dilution technics. As a result, only essential oil of *S. limbata* showed activity on some of microorganisms (MIC values were in the range of 15.62 and 250 μg/mL) [67]. Antimicrobial activity of quercetin-3-*O*-α-L-rhamnopyranosyl-(1→6)-β-D-glucopyranoside isolated from *S. leucantha* Cav. was evaluated on six microorganisms with agar diffusion method and found to have activity at different degrees. In the same study, the aforementioned compound is represented to have significant wound healing activity as well [68]. In a study by Haznedaroğlu et al. [69], the essential oil of *S. tomentosa* Miller were displayed to remarkably inhibit the growth of *Escherichia coli, Enterobacter cloacae, Enterococcus faecalis, Staphylococcus aureus* and *S. epidermidis*; while found to have no effect on *Pseudomonas aeruginosa*. Various *Salvia* species are widely used throughout the world for diseases such as influenza, common cold and the findings that we have given above could be thought to support its usages for these phenomenon.

We could not find any literature information on *L. punctata*, another plant that was determined by this study for the first time as being used as a folk medicine.

Foeniculum vulgare is used as folk medicine in the case of diseases like obesity, rheumatism, urinary system disorders in different parts of Turkey, but its usage for decreasing blood glucose level was determined first time with our study. Anti-hyperglycaemic effect of mixture that consist of *Terminalia chebula* Retz. water extract, ethanol extracts of *Cassia angustifolia* Vahl. and *Nigella sativa* L., ethanol-water extracts of rhubarb, *Glycyrrhiza glabra* L., *Pimpinella anisum* L. and *F. vulgare* have been shown in rats that are subjected to high fat diet [70]. In different studies, methanol extract and essential oil of *F. vulgare* were determined to cause decrease in plasma glucose levels in diabetic rats [71, 72]. With these aforementioned studies, consistency of bioactivity results with folk medicinal usages is demonstrated once again.

Topical application of *Helianthus annuus* seed oil was demonstrated to be beneficial against the wounds on horses [73]. Anti-inflammatory activity of diterpene acids (grandiflorolic, kaurenoic and trachylobanoic acids) isolated from *H. annuus* were evaluated and they presented in vivo and in vitro anti-inflammatory activity [74]. These findings partly support the usages of *H. annuus* seed oil in abscess, whitlow and burns that firstly recorded in our study area.

Usage of *Melissa officinalis* subsp. *altissima* on arthritis was recorded first time in Turkey by this study. Previously, water extract of *M. officinalis* was demonstrated to have anti-inflammatory activity by reducing in the amounts of the exudate, in the numbers of leukocytes and polymorphonuclear cells [75]. Additionally, ethanolic extract of *M. officinalis* leaves also showed good analgesic activity by inhibition of acetic acid-induced visceral pain, and glutamate-induced pain [76]. Results of these studies are also consistent with folk medicinal usages.

Folk medicine knowledge is a very important heritage. However, factors like decrease in village population, increase in the educational status, ease of reaching to orthodox medicine and drugs cause unconcern on folk medicine, therefore folk medicine knowledge is rapidly disappearing. Recently, researches on folk medicine are becoming widespread, but there are still many areas that have not been investigated in Turkey and detailed studies should be conduct before the loss of this precious heritage.

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