The Medicinal and Wild Food Plants of Batman City and Kozluk District (Batman-Turkey)

Gizem BULUT (✉)
Ahmet DOĞAN
İsmail ŞENKARDEŞ
Rojda AVCI
Ertan TUZLACI

Summary

This paper reports an ethnobotanical investigation carried out in 2012 to record medicinal and wild food plants of Batman City and Kozluk District. Totally, forty-one plants are recorded as used as traditional folk medicine for the region, and twenty of these are also used as a source of wild food. The most commonly used plants in the region as medicinal remedies were *Malva nicaeensis*, *Pistacia khinjuk*, *Plantago major* subsp. *intermedia* and *Teucrium polium*. Plants are mostly used for the treatment of gastrointestinal system diseases, respiratory system diseases and diabetes. The species most commonly used for food are: *Gundelia tournefortii*, *Pistacia khinjuk* and *Rhus coriaria*. This ethnobotanical study conducted in both districts will enable the traditional use of wild plants both as food sources and herbal remedies to be passed on to future generations.

Key words

ethnobotany; traditional medicine; wild food plants; Batman; Turkey

Department of Pharmaceutical Botany, Faculty of Pharmacy, Marmara University, 34668, Üsküdar-Istanbul, Turkey

✉ Corresponding author: gizem.bulut@marmara.edu.tr

Received: May 18, 2018 | Accepted: December 12, 2018

Introduction

Ethnobotanical studies clarify the worldwide, contemporary, historical, traditional and cultural uses to which plants have been put (Bulut and Tuzlacı, 2013) both as sources of food and as folk medicine; the latter application has gradually been increasing in European countries (Lentini and Venza 2007; Carrió and Vallès 2012; Łuczaj et al., 2013; Nedelcheva 2013; Dolina and Łuczaj 2014; Alarcón et al., 2015; Łuczaj and Dolina 2015; Redzic, 2015; Benítez et al. 2017) as well as in Turkey (Kültür, 2007; Tuzlacı and Şenkardeş, 2011; Dogan, 2012; Dogan et al., 2013; Gurdal and Kultur, 2013; Sargin et al., 2013; Bulut and Tuzlacı, 2015; Dogan et al., 2015; Sargin, 2015; Bulut, 2016; Senkardes and Tuzlaci, 2016) .

East Anatolia is the location of abundant flora as a result of its variable climate and the large number of different ecological zones. This variety means that the area functions as a very good source of medicinal plants, many of which have been used for many years in various Anatolian communities, and it is also the reason for the remarkable depth and breadth of accounts of folk knowledge found in this area (Özgökçe and Özçelik, 2004).

The aim of this study was to provide information about the traditional applications of wild plants as herbal medicine and food in Batman City and Kozluk District, locations in which no similar studies have previously been conducted (Sezik et al., 1997; Özgökce and Özcelik, 2004; Akan et al., 2008; Şığva and Seçmen, 2009; Tuzlaci and Dogan, 2010; Yesil and Urusak Akalin, 2009; Çakılcıoğlu and Türkoğlu, 2010; Yesil and Urusak Akalin, 2011; Demirci and Özhatay, 2012; Polat et al., 2013; Doğan and Tuzlaci, 2015; Mükemre et al., 2015, 2016; Tetik et al., 2013; Bulut et al., 2016; Bulut et al., 2017; Altundag Cakır, 2017).

Materials and methods

Batman Province is located (37° 52′ 50′′ N - 41° 7′ 39′′ E) in the southeast of Turkey at an altitude of 550 m above sea level (Fig. 1). It is made up of six districts, with a total area of 4649 km^2 and has a population of 534,205. More than 390,000 reside in the Batman City, while the remainder are located in the villages and subdistricts. Batman Province is surrounded by Muş to the north, Mardin to the south, Bitlis and Siirt to the east and the city of Diyarbakır to the west. Kozluk is a district of the Batman Province, covering an area of 1101 km^2, with a population of 60,690 (Fig. 2) (Batman, 2017).

The vegetation of studied area is similar to that characteristic of stepic communities and contains Irano-Turanian elements. The plain areas consist of mainly *Artemisia* sp., *Crataegus* sp., *Cerasus* sp. and *Pistacia* sp.. The higher parts of area is covered with mainly *Astragalus* sp., *Acantholimon* sp. and *Salvia* sp.

This ethnobotanical study investigated how wild plants are used as sources of food and for medicinal purposes. The ethnobotanical data was gathered through open and semi-structured interviews (Alexiades, 1996; Cotton, 1996; Martin, 1995) conducted with the local people in both Turkish and Kurdish. The researchers carrying out the interviews asked about traditional and other uses of plants in home for both food and medicinal purposes (Bulut, 2016). In the course of the interviews, information was gathered about the local names of any medicinal plants, the part(s) of the plants used, the illnesses being treated, the therapeutic effects, and

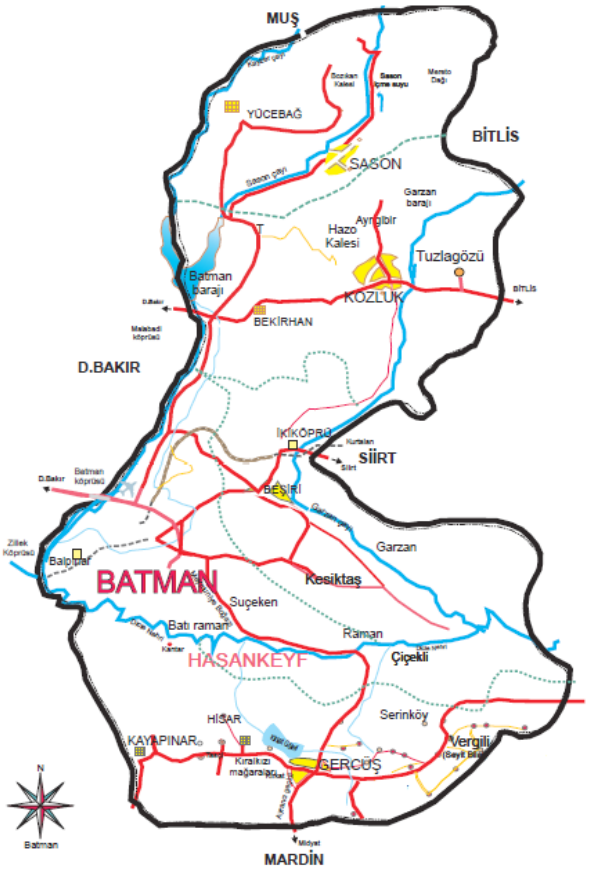

Figure 1. Map of Batman Province

how the plants were prepared and administered. For food plants, information was gathered about their local names, the part(s) used and consumption.

The plants that had been collected were identified by the authors using the *Flora of Turkey and East Aegean Islands* (Davis 1965-1985). Specimens were placed at the Herbarium of the Faculty of Pharmacy, University of Marmara (MARE).

Figure 2. View of Tosunpınar Village (Kozluk District, Batman Province)

Results and discussion

The plants utilized for medicinal and food purposes in Batman City and in the Kozluk District are given in Table 1. They are presented in alphabetical order by their botanical names, alongside any relevant information. Taxonomical alterations to The Plant List are provided in parentheses in Table 1 alongside the common scientific names. In the course of this study, 45 specimens were collected in the areas under investigation and 41 taxa, from 18 families, were recorded. The medicinal plant families most commonly found in use were Lamiaceae (21%) and Asteraceae (17%). Aerial parts are primarily utilized for medicinal usages.

Plants are primarily deployed medicinally for gastrointestinal system diseases, respiratory system diseases and diabetes. During the study, a total of 77 treatments was recorded. Most remedies were taken oraly, the main preparation methods being decoction and direct application. The most frequently used wild plants for therapeutic purposes in the region were *Malva nicaeensis* All., *Pistacia khinjuk* Stocks, *Plantago major* L. subsp. *intermedia* (Gilib.) Lange and *Teucrium polium* L.

Fifteen taxa used for medical treatments were also consumed as foods. Only five taxa (*Cardaria draba* (L.) Desv. subsp. *draba*, *Cerasus mahaleb* (L.) Miller var. *mahaleb*, *Echinops viscosus* DC. subsp. *bithynicus* Boiss. Rech. fil, *Eryngium campestre* L. var. *virens* Link and *Serratula cerinthifolia* (Sm.) Boiss.) were used solely for food (Table 1).

Table 1. Medicinal and Wild Food Plants of Batman City Center and Kozluk District (Batman-Turkey)

Botanical name, Family and Specimen number, Locality	Local name	Plant part used (medicine)	Ailments treated/ Therapeutic effect	Preparation and Administration	Plant part used (food)	Modes of consumption	References
Achillea vermicularis Trin. (Asteraceae, MARE 15405, K)	—	Aerial parts	Abdominal pain	Decoction, int.			(Özgökçe and Özçelik, 2004; Mükemre et al., 2015; Bulut et al., 2016;)[b]
Adiantum capillus – veneris L. (Adiantaceae, MARE 15407, K)	—	Aerial parts Aerial parts	Urinary diseases Diabetes	Decoction, int. before breakfast Decoction, int.			Urinary diseases (Demirci and Özhatay, 2012)
Alcea hohenackeri (Boiss. et Huet) Boiss. (Malvaceae, MARE 15397, B)	Hiro (Kr)	Flowers Flowers Roots	Bronchitis, Expectorant Laxative Kidney stones	Decoction, int. Decoction, int. Decoction, int.			
[a]*Alcea rosea* L. (Malvaceae, MARE 15396, B)	Hiro (Kr)	Flowers Flowers Roots	Bronchitis, Expectorant Laxative Kidney stones	Decoction, int. Decoction, int. Decoction, int.			(Bulut et al., 2016)[b]
Amaranthus sp. (Amaranthaceae, MARE 15393, B)	Dindul (Kr), Selmık (Kr)	Aerial parts	Stomach diseases	Cooked, int.	Aerial parts	Boiled and served with eggs, fried with (or without) egg	Stomach diseases (Polat et al., 2013) (Yeşil and Akalin 2011; Dogan and Tuzlaci, 2015; Altundağ Çakır 2017)
Aristolochia sp. (Aristolochiaceae, MARE 15372, B)	Zılındar (Kr)	Roots	Wound	Crushed, ext.			(Akan et al., 2008)[b]
Cardaria draba (L.) Desv. subsp. *draba* (Brassicaceae, MARE 15371, B) [*Lepidium draba* L.]	Kınaberk (Kr)				Aerial parts	Boiled and served with eggs, fried with (or without) egg	
Cerasus mahaleb (L.) Miller var. *mahaleb* (Rosaceae, MARE 15381, B) [*Prunus mahaleb* L.]	Kener (Kr), Koku ağacı (Tr), Mahlep (Tr)				Seeds	Spice (especially in pastry)	(Mükemre et al., 2016)[b]
Chrysophthalmum montanum (DC.) Boiss. (Asteraceae, MARE 15367, B)	Burutkafi (Kr), Hapşırık otu (Tr)	Whole plants Aerial parts	Wound Sinusitis	Crushed, ext. Crushed, ext.			
Crepis foetida L. (Asteraceae, MARE 15375, B)	Kulilka zer (Kr)	Aerial parts	Wound	Crushed, ext.			
Cyclotrichium leucotrichium (Stapf ex Rech. fil.) Leblebici (Lamiaceae, MARE 15368, B)	Punge tata (Kr)	Aerial parts	Asthma	Infusion, int.			(Akan et al., 2008)[b]

Botanical name, Family and Specimen number, Locality	Local name	Plant part used (medicine)	Ailments treated/ Therapeutic effect	Preparation and Administration	Plant part used (food)	Modes of consumption	References
Cyperus rotundus L. (Cyperaceae, MARE 15419, B)	Şembelilik (Tr)	Roots Roots	Diabetes, Stomachache, Rheumatism Diabetes, Stomachache, Rheumatism	Crushed (+honey), int. Infusion, int.			(Özgökçe and Özçelik, 2004)[b]
Echinops viscosus DC. subsp. *bithynicus* Boiss. Rech. fil (Asteraceae, MARE 15386, B) [*Echinops spinosissimus* Turra]	Şekırok (Kr)				Receptacles	Raw	(Dogan and Tuzlaci, 2015)
Eryngium campestre L. var. *virens* Link (Apiaceae, MARE 15379, B)	Kerengoz (Kr)				Roots	Raw	(Dogan and Tuzlaci, 2015; Altundağ Çakır 2017)
Foeniculum vulgare Miller (Apiaceae, MARE 15412, K)	Anason (Tr)	Fruits Fruits Aerial parts Aerial parts	Digestive Increasing milk secretion Insomnia Dyspepsia	Decoction, int. Decoction, int. Infusion, int. Infusion, int.	Aerial parts	Spice	
Glycyrrhiza sp. (Fabaceae, MARE 15417, B)	Meyan (Tr), Sus (Kr)	Root Leaves	Anaemia, Expectorant, Diabetes Skin diseases	Decoction, int. Crushed wrapped in a cloth, ext.			(Akan et al., 2008)
Gundelia tournefortii L. (Asteraceae, MARE 15380, B)	Kereng (Kr), Kenger (Tr)	Roots	Diabetes	Cooked, eaten	Roots Roots Roots	Raw Boiled and served with fried eggs Boiled then pickled	(Özgökçe and Özçelik, 2004; Cakilcioglu and Turkoglu, 2010; Polat et al., 2013; Tetik et al., 2017)[b] Raw (Yeşil and Akalin 2011; Dogan and Tuzlaci, 2015; Mükemre et al., 2016)
Lepidium sp. (Brassicaceae, MARE 15392, B)	Tuzık (Kr)	Aerial parts	Stomachache	Cooked, eaten	Aerial parts	Salad	(Altundağ Çakır 2017)[b]
Malva nicaeensis All. (Malvaceae, MARE 15420, K)	Tolık (Kr)	Aerial parts Aerial parts Aerial parts Aerial parts	Stomach diseases Stomach diseases Hemorrhoids Gynaecological diseases	Cooked, eaten Decoction, int. Decoction, int. Decoction, int			
Mentha longifolia (L.) Hudson subsp. *typhoides* (Briq.) Harley var. *typhoides* (Lamiaceae, MARE 15408, K)	Nınhe (Kr)	Leaves	Stomach diseases	–, eaten	Leaves	Spice	Stomach diseases (Sezik et al., 1997; Bulut et al., 2017) (Özgökçe and Özçelik, 2004; Yeşil and Akalin, 2009; Cakilcioglu and Turkoglu, 2010; Dogan and Tuzlaci, 2010; Polat et al., 2013; Bulut et al., 2016)[b] Spice (Yeşil and Akalin 2011; Dogan and Tuzlaci, 2015; Bulut et al., 2016, 2017; Altundağ Çakır 2017)
[a] *Mentha* x *piperita* L. (Lamiaceae, MARE 15390, K)	Nane (Tr)	Leaves	Cold	Infusion, int.	Leaves	Spice	Cold (Tetik et al., 2017)

Botanical name, Family and Specimen number, Locality	Local name	Plant part used (medicine)	Ailments treated/ Therapeutic effect	Preparation and Administration	Plant part used (food)	Modes of consumption	References
Nasturtium officinale R. Br. (Brassicaceae, MARE 15403, K)	Tuzık (Kr)	Aerial parts	Stomach diseases	–, eaten	Aerial parts	Salad	Stomach diseases (Polat et al., 2013) (Demirci and Özhatay, 2012)[b]
[a] *Ocimum basilicum* L. (Lamiaceae, MARE 15388, B)	Rihan (Kr)	Aerial parts Aerial parts	Dyspepsia Mouth diseases	Infusion, int. –, eaten	Aerial parts	Spice	(Polat et al., 2013; Bulut et al., 2016)[b]
[a] *Petroselinum crispum* (Miller) A.W. Hill. (Apiaceae, MARE 15391, K)	Beğdenoz (Kr)	Aerial parts Aerial parts	Gynaecological diseases Eye diseases	Decoction, int. –, eaten			(Bulut et al., 2016)[b]
Pistacia khinjuk Stocks (Anacardiaceae, MARE 15370, B)	Bıttım (Tr), Menengiç (Tr), Şengel (Tr)	Fruits Fruits	Stomachache Anthelmintic	–, eaten –, eaten before breakfast	Fruits	Coffee	Stomachache (Akan et al., 2008) (Bulut et al., 2017)[b] Coffee (Bulut et al., 2017)
Plantago major L. subsp. *intermedia* (Gilib.) Lange (Plantaginaceae, MARE 15421, K)	Belgeves (Kr)	Leaves Leaves Leaves	Stomach diseases Ulcer Wound	Decoction, int. Cooked, eaten Crushed, ext., wrapped in a cloth	Aerial parts	Boiled and served with eggs, fried with (or without) egg	Wound (Sezik et al., 1997; Özgökçe and Özçelik, 2004; Yeşil et Akalin, 2009; Dogan and Tuzlaci, 2010; Polat et al., 2013; Mükemre et al., 2015; Bulut et al., 2016; Tetik et al., 2017) (Şığva and Seçmen, 2009)[b]
Plumbago europaea L. (Plumbaginaceae, MARE 15384, B)	Reşka hespa (Kr)	Roots	Liver diseases	Decoction, int.			(Akan et al., 2008)[b]
Portulaca oleracea L. (Portulacaceae, MARE 15422, B)	Pırpar (Kr)	Aerial parts	Digestive, Urinary system diseases	–, eaten	Aerial parts Aerial parts	Raw in salads Cooked	Urinary system diseases (Dogan and Tuzlaci, 2010) (Bulut et al., 2016, 2017)[b] Salad (Dogan and Tuzlaci, 2015; Mükemre et al., 2016; Bulut et al., 2017)
Rhus coriaria L. (Anacardiaceae, MARE 15342, K)	Sumak (Tr)	Fruits Fruits	Appetizer Digestive	Infusion, int. –, eaten	Fruits	Spice	Appetizer (Bulut et al., 2017) (Demirci and Özhatay, 2012)[b] Spice (Bulut et al., 2017)
Salix acmophylla Boiss. (Salicaceae, MARE 15401, K)	Bi (Kr), Gıllaf (Kr)	Leaves	Liver diseases	Crushed (+leaves of *Plantago major* subsp. *intermedia*), int.			(Bulut et al., 2017)[b]
Salvia multicaulis Vahl. (Lamiaceae, MARE 15385, B)	Kaşketın (Kr)	Aerial parts	Scorpion-snike bite	Crushed, ext.			(Cakilcioglu and Turkoglu, 2010)
Salvia palaestina Bentham (Lamiaceae, MARE 15374, B)	Ada çayı (Tr)	Aerial parts	Cold, Expectorant, Diabetes	Infusion, int.			
Sanguisorba minor Scop. subsp. *magnolii* (Spach) Briq. (Rosaceae, MARE 15366, B)	Gıyaye paluka (Kr)	Fruits Aerial parts	Wart Urinary system diseases, Kidney stones	–, eaten Decoction, int.			

Botanical name, Family and Specimen number, Locality	Local name	Plant part used (medicine)	Ailments treated/ Therapeutic effect	Preparation and Administration	Plant part used (food)	Modes of consumption	References
Serratula cerinthifolia (Sm.) Boiss. (Asteraceae, MARE 15376, B) [*Klasea cerinthifolia* (Sm.) Greuter & Wagenitz]	Çay otu (Tr)				Leaves	Tea	
Teucrium polium L. (Lamiaceae, MARE 15378, 15404, B, K)	Merwend (Kr)	Aerial parts Aerial parts	Abdominal pain, Digestive, Cold, Diabetes, Stomachache Antitussive	Decoction, int. Infusion, int.			Cold (Dogan and Tuzlaci, 2010; Polat et al., 2013) Stomachache (Özgökçe and Özçelik, 2004; Tetik et al., 2017) Diabetes (Akan et al., 2008; Yeşil and Akalin, 2009; Şığva and Seçmen, 2009; Cakilcioglu and Turkoglu, 2010; Demirci and Özhatay, 2012; Polat et al., 2013; Tetik et al., 2017; Bulut et al., 2017) (Sezik et al., 1997)[b]
Thymbra sintenisii Bornm. et Aznav. (Lamiaceae, MARE 15383, B)	Catire (Kr)	Aerial parts	Cold	Infusion, int.	Aerial parts	Spice	
Thymus kotschyanus Boiss. et Hohen. (Lamiaceae, MARE 15406, K)	Catire (Kr)	Aerial parts	Cold	Infusion, int.	Aerial parts	Spice	Cold (Yeşil and Akalin, 2009) Spice (Yeşil and Akalin 2011; Dogan and Tuzlaci, 2015; Mükemre et al., 2016; Altundağ Çakır 2017)
Tragopogon longirostris Bisch. ex Schultz Bip. var. *longirostris* (Asteraceae, MARE 15405, B) [*Tragopogon porrifolius* L. subsp. *longirostris* (Sch.Bip.) Greuter]	Koca badır (Tr), İshal out (Tr)	Roots Root's juice	Constipation Constipation	Peeled off, eaten Dropped on the sugar, int.			(Dogan and Tuzlaci, 2010)[b]
Tribulus terrestris L (Zygophyllaceae, MARE 15416, B)	Gurnig (Kr), Kartıba (Kr)	Aerial parts	Kidney Stones, Cardiovascular diseases, Stomach diseases	Decoction, int.			Kidney stones (Polat et al., 2013; Bulut et al., 2017) Cardiovascular diseases (Polat et al., 2013;Tetik et al., 2017)
Urtica sp. (Urticacaeae, MARE 15409, K)	Gezgez (Kr), Isırgan (Tr)	Aerial parts	Rheumatism	Crushed wrapped in a cloth, ext.	Aerial parts	Cooked	Rheumatism (Dogan and Tuzlaci, 2010; Polat et al., 2013; Mükemre et al., 2015;) (Akan et al., 2008; Şığva and Seçmen, 2009; Cakilcioglu and Turkoglu, 2010; Demirci and Özhatay, 2012; Tetik et al., 2017)[b] Cooked (Altundağ Çakır 2017; Dogan and Tuzlaci, 2015) (Mükemre et al., 2016)[b]

Botanical name, Family and Specimen number, Locality	Local name	Plant part used (medicine)	Ailments treated/ Therapeutic effect	Preparation and Administration	Plant part used (food)	Modes of consumption	References
[a] *Zea mays* L. subsp. *mays* (Poaceae, MARE 15402, K)	Mısır (Tr)	Silk	Cancer	Decoction, int.			(Sezik et al., 1997; Polat et al., 2013; Bulut et al., 2016, 2017; Tetik et al., 2017)[b]

int.: internal use; ext.: external use; [a] Cultivated plants [b] Different usage; B: Batman City and K: Kozluk District; The language of local names is in Turkish (Tr) and Kurdish (Kr)

Wild vegetables continue to be used in this region. They are usually picked in spring (March–April), while some fruit are also gathered at the close of summer and at the beginning of autumn. The interviewees stated that they particularly chose to eat wild food plants as they considered them to be healthier.

The species most commonly used for food are: *Gundelia tournefortii* L., P. *khinjuk* and *Rhus coriaria* L.

Menengiç coffee is very famous in the region, made from fruits of *P. khinjuk*.

Other ethnobotanical utilizations have also been recorded during investigations that are carried out in the region. A very popular local soap ("bıttım") is made of oil which is derived from the fruits of *P. khinjuk*.

Astragalus lamarckii Boiss. (MARE 15369), *E. viscosus* subsp. *bithynicus* and *E. campestre* var. *virens* are utilized in apiculture.

The branches of *Scabiosa argentea* L. (MARE 15387) and *Xeranthenum* sp. (MARE 15382, 15415) are used as sweepers.

Also, *C. mahaleb* var. *mahaleb* and *Peganum harmala* L. (MARE 15387) are used for "nazar" (believed to protect against the evil eye).

Comparison of the present study with other, previous, comprehensive, ethnobotanical studies of plants used in neighbouring areas for folk medicine (Sezik et al., 1997; Özgökce & Özcelik, 2004; Akan et al., 2008; Şığva and Seçmen, 2009; Tuzlaci and Dogan, 2010; Yesil and Urusak Akalin, 2009; Çakılcıoğlu and Türkoğlu, 2010; Demirci and Özhatay, 2012; Polat et al., 2013; Mükemre et al., 2015; Tetik et al., 2013; Bulut et al., 2016; Bulut et al., 2017) is presented in Table 1. The table reveals that, *Gundelia tournefıortii* L., *Mentha longifolia* (L.) Hudson, *Teucrium polium* L. and *P. major* L., recorded from seventeen localities, are the most common herbal medicinal plants on Batman City and Kozluk District and its surrounding area.

It is noted that five taxa (*G. tournefıortii*, *Mentha longifolia*, *Portulaca oleracea* L., *R.coriaria*, *Thymus kotschyanus* Boiss. et Hohen.) are distinctive as wild food plants especially in east of Turkey (Özgökce and Özcelik, 2004; Akan et al., 2008; Şığva and Seçmen, 2009; Yesil and Urusak Akalin, 2011; Doğan and Tuzlaci, 2015; Mükemre et al., 2016; Bulut et al., 2016; Bulut et al., 2017; Altundag Cakır, 2017).

Investigation of the traditional plant uses in our studies and numerous ethnobotanical literature of research in Turkey revealed that the use of *Serratula cerinthifolia* was recorded in Turkey for the first time.

Conclusion

This research, conducted in the southeast part of Turkey, investigated plants used as traditional household remedies and as wild sources of food. Forty-one plants belonging to 18 families were identified in this study. In addition, other ethnobotanical utilizations were recorded. This ethnobotanical study shows that the use of traditional folk medicine and edible plants is still prevalent in the community. Therefore, the transmission of this knowledge from generation to generation is provided.

Acknowledgments

The authors wish to thank all the informants who contributed to this study with their knowledge and friendliness.

References

Akan H., Korkut M.M., Balos M.M. (2008.) Arat Dağı ve çevresinde (Birecik, Şanlıurfa) etnobotanik bir araştırma. Fırat Üniv. Fen ve Mühündislik Bilimleri Dergisi 20: 67-81 (in Turkish).

Alarcón R., Pardo-de-Santayana M., Priestley C., Morales R., Heinrich M. (2015). Medicinal and local food plants in the south of Alava (Basque Country, Spain). J Ethnopharmacol 176(1): 207-224.

Alexiades M. N. (1996). Selected Guidelines for Ethnobotanical Research: A Field Manual. New York.

Altundağ Çakır E. (2017). Traditional knowledge of wild edible plants of Igdır Province (East Anatolia, Turkey). Acta Soc Bot Pol 86 (4) 35-68. doi: 10.5586/asbp.3568

Batman İli. (2017) Avaible from: http://www.batman.gov.tr [17/05/2018]

Benítez G., Molero-Mesa J., González-Tejero M. R. (2017). Gathering an edible wild plant: food or medicine? A case study on wild edibles and functional foods in Granada, Spain. Acta Soc Bot Pol. 86 (3): 1-27. doi: 10.5586/asbp.3550

Bulut G., Tuzlaci E. (2013). An ethnobotanical study of medicinal plants in Turgutlu (Manisa-Turkey). J Ethnopharmacol 149(3):633-647. http://dx.doi.org/10.1016%2Fj.jep.2013.07.016

Bulut G., Tuzlacı E. (2015). An ethnobotanical study of medicinal plants in Bayramiç (Çanakkale-Turkey). Marmara Pharm J 19(1): 269-282. doi: 10.12991/MPJ.201519392830

Bulut G. (2016). Medicinal and wild food plants of Marmara Island (Balikesir – Turkey). Acta Soc Bot Pol, 85: 1-16. doi: 10.5586/asbp.3501

Bulut G., Biçer M., Tuzlacı E. (2016). The folk medicinal plants of Yüksekova (Hakkari-Turkey). J. Fac. Pharm. Istanbul, 46: 115-124.

Bulut G., Kokrmaz A., Tuzlacı E. (2017). The ethnobotanical notes from Nizip (Gaziantep-Turkey). Istanbul J Pharm 47 (2): 57-62. doi: 10.5152/istanbuljpharm.2017.009.

Cakılcıoğlu U., Türkoğlu I. (2010). An ethnobotanical survey of medicinal plants in Sivrice (Elazığ-Turkey). J Ethnopharmacol 132: 165-175.

Carrió E., Vallès J. (2012). Ethnobotany of medicinal plants used in Eastern Mallorca (Balearic Islands, Mediterranean Sea). J Ethnopharmacol 141 (3):1021-1040.

Cotton C.M. (1996). Ethnobotany: Principles and Applications. JohnWiley and sons Ltd. West Sussex, UK.

Davis P.H. (1965-1985). The Flora of Turkey and the East Agean Islands. Edinburgh: Edinburgh University Press; vol. 1-9.

Demirci S., Özhatay N. (2012). An ethnobotanical study in Kahramanmaraş (Turkey); wild plants used for medicinal purpose in Andirin, Kahramanmara Turk J. Pharm. Sci. 9 (1): 75-92.

Dogan Y., Nedelcheva A., Łuczaj Ł., Drăgulescu C., Stefkov G., Maglajlić A., Ferrier J., Papp N., Hajdari A., Mustafa B., Dajić-Stevanović Z., Pieroni A. (2015). Of the importance of a leaf: the ethnobotany of sarma in Turkey and the Balkans. J Ethnobiol Ethnomed 11:6.

Dogan Y., Ugulu I., Durkan N. (2013). Wild edible plants sold in the local markets of Izmir,

Turkey. Pak J Bot 45:177–84.

Dogan Y. (2012). Traditionally used wild edible greens in the Aegean Region of Turkey. Acta Soc Bot Pol 81(4): 329–341. http://dx.doi.org/10.5586/asbp.2012.037

Dogan A., Tuzlaci E. (2015). Wild edible plants of Pertek (Tunceli-Turkey). Marmara Pharm J 19: 126-135.

Dogan A., Tuzlaci E. (2015). Wild edible plants of Pertek (Tunceli-Turkey). Marmara Pharm J 19: 126-135.

Dolina K., Łuczaj Ł. (2014). Wild food plants used on the Dubrovnik coast (south-eastern Croatia). Acta Soc Bot Pol 83(3): 175–181. http://dx.doi.org/10.5586/asbp.2014.029

Gurdal B., Kultur S. (2013). An ethnobotanical study of medicinal plants in Marmaris (Muğla, Turkey). J Ethnopharmacol 146(1):113–126. http://dx.doi.org/10.1016/j.jep.2012.12.012

Kültür S. (2007). Medicinal plants used in Kırklareli Province (Turkey). J Ethonopharmacol 111(2): 341-364.

Lentini F., Venza F. (2007). Wild food plants of popular use in Sicily. J Ethnobiol Ethnomed. 3(1): 15. http://dx.doi.org/10.1186/1746-4269-3-15

Łuczaj Ł., Fressel N., Perković S. (2013). Wild food plants used in the villages of the Lake Vrana Nature Park (northern Dalmatia, Croatia). Acta Soc Bot Pol 82(4):275–281. http://dx.doi.org/10.5586/asbp.2013.036

Łuczaj Ł., Dolina K. (2015). A hundred years of change in wild vegetable use in southern Herzegovina. J Ethnopharmacol 166:297–304. http://dx.doi.org/10.1016/j.jep.2015.02.033

Martin, G.J. (1995). Ethnobotany: A Methods Manual. Chapman and Hall, London.

Mükemre M., Behçet L., Çakılcıoğlu U. (2015). Ethnobotanical study on medicinal plants in villages Çatak (Van-Turkey). J Ethnopharmacol 166: 361-374.

Mükemre M., Behçet L., Cakılcıoğlu U. (2016). Survey of wild food plants for human consumption in villages of Çatak (Van-Turkey). Indian Journal of Traditional Knowledge 15 (2): 183-191.

Nedelcheva A. (2013). An ethnobotanical study of wild edible plants in Bulgaria. Eurasia J Biosci 7:7 7–94. http://dx.doi.org/10.5053/ejobios.2013.7.0.10

Redzic S.J. (2015). Wild edible plants and their traditional use in the human nutri¬tion in Bosnia-Herzegovina.Ecol Food Nutr 45(3): 189–232. http:// dx.doi.org/10.1080/03670240600648963

Sargin S.A., Akçicek E., Selvi S. (2013). An ethnobotanical study of medicinal plants used by the local people of Alaşehir (Manisa) inTurkey. J Ethnopharm 150: 860–874.

Sargin S.A. (2015). Ethnobotanical survey of medicinal plants in Bozyazi district of Mersin, Turkey. J Ethnopharmacol 173: 105–126.

Senkardes I., Tuzlaci E. (2016). Wild edible plants of southern part of Nevşehir in Turkey. Marmara Pharm J 20: 34-43.

Sığva H.Ö., Seçmen Ö. (2009). Ethnobotanical survey of Işıklı (Çarpın), Dağdancık and Tokdemir in Gaziantep, Turkey. IUFS J Biol 68(1): 19-26.

The plant list. (2015) Avaible from: http://www.theplantlist.org [16/05/2018]

Tuzlacı E., Doğan A. (2010). Turkish folk medicinal plants, IX: Ovacık (Tunceli). Marmara Pharm J 14(3): 136-143.

Tuzlacı E., Şenkardeş İ. (2011). Turkish folk medicinal plants, X: Ürgüp (Nevşehir). Marmara Pharm J 15(2): 58-68.

Yeşil Y., Uruşak Akalın E. (2011). The use of wild edible plants in Kürecik (Akçadağı, Malatya). Fac Pharm Istanbul 41: 90-103.

Yeşil Y., Uruşak Akalın E. (2009). Folk medicinal plants in Kürecik Area (Akçadağ/Malatya). Turkish Journal of Pharmaceutical Sciences 3:207-220.