

## TRADITIONAL USES OF MEDICINAL PLANTS OF ÜZÜMLÜ DISTRICT, ERZINCAN, TURKEY

MUSTAFA KORKMAZ<sup>1\*</sup> AND SİNEM KARAKUŞ<sup>2</sup>

<sup>1</sup>Department of Biology, Faculty of Science and Art, Erzincan University, Erzincan, Turkey

<sup>2</sup>Çölemerik Vocational School, Hakkari University, Hakkari, Turkey

\*Corresponding author's e-mail: korkmazmustafa67@yahoo.com.tr

### Abstract

A list of medicinal plants used by local people in Üzümlü district and its villages is presented. This study included the first detailed ethnobotanical survey carried out in Erzincan. The study was conducted during spring and summer periods in 2010 and 2011 through face-to-face interview method to determine the local names, used parts, and medicinal usages of the determined plants. The plant samples collected from the study area were pressed, dried, and labeled according to the herbarium techniques, and identified. Totally 64 plant taxa belonging to 53 genera and 29 families were used by local people for different medicinal purposes in the area. The families including the highest number of taxa were Rosaceae (11 species), Asteraceae (6 species) and Lamiaceae (5 species). The species with the highest number of usage as herbal medicine were *Urtica dioica*, *Anthemis cretica* subsp. *iberica*, *Petroselinum crispum*, *Allium cepa*, *Rheum ribes*, *Rosa dumalis* subsp. *boissieri* var. *boissieri* and *Vitis vinifera*. Fruits and flowers were the most widely used parts of the plants. Decoction was the main method for using, and the primary therapeutic use of herbal remedies was for the respiratory system diseases such as cold, cough, asthma, and bronchitis. This study was the first carried out on 20 plant taxa used as traditional medicine, and the use of 28 taxa were recorded for the first time in Turkey. For maintaining the knowledge on traditional medicine, urgent studies should be carried out for recording before they have been completely lost.

**Key words:** Ethnobotany, Medicinal plants, Traditional use, Erzincan, Eastern Anatolia.

### Introduction

Baytop (1999) stated that there were about 20.000 herbal plants used for medical purposes, and 600 of these have been known to be grown in Turkey (Polat *et al.*, 2011). Turkish people use plants as medicinal remedy, food, animal fodder, fuel, dye, furniture, ornament, agricultural tool, and construction material for many years like many other societies (Özgen *et al.*, 2012; Gençler Özkan & Koyuncu, 2005). According to Hufford (1992), folk medicine is defined as the official medicine of the modern world. In rural parts of Anatolia, traditional medicine has been the most common medicine subsequent to modern medicine. Traditional medicine has also been known as the complementary medicine. Traditional medicinal data are very important for modern pharmaceutical companies, because discovery of a new drug requires high research cost and long period of time (Uğurlu, 2011). Nowadays, the use of plants in herbal medicine has been decreasing, but important amount of information about folk medicine has still remained among the population. So, it is necessary to obtain and record this valuable information immediately.

Turkey has a rich and diverse flora because of its widely different climatic, geographical and geological aspects. Hosting to many cultures, Anatolia has a vast ethnobotanical heritage; The efforts to define and maintain these cultural values have led to an increasing number of research on the subject. The Eastern Anatolian region is the largest, and one of the richest areas in terms of its biodiversity. About 132 articles have been published about the ethnobotanical studies of the region. Majority of these studies are focused on Elazığ, Van and Erzurum provinces. Where as only one study was conducted on Erzincan province (Polat *et al.*, 2012). According to this study, Erzincan province was the least studied area. There are a

few ethnobotanical studies in which Erzincan is briefly mentioned (Özgökçe & Özçelik, 2004; Sezik *et al.*, 1997; Yıldırım, 1985). But, there has been no detailed research on traditional uses of medicinal plants in the area.

Eastern Anatolian Region is the second most important region of Turkey in terms of its floristic richness. The province of Erzincan which has a transition feature among Eastern Black Sea, Eastern Anatolia, and Central Anatolian regions is one of the important gene and endemism centers of Turkey. Erzincan has 2 of 13 endemic plant sites and 6 important plant areas of Turkey (Korkmaz *et al.*, 2013).

Üzümlü (Cimin) District is located on the east side of Erzincan city center and on the South slope of the Esence (Keşiş) mountain (Fig. 1). This mountain is important for endemism in Turkey and belongs to Irano-Turanian floristic region (Ekim *et al.*, 2000). Geologically, the area consists of serpentine from the upper Cretaceous. Nevertheless, limestone from the Cretaceous can be found in some places such as higher parts of Üzümlü (Akkan, 1964). Continental climate is prevalent throughout the area. Annual average temperature is 6.8°C, summer average is 23.9°C, and winter average is -3.7°C. The coldest month is January, and the warmest is August. Average precipitation is 535 mm. (Mortan, 1991).

### Materials and Methods

Plant samples were collected from Üzümlü district and its villages. The field survey was conducted in the spring and summer seasons of 2010 and 2011 and face-to-face interviews were held with the villagers and some people living in the center of the district. During the studies, local names, parts, used and medicinal usages of the plants were determined. Interviews were performed with about 150 people, but many of them, especially

women, living in the villages avoided from giving their names. So 57 recorded names (15 women, 42 men) were given in the list of source persons. Their ages varied between 35 and 90 years old. Most of the interviewees were over 40 years old (Table 2). In the table, names, ages and localities of interviewers are presented. Medicinal plant samples collected from the study area were pressed, dried and labeled according to the herbarium techniques. Their scientific names were identified by using Flora of Turkey and the East Aegean Islands (Davis, 1965-1985;

Davis *et al.*, 1988 and Güner *et al.*, 2000). All plant specimens were deposited in Erzincan University, Science and Art Faculty Herbarium. Alphabetical list of the plant taxa is given in Table 1. The table has the scientific names (family and species names), localities and Turkish names (Güner *et al.*, 2012), local names, used parts, using aims, usages and source persons. In addition, the plant parts used for preparation of the herbal remedies are given in Table 3. The local preparation and application forms are given in Tables 4 and 5 presents the therapeutic uses.

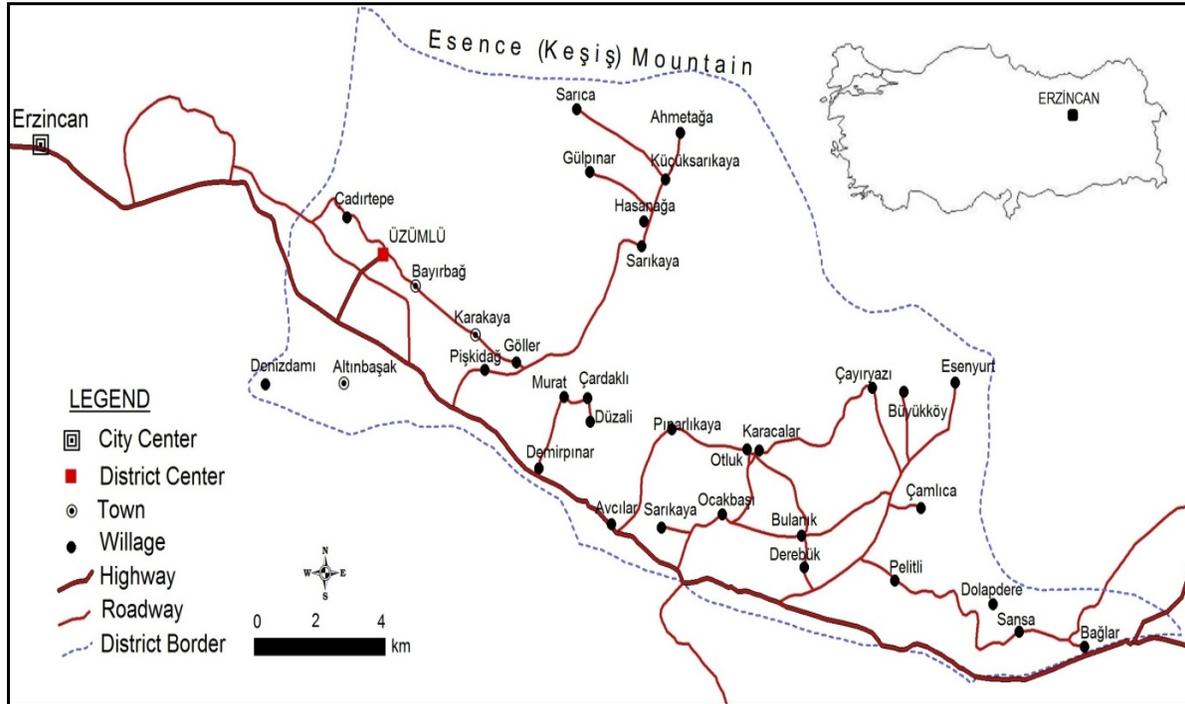


Fig. 1. Location map of the survey area.

## Results and Discussion

Data obtained from the field survey was summarized and given in Table 1. The families with the highest number of medicinal plant taxa were Rosaceae (11 species), Asteraceae (6 species) and Lamiaceae (5 species). Totally 125 usage from 91herbal remedies were obtained from 64 plant taxa belonging to 53 genera and 29 families. The data related to 20 (31.25%) of the 64 taxa were not described in previous reports on traditional medicine in Turkey (Akaydın *et al.*, 2013; Çakılıoğlu *et al.*, 2011; Della *et al.*, 2006; Gençler Özkan & Koyuncu, 2005; Güneş & Özhatay, 2011; Korkmaz & Karakuş, 2014; Özçelik & Balabanlı, 2005; Özgen *et al.*, 2012; Özgökçe & Özçelik, 2004; Özüdoğru *et al.*, 2011; Polat *et al.*, 2011; Saraç *et al.*, 2013; Sezik *et al.*, 1991; 1997; Tetik *et al.*, 2013; Tuzlacı and Doğan, 2010; Yücel *et al.*, 2011; Yücel *et al.*, 2013).

According to the mentioned literature, this is the first study related to 20 plant taxa used for traditional medicinal purposes in Turkey. These are *Senecio vernalis* Waldst. & Kit., *Cerinth minor* L. subsp. *auriculata* (Ten.) Domac, *Brassica oleracea* L. var. *italica* Plenck,

*Citrullus lanatus* Thunb. Matsumb. & Nakai, *Euphorbia orientalis* L., *Phaseolus vulgaris* L., *Pisum sativum* L., *Hypericum heterophyllum* Vent., *Mentha x piperita* L., *Allium ampeloprasum* L., *Plantago media* L., *Adonis aestivalis* L., *Amygdalus orientalis* L., *Armeniaca vulgaris* Lam., *Malus pumila* Mill., *Cerasus vulgaris* Mill., *Prunus persica* (L.) Batsch., *Lycopersicum esculentum* Miller, *Tilia tomentosa* Moenchand *Vitis vinifera* L. 28 usages of these taxa have also been recorded for the first time. Examples of some interesting uses are as: *Citrullus lanatus* is used for slimming, *Amygdalus orientalis* for diabetes, *Malus pumila* for skin care and cough, *Cerasus avium* for urinary infections and as blood purifier, *Prunus cerasus* for hypertension, *Lycopersicum esculentum* for blood forming and *Vitis vinifera* for mental loss, cough, blood forming. Among these 20 plants, *Armeniaca vulgaris*, *Phaseolus vulgaris*, *Vitis vinifera* are used for the production of traditional foods in Kemaliye district (Yücel *et al.*, 2013). *Cerinth minor*, *Phaseolus vulgaris*, *Pisum sativum*, *Allium ampeloprasum*, *Amygdalus orientalis*, *Armeniaca vulgaris*, *Prunus persica*, *Lycopersicum esculentum*, and *Vitis vinifera* are 9 species of the list are used as food in the district (Korkmaz & Karakuş, 2014).

Table 1. Medicinal plants used in Üzümlü District and its villages, Erzincan, Turkey.

Scientific name	Locality	Turkish name	Local names	Used parts	Preparation	Uses/Ailments treated	Source Person
<b>Apiaceae</b>							
<i>Anethum graveolens</i> L.	Ocakbaşı village	Dereotu	Dereotu	Branch and Leaves	Eaten fresh with empty stomach	As appetite suppressant	44, 45
<i>Petroselinum crispum</i> (Miller) A. W. Hill	Üzümlü district	Maydanoz	Maydanoz	Branch Leaves	Decoction, tea decoction (with empty stomach) Eaten fresh	Against urinary system infections for slim body, For eye health, Against infections	1, 2, 3, 17, 20, 21, 58
<b>Asteraceae</b>							
<i>Achillea biebersteinii</i> Afân.	Karakaya town, Karacalar, Büyükköy, Çardaklı, Tanyeli villages	Hanzabel	Kılıç otu, Sarıçiçek, Sarı Civanperçemi	Flower Leaves	Decoction, tea External, Crushed	For asthma and cancer treatment used to stop bleeding	4, 5, 7, 22, 46, 48, 49, 58
<i>Anthemis cretica</i> L. subsp. <i>iberica</i> (Bieb.) Grierson	Karakaya town, Demirpınar village	Kaf papatyası	Be Yaz Papatyası	Flower Flowering branches	Decoction, tea Decoction, external	Menstrual diuretic, antitussive, chest softener and expectorant cleaning hair to lighten the hair color	5, 58
<i>Cichorium intybus</i> L.	Tanyeli and Büyükköy villages	Hindiba	Sakız Otu	Root	Internal	Latex is absorbed to ease digestion	7, 49, 58
<i>Gnaphalium taurinifolium</i> L. var. <i>taurifolium</i>	Göller village	Kenger	Kenger, Sakız Otu	Root and Stem	Gum	Oral and dental health, strengthening the gums and appetite enhancer	55, 58
<i>Helichrysum arenarium</i> (L.) Moench, subsp. <i>erzincanicum</i> Davis & Kupicha, Endemic.	Ocakbaşı village	Erzincan Altunotu	Altın Otu	Flowering branches	Decoction, tea	Against urinary system infections	44, 45
<i>Senecio vernalis</i> Waldst. & Kit.	Çadırtepe village	Kamarya Otu	Sarı Papatyası	Flower	Decoction, tea	Against cold	58
<b>Berberidaceae</b>							
<i>Berberis vulgaris</i> L.	Çadırtepe village, Bayırbağ town, Büyükköy	Kızıl karamuk	Karamuk-Kadımt uzuğu	Fruit	Eaten	Diarrhea	7, 16, 25, 28, 42, 43, 49, 58
<b>Betulaceae</b>							
<i>Corylus avellana</i> L. <sup>e</sup>	Çadırtepe village	Fındık	Fındık	Fruit	Eaten	Cholesterol-lowering	58
<b>Boraginaceae</b>							
<i>Cerithe minor</i> L. subsp. <i>auriculata</i> (Ten.) Donat	Tanyeli village	Livarotu	Hışış	Leaves	Decoction, tea	For edema	58
<b>Brassicaceae</b>							
<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck	Üzümlü district	-	Brokoli	Flower	Eaten (fresh or cooked)	Digestive	1, 2, 3, 17, 20, 21, 58
<b>Caprifoliaceae</b>							
<i>Viburnum opulus</i> L.	Karacalar village	Gilaboru, Kartopu	Girabolu, Grabolu	Fruit	Infusion	Against kidney stones and sands, kidney infections, urinary disorders and prostate	58
<b>Cucurbitaceae</b>							
<i>Citrullus lanatus</i> Thunb. Matsumb. & Nakai	Üzümlü district	Karpuz	Karpuz	Fruit	Eaten fresh	Diuretic, water melon diet for slim body	17, 20, 21, 58
<i>Cucurbita pepo</i> L. <sup>e</sup>	Esenyurt village	Sakız kabağı	Kabak	Fruit	Eaten cooked	Intestinal regulator	26, 27
<i>Cucumis sativus</i> L. <sup>e</sup>	Üzümlü district	Hıyar	Salatalık, Hıyar	Fruit	External Eaten fresh	Fruit peels are used for relaxing and care of skin, Lowering cholesterol and blood glucose	1, 2, 3, 17, 20, 21, 58
<b>Elaeagnaceae</b>							
<i>Elaeagnus angustifolia</i> L., Endemic.	Çadırtepe and Göller villages	İğde	İğde	Fruit	Decoction, tea	For cough and bronchitis	55, 58
<b>Euphorbiaceae</b>							
<i>Euphorbia orientalis</i> L.	Bayırbağ village, Büyükköy	Gezer sütüğe	Sütüğe	Stem and branches	External	Latex, used for eczema	7, 16, 25, 28, 42, 43, 49

Table 1. (Cont'd.).

Scientific name	Locality	Turkish name	Local names	Used parts	Preparation	Uses/Ailments treated	Source Person
<b>Fabaceae</b>							
<i>Glycyrrhiza glabra</i> L.	Pişıklıdağ and Büyükdüğü Kadıgan village Üzümlü, district	Meyan	Meyan Kökü	Root	Decoction Chewing, internal	Asthma healing	38, 58
<i>Phaseolus vulgaris</i> L. <sup>6</sup>	Üzümlü, district	Fasulye	Fasulye	Seed	Internal	One pea is ingested before a journey against motion sickness and nausea	58
<i>Pisum sativum</i> L. <sup>6</sup>	Üzümlü district	Bezelye	Bezelye	Fruit	Eaten, cooked	Against constipation	1, 2, 3, 17, 20, 21, 58
<b>Guttiferae</b>							
<i>Hypericum heterophyllum</i> Vent., Endemic.	Pişıklıdağ	Yarıyaprak	Sarı Kantaron	Flower	Decoction, tea	Cold	37, 38
<i>Hypericum perforatum</i> L.	Pınarlıkaya village	Kantaron	Sarı Kantaron	Leaves, Branch, Flower	External, (treatment with olive oil)	For wound and scar healing and stop bleeding. Fill the deep wounds without any trace, even in a week	23, 33, 34
<b>Juglandaceae</b>							
<i>Juglans regia</i> L. <sup>6</sup>	Çadırtepe village	Ceviz	Ceviz	Fruit, Fruit	Eaten (on empty stomach) Internal (on empty stomach) Decoction, int	Against heart palpitations. For decreasing cholesterol, one walnut thrown into the water, waited for a night and the water is drunk in the morning. Inner membrane is boiled in water and drink for cough healing.	58
<b>Lamiaceae</b>							
<i>Mentha longifolia</i> (L.) Hudson	Bayırbağ town, Pişıklıdağ, Karacalar and Büyükköy villages	Püsk	Nane, Yarpuz, Uzun Yapraklı Nane	Flower	Decoction, tea	Cancers healing	16, 25, 28, 37, 38, 42, 43, 55
<i>Mentha x piperita</i> L.	Küçük, Sarıkaya village	Nane	Nane	Leaves, Branch	Decoction, tea	Against colds and nausea	58
<i>Salvia sclarea</i> L.	Avcılar village, Tekin 91	Paskulak	Ada Çayı	Flowering branch	Decoction, tea	Against stomach pain, nervousness and tension	24, 48
<i>Salvia verticillata</i> L. subsp. <i>Amasizaca</i> (Frey & Borm.) Borm.	Pişıklıdağ and Büyükköy villages	Dudrak	Kayış Kuran	Flower	Decoction, tea	Against colds	35, 36, 37, 38, 49
<i>Stachys lavandulifolia</i> Vahl var. <i>lavandulifolia</i>	Ocakbaşı village	Tüylü çay	Ada Çayı	Flowering branch	Decoction, tea	Treatment of shortness of breath	44, 45
<b>Amaryllidaceae</b> (Liliaceae)							
<i>Allium ampeloprasum</i> L. <sup>6</sup>	Tanyeli village	Prasa	Prasa	Stem	Eaten (fresh or cooked)	Against constipation	58
<i>Allium cepa</i> L. <sup>6</sup>	Üzümlü district	Soğan	Soğan	Bulbus	Decoction (on empty stomach) Infusion (mixed with honey) Infusion, External External (Boiled with milk)	For fertility of women, 4 bulbous broken down to small parts, boiled 10 minutes in 1 kg water and drink in the morning and evening. For the treatment of cough, Cooked, mixed with crushed soap and closed on infected wounds. For injury and dents	20, 21, 29, 40, 41, 53
<i>Allium sativum</i> L. <sup>6</sup>	Üzümlü district	Sarımsak	Sarımsak	Bulbus	External Internal (on empty stomach)	For inflammation of the spot treated on the wound. Against ringworm. Clove of garlic is ingested for lowering blood pressure	20, 21, 29, 40, 41, 53
<i>Eremurus spectabilis</i> M. Bieb.	Üzümlü district	Çiriş	Çiriş, Kiriş	Leaves	Eaten, cooked	For decreasing blood glucose level and as intestinal regulator	20, 21, 29, 40, 41, 53

Table 1. (Cont'd.).

Scientific name	Locality	Turkish name	Local names	Used parts	Preparation	Uses/Ailments treated	Source Person
<b>Malvaceae</b>							
<i>Alcea caberri</i> (Boiss.) Boiss.	Tanyeli Büyükköy villages	Hıraçiçeği	Hatmi, Hatmi Çiçeği	Flower and fresh leaves	Internal (Boiled with milk) Decoction, tea	Throat pain and cough healing, Against shortness of breath	49, 58
<i>Malva neglecta</i> Wallr.	Bayırbağ town, Pişkişdağ and Pınarlıkaya villages	Ebegümeci	Ebegümeci	Seed Branch, Leaves, Flower	Decoction, tea	As anti-inflammatory and analgesic For rheumatism and cancers healing	16, 23, 25, 28, 37, 38, 42, 43, 55
<b>Moraceae</b>							
<i>Morus alba</i> L.	Üzümlü district	Ak dut	Beyaz Dut	Fruit, Fruit,	Eaten (Grape molasses) Eaten fresh	As blood builder, for bronchitis and asthma healing, Eaten on empty stomach as intestine regulator	3, 8, 10, 11, 12
<i>Morus nigra</i> L.	Üzümlü, district	Kara dut	Kara Dut	Fruit,	Eaten fresh and gargle	Treatment of mouth sores	3, 8, 10, 11, 12
<b>Pinaceae</b>							
<i>Pinus sylvestris</i> L.	Çadırtepe village	Sarıçam	Çam	Branch and stem	Decoction, external	Against hair loss, small, resinous branches are boiled and used to clean hair	58
<b>Plantaginaceae</b>							
<i>Plantago major</i> L.	Bayırbağ town	Sinirotu	Bağa Yaprağı	Leaves	Decoction, internal Eaten as dried	Against urethritis and itching, Against itching	16, 25, 28, 42, 43, 58
<i>Plantago media</i> L.	Göller and Demirpınar villages	Şimşek yaprağı	Bağa Yaprağı	Leaves	Decoction, internal	Against urethritis	55, 58
<b>Poaceae</b>							
<i>Agropyron repens</i> (L.) P. Beauv.	Pişkişdağ village	-	Ayrık otu	Root	Decoction	Against liming and rheumatism	36, 37, 38
<i>Hordeum vulgare</i> L. <sup>c</sup>	Üzümlü district	Arpa	Arpa	Seed	Religious	For wart healing, a number of prayed barley is embedded next to fountain as the same number of warts	1, 2, 3, 8, 10, 11, 12
<b>Polygonaceae</b>							
<i>Rheum ribes</i> L.	Üzümlü district	Işgım	Işgım, Uşgun	Root Seed	Decoction, internal Pills internal Decoction, internal	To reduce blood sugar and blood pressure, For hemorrhoids, roasted and crushed root powder is mixed with honey to produce pills For asthma healing	1, 2, 3, 8, 10, 11, 12, 58
<i>Rumex acetosella</i> L.	K. Sarıkaya and Karacalar villages	Kuzukulağı	Kuzukulağı, Kırmızı Kuzukulağı	Leaves	Eaten fresh or as salad	For lowering blood glucose	58
<i>Rumex crispus</i> L.	Çadırtepe and Demirpınar villages	Labada	Evelik	Seed	Decoction, int.	For edema healing	58
<b>Ranunculaceae</b>							
<i>Adonis aestivalis</i> L.	Bayırbağ town	Kandamlası	Gavur lalesi, Keklik Gözd	Flower	Decoction, int.	Diuretic	16, 25, 28, 42, 43, 58
<b>Rosaceae</b>							
<i>Amygdalus orientalis</i> Miller	Çadırtepe and Göller villages, Bayırbağ town	Payam	Badem, Yabani Badem	Fruit	Eaten (after boiled and dried)	Bitter almonds are used to decrease blood glucose	16, 25, 28, 42, 43, 55, 58
<i>Armeniaca vulgaris</i> Lam. <sup>c</sup>	Pişkişdağ, village	Kayısı	Kayısı	Fruit, Gum	Eaten fresh or dried Eaten or chewing	Against constipation, For stomach pain	35, 36, 37, 38, 54, 58
<i>Crataegus monogyna</i> Jacq.	Çadırtepe village, Karakaya village, Bayırbağ, town, Çamlıca village	Yemişen	Alıç	Fruit	Eaten fresh	To reduce blood glucose and blood pressure	5, 6, 14, 32, 39, 42, 43, 50, 56, 57, 58

Table 1. (Cont'd.).

Scientific name	Locality	Turkish name	Local names	Used parts	Preparation	Uses/Ailments treated	Source Person
<i>Cydonia oblonga</i> Mill. <sup>c</sup>	Çadırtepe village, Bayırbağ town	Ayva	Ayva	Leaves Seed Seed	Infusion, tea External	For cold and cough healings. For sore of throat, Seeds were waited in warm water and used for wounds of nipples by lactating women	16, 25, 28, 42, 43, 58
<i>Malus pumila</i> Mill. <sup>c</sup>	Çadırtepe village	Elma	Elma	Fruit	External Decoction, int	For skin health and beauty apple peel is applied, For cough healing apple peels are used	58
<i>Cerasus avium</i> (L.) Moench <sup>c</sup>	Çadırtepe village	Kiraz	Kiraz	Fruit	Eaten fresh (on empty stomach)	As blood purifier, Dried fruit stalks are used for urinary infections	58
<i>Cerasus vulgaris</i> Mill. <sup>c</sup>	Üzümlü district	Vişne	Vişne	Fruit stalk Fruit	Decoction, tea Eaten fresh	For decreasing blood pressure	29, 40, 41, 51, 53
<i>Prunus persica</i> (L.) Batsch. <sup>c</sup>	Karakaya town	Şeftali	Şeftali	Fruit	Eaten fresh	Against diarrhea	5, 6, 14, 32, 39
<i>Rosa damalis</i> Bechst. subsp. <i>boissieri</i> (Crépin) Ö. Nilsson var. <i>boissieri</i>	Çadırtepe village, Karakaya and Bayırbağ towns	İlgüli	Kuşburnu	Fruit	Decoction, tea Eaten with seeds	For relaxing the body and the treatment of the common cold, Poulitice of fruits is used to treat external hemorrhoids, For hemorrhoids	5, 6, 9, 13, 14, 26, 27, 32, 39, 58
<i>Rosa canina</i> L.	Çayırcazi village	Gül	Gül	Çiçek	Infusion, tea	For cough healing	58
<i>Rubus idaeus</i> L.	Bayırbağ town, K. Sarıkaya village	Ahududu	Bөгürtlen	Root Fruit	Decoction, tea Eaten fresh	Against infections, As appetizing and source of vitamins	18, 19, 58
<b>Scrophulariaceae</b>							
<i>Verbascum</i> L. sp.	Çardaklı village	Sığırkuyruğu	Sığırkuyruğu	Flower	Decoction, tea	For asthma healing	4, 46, 58
<b>Solanaceae</b>							
<i>Lycopersicon esculentum</i> Miller <sup>c</sup>	Üzümlü district	Domates	Domates	Fruit	Eaten fresh	As blood-builder	1, 2, 3, 8, 10, 11, 12, 58
<i>Solanum tuberosum</i> L. <sup>c</sup>	Üzümlü district	Patates	Patates, Kartol	Tuber	External Eaten, after boiling	Slices wrapped to the forehead for headache healing, For diarrhea healing	1, 2, 3, 8, 10, 11, 12, 58
<b>Tiliaceae</b>							
<i>Tilia tomentosa</i> Moench	Karakaya town	Güntüşi ihlamur	Ihlamur	Flowers and Leaves	Decoction, tea	As chest emollient and expectorant	5, 6, 14, 32, 39, 56, 57, 58
<b>Urticaceae</b>							
<i>Urtica dioica</i> L.	Bayırbağ town, Pınarlıkaya village	Isırgan	Isırgan	Leaves Flowers Seed	External, Decoction, tea Eaten	Crushed and wrapped to the rheumatic areas, As cancers healing and increasing milk secretion of lactating women, Dried seeds are mixed with honey and used for the treatment of fatigue, anemia and cancers	25, 42, 43, 58
<b>Vitaceae</b>							
<i>Vitis vinifera</i> L. <sup>c</sup>	Pişıklıdağ and Demirpınar villages	Asma	Cimin Üzüümü, Karaerik Üzüümü	Fruit	Internal (Grape juice) Internal (Grape Molasses) Eaten (on empty stomach)	Grape juice is produced with adding some water and sugar and boiling. It reduce memory loss. For cough healing and blood-forming, Dried fruits as blood-forming	31, 35, 36, 37, 38, 58
<b>Zygophyllaceae</b>							
<i>Tribulus terrestris</i> L.	Üzümlü district	Demir Dikeni	Dadaş Otu	Fruit	Decoction, tea	For treatment of heart disease, urinary system inflammation and atherosclerosis	40, 41, 51, 53

c: Cultivated plants

**Table 2. The list of the source people.**

No	Surname and Name	Age	Place
1.	AKERİK Fikri	69	Üzümlü
2.	AKERİK Mehmet	67	Üzümlü
3.	AKSUN Salih	56	Üzümlü
4.	AKYILDIZ Kenan	47	Çardaklı Köyü
5.	BAL Mehmet	75	Karakaya
6.	BEKAR Erdal	40	Karakaya
7.	BEBEK Yavuz	55	Büyük Köy
8.	BEŞİKTAŞ Zübeyir	55	Üzümlü
9.	BOKE Ünal	45	B. Kadağan Köyü
10.	CANBABA Basri	65	Üzümlü
11.	CANBABA Halil	67	Üzümlü
12.	CANBABA Hüseyin	69	Üzümlü
13.	ÇAMBELİ İbrahim	62	B. Kadağan Köyü
14.	DAL Yavuz	40	Karakaya
15.	DEDE Kamer	90	Altınbaşak
16.	DEMİREL Burhan	55	Bayırbağ
17.	DOĞAN Emine	68	Üzümlü
18.	DOĞAN Hüseyin	76	Yedigöller Köyü
19.	DOĞAN Kadriye	68	Yedigöller Köyü
20.	DOĞAN Sahile	55	Üzümlü
21.	DOĞAN Salim	58	Üzümlü
22.	GÜL Hatice	48	Çardaklı Köyü
23.	GÜLEN Haydar	53	Pınarlıkaya Köyü
24.	GÜLTEKİN Hakkı	61	Avcılar Köyü
25.	GÜNER Aslı	60	Bayırbağ
26.	GÜNER Eyüp	75	Esenyurt Köyü
27.	GÜNER Meltem	70	Esenyurt Köyü
28.	GÜNER Servet	63	Bayırbağ
29.	GÖZÜTOK Murat	35	Üzümlü
30.	IŞIK Hıdır	48	Pınarlıkaya Köyü
31.	İLHAN Aysel	50	Pişkidağ
32.	KARA Demet	43	Karakaya
33.	KARAGÖZ Ali Rıza	50	Pınarlıkaya Köyü
34.	KARAGÖZ Şahverdi	56	Pınarlıkaya Köyü
35.	KARAKAŞ Remziye	67	Pişkidağ
36.	KARAKAŞ Rukiye	30	Pişkidağ
37.	KARAKAŞ Sevim	57	Pişkidağ
38.	KARAKAŞ Yaşar	65	Pişkidağ
39.	KARAKAYA Faruk	67	Karakaya
40.	KARAKELLE Hayati	65	Üzümlü
41.	KARAKELLE Nizamettin	57	Üzümlü
42.	MUMCU İlhan	37	Bayırbağ
43.	MUMCU Orhan	48	Bayırbağ
44.	POLAT Mehmet	61	Ocakbaşı Köyü
45.	POLAT Şeray	56	Ocakbaşı Köyü
46.	SAHAN Mürbet	57	Çardaklı Köyü
47.	SARÇALI Mehmet	55	Altınbaşak
48.	SEL Serap	60	Avcılar Köyü
49.	ŞİRİN Ercan	45	Büyükköy
50.	TOK Ali Can	45	Çamlıca Köyü
51.	TÜRK Mehmet	66	Üzümlü
52.	ÜZÜMLÜ Aydın	48	Pişkidağ Köyü
53.	YENİÇERİ Hikmet	65	Üzümlü
54.	YILMAZ Özhan	65	Pişkidağ
55.	YİĞİT Dursun	62	Göller Köyü
56.	VARLIK Osman	73	Karakaya
57.	VARLIK Solmaz	50	Karakaya

**Table 3. Plant parts used for preparation of the herbal remedies.**

Plant parts used	Absolute value	Frequency (%)
Fruit	24	26.4
Flower	19	20.8
Leave	16	17.6
Branch	10	11.0
Seed	7	7.7
Root	6	6.6
Stem	4	4.4
Bulb	2	2.2
Tuber	1	1.1
Fruit stalk	1	1.1
Gum	1	1.1
<b>Total</b>	<b>91</b>	<b>100.0</b>

**Table 4. Preparation and application forms of the 91 herbal remedies.**

Plant parts used	Absolute value	Frequency (%)
Decoction (as tea)	24	23.5
Decoction, (internal)	11	10.7
Decoction (as bath)	1	1.0
Eaten fresh	22	21.5
Eaten cooked	8	7.8
Eaten dried	5	4.9
Eaten (after boiled, dried)	1	1.0
Eaten with honey	1	1.0
Eaten (grape juice)	1	1.0
Eaten (grape molasses)	1	1.0
Eaten as salad	1	1.0
External	12	11.7
Gargle	1	1.0
Gum	1	1.0
Infusion (int.)	6	5.8
Chewing (int.)	2	2.0
Ingest (int)	2	2.0
Pill	1	1.0
Religious	1	1.0
<b>Total</b>	<b>102</b>	<b>99.9</b>

Although 43 taxa were included in the literature, uses of many of these were found as different in our study. At least one therapeutic use is different from the data related to the literature. These taxa were *Anethum graveolens* L., *Petroselinum crispum*, (Miller) A. W. Hill, *Achillea biebersteinii* Afan., *Anthemis cretica* L. subsp. *iberica* (Bieb.) Grierson, *Cichorium intybus* L., *Helichrysum arenarium* L. subsp. *erzincanicum* Davis & Kupicha, *Mentha longifolia* (L.) Hudson, *Berberis vulgaris* L., *Corylus avellana* L., *Cucumis sativus* L., *Elaeagnus angustifolia* L., *Glycyrrhiza glabra* L., *Juglans regia* L., *Salvia sclarea* L., *Allium cepa* L., *Allium sativum* L., *Eremurus spectabilis* M. Bieb., *Alcea calverti* (Boiss.) Boiss., *Morus nigra* L., *Pinus sylvestris* L., *Plantago major* L., *Rheum ribes* L., *Rubus idaeus* L. and *Verbascum* L. sp.

Some species in the area have been used for similar purposes as in the other studies in Turkey. These are *Gundelia tournefortii* L. var. *tournefortii*, *Viburnum opulus* L., *Cucurbita pepo* L., *Hypericum perforatum* L., *Juglans regia*, *Mentha longifolia*, *Salvia verticillata* L. subsp. *amasiaca* Freyn & Bornm. *Stachys lavandulifolia* Vahl var. *lavandulifolia*, *Malva neglecta* Wallr., *Agropyron repens* (L.) P. Beauv., *Hordeum vulgare* L., *Rheum ribes*, *Rumex acetosella* L., *Rumex crispus* L., *Cerasus avium* (L.) Moench, *Crataegus monogyna* L., *Cydonia oblonga* Miller, *Rosa dumalis* Bechst. subsp. *boissieri* (Crépin) Ö. Nilsson var. *boissieri*, *Rosa canina* L., *Solanum tuberosum* L. and *Tribulus terrestris* L.

**Table 5. Therapeutic uses or diseases treated of the 91 herbal remedies.**

Therapeutic uses/ailments treated	Absolute value	Incidence (%)
Respiratory system diseases	27	21.6
Skin disorders	13	10.4
Digestive system diseases	13	10.4
Urinary system disorders	9	7.2
Diabetes	5	4.0
Cancers	5	4.0
Hypertension	4	3.2
Blood builder	4	3.2
High cholesterol	3	2.4
Hemorrhoids	3	2.4
Rheumatism	3	2.4
Edema	2	1.6
Heart diseases	2	1.6
Infections	2	1.6
Motion sickness and nausea	2	1.6
Nervousness and tension	2	1.6
Slimming	2	1.6
Stop bleeding (astringent)	2	1.6
Anemia	1	0.8
Anti-inflammatory	1	0.8
Appetite suppressant	1	0.8
Appetizing	1	0.8
Atherosclerosis	1	0.8
Blood purifier	1	0.8
Eye health	1	0.8
Fatigue	1	0.8
Fertility of women	1	0.8
Hair care (hair color)	1	0.8
Hair loss	1	0.8
Headache	1	0.8
Injury and dents	1	0.8
Kidney infections	1	0.8
Kidney stones and sands	1	0.8
Liming of joints	1	0.8
Memory loss	1	0.8
Menstrual diuretic	1	0.8
Milk secretion (women)	1	0.8
Mouth wounds	1	0.8
Oral and dental health	1	0.8
Source of vitamins	1	0.8
<b>Total</b>	<b>125</b>	<b>100.0</b>

Most frequently used species in the area and their record numbers are *Urtica dioica* L. (10), *Plantago major* L. (10), *Malva neglecta* (9), *Mentha longifolia* L. (8), *Rosa canina* (7), *Hypericum perforatum* L. (6), *Rheum ribes* (6) and *Rumex crispus* (5).

Twenty-three among the total 64 medicinal plant taxa have been cultivated, and 41 of those grow wild. The species with the highest number of uses as herbal medicine are *Urtica dioica* 5 (4.3%), *Anthemis cretica* L. subsp. *iberica* (Bieb.) Grierson 5 (4.3%), *Petroselinum crispum* 4 (4.3%), *Allium cepa* L. 4 (4.3%), *Rheum ribes* 4 (4.3%), *Rosa dumalis* subsp. *boissieri* var. *boissieri* 4 (4.3%), *Vitis vinifera* 4 (4.3%), *Cucumis sativus* L. 3 (2.6%), *Cydonia oblonga* 3 (2.6%), *Juglans regia* L. 3 (2.6%) and *Malva neglecta* 3 (2.6%) (Table 1). Three taxa are endemic to the area. These are *Helichrysum arenarium* (L.) Moench. subsp. *erzincanicum* Davis & Kupicha, *Elaeagnus angustifolia* and *Hypericum heterophyllum*.

Valuable knowledge such as local names, used parts, preparation methods and uses were collected through performing face-to-face interviews with 150 local people. But, many of the women living in the villages avoided from giving their names. Therefore, 57 recorded names (15 women, 42 men) were presented in the list of source people (Table 2). Their ages varied between 35 and 90 years. Most of them were over 40 years old.

The number and percentage related to the use of the different parts of the medicinal plant in herbal remedy preparation was given in Table 3. Fruits and flowers were the most widely used parts (26.4% and 20.9%, respectively), subsequent to leaves (17.6%), branches (11.0%), seeds (7.7%), roots (6.6%), and stems (4.4%). Bulbs (2.2%) and tuber, fruit stalk and gum were less commonly utilized. Local forms of preparation and application of the 91 herbal remedies from 64 medicinal plant taxa were given in Table 4. Decoction was the main traditional method for using the plants in the area because of its simple and easy way of preparation. Decoction as tea was the most widely preferred preparing method of use. Eating fresh or external use were the second and the third widely preferred methods in the area. Eating directly the fruits or some other parts were also the frequent use of the plants for traditional remedies. Fresh plants parts were generally used as internally or externally. Therapeutic uses or the diseases treated through the herbal remedies were given in Table 5. The primary therapeutic use of herbal remedies among the 125 therapeutic use of 91 herbal remedies were for the respiratory system diseases such as cold, cough, asthma and bronchitis (21.6%). The second most frequent use was related to the treatment of skin disorders including wounds, bleeding, eczema, itching (10.4%), and digestive system disorders like as stomachache, diarrhea, constipation, and hemorrhoids (10.4%). The third most widely use was for the urinary system disorders like urinary infections, kidney diseases and for the diuretic purposes (7.2%).

Cimin Üzüümü (*Vitis vinifera*) was very important for the area. It was preferred by many people because of its not increasing the blood glucose level after eating. So it has very important role for the economy of the district. The price of one kg changes from 2 to 4 US Dollars. The other economic plants growing in the area were *Anethum graveolens*, *Petroselinum crispum*, *Lactuca sativa* L., *Viburnum opulus*, *Cucumis sativus*, *Cucurbita pepo*, *Citrullus lanatus*, *Phaseolus vulgaris*, *Mentha x piperita*, *Allium cepa*, *Hibiscus esculentus*, *Rheum ribes*, *Portulaca oleracea* L., *Fragaria vesca* L., *Malus pumila*, *Cerasus avium*, *Prunus persica*, *Capsicum annum* L., *Solanum tuberosum*, and *Lycopersicon esculentum*. Animal husbandary was the second important source of income in the area. So, many families have migrated to the high plateaus from spring to the autumn every year.

It was determined that the people over the age of 50 were usually more familiar with the medicinal plants, and they more frequently use these. The local people generally benefited from modern medicine for serious health problems, but they also benefited from the medicinal plants for some unserious health problems. Uses of traditional medicinal plants like in villages away from the city center like Karacalar and Avcılar villages

were more frequent than the nearest villages. The use of plants for medicinal purposes shed into oblivion in villages where many people have gone abroad for work. Herbal treatment was more common in the mountainous villages such as Sansa and Büyükköy where it was difficult to transport.

Polat *et al.* (2012) evaluated the ethnobotanical studies in Eastern Anatolia region of Turkey. According to this study, majority of the researches focused on Elazığ, Van and Erzurum provinces, but the minority were performed in Bingöl, Bitlis, Kars, Muş and Erzincan. Traditional medicine has still been widely used in the Eastern Anatolian Region, but it has sharply changed with modern medicine and pharmaceuticals due to many reasons. As mentioned by Sezik *et al.* (1997), because of the migration of rural people from the villages to big cities like İstanbul, İzmir and to other city centers, traditional uses of medicinal plants has been lost rapidly in the area, particularly in Erzincan, Ardahan and Kars provinces. For maintaining the valuable knowledge related to the traditional medicine, urgent studies should be performed before they have completely lost in the region.

According to recent opinion, synthetic chemicals that are mostly used in food industry and pharmacology cause different diseases. This has led to an increased demand for natural and organic products. Because of that need, wild plants which are popularly used in the traditional culture have become an important source of the trade (Akbulut *et al.*, 2013). Yücel *et al.*, (2013) determined traditional foods of Kemaliye district. Korkmaz & Karakuş (2014) have recently studied the traditional uses of plants used as food in Üzümlü province. This research was conducted to determine the preparation methods, useful parts, scientific and local names of the plants used as public medicine in Üzümlü district.

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