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(RESEARCH ARTICLE)



## Investigation of plants with ethnobotanical use in Gaziantep province (Turkey)

Özer Havva<sup>1</sup> and Türkmen Necattin<sup>2,\*</sup>

<sup>1</sup> Republic of Turkey, Credit and Hostels Institution, Regional Representative, Adana-Turkey.

<sup>2</sup> Cukurova University, Faculty of Sciences and Letters, Department of Biology, 01330 Adana-Turkey.

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### Abstract

This research was carried out to determine the ethnobotanical use of natural and cultural plants used by local people living in the rural areas of Gaziantep province. The research was conducted in 2013-2016. As a result of interviews made with the people of the region, 65 plant species belonging to 59 genera and 24 families were identified. Families with the most species in terms of use: Asteraceae (10 species), Rosaceae (10 species), Brassicaceae (6 species), Lamiaceae (6 species), Anacardiaceae (3 species), Apiaceae (3 species), Liliaceae (3 species) and Moraceae (3 species). The proportion of wild plant species to total species in the study area is 60% (39 species). It was determined that these plant species were used for various purposes (food, medicinal, spices, tea, chewing gum, toothpicks, textile, amulet, and fodder). The wild medicinal plants sold must be cultured to ensure standardization and the medicinal plant sellers should be adequately trained.

**Keywords:** Gaziantep; Ethnobotany; Useful plants; Medicinal plants; Turkey

### 1. Introduction

The ethnobotanical term was first described by John W. Harshberger, a professor of biology in 1896, to refer to the investigation of the natural history of local people and was described as "the use of plants in the local community" [1, 2]. Today, however, not only are the plants used, but they also focus on issues such as how to understand why and how they are used, the conditions of the environment in which these plants grow and cultivation [3].

Ethnobotany deals with the obligate dynamic relationships interactions between human population, cultural values and plants. However, the interaction of plants with human society changes due to their uses, relative importance, variations in social, cultural and ethnic factors [4]. Turkey has rich history on the folk use of plants. Some ethnobotanical studies have been documented the medicinal knowledge about the plants in different parts of the country [5, 6, 7].

Investigations on cultivated plants have shown that the use of dense fertilizers and chemical medicines negatively affects the natural flavors and aromas of plants. Hence, interest in organic crops and naturally grown wild plants is increasing. Due to the ineffectiveness of synthetic drugs over time and the increased side effects, the tendency towards plant-based therapies has increased [4].

According to the World Health Organization (WHO), about 20,000 plant species are used for medical purposes. The main commercial centers of herbal medicines in the world are Hamburg, New York and Hong Kong. Today, ethnobotanical studies include not only medical plants but also food, handicrafts, fuel, animal feed, coloring, veterinary medicine, etc. Over time, ethnobotanical work has gained momentum as the global environmental crisis has grown and traditional botany culture has disappeared [8].

\* Corresponding author

E-mail address: [nturkmen@cu.edu.tr](mailto:nturkmen@cu.edu.tr)

Gaziantep province, which is a research area, is located at the junction of Mediterranean and Southeastern Anatolia and is located between 36 ° 28 'and 38 ° 01' east longitudes and 36 ° 38 'and 37 ° 32' north latitudes. Gaziantep, with 6,222 square kilometers area covers about 1% part of Turkey (Fig. 1). Gaziantep which has a history of 6000 years is one of the oldest settlements of Anatolia and the World. The population of the city is over 2 million with the immigrations it took in recent years.

Gaziantep is rich in biodiversity because it covers the Mediterranean and Iran-Turan vegetation geographical regions. Forests and shrubs in the western part are from Mediterranean plants, and the steppe species in the eastern and southern parts are composed of Iran-Turan plants. There is no extensive ethnobotanical work already done in Gaziantep which has rich plant diversity. Therefore, this work was done to record the majority of domestic medical plants and other traditional ethnobotanical information.



**Figure 1** Geographic location of the study area (modified from Google Earth)

## 2. Material and methods

Many visits were made to the study area in different seasons between 2013 and 2016. Ethnobotanical data including local names and traditional uses of the plants was obtained from local inhabitants (informants) including both males and females preferably of old ages through semi-structured questionnaire [2]. During the surveys, new samples of useful plants were collected with the guidance of local inhabitants from the study area for voucher specimens and scientific identification. The photos of the plants collected were taken.

All collected samples were identified according to the Flora of Turkey [9]. Author names of plant species were written according to Brummitt and Powell [10].

## 3. Results and discussion

As a result of field studies and surveys in Gaziantep region, a total of 65 vascular plant species (belonging to 59 genera and 26 families) with ethnobotanical use were determined. All of these species belong to the Spermatophyta section and Angiospermae (Flowering Plants) class. Of these, 39 (60%) are naturally grown and 26 (40%) are traditionally cultivated species. Their families, their local and scientific names, their intended use, their form of use and their parts are given in Table 1.

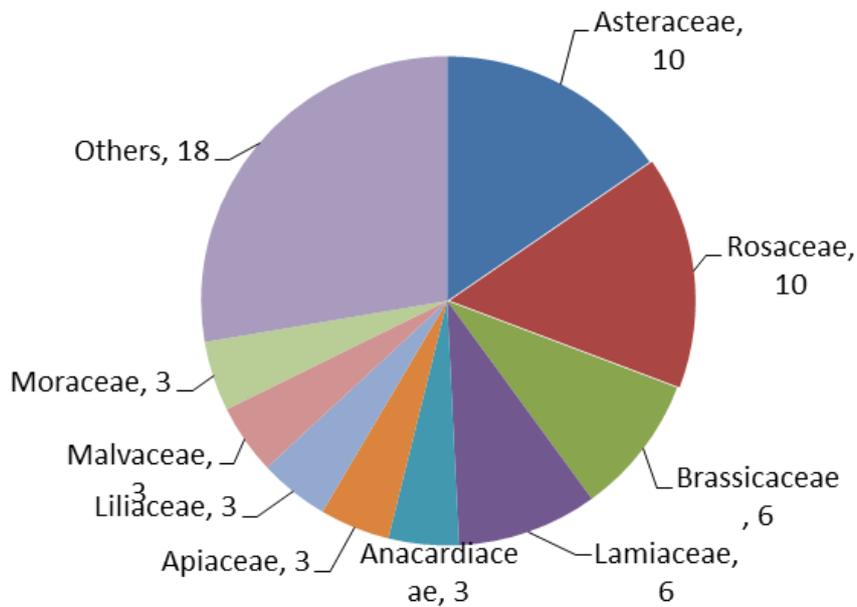
**Table 1** Floristic list and traditional use of plants found in Gaziantep Province, Turkey

Family / Species	Local name	Traditional uses	Parts used	Usefulness-Application; Naturalness
<b>Anacardiaceae</b>				
<i>Pistacia terebinthus</i> L.	Melengiç	Food, medicinal	Fruit	Roasted coffee is used in the treatment of sore throat; wild
<i>Pistacia vera</i> L.	Antep fıstığı	Food, medicinal	Fruit	It is consumed fresh and dry, it is used in treatment of stomach aches by swallowing gum; culture
<i>Rhus coriaria</i> L.	Sumak	Spice	Fruit	It is consumed as sour spices; wild
<b>Apiaceae</b>				
<i>Ammi visnaga</i> (L.) Lam.	Hiltan	Toothpick	Pedicels	Used in drying; culture
<i>Conium maculatum</i> L.	Baldırgan	Medicinal	Aerial parts	It is made into ointment by crushing, it is used in itching treatment.; wild
<i>Petroselinum crispum</i> (Mill.) A.W.Hill	Maydanoz	Food, medicinal	Leaves, stem	Freshly eaten in salads and meals, the tea is used in the treatment of kidney stones; culture
<b>Asteraceae</b>				
<i>Anthemis pseudocotula</i> Boiss.	Papatya, dövmeçik	Spice	Stem	Dried and used as spice in meatballs; wild
<i>Carduus nutans</i> L.	Alagelek	Food	Leaves	Used in making pilaw; wild
<i>Centaurea babylonica</i> (L.) L.	Kavkut	Food	Stem	The body is peeled and consumed raw; wild
<i>Centaurea calcitrapa</i> L.	Çakırdikeni	Food	Stem	The body is peeled and consumed raw; wild
<i>Gundelia tournefortii</i> L.	Sakız kenger	Food, chewing gum	Stem, root	Body shell is peeled and eaten fresh; chewing gum is obtained from its roots; wild
<i>Lactuca sativa</i> L.	Marul	Food	Leaves	Consumed as a salad; culture
<i>Onopordum carduchorum</i> Bornm. et Beauverd	Kenger	Food	Flower table	The flower table is eaten by removing the thorns; wild
<i>Scorzonera kotschyi</i> Boiss.	Yemlik	Food	Leaves	Freshly eaten; wild
<i>Silybum marianum</i> (L.) Gaertn.	Kangal	Food	Stem	Peeled and eaten; wild
<i>Tragopogon longirostis</i> Bisch. ex Schultz Bip.	Tekeşakalı	Food	Leaves	Freshly eaten; wild
<b>Boraginaceae</b>				
<i>Anchusa azurea</i> Mill.	Dingilkara	Medicinal	Aerial parts	The mash formed by boiling is applied to wound surface; wild
<i>Onosma albo-roseum</i> Fisc. et Mey.	Emecek	Food	Flower	The nectar in the flower is eaten by the children; wild
<b>Brassicaceae</b>				
<i>Cardaria draba</i> (L.) Desv.	Bozot-Toklubaşı	Food	Leaves	Used in making pilaw; wild
<i>Coronopus squamatus</i> (Forssk.) Asch.	Yaban teresi	Food	Aerial parts	A fresh salad is made; wild
<i>Erysimum smyrnaeum</i> Boiss. et Balansa	Büzmeçik otu	Medicinal	Flowers	Boiled tea is used in children to treat jaundice; wild
<i>Nasturtium officinale</i> R. Br.	Ispatan	Food	Aerial parts	Freshly eaten; wild
<i>Raphanus sativus</i> L.	Turp	Food	Root, leaves	Freshly eaten, culture.
<i>Sinapis arvensis</i> L.	Hardal	Food	Seed	Pilaf is made; wild

<b>Cucurbitaceae</b>				
<i>Bryonia alba</i> L.	Yılan kökü, ürüngül	Food	Aerial parts	Roasted eaten; wild
<b>Fabaceae</b>				
<i>Cicer arietinum</i> L.	Nohut	Food	Fruit	Eaten as dry and fresh; culture
<b>Geraniaceae</b>				
<i>Erodium cicutarium</i> (L.) L'Hér.	İğnelik	Food	Aerial parts	Roasted with onions, eaten; wild
<b>Hypericaceae</b>				
<i>Hypericum perforatum</i> L.	Kantaron	Medicinal	Flower	The mixture obtained by holding for 1 year in olive oil is used in all kinds of wound treatment; wild
<b>Juglandaceae</b>				
<i>Juglans regia</i> L.	Ceviz	Food	Fruit	Eat as nuts, culture
<b>Lamiaceae</b>				
<i>Melissa officinalis</i> L.	İğne otu	Medicinal	Leaves	The tea is used in the treatment of insomnia by its relaxing effect.; wild
<i>Mentha longifolia</i> (L.) Huds.	Yarpuz	Food	Aerial parts	Used in making fresh salads; wild
<i>Mentha piperita</i> L.	Nane	Food	Aerial parts	Used in making fresh and dry salads; wild
<i>Sideritis syriaca</i> L.	Dağ çayı-Balbaşı	Tea-making	Aerial parts	Drinking as tea; wild
<i>Teucrium polium</i> L.	Acı yavşan	Medicinal	Aerial parts	The tea is consumed as a gas remover in babies; wild
<i>Thymbra spicata</i> L.	Zahter	Spice, tea-making	Leaves	It is consumed as spice and tea; wild
<b>Liliaceae</b>				
<i>Allium cepa</i> L.	Soğan	Food	Aerial parts	Used in meals; culture
<i>Allium sativum</i> L.	Sarımsak	Food	Aerial parts	Used in meals; culture
<i>Asphodelus aestivus</i> Brot.	Nünnük	Food	Leaves	Roasted eaten; wild
<b>Malvaceae</b>				
<i>Alcea setosa</i> (Boiss.) Alef.	Hıra	Medicinal	Flower	Tea is used to cough; wild
<i>Gossypium herbaceum</i> L.	Pamuk	Textile	Seed hairs	Seed hairs are used in the textile industry; culture
<i>Malva neglecta</i> Wallr.	Döngel	Food	Leaves, stem	Boil it with hot water and make salad; wild
<b>Moraceae</b>				
<i>Ficus carica</i> L.	İncir	Food	Fruit	Eat fruit; a kind of yoghurt called 'teleme' is obtained with milk; culture
<i>Morus alba</i> L.	Beyaz dut	Food	Fruit	The fruit is eaten fresh and dry; culture
<i>Morus nigra</i> L.	Kara dut	Food, medicinal	Fruit	The fruit is eaten fresh, crushed and used in the treatment of oral wounds; culture
<b>Oleaceae</b>				
<i>Olea europaea</i> L.	Zeytin	Food	Fruit	The fruit is eaten by being sweetened, it is consumed by turning it into oil; culture

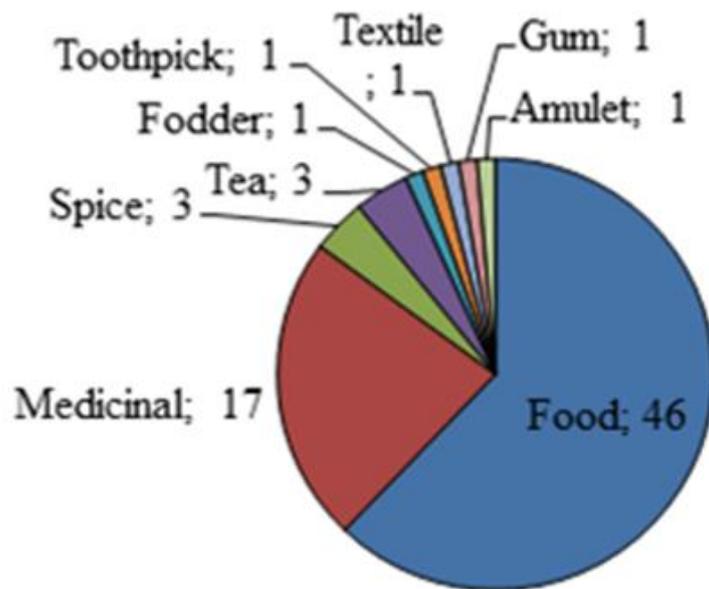
<b>Papaveraceae</b>				
<i>Papaver rhoeas</i> L.	Gelineli	Food	Leaves	Pilaf is made; wild
<b>Polygonaceae</b>				
<i>Polygonum aviculare</i> L.	Başak bağı	Medicinal	Aerial parts	Used in the treatment of kidney stones by making tea; wild
<i>Rumex acetosella</i> L.	Ekşimen	Food	Leaves	Salad is made; wild
<b>Poaceae</b>				
<i>Hordeum vulgare</i> L.	Arpa	Animal feed	Seed	Used as animal feed, culture
<i>Triticum dicoccoides</i> (Koern.) Koern.	Buğday	Food	Seed	Used in bakery products; culture
<b>Punicaceae</b>				
<i>Punica granatum</i> L.	Nar	Food, medicinal	Fruit	Fresh fruit is eaten, it is used in the treatment of diarrhea with tea made of fruit husk tea; culture
<b>Rhamnaceae</b>				
<i>Paliurus spina-christi</i> Mill.	Karaçalı	Medicinal	Fruit	Used to treat kidney disease by boiling; wild
<b>Rosaceae</b>				
<i>Amygdalus communis</i> L.	Badem	Medicinal, food	Fruit	Bitter almond fruit, in the treatment of diabetes; sweet almond fruit is consumed as food when it is fresh and dried; culture.
<i>Armeniaca vulgaris</i> Lam.	Kayısı	Food	Fruit	It is eaten fresh and dry; culture
<i>Cerasus avium</i> (L.) Moench	Kiraz	Food	Fruit	Eaten as dry and fresh; culture
<i>Crataegus aronia</i> L. Bosc	Aliç	Food	Fruit	Freshly eaten, culture.
<i>Cydonia oblonga</i> Mill.	Ayva	Food	Fruit	Freshly eaten, culture.
<i>Malus sylvestris</i> Mill.	Elma	Food, medicinal	Fruit	It is eaten fresh, is used in cough treatment by making tea; culture
<i>Prunus divaricata</i> Ledeb.	Dağ kirazı	Food	Fruit	Freshly eaten; culture
<i>Rosa canina</i> L.	Yabangülü-kuşburnu	Tea-making	Fruit	Drinking as tea; wild
<i>Rubus idaeus</i> L.	Böğürtlen-Ahududu	Food	Fruit	It is eaten fresh; consumed by making pastries; culture
<i>Rubus sanctus</i> Schreb.	Bük	Food	Fruit	Freshly eaten; wild
<b>Urticaceae</b>				
<i>Urtica dioica</i> L.	Isırgan	Tea-making, medicinal	Aerial parts	Drinking as tea; It is used in the treatment of rheumatism by turning the body into mush; wild
<b>Vitaceae</b>				
<i>Vitis vinifera</i> L.	Asma	Food	Leaves	Meals are made from leaves; the fruit is consumed dry and fresh; culture
<b>Zygophyllaceae</b>				
<i>Peganum harmala</i> L.	Üzerlik	Amulet	Seed	Ornament made from seeds is used as amulet; wild

In the family distribution of detected species (Fig. 2), the most commonly used families are Asteraceae and Rosaceae 10 species; Brassicaceae and Lamiaceae are 6 species; Anacardiaceae, Apiaceae, Liliaceae, Malvaceae and Moraceae are 3 species; while the other families were represented by one or two species.



**Figure 2** Distribution of traditionally used plant species to families

Most of the plants in the study area were used for food (46 species) and medicine (17 species), followed by spices (3 species), tea (3 species), toothpicks (1 species), textiles (1 species), fodder (1 species), chewing gum (1 species) and amulet (1 species) (Fig. 3).



**Figure 3** Distribution of plant species according to their intended use

Some photographs of the ethnobotanical plants obtained from the research area are given in figure 4.



**Figure 4** Photos of some of the plants with ethnobotanical use

The distribution of plant species according to usage purposes is 86% for food and medicine, and 14% for other uses. These ratios are a clear indication of the hope that the people of the region will benefit from natural plants in the solution of nutritional and health problems.

Generally, most of the medicinal plants are seldom used today, and knowledge about their preparation is scarce. The knowledge about medicinal plants and their preparation is now confined mostly to old people. The younger generations are rapidly adopting the allopathic medicines, and traditional medicinal plants are now seldom used [4, 11]. The rich treasure of indigenous knowledge about local medicinal plants is therefore under threat; likely to gradually disappear with the death of older people. However, some medicinal plants such as *Sideritis* and *Hypericum* are still widely used by the local people in study area.

In order to establish a standard of medicinal plants used by the people in the region agriculture is needed. However, it is not possible to talk about any standardization of plants collected and sold today. Especially cultivation of extremely rare and endemic species collected from nature could contribute to maintain them. One way of ensuring the continuity of native plants legally collect them at the appropriate time and in moderation. A good knowledge of the interaction between with people and forests has a great importance on the efficiency and sustainability of natural areas.

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## Compliance with ethical standards

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### *Disclosure of conflict of interest*

The authors declare that they have no conflict of interests.

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