**A survey on wild plants with ethnobotanical use in the Bahçe and Hasanbeyli districts of Osmaniye, Turkey**

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**Abstract**

This research was carried out between 2004 and 2006 in order to determine the medicinal plants used by the people of Bahçe and Hasanbeyli, Osmaniye province, Turkey. As a result of interviews with the people of the region, 80 taxa belonging to 34 families were used for various purposes (medicine, food, household goods, ornaments, timber, paint, and talisman). From the endemic and rare plants used by the people, *Centaurea hardajianii*, *Chaerophyllum libanoticum*, *M. fruticosa* subsp. *barbata*, *T. eigii* VU; *A. apterocarpa*, *C. aronia* var. *minuta*, *Helyschrysum arenarium* subsp. *aucheri* LC; *A. glutinosa* subsp. *antitaurica* NT; *F. amanicola* EN and *S. confertiflora* DD are classified as threatened categories. The first use of *Cruciata taurica* as yeast was recorded in this study.

**Keywords:** Conservation; Ethnobotany; Traditional medicine; Wild plants

**1. Introduction**

Bahçe and Hasanbeyli districts of Osmaniye province situated in the transitional zone of the Irano-Turanian and East Mediterranean phytogeographic regions on Amanos Mountains of Turkey, between 37° 02’-37° 17’ north latitudes 36° 14’-36° 25’ east longitudes (Fig. 1). It covers a total surface of 39 506 hectares, reaching at between 342 to 1747 meters a.s.l. and its total population is 25 422. Farming and animal husbandry are the main sources of livelihood of the people. There are two towns (Bahçe and Hasanbeyli) and 21 villages (Arıçaklık, Arıklıkaş, Aşağıarıcaklı, Aşağıkaradere, Bekdemir, Burğaçlı, Gökmustafalı, İnderesi, Kaman, Kızlaç, Nohut, Örencik, Savranlı, Yaylalık and Yukarıkaradere belonging to Bahçe district, and Çolaklı, Çulhalı, Kalecik, Karayiğit, Sarayova and Yanıkçısıla belonging to Hasanbeyli district) in the study area.

Mediterranean climate predominates in the study area with mild rainy winters and long periods of summer drought. Average annual rainfall is 852 mm. Average annual temperature is 15.7 °C. Average minimum temperature is 6.5 °C in February and maximum is 25.6 °C in August.

Topography is distinctly marked with hills and steep slopes. The main vegetation types in the area are macchia, forest and steppe adopted to Mediterranean type climate, edaphic and anthropogenic conditions in there (forestation 58%). Vegetation of the area is under severe biotic pressure due to excessive cutting and overgrazing.

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 [1-4]. 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 [5-9].

![Figure 1](image)

**Figure 1** Location of the Bahçe and Hasanbeyli districts, Osmaniye, Turkey

There is no previous study about the ethnobotany of Bahçe and Hasanbeyli districts riched in plant wealth; therefore, this study has been made to prepare an inventory of indigenous medicinal plants and to bring other traditional knowledge on record.

### 2. Material and methods

Many seasonal visits to the study area were between 2004-2006. 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 [10-11]. 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.

All collected samples were identified according to the Flora of Turkey [12-13]. Author names of plant species were written according to [14]. Herbarium specimens are stored at the department of Biology, Science and Arts Faculty, University of Çukurova.

### 3. Results and discussion

Ethnobotanical floristic list of plants in the study area comprised of 80 native species (3 Pteridophytes, 77 Spermatophytes: 1 Gymnosperm and 76 Angiosperms: 6 Monocotyledons and 70 Dicotyledons) belonging to 70 genera and 34 families (Table 1). Of which 45 were perennial herbs, 17 shrubs, 9 trees, 8 annual herbs, 1 bulbous species. The family Lamiaceae (15 species), Asteraceae (8 species), Apiaceae (7 species), Rosaceae (7 species), Liliaceae (4 species), Brassicaceae (3 species), Malvaceae (3 species) were the leading families.

Local people, 80 plant species use for specific purposes. Among them 37 species were used as medicinal, 21 species as food, 4 species spice, 2 species as furniture, 2 species as fiber dye, 1 species as fuel, 1 species as cleaner, 1 species as chewing gum, and 11 species for multiple uses (Table 1).

Especially, 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 [3]. 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 are still widely used, such as *Sideritis* spp and *Hypericum* spp, which are extensively used by the local people in both districts.
Table 1 Floristic list and traditional use of plants found in Bahçe and Hasanbeyli districts of Osmaniye Province, Turkey.

| Family / Species | Local name | Traditional uses | Parts used | Application, uses / ailment treated |
|------------------|------------|------------------|------------|-------------------------------------|
| Adiantaceae      |            |                  |            |                                     |
| Adiantum capillus-veneris L. | Pırpır otu | Medicinal | Leave | As infusion / expectorant          |
| Amaranthaceae    |            |                  |            |                                     |
| Amaranthus retroflexus L. | Kızılbacak | Food  | Stem | Eaten fresh or cooked              |
| Anacardiaceae    |            |                  |            |                                     |
| Pistacia terebinthus L. ssp. palaestina (Boiss.) Engl. | Menengiç | Food  | Fruit | Eaten fresh or drunk as coffee after grind |
| Rhus coriaria L. | Sumak      | Spice            | Fruit      | Crushed after drying / spice and condiment |
| Apiaceae         |            |                  |            |                                     |
| Chaerophyllum libanoticum Boiss. & Kotschy | Food  | Aerial parts | Eaten fresh |                                     |
| Eryngium glomeratum Lam. | Boğaz zili | Medicinal | Aerial parts | As infusion / colic of livestocks |
| Ferula amanica Hub.-Mor. | Çağışır | Medicinal | Root | Eaten after grind / fertility of livestocks |
| Foeniculum vulgare Mill. | Anason, Kömbeotu | Spice | Seed | Grinded after drying / spice and condiment |
| Grammosciadium daucoides DC. | Dağ sırası, Geyik sırası | Spice | Seed | After drying / spice and condiment |
| Laser trilobus (L.) Borkh. | Kemun, Kimyon | Spice | Seed | Grinded after drying / spice and condiment |
| Sium sisarum L. var. lancifolium (M.Bieb.) Thell. | Gazyağı | Food  | Aerial parts | Eaten fresh |
| Araceae          |            |                  |            |                                     |
| Arum dioscoridis Sm. | Yılan pancarı | Food  | Leave | Boiled, then baked |
| Aspidiaceae      |            |                  |            |                                     |
| Dryopteris filix-mas (L.) Schott | Eğrelti | Medicinal | Leave | As infusion / intestinal worms |
| Asteraceae       |            |                  |            |                                     |
| Achillea biebersteinii Afan. | Civan perçemi | Medicinal | Aerial parts | As infusion / diuretic and menstruation |
| Anthemis cotula L. | Papatya | Medicinal | Flower | As infusion / menstruation and carminative |
| Anthemis tinctoria L. var. tinctoria | Sarı papatya | Fiber dye | Flower | Boiling / yellow colorant is obtained |
| Centaurea haradjianii Wagenitz | Kaputkulak | Food  | Leave | Cooked after coiling |
| Chondrilla juncea L. var. juncea | Çtımkık, Sakızlık | Chewing gum | Root | Chewed juice from roots |
| Helichrysum arenarium (L.) Moench ssp. acheri (Boiss.) Davis & Kupicha | Yayla çiçeği, Olmez otu | Medicinal, ornamental | Flower | As infusion / diuretic, bile secretion; dangling bouquets |
| **Helichrysum plicatum** DC. ssp. plicatum | Yayla çiçeği, Ölmez otu | Medicinal, ornamental | Flower | As infusion / diuretic, bile secretion; dangled bouquets |
| **Helichrysum plicatum** DC. ssp. polyphyllum (Ledeb.) Davis&Kupicha | Yayla çiçeği, Ölmez otu | Medicinal, ornamental | Flower | As infusion / diuretic, bile secretion; dangled bouquets |

**Betulaceae**

| *Alnus glutinosa* (L.) Gaertn. ssp. *antitaurica* Yalt. | Zorkun, Kızilağaç | Fuel | Stem | As cut / building materials |

**Boraginaceae**

| *Anchusa azurea* Mill. var. azurea | Dindingana | Medicinal | Root | Crushed on lesions externally / vulnerary |
| *Cynoglossum officinale* L. | Kılıç otu | Medicinal | Leave | Crushed on lesions externally / vulnerary |

**Brassicaceae**

| *Alyssum constelletum* Boiss. | Goramaz | Medicinal | Aerial parts | As infusion / releasing anger |
| *Cardaria draba* (L.) Desv. ssp. *draba* | Toklu başı | Medicinal | Leave | Crushed on lesion externally / remediation |
| *Nastartium officinale* R.Br. | Ispatan | Food | Aerial parts | Eaten fresh or cooked |

**Campanulaceae**

| *Michauxia campanuloides* L’Her. ex Aiton | Kırtmaç | Food | Root and stem | Eaten fresh |

**Caprifoliaceae**

| *Sambucus ebulus* L. | Telli sultan | Medicinal | Leaves | Heated leaves, externally / emollient |

**Caryophyllaceae**

| *Silene confertiflora* Chowdhuri | Gıcı pancar | Food | Leaves | Cooked |

**Cupressaceae**

| *Juniperus oxycedrus* L ssp. *oxycedrus* | Ardıç | Medicinal | Seed | As infusion / expectorant for goats |

**Dioscoreaceae**

| *Tamus communis* L ssp. *communis* | Sarmaşık | Medicinal | Root | A piece on bruise externally / rheumatism |

**Equisetaceae**

| *Equisetum ramossissimum* Desf. | Ulama | Medicinal | Aerial parts | As infusion / diuretic and kidney stones |

**Fabaceae**

| *Ononis spinosa* L ssp. *leiosperma* (Boiss.) Sirj. | Yağlıcak, | Food | fruit | Cooked |
| *Spartium junceum* L. | Boruk çalısı | Furniture | Aerial parts | As a broom |

**Fagaceae**

| *Quercus cerris* L var. *cerris* | Meşe | Fuel, fodder, shelter | Aerial parts | As cut; leaves give to livestocks or constructed arbor |
| **Hypericaceae**          |                                |          |                  |                                                                 |
|---------------------------|--------------------------------|----------|------------------|----------------------------------------------------------------|
| Hypericum *confertum* Choisy ssp. *stenobotrys* (Boiss.) Holmboe | Kantaron | Medicinal | Aerial parts | As infusion / sedative, sleeping, bruise remedy |
| Hypericum *thymifolium* Banks&Sol. | Kantaron | Medicinal | Aerial parts | As infusion / sedative, sleeping, bruise remedy |

| **Hypolepidaceae**       |                                |          |                  |                                                                 |
|--------------------------|--------------------------------|----------|------------------|----------------------------------------------------------------|
| Pteridium aquilinum (L.) Kuhn | Kırkparmak | Medicinal | Leaves | Crushed on bruise, externally / painkiller |

| **Lamiaceae**           |                                |          |                  |                                                                 |
|-------------------------|--------------------------------|----------|------------------|----------------------------------------------------------------|
| Ajuga *chamaepitys* (L.) Schreb. ssp. *chia* (Schreb.) Arcang. var. *ciliata* Briq. | Basur otu | Medicinal | Aerial parts | As infusion / diaphoretic, menstruation |
| Calamintha *sylvetica* Bromf. ssp. *ascendens* (Jord.) P.W. Ball | Çay | Medicinal | Aerial parts | As infusion / digestive |
| Melissa *officinalis* L. ssp. *inodora* (Bornm.) Bornm. | Oğul otu | Medicinal | Aerial parts | As infusion / sedative, gastric and carminative |
| Mentha *longifolia* (L.) Huds. ssp. *longifolia* | Narpuz, Yarpuz | Food | Leave | As pieces after drying / tea, spice and condiment |
| Micromeria *fruticosa* L. Druce ssp. *barbata* (Boiss.&Kotschy) Davis | Sancı çayı, Şarşar çayı | Medicinal | Aerial parts | As infusion / nausea and carminative |
| Micromeria *fruticosa* L. Druce ssp. *brachycalyx* P.H. Davis | Sancı çayı, Şarşar çayı, Naneli çay | Medicinal | Aerial parts | As infusion / nausea and carminative |
| Micromeria *myrtifolia* Boiss.&Hohen. | Kertiş kuyruğu | Medicinal | Aerial parts | As infusion / appetitive and carminative |
| Origanum *syriacum* L. var. *bevanii* (Holmes) Ietsw. | Eşek reyhanı, Elma otu | Medicinal | Aerial parts | As infusion / stimulative, expectorant and across coughing |
| Sideritis *parfoliata* L. var. *condensata* Boiss. | Adaçayı | Medicinal | Aerial parts | As infusion / stimulative, appetitive and carminative |
| Sideritis *syriaca* L. ssp. *nusairensis* (Post) Hub.-Mor. | Dağ çayı | Medicinal | Aerial parts | As infusion / stimulative, appetitive and carminative |
| Teucrium *polium* L. | Par yavaşanı | Medicinal | Aerial parts | As infusion / appetitive, gastric and stimulative |
| Thymbra *spicata* L. var. *spicata* | Kekik | Food, medicinal | Leave | As pieces after drying / spice or as infusion/stimulative and relaxing |
| Thymus *eigii* (Zohary&P.H. Davis) Jalas | Kekik | Food, medicinal | Leave | As pieces after drying / tea, spice and condiment or as infusion / stimulative and relaxing |
| Thymus *kotschyanus* Boiss. & Hohen. var. *glabrascens* Boiss. | Gül kekiği | Food | Leave | As pieces after drying / tea, spice and condiment |
| Ziziphora *capitata* L. | Dağ reyhanı | Medicinal | Aerial parts | As infusion / gastric |

| **Liliaceae**           |                                |          |                  |                                                                 |
|-------------------------|--------------------------------|----------|------------------|----------------------------------------------------------------|
| Allium *ampeloprasum* L. | Köremen | Food | Aerial parts | Eaten fresh |
| Plant Family | Species | Common Name | Part Used | Use |
|-------------|---------|-------------|----------|-----|
| Asparagaceae | Asparagus acutifolius L. | Demir delen | Leave | As infusion / constipation |
| | Ruscus aculeatus L. var. angustifolius Boiss. | Tavşan topuğu | Root | As infusion / iuretic and diaphoretic |
| | Smilax aspera L. | Sincar | Leave | Crushed on bruise externally / rheumatism and painkiller |
| Malvaceae | Alcea apterocarpa (Fenzl) Boiss. | Hatmi | Aerial parts | As boil / antiseptic skin |
| | Alcea striata (DC.) Alef. ssp. rufescens (Boiss.) Cullen | Kömeç çiçeği | Aerial parts | As infusion / laxative |
| | Malva neglecta Wallr. | Kömeç | Food | Cooked |
| Plantaginaceae | Plantago major L. ssp. intermedia | Kırksınır otu | Leave | Crushed on lesion externally / blain cure |
| Platanaceae | Platanus orientalis L. | Çınar | Wood, furniture, Stem | As cut for building materials; packing case |
| Polygonaceae | Polygonum aviculare L. | Kayışkıran | Aerial parts | As infusion / diuretic and across diabetes |
| | Rumex acetosella L. | Eşkimenek | Aerial parts | Eaten fresh |
| Ranunculaceae | Ranunculus sericeus Banks & Sol. | Çınarcık | Medicinal | Crushed on lesion externally / remediation |
| Rhamnaceae | Paliurus spina-christi Mill. | Karaçalı | Medicinal, food, amulet, fence, Thorns pricked verrucas / remediatiation; eaten fresh fruits; thorny branches for charm |
| Rosaceae | Crataegus aronia (L.) Bosc var. minuta Browicz | Aliç | Food, Fruit, Eaten fresh |
| | | Yemişen | Food, Fruit, Eaten fresh |
| | Malus sylvestris Mill. ssp. orientalis (A. Uglitzk.) Browicz var. orientalis | Elma | Food, Fruit, Eaten fresh |
| | Prunus divaricata Ledeb. ssp. divaricata | Yunus eriği | Food, Fruit, Eaten fresh |
| | Pyrus elaegnifolia Pall. ssp. kotschyana (Boiss.) Browicz | Armut, Taş armut | Food, Fruit, Eaten fresh |
| | Rosa canina L. | Kuşburnu | Medicinal, Fruit, As infusion / stregtening and across diabetes |
| | Rubus sanctus Schreb. | Böğürtlen | Food, medicinal, fence, Fruit, As infusion from roots / stregtening, across diabetes and constipation; planted as barrier |
### Rubiaceae

| **Cruciata taurica** (Pall. ex Willd.) Ehrend. | Topaçık | Food | Aerial parts | Mixed juice of the crushed material with fresh milk |
| --- | --- | --- | --- | --- |
| **Rubia tinctorum** L. | Kök boya | Fiber dye | Root | Boiling / red paint |

### Scrophulariaceae

| **Anarrhinum orientale** Benth. | Süpürge otu | Furniture | Aerial parts | As a broom |

### Ulmaceae

| **Celtis australis** L. | Dağdağan | Wood, fence | Stem | As cut for building materials or barrier construction |

### Urticaceae

| **Urtica dioica** L. | Isırgan otu, Isırgı | Medicinal, food | Aerial parts | As infusion / blood purifier, appetitive and diuretic; cooked |

### Zygophyllaceae

| **Tribulus terrestris** L. | Çoban çökerten | Medicinal | Aerial parts | As infusion / diuretic, cardiotonic and vasodilator |

*Rhus coriaria, Achillea biebersteinii, Helichrysum arenarium* ssp. aucheri, *Helichrysum plicatum* ssp. plicatum, *Helichrysum plicatum* ssp. polyphyllum, *Hypericum thymifolium*, *Hypericum confertum* ssp. stenobotrys, *Sideritis parfoliata* var. condensata, *Sideritis syriaca* ssp. nusairesis, *Origanum syriacana* var. bevanii, *Melissa officinalis* ssp. inodora, *Teucrium polium*, *Micromeria fruticosa* ssp. brachycalyx and *Micromeria fruticosa* ssp. barbata have been over-exploited by local people for medicinal, spice, ornamental and commercial purposes.

From the endemic and rare plants which the people use *Centaurea haradjianii, Chaerophyllum libanoticum, Micromeria fruticosa* ssp. barbata and *Thymus eigii* VU (Vulnerable); *Alcea apterocarpa, Crataegus aronia* var. minuta and *Helichrysum arenarium* ssp. aucheri LC (Least concern); *Alnus glutinosa* ssp. antitaurica NT (Near threatened); *Ferula amanicola* EN (Endangered); *Silene confertiflora* enter DD (Data Deficient) risk classes according to [15-16].

### 4. Conclusion

Coagulation of fresh goat/sheep milk with *Cruciata taurica* extract ("teleme" in local name) was first detected in this study. *Cruciata extract* was found to be the first time to obtain cheese by dropping into fresh goat/sheep milk. Specifically, threatened species should be collected from their natural habitat at appropriate time and with appropriate methods to sustain their generations, and agricultural cultures should be encouraged if they are to be used commercially. It would be useful to educate traditional medical practitioners in the research area to provide appropriate plant materials and to use appropriate treatment methods. The disappearance of an ethnobotanical culture in the region was prevented by this study. The method of obtaining cheese by dropping *Cruciata taurica* extract into fresh sheep / goat milk was first determined in this study. Some wild plants with ethnobotanical use can be damaged by excessive consumption and therefore protective measures (*in-situ* and / or *ex-situ*) should be taken.

### 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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