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(RESEARCH ARTICLE)



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

Mart Salim¹ and Türkmen Necattin^{2,*}¹ Republic of Turkey, Adana National Education Directorate, Adana-Turkey.² Cukurova University, Faculty of Sciences and Letters, Department of Biology, 01330 Adana-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*, *Micromeria fruticosa* subsp. *barbata*, *Thymus eigii* VU; *Alcea apterocarpa*, *Crataegus aronia* var. *minuta*, *Helyschrysum arenarium* subsp. *aucheri* LC; *Alnus glutinosa* subsp. *antitaurica* NT; *Ferula amanicola* EN and *Silene 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 (Arıcaklı, Arıklıkaş, Aşağıarıcaklı, Aşağıkaradere, Bekdemir, Burgaçlı, Gökmustafalı, İnderesi, Kaman, Kızlaç, Nohut, Örencik, Savranlı, Yaylalık and Yukarıkaradere belonging to Bahçe district, and Çolaklı, Çulhalı, Kalecik, Karayiğit, Sarayova and Yanıkkışla 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

* Corresponding author

E-mail address: nturkmen@cu.edu.tr

ethnobotanical studies have been documented the medicinal knowledge about the plants in different parts of the country [5-9].

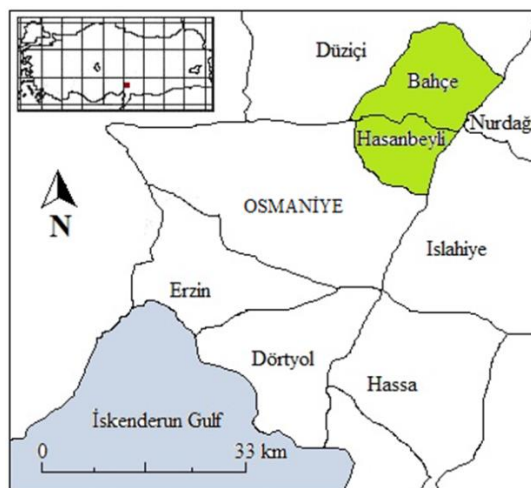


Figure 1 Location of the Bahçe and Hasanbeyli districts, Osmaniye, Turkey

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				
<i>Adiantum capillus-veneris</i> L.	Pırpır otu	Medicinal	Leaf	As infusion / expectorant
Amaranthaceae				
<i>Amaranthus retroflexus</i> L.	Kızılback	Food	Stem	Eaten fresh or cooked
Anacardiaceae				
<i>Pistacia terebinthus</i> L. ssp. <i>palaestina</i> (Boiss.) Engl.	Menengiç	Food	Fruit	Eaten fresh or drunk as coffee after grind
<i>Rhus coriaria</i> L.	Sumak	Spice	Fruit	Crushed after drying / spice and condiment
Apiaceae				
<i>Chaerophyllum libanoticum</i> Boiss. & Kotschy		Food	Aerial parts	Eaten fresh
<i>Eryngium glomeratum</i> Lam.	Boğaz zili	Medicinal	Aerial parts	As infusion / colic of livestock
<i>Ferula amanicola</i> Hub.-Mor.	Çağsır	Medicinal	Root	Eaten after grind / fertility of livestock
<i>Foeniculum vulgare</i> Mill.	Anason, Kömbeotu	Spice	Seed	Grinded after drying / spice and condiment
<i>Grammosciadium daucoides</i> DC.	Dağ sırası, Geyik sırası	Spice	Seed	After drying / spice and condiment
<i>Laser trilobun</i> (L.) Borkh.	Kemun, Kimyon	Spice	Seed	Grinded after drying / spice and condiment
<i>Sium sisarum</i> L. var. <i>lancifolium</i> (M.Bieb.) Thell.	Gazyacı	Food	Aerial parts	Eaten fresh
Araceae				
<i>Arum dioscoridis</i> Sm.	Yılan pancarı	Food	Leaf	Boiled, then baked
Aspidiaceae				
<i>Dryopteris filix-mas</i> (L.) Schott	Eğrelti	Medicinal	Leaf	As infusion / intestinal worms
Asteraceae				
<i>Achillea biebersteinii</i> Afan.	Civan perçemi	Medicinal	Aerial parts	As infusion / diuretic and menstruation
<i>Anthemis cotula</i> L.	Papatya	Medicinal	Flower	As infusion / menstruation and carminative
<i>Anthemis tinctoria</i> L. var. <i>tinctoria</i>	Sarı papatya	Fiber dye	Flower	Boiling / yellow colorant is obtained
<i>Centaurea haradjianii</i> Wagenitz	Kaputkulak	Food	Leaf	Cooked after boiling
<i>Chondrilla juncea</i> L. var. <i>juncea</i>	Çıtmık, Sakızlık	Chewing gum	Root	Chewed juice from roots
<i>Helichrysum arenarium</i> (L.) Moench ssp. <i>aucheri</i> (Boiss.) Davis & Kupicha	Yayla çiçeği, Ölmez otu	Medicinal, ornamental	Flower	As infusion / diuretic, bile secretion; dangled bouquets

<i>Helichrysum plicatum</i> DC. ssp. <i>plicatum</i>	Yayla çiçeği, Ölmez otu	Medicinal, ornamental	Flower	As infusion / diuretic, bile secretion; dangled bouquets
<i>Helichrysum plicatum</i> DC. ssp. <i>polyphyllum</i> (Ledeb.) Davis&Kupicha	Yayla çiçeği, Ölmez otu	Medicinal, ornamental	Flower	As infusion / diuretic, bile secretion; dangled bouquets
Betulaceae				
<i>Alnus glutinosa</i> (L.) Gaertn. ssp. <i>antitaurica</i> Yalt.	Zorkun, Kızılağaç	Fuel	Stem	As cut / building materials
Boraginaceae				
<i>Anchusa azurea</i> Mill. var. <i>azurea</i>	Dindingana	Medicinal	Root	Crushed on lesions externally / vulnerary
<i>Cynoglossum officinale</i> L.	Kılıç otu	Medicinal	Leave	Crushed on lesions externally / vulnerary
Brassicaceae				
<i>Alyssum constelletum</i> Boiss.	Goramaz	Medicinal	Aerial parts	As infusion / releasing anger
<i>Cardaria draba</i> (L.) Desv. ssp. <i>draba</i>	Toklu başı	Medicinal	Leave	Crushed on lesion externally / remediation
<i>Nastartium officinale</i> R.Br.	Ispatan	Food	Aerial parts	Eaten fresh or cooked
Campanulaceae				
<i>Michauxia campanuloides</i> L'Her. ex Aiton	Kırtmaç	Food	Root and stem	Eaten fresh
Caprifoliaceae				
<i>Sambucus ebulus</i> L.	Telli sultan	Medicinal	Leaves	Heated lieves, externally / emollient
Caryophyllaceae				
<i>Silene confertiflora</i> Chowdhuri	Gıcı pancar	Food	Leaves	Cooked
Cupressaceae				
<i>Juniperus oxycedrus</i> L. ssp. <i>oxycedrus</i>	Ardıç	Medicinal	Seed	As infusion / expectorant for goats
Dioscoreaceae				
<i>Tamus communis</i> L. ssp. <i>communis</i>	Sarmaşık	Medicinal	Root	A piece on bruise externally / rheumatism
Equisetaceae				
<i>Equisetum ramossissimum</i> Desf.	Ulama	Medicinal	Aerial parts	As infusion / diuretic and kidney stones
Fabaceae				
<i>Ononis spinosa</i> L. ssp. <i>leiosperma</i> (Boiss.) Sirj.	Yağlıcak,	Food	fruit	Cooked
<i>Spartium junceum</i> L.	Boruk çalısı	Furniture	Aerial parts	As a broom
Fagaceae				
<i>Quercus cerris</i> L. var. <i>cerris</i>	Meşe	Fuel, fodder, shelter	Aerial parts	As cut; leaves give to livestock or constructed arbor

Hypericaceae				
<i>Hypericum confertum</i> Choisy ssp. <i>stenobotrys</i> (Boiss.) Holmboe	Kantaron	Medicinal	Aerial parts	As infusion / sedative, sleeping, bruise remedy
<i>Hypericum thymifolium</i> Banks&Sol.	Kantaron	Medicinal	Aerial parts	As infusion / sedative, sleeping, bruise remedy
Hypolepidaceae				
<i>Pteridium aquilinum</i> (L.) Kuhn	Kırkparmak	Medicinal	Leaves	Crushed on bruise, externally / painkiller
Lamiaceae				
<i>Ajuga chamaepitys</i> (L.) Schreb. ssp. <i>chia</i> (Schreb.) Arcang. var. <i>ciliata</i> Briq.	Basur otu	Medicinal	Aerial parts	As infusion / diaphoretic, menstruation
<i>Calamintha sylvatica</i> Bromf. ssp. <i>ascendens</i> (Jord.) P.W. Ball	Çay	Medicinal	Aerial parts	As infusion / digestive
<i>Melissa officinalis</i> L. ssp. <i>inodora</i> (Bornm.) Bornm.	Oğul otu	Medicinal	Aerial parts	As infusion / sedative, gastric and carminative
<i>Mentha longifolia</i> (L.) Huds. ssp. <i>longifolia</i>	Narpuz, Yarpuz	Food	Leave	As pieces after drying / tea, spice and condiment
<i>Micromeria fruticosa</i> (L.) Druce ssp. <i>barbata</i> (Boiss.&Kotschy) Davis	Sancı çayı, Şarşar çayı	Medicinal	Aerial parts	As infusion / nausea and carminative
<i>Micromeria fruticosa</i> L. Druce ssp. <i>brachycalyx</i> P.H. Davis	Sancı çayı, Şarşar çayı, Naneli çay	Medicinal	Aerial parts	As infusion / nausea and carminative
<i>Micromeria myrtifolia</i> Boiss.&Hohen.	Kertiş kuyruğu	Medicinal	Aerial parts	As infusion / appetitive and carminative
<i>Origanum syriacum</i> L. var. <i>bevanii</i> (Holmes) Ietsw.	Eşek reyhanı, Elma otu	Medicinal	Aerial parts	As infusion / stimulative, expectorant and across coughing
<i>Sideritis parfoliata</i> L. var. <i>condensata</i> Boiss.	Adaçayı	Medicinal	Aerial parts	As infusion / stimulative, appetitive and carminative
<i>Sideritis syriaca</i> L. ssp. <i>nusairensis</i> (Post) Hub.-Mor.	Dağ çayı	Medicinal	Aerial parts	As infusion / stimulative, appetitive and carminative
<i>Teucrium polium</i> L.	Par yavşanı	Medicinal	Aerial parts	As infusion / appetitive, gastric and stimulative
<i>Thymbra spicata</i> L. var. <i>spicata</i>	Kekik	Food, medicinal	Leave	As pieces after drying / spice or as infusion/stimulative and relaxing
<i>Thymus eigii</i> (Zohary&P.H. Davis) Jalas	Kekik	Food, medicinal	Leave	As pieces after drying / tea, spice and condiment or as infusion / stimulative and relaxing
<i>Thymus kotschyanus</i> Boiss. & Hohen. var. <i>glabascens</i> Boiss.	Gül kekiği	Food	Leave	As pieces after drying / tea, spice and condiment
<i>Ziziphora capitata</i> L.	Dağ reyhanı	Medicinal	Aerial parts	As infusion / gastric
Liliaceae				
<i>Allium ampeloprasum</i> L.	Köremen	Food	Aerial parts	Eaten fresh

<i>Asparagus acutifolius</i> L.	Demir delen	Medicinal	Leave	As infusion / constipation
<i>Ruscus aculeatus</i> L. var. <i>angustifolius</i> Boiss.	Tavşan topuğu	Medicinal	Root	As infusion / iuretic and diaphoretic
<i>Smilax aspera</i> L.	Sincar	Medicinal	Leave	Crushed on bruise externally / rheumatism and painkiller
Malvaceae				
<i>Alcea apterocarpa</i> (Fenzl) Boiss.	Hatmi	Cleaner	Aerial parts	As boil / antiseptic skin
<i>Alcea striata</i> (DC.) Alef. ssp. <i>rufescens</i> (Boiss.) Cullen	Kömeç çiçeği	Medicinal	Aerial parts	As infusion / laxative
<i>Malva neglecta</i> Wallr.	Kömeç	Food	Stem	Cooked
Plantaginaceae				
<i>Plantago major</i> L. ssp. <i>intermedia</i>	Kırksinir otu	Medicinal	Leave	Crushed on lesion externally / blain cure
Platanaceae				
<i>Platanus orientalis</i> L.	Çınar	Wood, furniture	Stem	As cut for building materials; packing case
Polygonaceae				
<i>Polygonum aviculare</i> L.	Kayıskıran	Medicinal	Aerial parts	As infusion / diuretic and across diabetes
<i>Rumex acetosella</i> L.	Eşkimenek	Food	Aerial parts	Eaten fresh
Ranunculaceae				
<i>Ranunculus sericeus</i> Banks & Sol.	Çınarcık	Medicinal	Leave	Crushed on lesion externally / remediation
Rhamnaceae				
<i>Paliurus spina-christi</i> Mill.	Karaçalı	Medicinal, food, amulet, fence	Stem, fruit and seed	Thorns pricked verrucas / remediation; eaten fresh fruits; thorny branches for charm
Rosaceae				
<i>Crataegus aronia</i> (L.) Bosc var. <i>minuta</i> Browicz	Alıç	Food	Fruit	Eaten fresh
<i>Crataegus monogyna</i> Jacq. ssp. <i>monogyna</i>	Yemişen	Food	Fruit	Eaten fresh
<i>Malus sylvestris</i> Mill. ssp. <i>orientalis</i> (A. Uglitzk.) Browicz var. <i>orientalis</i>	Elma	Food	Fruit	Eaten fresh
<i>Prunus divaricate</i> Ledeb. ssp. <i>divaricata</i>	Yunus eriği	Food	Fruit	Eaten fresh
<i>Pyrus elaeagnifolia</i> Pall. ssp. <i>kotschyana</i> (Boiss.) Browicz	Armut, Taş armut	Food	Fruit	Eaten fresh
<i>Rosa canina</i> L.	Kuşburnu	Medicinal	Fruit	As infusion / strengtening and across diabetes
<i>Rubus sanctus</i> Schreb.	Böğürtlen	Food, medicinal, fence	Fruit, root and stem	Eaten fruit; as infusion from roots / strengtening, across diabetes and constipation; planted as barrier

Rubiaceae				
<i>Cruciata taurica</i> (Pall. ex Willd.) Ehrend.	Topacak	Food	Aerial parts	Mixed juice of the crushed material with fresh milk
<i>Rubia tinctorum</i> L.	Kök boya	Fiber dye	Root	Boiling / red paint
Scrophulariaceae				
<i>Anarrhinum orientale</i> Benth.	Süpürge otu	Furniture	Aerial parts	As a broom
Ulmaceae				
<i>Celtis australis</i> L.	Dağdağan	Wood, fence	Stem	As cut for building materials or barrier construction
Urticaceae				
<i>Urtica dioica</i> L.	Isırgan otu, Isırgı	Medicinal, food	Aerial parts	As infusion / blood purifier, appetitive and diuretic; cooked
Zygophyllaceae				
<i>Tribulus terrestris</i> L.	Çoban çökerten	Medicinal	Aerial parts	As infusion / diuretic, cardiotoxic and vasodilator

Rhus coriaria, *Achillea biebersteinii*, *Helichrysum arenarium* ssp. *aucherii*, *Helichrysum plicatum* ssp. *plicatum*, *Helichrysum plicatum* ssp. *polyphyllum*, *Hypericum thymifolium*, *Hypericum confertum* ssp. *stenobotrys*, *Sideritis parfoliata* var. *condensata*, *Sideritis syriaca* ssp. *nusairensis*, *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. *aucherii* LC (Least concern); *Alnus glunitosa* 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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