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# ETHNOECOLOGY OF POISONOUS PLANTS OF TURKEY AND NORTHERN CYPRUS

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**Abstract**

Interest in plants is increasing and much work is being carried out these days on their multipurpose uses. A great impetus has been given to this during the last 3 decades. Several publications have been made by different investigators. Large number of naturally growing plants are collected and sold at the markets. Nearly 500 plants are used for primary health care in Turkey and a 23 in Cyprus. However, not much is known about the poisonous plants. Some of these are toxic and others cause reaction. Plant poisoning lies around 6 %, rurals suffer more from the consumption of naturally growing plants as compared to urban dwellers. One has to be very cautious before using these plants as the plants used for the purpose of treatment of diseases as a whole or parts thereof or consumed by the public directly could prove dangerous for the health. This paper describes ethnoecological aspects of the widely distributed major poisonous plants in Turkey and Northern Cyprus which can prove fatal if used unknowingly. Major applications and active constituents of plant taxa are outlined.

## Introductıon

Plant poisoning has plagued living beings throughout their history. Today poisonous plants are part of our life indoors as well as outdoors. Among the thousands of plants in our environment, there are relatively few that, when ingested, cause acute life-threatening illnesses (Anonymous, 2003). Nearly 5000 taxa of the world's estimated 400.000 plant species have been studied in detail for their medical uses and only 1 % of indigenous cultures surveyed for knowledge of medicinal plants and natural products (Gray, 2000; Wright & Nebel, 2002; Choudharry et al., 2003; Ahmad, 2007; Hazrat et al., 2007; Ibrar et al., 2007; Khan & Khatoon, 2008). The plant world helps us to sustain life because we consume a large number of plants (Watt & Breyer-Brandwijk, 1962; Enari, 1982; Spoerke & Smolinske, 1990; Filmer, 1997; Sharon, 2001). While some of these are useful for treatment of various diseases others produce adverse health effects. Later can be quite sudden or take some time to develop. The diversity of chemical substances in plants is quite amazing. The role that a particular chemical plays in the normal ecology of the plant is not well understood, these are said to provide protection from predators, but can cause allergic reactions, dermatitis, internal poisoning or irritation, blood, nerve or cardiac poisoning. There are several toxicologically significant plant constituents, these

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include alkaloids, amino acids, peptides and proteins, glycosides, minerals, acids, oxalates, terpenes, phenolics and tannins, phytotoxins, photosensitizing compounds, resins and essential oils.These are generally known as secondary metabolites (Frohne & Pfander, 1984). However, sensitivity to the toxic effects of plants differs with regard to the species (Hardin *et al*., 1974; Nielson *et al*., 1988; Kaiser Permanente-Northwest, 2003). Poisonous plants have always been part of our daily life and some of them are so common that we do not even suspect their toxic nature. Depending on the plant species, the poisonous parts of the plants can be the root, rhizome, bulb, stem, branch, leaf, flower, fruit, seed, pollen, nectar or sap (Secmen & Leblebici,1987). They basically poison on contact, ingestion, or by absorption or inhalation causing different reactions (Mert *et al*.2008). This stresses the need for studying their ethnoecology.

A large population in Turkey and Northern Cyprus consume plants growing in the wild as diet or for their primary health care. Interest in plants is increasing and a lot of work is being carried out these days on the multipurpose uses of plants. A great impetus has been given to this during the last 3 decades. Several publications have been made by different investigators notable among them being; Baytop (1963, 1999), Ozturk & Ozcelik (1991), Ozcelik & Sagmanligil (1993), Sagmanligil *et al*. (1994), Asimgil (1999), and Hadjikyriakou (2007). This statement has been highlightened by Baser *et al*. (1986). However, not much is known about the poisonous plants (Baytop, 1963, 1989; Secmen & Leblebici, 1987; Kaya & Filazi, 1995; Kivicak & Mert, 2001;Yilmaz & Akpinar, 2006). This paper describes ethnoecological aspects of the widely distributed major poisonous plants in Turkey and Northern Cyprus which can prove fatal if used unknowingly.

## Materials and Methods

The area of study covers three phytogeographical regions of Turkey, namely; the Mediterranean including West and South Anatolian divisions; Euro-Siberian including Marmara and Black Sea divisions and Irano-Turanian including Central, South-East and East Anatolian divisions with an area of total 814572 $km^2$ and Northern Cyprus with an area of 9250 $km^2$. The area experiences mediterranean, oceanic and continental climates. Mean annual temperatures vary between $21^0$-$30^0$C in summers and $3^0$-$10^0$C in winters. Data for this study was gathered over years basically from 1973 till 2000 during organized field trips under the projects TUBITAK / TBAG- 142 “Ecology and Systematics of Wild West Anatolian Mints” (1973-1976), TBAG-547 “Ecology and Economic Evaluation of West Anatolian Grasslands” (1984-1987), Ege Univ. Research Foundation 004 "Flora of Aegean Region and its Biological Aspects” (1988), DEMOS European Community “Desertification in the Mediterranean Drylands: Development of a Monitoring System Based on Plant Ecophysiology” (1998-2000)”. Field investigations included surveys of markets and interviews with villagers. Collections of ethnobotanical data were made mainly in and around the rural areas noting their local names, habit, altitudes, distribution and names of toxic compounds present in the plant. The specimens were identified with the help of Flora of Turkey and East Aegean Islands (Davis, 1965-1988) and are deposited in the Herbarium of Faculty of Science & Arts, Canakkale Onsekiz Mart University (COMU) under the herbarium numbers as Uys (Ismet Uysal) and the herbarium of Near East University under the herbarium numbers as SG (Salih Gucel). Names of organic compounds were verified by using the Dictionary of Organic

Compounds (Cook *et al*.1965). A literature survey was conducted to determine the presence or absence of bioactive compounds in these species (Aplin, 1976; Tisserand & Balacs, 1995; Ditamaso, 1994; Cheeke, 1998; Bruneton, 1999; Balabanlı *et al*., 2006 ; Ahmad, 2007).

**Results and Discussion**

Turkey shows a flourishing plant diversity. The country embodies more than 9000 taxa of higher plants which help us to sustain life as a large proportion of the population is using plants for different purposes and about 500 plants are used for health care (Baytop, 1999). This is enlightened by several investigations undertaken on folk medicine notable being (Baytop 1963, Baser *et al*. 1986, Sezik *et al*. 1991,1997; Yeşilada *et al*. 1993, Sayar *et al*. 1995, Surmeli *et al*. 2001). Some of these are toxic and others cause reaction. Plant poisoning in Turkey lies around 6 % (Mat, 1998) rurals suffer more from the consumption of naturally growing plants as compared to urban dwellers. Only few publications deal with the poisonous plants (Baytop 1963, 1989; Karamanoglu & Oder 1972; Swanker, 1984; Mat 1998; Dogan & Ok, 2000; Dogan *et al*., 2005; Hazrat *et al*., 2007). Many people in our study area depend on plants for their primary health care as well as food. Every year more than 100 persons are reported to go to the clinics due to poisoning from plant taxa (Mat, 1998). The key to avoiding problems with poisonous plants is proper identification and avoidance of these plants. Knowing poisonous plants is as important as knowing edible plants. Knowing the poisonous plants will help us avoid sustaining injuries from them. Recognition of poisonous plants will help to minimize the potential for poisoning from poisonous plants. Many edible plants have deadly relatives and look-alike. Successful use of plants thus depends on positive identification. As such, there is a great need to learn to identify the poisonous plants and the conditions under which they can be dangerous to us. The diagnosis of plant poisonings can be difficult. In Turkey preparation for military missions includes learning to identify those harmful plants in the target area. There is no room for experimentation where plants are concerned, especially in unfamiliar territory.

This study revealed that 474 taxa belonging to 64 families are poisonous. The families that contain the highest number of poisonous species are Fabaceae (50), Ranunculaceae (48), Asteraceae (44) and Liliaceae (28). Families with the highest poisonous genera are Fabaceae (23), Asteraceae (22), Apiaceae (16), Ranunculaceae (16), and Liliaceae (10). Euphorbia (12), Lathyrus (12), Ranunculus (12), Colchicum (11), and Prunus (11) are the five genera with the highest number of poisonous taxa. Major applications and active constituents of 182 plant taxa belonging to 48 families are presented in table 1. *Equisetum arvense*, *Juniperus excelsa*, *Adonis aestivalis*, *Ranunculus sceleratus*, *Agrostemma githago*, *Peganum harmala*, *Lathyrus sativus*, *Vicia sativa*, *Sambucus nigra*, *Nicotiana glauca*, *Digitalis ferruginea*, *Euphorbia cyparissias*, *Lolium temulentum*, *Rumex acetosella*, *Conium maculatum*, *Apocynum venetum*, *Nerium oleander*, *Cionura erecta*, *Cannabis sativa*, *Viburnum lantana*, *Artemisia absinthium*, *Tanacetum vulgare* and *Ecballium elaterium* are most important poisonous taxa (Table 1).

In the Northern Cyprus most common poisonous taxa are; *Leontice leontopetalum* L. (Berberidaceae), *Hypericum triquetrifolium* Turra. (Guttiferae), *Oxalis corniculata*

**Table 1. The distribution, formation/flowering period and active constituents of poisonous plants of Turkey.**

| Scientific name | Local name | Distribution | Formation, altitude and flowering period | Toxic part and effective component |
|---|---|---|---|---|
| **Aquifoliaceae** | | | | |
| *Ilex aquifolium* L. | Çoban püskülü | Balıkesir | Trees, 300-400 m, | Fruit and leaves, ilicin, saponin, triterpenoidler, atropin, scopolamin, hyoscyamin |
| **Amaranthaceae** | | | | |
| *Amaranthus refroflexus* L. | Tilkikuyruğu | İstanbul, Kocaeli, Bursa, Sakarya, Ankara, Bitlis, Antalya | Annual, 1900 m, 5-7 | Whole plant, saponin, flavanoide |
| **Apocynaceae** | | | | |
| *Apocynum andnatum* L. | Köpek zehiri | Kırklareli, İstanbul, Artvin, İzmir, Malatya, Denizli, Antalya, İçel, Hakkari | Perennial herbs, 1800 m, | Root, apocynin |
| *Nerium oleander* L. | Zakkum, Ağu çiçeği, Kanaağacı, Zıkkım ağacı, Ağu ağacı, Avu, Ayan, Fattak | Manisa, Çanakkale, Balıkesir, Mugla, Denizli, Aydın, Antalya, Mersin, Adana, Hatay, Adıyaman, İstanbul | tall shrubs, 800 m., 4-9. | Leaves; oleandrosin, neriosid, digitoxin, rosagenin glycoside, flavanoid, saponin, cardiotonic glycoside, neriin, neriantin |
| **Araceae** | | | | |
| *Arum detruncatum* C.A. Meyer ex Schoott | Toros Danaayağı, Buzağı otu, Nivik, Yılan ekmeği, Yılan yastığı | Adana, Gümüşhane, Kayseri, Sivas,Burdur, Konya, K. Maraş, Gaziantep, Sakarya, Kayseri, Elazığ, Van, Mersin, Niğde, Trabzon, Erzincan, Tunceli | perennial herbs, (4-) 5-6. | Leaves, fruit and tuber; Aronin (saponin glycoside),irritan juice |
| *A. italicum* Miller | Italyan Danaayağı | İstanbul, Bursa, Kocaeli, Samsun, Ordu, Trabzon, Rize | perennial herbs, 2500 m., 3-5 (-6). | Whole plant; Irritan juice and aronin saponini. |
| *Dracunculus vulgaris* Scott. | Yılan yastığı, Yılankökü | Tekirdağ, Çanakkale, Balıkesir, Bursa, İstanbul, İzmir, Manisa, Aydın, Denizli, Antalya | perennial herbs, 30-475 m., 5-6. | Whole plant, Aronin (saponin glycoside) , flavonoid |
| **Aristolochiaceae** | | | | |
| *Aristolochia bottae* Jaub.& Spach | Lohusa otu | Diyarbakır, Trabzon, Gümüşhane , Sivas, Siirt, Bitlis, Urfa, Mardin | perennial herbs, 1250-1700 m., 3-6. | Whole plant, Tanen, sugar, volatile oils, resin, aristolohik acid and alkoloids |
| **Asclepiadaceae** | | | | |
| *Cionura eracta* (L.)Griseb | Babrik | Kırklareli, Balıkesir, İstanbul, Bursa, Zonguldak, Amasya, Giresun, Manisa, Eskişehir, Ankara, Adana, Elazığ, | Semishrubs, 1100-1400 m, 4-9. | Whole plant, safranal |

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| | | Muğla, Denizli, Antalya, K. Maraş, Mardin, Siirt. | | |
| *Cynanchum acutum* L. | Panzehir otu, Sütlü sarmaşık | Tekirdağ, Balıkesir, İstanbul, Bursa, Zonguldak, Amasya, Samsun, Gümüşhane, Artvin, Kars, Manisa, Kütahya, Konya, Ankara, Kayseri, Malatya, Erzincan, Van, İzmir, Muğla, Isparta, İçel, Hatay, Çanakkale | perennial herbs, 1500 m., 6-9. | Whole plant, Vincetoksin glycoside |
| *Periloca graeca* L. | İpekfidanı | İstanbul, Bolu, Zonguldak, Sinop, Ordu,Trabzon, Rize, Artvin,Balıkesir, Ankara, Elazığ Erzurum,Siirt, Denizli, Antalya, İçel, Hatay, Mardin, Diyarbakır | Shrubs, 1200 m., 4-7. | Whole plant, Vincetoksin glycoside |
| **Aspidiaceae** | | | | |
| *Dryopteris filix-mas* (L.) Schott | Erkek eğrelti otu | İstanbul, Bolu, Kastamonu, Sinop, Ordu,Trabzon, Niğde, Hatay | perennial herbs, 1000-1100 m., 6-9. | Whole plant, Triterpen, hanficilin |
| **Boraginaceae** | | | | |
| *Alkanna orientalis* (L.) Boiss. | Havaciva otu | Bursa, Ankara, Zonguldak, Samsun, Tokat, Gümüşhane, Kars, Eskişehir,Ankara, Nevşehir, K. Maraş, Erzincan, Erzurum, Bitlis, Ağrı, Aydın, Muğla, Konya, Niğde Hakkari, Bilecik | perennial herbs, 4-8 | Whole plant, Naphthaquinone |
| *Cynoglossum montanum* L. | Köpekdili | Balıkesir, Bursa, Kastamonu, Bolu, Amasya, Artvin, Kütahya, Eskişehir, Kayseri, Yozgat, Muş, Muğla, Mersin, K. Maraş | binnial herbs, 360-2200 m., 4-6(-8). | Whole plant, pyrrolizidine derivatives alkoloids |
| *Echium italicum* L. | Engerekotu | Edirne, Balıkesir, İstanbul, Bursa, Ankara, Samsun, Trabzon, Artvin, Erzurum, İzmir, Eskişehir, Konya, Malatya, Erzincan, Bitlis, Denizli, Antalya, Mersin, Gaziantep, Mardin, Hakkari | binnial herbs, 1950m., 5-8. | Whole plant, pyrrolizidine (sinoglosin, kosolidin) |
| *Solenanthus stamineus* (Desf.) Wettst | Unknown | Samsun, Sivas, Giresun, Erzurum, Kars, Kayseri, Tunceli, Bitlis, Antalya, Isparta, Konya, K. Maraş, Adıyaman, Hakkari | perennial herbs, 850-2300 m., 4-8. | Whole plant poisonous, Unknown |

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| **Buxaceae** | | | | |
| *Buxus sempervirens* L. | Şimşir ağacı,Anadolu Şimşir, Cımşır, Şümşür, Adi şimşir | Kocaeli, Bolu, Kastamonu, Zonguldak, Trabzon, Rize, Denizli, Adana, K. Maraş, Hatay | shrubs or trees, 100-2000 m., 4-7. | Root and Leaves; Alkoloid, flavonoid, saponin, buksin (steroidal alkoloid), Rezin, Volatile oils |
| **Cannabaceae** | | | | |
| *Cannabis sativa* L. | Kenevir, Gonca, Deligonca, Kendir, Kınnapotu, Esrar otu | Çanakkale, Kırklareli, Tekirdağ, İstanbul | annual herbs, 6-9 | Leaves and flowers; Tetrahidrokannabinol (THC), meroterpenoid. |
| **Caprifoliaceae** | | | | |
| *Sambucus ebulus* L. | Mürandr, Boki, Yabani mürandr, Sultan otu, Ayı otu, Cücemürandr, Hekimana, Kımçırık, Patpatik, Pellempüs | İstanbul, Balıkesir, Bolu, Kastamonu, Amasya, Ordu, Giresun, Artvin, Ankara, Van, Isparta, Antalya, Hatay | perennial herbs, 500-2000 m., 7-8. | Leaves, cork of stem and fruit; Saponin, sambunigrin and cyanidin glicosid, resine. |
| Sambucus nigra L | Mürandr ağacı, Boylu mürandr, Kara mürandr, Siyah mürandr, Patrık | Kırklareli, İstanbul, Bolu, Sinop, Ordu, Giresun, Rize, Artvin, İzmir, Elazığ, Van. | Perennial shrubs, 1700 m, 4-7. | Leaves, cork of stem and fruit; Saponin, sambunigrin and cyanidin glicosid, resine. |
| *Viburnum lantana* L. | Kokarağaç | Bolu, Ankara, Samsun, Sivas, Gümüşhane, Rize, Kars, Kütahya, Konya, Yozgat, Erzincan, Ağrı | Shrubs, 1000-2000, 6-7. | Leaves and flowers, Iridoid |
| **Caryophyllaceae** | | | | |
| *Agrostemma githago* L. | Karamuk, Katırçiçeği | Çanakkale, İstanbul, Biklecik, Bolu, Çankırı, Kastamonu, Gümüşhane, Siirt, Artvin, Kütahya, Kayseri, Elazığ, Erzurum, Bitlis, Muğla, Antalya, Hatay | Annual herbs, 30-2500 m., 4-7. | Seeds, saponin glycoside, githagenin |
| *Dianthus caleocephalus* Boiss. | Karanfil | Çanakkale, İstanbul, Bilecik, Sakarya, Zonguldak, Amasya, Gümüşhane, İzmir, Kars, Niğde, K.Maraş, Erzincan, Erzurum, Bitlis, Burdur, Antalya, Konya | Perennial herbs, 400-2300 m., 5-9. | Whole plant, Saponin |
| *Silene laxa* Boiss.& Kotschy | Simotu | Adana, Tunceli, Muş, Erzurum, Bitlis, Van, Hakkari | Perennial,1000-3100m., 7-8. | Whole plant, Saponin |

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| **Celastraceae** | | | | |
| *Euonymus europaeus* L. | İğ ağacı, Papazkülahı | Kırklareli, İstanbul, Bolu, Ankara, Sinop, Trabzon, Artvin, Sivas, Hatay | Shrubs or trees, 1600 m., 4-6. | Whole plant, Eandnosid, eandbiosid, saponin and triterpenoit |
| *E. latifolius* (L.)Miller | İğ ağacı, Papazkülahı | Kırklareli, Bolu, Kastamonu, Samsun, Ordu, Gümüşhane, Artvin, Çanakkale, Balıkesir, Bilecik, Yozgat, Kayseri, Van, Isparta | Shrubs or trees | Whole plant, Hydrocarbon and triterpenoid |
| **Chenopodiaceae** | | | | |
| *Kochia prostrata* (L.) Schrad. | Kokarot | Kastamonu, Sivas, Erzurum, Konya, Kayseri, Erzincan, Van, Ağrı | Perennial semiscrubs, s.l.-1900 m., 6-8. | Whole plant, Unknown |
| **Cistaceae** | | | | |
| *Cistus laurifolius* L. | Laden | Bursa, Ankara, Kastamonu, Sinop İzmir, Kütahya, Yozgat, Denizli, Adana | Shrubs, 50-1200 m., 5-6. | Whole plant, Diterpenoid |
| **Compositae(Asteraceae)** | | | | |
| *Achillea. millefolium* L. | Kılıçotu | İstanbul, Bilecik, Bolu, Zonguldak, Kastamonu, Gümüşhane, Rize, Kars, Yozgat, Tunceli, Erzurum, Ağrı, Siirt, Hakkari, Edirne, Ordu | Perennial herbs, 500-3450 m., 6-9. | Whole plant, Sesquiterpenoid |
| *Artemisia absinthium* L. | Akpelin,Acıpelin, Büyükpelin,Pelinotu | İstanbul, Bolu, Kastamonu, Sivas, Gümüshane, Kars, Ankara, Maras, Tunceli, Mus, Agri, Antalya, Konya, Adana, Hakkari. | Pernnial herbs, s.l. -2600 m, 6-9 | Whole plant, Sesquiterpenoid , Triterpenoid, artabsin absintin and flavon derivatives, Coumarin |
| *Bellis perennis* L | Koyungözü, Çayır papatyası, Çayır güzeli | Kırklareli, Çanakkale, İstanbul, Bolu, Kastamonu, Sinop, Samsun, Gümüşhane, Rize, Manisa, Konya, Elazığ, Bitlis, İzmir, Antalya, Mersin, Hatay | Perennial herbs, s.l.-2000 m., 3-8. | Whole plant,poisonous, unknown |
| *Centaurea. urvillei* DC | Peygamber çiçeği, Gelin düğmesi | Bilecik, Bolu, Zonguldak, Çorum, Trabzon, İzmir, Kütahya, Isparta, Kayseri, K. Maraş, Muğla, Burdur, Mersin, Niğde, Gaziantep, Konya, Ankara, Amasya, Uşak, Nevşehir, Antalya, Samsun, Kocaeli, Çankırı, Sivas, Elazığ, Malatya, Ş. Urfa, Hakkari, Adıyaman, Bitlis | Biannial or perennial herbs, s.l.-2000 m., 6-7. | Whole plant, Flavonoid,sesquiterpenoid,triterpenoid and phenylpropanoid |

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| *C. solstitialis* L. | Ateşdikeni | Kırklareli, İstanbul, Kocaeli, Bolu, Zonguldak, Amasya, Gümüşhane, Erzurum, Balıkesir, Afyon, Ankara, Kayseri, Sivas, Muş, Bitlis, İzmir, Denizli, Antalya, Konya, Niğde, Adana, Mardin, Hakkari, Muğla, Mersin | Annual herbs, 1900 m., 6-8. | Whole plant, Santaurin, Sianin, Sikorin |
| *Cnicus benedictus* L. | Mübarek dikeni, Şevketibostan | Çanakkale, İstanbul, Samsun, İzmir, Manisa, Ankara, Nevşehir, Diyarbakır, K. Maraş, Mardin, Edirne, Sakarya, Kars, Elazığ, Diyarbakır, Aydın, Antalya, Isparta, Konya, Mersin, Adana, Siirt | Annual herbs, 70-1580 m., 4-6. | Whole plant, Steroid and triterpenoid |
| *Helichryssum plicatum* DC. | Herdemtaze, Yaylaçiçeği, Kaymakçiçeği | Bursa, Bolu, Zonguldak, Amasya, Sivas, Trabzon, Erzurum, Kars, Kütahya, Konya, Ankara, Kayseri, K. Maraş, Erzincan, Bitlis, Ağrı, Antalya, Isparta, Niğde, Hakkari, Denizli, Gümüşhane, Kayseri, Tunceli,Bingöl, Van, Hatay, Kastamonu, Giresun | Perennial, Woody, 1400-2850 m., 6-8. | Whole plant, Flavonoid |
| *Onopordum acanthium* L. | | İstanbul, Kastamonu, Gümüşhane, Artvin, Ankara, Diyarbakır, Erzurum, Van, Ağrı, Kars, Isparta, Mardin, Hakkari | Biannial herbs, 600-2600 m., 6-8. | Whole plant, Sesquiterpenoid |
| *Scorzonera latifolia* (Fisch. & Mey.) DC | Dağsakızı, Nerebent | Erzurum, Kayseri, Sivas, Elazığ, Bingöl, Bitlis, Diyarbakır, Hakkari, Ağrı | Perennial herbs, 1200-3100 m., 7. | Whole plant, Triterpenoid |
| *S. tomentosa* L. | Pınar, Nalbant | Çankırı, Kastamonu, Sivas, Gümüşhane, Artvin, Kars, Uşak, Konya, Ankara, Sivas, Erzincan, Erzurum, Malatya | Perennial herbs, 800-2600 m., 6-8. | Whole plant, Triterpenoid |
| *Senecio. jacobaea* L. | Su Kanaryaotu | İstanbul, Bursa, Ordu, Trabzon, İzmir, Adana., | biannial or perennial herbs, 300 m., 6-7. | Whole plant, pyrrolizidine alkaloids |
| *S. paludosus* L. | Kanaryaotu | İstanbul, Bursa, Bolu | Perennial herbs, 1400 m., 7-9. | Whole plant; Pyrrolizidine, Yakobin, Yakonin, Silvasenesin |
| *S. vulgaris* L. | Adi Kanaryaotu | Ankara, Çanakkale, İstanbul, Kocaeli, Bolu, Samsun, Trabzon, Rize, İzmir, Ankara, Adana | Annual herbs, 700 m., 3-8. | Flowers,Prolizidin alkoloids |
| *Xanthium strumarium* L. | | İstanbul, Sakarya, Kastamonu, İzmir, Kütahya, Ankara, Van, Erzurum, Antalya, Ş. Urfa, Bolu, Samsun, Elazığ, Denizli, Adana, Mardin | Annual herbs, 1750 m., (6-) 7-10. | Whole plant, Xantostrumarin |

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| *Tanacetum balsamita* L. Subsp. *balsamitoides* (Schultz Bip.) Grierson | Marsuvanotu, Pireotu. Solucanotu, Kılıçotu, Boğa yaprağı | Gümüşhane, Rize, Artvin, Tunceli, Muş, Ağrı, Hakkari | Perennial herbs, 110-3000 m., 6-8 (9). | Whole plant, Sesquterpenoid, flavonoid, monoterpenoid diterpenoid |
| *T. vulgare* L | Pireotu | İstanbul, Kocaeli,Kastamonu, Tokat, Sivas, Ankara, Muş, Van. | Perennial herbs, 1000-2200 m, 6-8. | Whole plant, Monoterpenoid |
| **Cruciferae (Brassicaceae)** | | | | |
| *Cheiranthus cheiri* L. | Şebboy | Hatay | Perennial,woody, 600 m., 3-4. | Whole plant, Steroit yapıda kalp glycoside |
| *Sinapis arandnsis* L. | Yabani hardal | Çanakkale, Tekirdağ, İstanbul, Gümüşhane, Kars, Kütahya, Ankara, Diyarbakır, Muş, Van, Konya, Mersin, Gaziantep | Annual herbs, 1800 m., 4-6. | Slightly poisonous. Glycoside, Sinigrin, Sinalpin |
| *Sisymbrium officinale* (L.) Scap | | Çanakkale, İstanbul, Sinop, Samsun, Tapzon, Artvin, İzmir, Bursa, Muğla, Antalya, İçel, Hatay, Urfa | Annual herb, 1000 m., 3-6. | Kardenolit glycoside |
| **Cucurbitaceae** | | | | |
| *Bryonia alba* L. | Akasma, Binkulaç, İtkabağı, Ülüngür | İstanbul, Ankara, Kastamonu, Amasya, Artvin, Konya, Bingöl | Perennial herb, 850-1600m., 6. | Bryonin (bryonidin) glycoside |
| *Citrullus colocynthis* (L.) Schrader | Acı elma, Acı karpuz, Ebucehil karpuzu | İçel | Perennial herb, 5 | Kukurbitasin glycoside |
| *Ecballium elaterium* (L.) A.Rich | Acı dülek, Acı kavun, Cırtatan, Eşek hıyarı, Karga düandleği, Şeytan keleği | Kırklareli, Tekirdağ, İstanbul, Balıkesir, Bilecik, Sinop, Amasya, İzmir, Muğla, Denizli, Konya, İçel, Hatay, Konya, Kahramanmaraş | 600 m., 4-10. | Fruits, ecballin, Kukurbitasin glycoside, saponin and triterpenoid |
| **Cupressaceae** | | | | |
| *Juniperus excelsa* Bieb | Ardıç, Bozardıç, Adi Ardıç ,Yüksek Ardıç, Çerkem, Ağaçlar | Bilecik, Sinop, Tokat, Gümüşhane, Isparta, Mersin, Balıkesir, Eskişehir, Kayseri, Van, Muğla, Burdur, Antalya, K.Maraş | Trees and shrubs, 300-2300 m., | Whole plant, Diterpenoid |
| *J. communis* L. subsp. *nana alpina* Gaudin | Cüce Ardıç, Yağ Ardıç,Dağ Ardıç | Bursa, Bolu, Kastamonu, Amasya, Sivas, Gümüşhane, Rize, İzmir, Kayseri, Tunceli, Bitlis, Denizli | Sürünücü çalılar | Fruits; pinen, cadinencomphen,juniperi juniperol, terpineol, juniperin |
| **Equisetaceae** | | | | |
| *Equisetum arandnse* L. | At kuyruğu, Kırkkilit otu | İstanbul, Bursa, Kastamanonu, Rize, Ankara, Adıyaman, Van | Perennial herbs, 1700 m | Young shoote; Equisetin, Saponin, silisilik acid, thiaminaz and other compounds |

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| **Ericaceae** | | | | |
| Rhododendron caucasicum Pallas | Kafkasya Komarı Zifin ,KomarOrmangülü | Rize, Erzurum, Artvin, Kars | Perennial shrubs, (1830) 2000-3000 m., 5-7. | Folwers and Leaves; Diterpene (Grayanotoxine),Ericolin, Andromedotoxin |
| *R. luteum* Sweet | Zifin. Zifinağu, Srıağu | Trabzon, Çanakkale, Kastamonu, Sinop, Amasya, Samsun, Ordu, Giresun, Gümüşhane, Artvin, Rize, Balıkesir | Shrubs, 400-2000(2200) m., 4-7 (-9). | Ericolin, Andromedotoxin, Resine- Resinoids, |
| R. ponticum L. | Komar, Karaağu, Kafil, Morağu, Zelenika | Kırklareli, Kocaeli, Sakarya, Bolu, Kastamonu, Zonguldak, Giresun, Trabzon, Rize, Artvin | Perennial shrubs, 600-2000 m., (3-) 5-6 (-8). | Leaves, Flowers; Ericolin, Andromedotoxin |
| **Euphorbiaceae** | | | | |
| *Euphorbia amygdaloides* L. | Sütleğenotu,Süt yakıcı, Kızartıcı | Tekirdağ, Balıkesir, İstanbul, Bolu, Kastamonu, Samsun, Trabzon | Perennial herbs, 50-2000 m., 3-8. | Leaves,Seed, latex ; resine, öforon, öforban, diterpene, triterpene |
| *E. cyparissias* L | Sütleğenotu | Edirne, Kırklareli, Zonguldak | Perennial herbs,9 | Whole plant, Diterpene esters in milky latex , Triterpenoid |
| *E.falcata* L. subsp. *falcata* | | Kırklareli, Tekirdağ, İstanbul, Bursa, Kastamonu, Gümüşhane, İzmir, Erzurum, Kütahya, Ankara, Kırşehir, Malatya, Ağrı, Muğla, Antalya, Adana, Konya, Urfa, Diyarbakır, Sakarya, Zonguldak, Tokat, Hatay, Balıkesir, Manisa, Muğla, Denizli | Annual herbs, 1900 m., 4-8. | Whole plant, Resins- Resinoids |
| *E. peplis* L. | Sütleğenotu | Tekirdağ, Çanakkale, İstanbul, Kastamonu, Sinop, Trabzon, İzmir, Ankara, Muğla, Antalya, Adana., | Annual herbs, 900 m., 6-9. | Whole plant, Resines-Resinoides, Tanen |
| *E. seguieriana* Necker | | Kırklareli, Çanakkale, İstanbul, Bolu, Ankara, Amasya, Samsun, Erzurum, Eskişehir, Ağrı, Isparta, Tekirdağ, Kocaeli, Zonguldak, Çorum, Kars, Kütahya, Konya | Perennial herbs, 10-1900 m., 3-10. | Whole plant, Diterpenoid |
| *Ricinus communis* L | Hintbaklası, Dedemene, Genegerçek otu, Hara tohumu, Hırva, Kene otu, Kenek | İstanbul, Çanakkale, Antalya, Mersin | Perennial herbs, 35 m., 4-5. | Seed, leaves; Ricinin, toksalbumin, Ricinoelik acid, strikinin alkoloids. |
| *Mercurialis annua* L. | Parşen, Parten, Yerfesleğeni | Trabzon, Çanakkale, Balıkesir, İstanbul, Bilecik, Bolu, Ankara, Samsun, Amasya, Kütahya, Aydın, Muğla, Antalya, İçel, Hatay | Annual herbs | Saponinler (Metliamin, Trimetilamin) |

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| *M. perennis* L. | | Kırklareli, İstanbul, Kocaeli, Zonguldak, Trabzon | 850-900 m., 3. | Root, seed and shoot; Saponinler |
| **Gentianaceae** | | | | |
| *Gentiana gelida* Bieb | Centiyane | Gümüşhane, Trabzon, Erzurum, Erzincan, Ağrı, Hakkari | Perennial herbs, 200-3200 m., 8-9. | Whole plant, İridoid |
| **Gramineae (Poaceae)** | | | | |
| *Lolium temulentum* L. | Yemlik, Delice | Çanakkale, İstanbul, İzmir, Manisa, Konya ,Aydın, Denizli, Antalya, K. Maraş, Diyarbakır, Mardin, Trabzon | Annual herbs, 1300 m., 5-7. | Seeds, Alkoloids |
| **Guttiferae (Hypericaceae)** | | | | |
| *Hypericum androsaemum* L. | Kılıçotu, Kuzukıran, Mayasıl otu, Yaraotu, Sarıkantoron | Kırklareli, Bursa, Bolu, Kastamonu, Sinop, Samsun, Giresun, Rize, Erzurum | Shrubs, 250-1300 m., 6-7. | Hypericin compounds |
| *H. perforatum* L | Binbirdelikotu, Sarı Kantoron | Çanakkale, İstanbul, Kocaeli, Zonguldak, Amasya, Samsun, Giresun, Gümüşhane, Balıkesir, Manisa, Isparta, Ankara, Nevşehir, K.Maraş, Erzincan, Erzurum, Aydın, Van, Muğla, Antalya, Konya, Mersin, Hatay, Hakkari | Perennial herbs, 2500 m., 5-7(-9). | Leaves, flowers; Tanen, volatile oils, flavon derivatives, Hypericine (pigment, sensitivity to light) |
| **Labiatae (Lamiaceae)** | | | | |
| *Marrubium parviflorum* Fisch. & Mey. | | Çankırı, Amasya, Sivas, Gümüşhane, Kütahya, Konya, Ankara, Kayseri, K. Maraş, Malatya, Erzurum, Denizli, Isparta, Karaman, Niğde, Gaziantep, Siirt, Antalya, Eskişehir, Afyon, Nevşehir, Muş, Van. | Perennial herbs,5-9 | Whole plant, diterpenoid , essential oil, terpenoid derivatives |
| *Phlomis armeniaca* Willd. | Silvanok, Silvanoki, Ayıkulağı | Bolu, Çankırı, Amasya, Erzurum, Artvin, İzmir, Kütahya, Eskişehir, Ankara, Nevşehir, Sivas, Erzincan, Muğla, Van, Antalya, Konya, Adana | Perennial herbs, 800-2350 m., 6-8. | Whole plant, Phenylpropanoid, lignan, iridoid, phenylethanoid |
| *P. pungens* Willd. | Şalba, Silvanok | Bursa, Ankara, Amasya, Kars, Afyon, Kayseri, Sivas, Muş, Konya, Mersin, Urfa, Mardin, Tekirdağ, Muğla, Antalya, Edirne, Çanakkale, Çankırı, Gümüşhane, Kars, Uşak, Eskişehir, | Perennial herbs, 250-2400 m., 6-8. | Whole plant, İridoid, phenylethanoid |

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| | | Tunceli, Ağrı, Denizli, Niğde, K. Maraş, Hakkari, İstanbul, Bilecik, Tokat, Kütahya, Balıkesir, Elazığ | | |
| *Salvia candidissima* Vahl | | Çankırı, Kastamonu, Sivas, Gümüşhane, Kayseri, K. Maraş, Erzincan, Bitlis, Niğde, Adıyaman, Mardin, Hakkari, Amasya, Kütahya, Ankara, Yozgat, Isparta, Mersin, Niğde | Perennial herbs, 700-2000 m., 5-9. | Whole plant, Diterpenoid |
| *S. multicaulis* Vahl | Kaşgatenik | Sivas, Gümüşhane, Erzurum, Kars, Kayseri, Sivas, Malatya, Erzincan, Van, Adana, Malatya, Mardin, Hakkari | Perennial herbs, 550-2600 m., 4-7. | Whole plant, Di and triterpenoid |
| *S. trichoclada* Bentham | | Elazığ, Diyarbakır, Bitlis, Van, Mardin, Siirt, Hakkari | Perennial herbs, 300-2000 m., 5-7. | Whole plant, Essential oil, flavonoid, hydrocarbon, di-triterpenoid, organic acid, lignan, steroid, sesquiterpenoid, monoterpenoid |
| *S. andrticillata* L | | İstanbul, Bursa, Giresun, Sinop, Trabzon, Rize, Artin, Muş, Van, Bitlis, Hakkari, Amasya, Kırklareli, Bursa, Bolu, Zonguldak, Sivas, Gümüşhane, Kars, Kütahya, Konya, Ankara, Nevşehir, Erzincan, Erzurum, Ağrı, Antalya, Adana | Perennial herbs, 2300 m., 5-9. | Whole plant, Diterpenoid |
| *Scutellaria orientalis* L. | | Muş, Malatya, Elazığ, Bitlis, Van, Hakkari, Erzurum, Artvin, Kars, Erzincan, Ağrı, Sivas, Tunceli, Diyarbakır, Bingöl, Adana, Niğde, Ankara, Nevşehir, Konya, Kastamonu, Amasya, Gümüşhane, Eskişehir, Yozgat, Denizli, Burdur, Bursa, Balıkesir, Afyon, Kayseri, Isparta, Karaman, K. Maraş, İzmir, Siirt, Aydın, Gaziantep | Perennial herbs, 450-3000 m., 5-8. | Whole plant, Mono and diterpenoid |
| *Stachys lavandulifolia* Vahl | | Bursa, Ankara, Amasya, Gümüşhane, Kars, Kayseri, Malatya, Erzincan, Erzurum, Bitlis, Antalya, Isparta, Mersin, Hakkari, Ağrı, Van, Adana | Perennial herbs, 1000-3660 m., 5-8. | Whole plant, Essential oil phenylpropanoid |

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| *Teucrium chamaedrys* L | Dermanigisko, Yer meşesi, Merandn | Kırklareli, İstanbul, Bolu, Kastamonu, Çankırı, Samsun, İzmir, Kütahya, Konya, Ankara, Nevşehir, Aydın, Denizli, Antalya, Konya, Adana, Sinop, Trabzon, Ordu, Rize, Artvin, Mersin, Afyon, K. Maraş, Hatay, Adıyaman, Erzurum, Amasya, Kayseri, Malatya, Sivas, Tunceli, Muş, Ağrı | Perennial herbs, 2300 m., 6-9. | Whole plant, Flavonoid, lignan, steroid, diterpenoid and phenylpropanoid, essential oils |
| *T. polium* L. | Tüylü kısamahmut | İstanbul, Kocaeli, Eskişehir, Ankara, Amasya, Samsun, Trabzon, Artvin, Kars, Manisa, Kütahya, Kayseri, Malatya, Elazığ, Erzurum, Bitlis, Aydın, Konya, Mersin, Gaziantep, Urfa, Hakkari | Perennial herbs, 2050 m., 6-9. | Whole plant, Essential-oil, lignan, phenylpropanoid |
| **Leguminosae (Fabaceae)** | | | | |
| *Anagyris foetida* L | Domuzdikeni, Zivircik | Çanakkale, İzmir, Balıkesir,Siirt, Eskişehir, İzmir, Muğla,Antalya, Mersin, Hatay, Mardin | Shrubs , 1000 m., 3-5. | Whole plant, Sitizin alkoloids |
| *Coronilla coronata* L. | Akrep kuyruğu, Yalancı burçak | Artvin, Kütahya, Hatay,Mersin | Perennial herbs, 700-100 m., 5-6. | Whole plant, Heart glycoside,Coronillin |
| *C. emerus* Boiss. L. | | Çanakkale, İzmir, Uşak, Muğla, Denizli, Antalya, Mersin, Adana, Hatay, Gaziantep | Shrubs, 1300 m., 3-5. | Whole plant, Coronillin |
| *C. scorpioides* (L)Koch | Akrepkuyruğu | Çanakkale,İstanbul, Bursa, Ankara, Amasya, Samsun, İzmir, Kütakya, Afyon, Muğla, Antalya, Mersin, Adana, Gaziantep, Mardin | Annual herbs, Ç.Z. 1000 m., 3-7. | Whole plant, Coronillin |
| C. varia L. | Renkliburçak | İstanbul, Ankara, Sinop, Samsun, Giresun, Gümüşhane, Artvin, İzmir, Kütahya, Ankara, Malatya, Erzurum, Ağrı, Kars, Muğla, Antalya, Konya, Adana, Hakkari, Mersin | Perennial herbs, 250-2150 m., 5-8. | Whole plant, Coronillin |
| *Genista tinctoria* L. | Boyacı katırtırnağı | Kırklareli, İstanbul, Sakarya, Zonguldak, Sinop, Amasya, Trabzon, Artvin, Bursa, Muş | Shrubs, 10-200 cm, 2200 m., 4-7. | Whole plant, Cytisin, spartein alkoloids , alkoloid and flavonoid |

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| *Glycyrrhiza glabra* L. | Meyan kökü.Bian | Samsun, Kars, Siirt, Muş, Bitlis, K. Maraş, Gaziantep, Urfa, Diyarbakır,Çankırı, Amasya, Sivas, Kars, Aydın, Muğla, Antalya, İsparta, Mersin, Hatay, Mardin, Urfa, Hakkari, Van, İzmir, Ankara, Kırşehir, Malatya, Erzurum, Tunceli | Perennial herbs, 1800 m., 6-7. | Whole plant, Flavonoid and saponin |
| *Lathyrus aphaca* L. | Sarı Burçak | İstanbul, Çanakkale, Çankırı, Ankara, Sinop, İzmir, Muğla, Ağrı, Mersin, K. Maraş, Tekirdağ, Sakarya, Amasya, Tokat, Trabzon, Malatya, Van, Antalya, Hatay, Gaziantep, Urfa, Siirt, Artvin, Elazığ, Konya, Kocaeli, İzmir, Uşak, Muğla | Annual herbs, 100-1700 m., 4-5. | Seed, Propionitrits derivatives |
| *L. sativus* L. | Mürdümük, Ak Burçak.Çüşne | Çanakkale, İstanbul, Amasya, İzmir, Kütahya, Elazığ, Diyarbakır, Antalya, Konya, Mersin, Gaziantep, Urfa, Mardin | Annual herbs, 1520 m., 4-6. | seeds poisonous, some amino acids |
| *Robinia pseudoacacia* L. | Akasya, Salkım çiçeği, Beyaz salkım | İstanbul, Sakarya, Artvin | Trees, 4-6 | Rizome, fruit, seed and Leaves; Lectine (Robinin), fitotoksin |
| *Melilotus alba* Desr | Aktaş yoncası, Kokulu yonca | Tekirdağ, İstanbul, Zonguldak, Samsun, Uşak, Ankara, Erzincan, Erzurum, Van, Denizli, Konya, K. Maraş, Hakkari | Annual or biannial, 1760 m., 5-7(-9). | Whole plant, Kumarins |
| *Sophora alopecuroides* L. | | Ankara, Sakarya, Kastamonu, Samsun, Erzurum, Kayseri, Sivas, Erzincan, Ağrı, Kars, Adana, Malatya, Van | Perennial herb, 1750 m., 4-7. | Whole plant, Sitizin and derivatives alkoloids |
| *Vicia faba* | Bakla, Geniş fasülye, At fasülyesi | İstanbul, Bilecik, İçel nadas tarlalar, İzmir | | Seeds poisonous, Siyonogenetics glycoside |
| *V. sativa* L. | | Tekirdağ, İstanbul, Kocaeli, Kastamonu, Samsun, Afyon, Erzurum, Muğla, Antalya, Mersin, Adana, Gaziantep, Mardin, Bingöl, Erzincan, Kütahya, Muş, Artvin, Rize, Kars, Konya, Diyarbakır, Muş, Tunceli, Hatay, Kırklareli, Bursa, Bolu, İzmir, Bitlis, Mersin, Hakkari, Kocaeli, Trabzon, Muğla, Antalya, K. Maraş, Çanakkale | Annual herbs, 2000 m., 3-5 (-6). | Seeds poisonous ; Siyonogenetics glycoside |
| **Liliaceae** | | | | |
| *Aloe andra* (L.) Burm. fil. | Öd ağacı, Sarısabır | Antalya | Perennial herbs, 4-5 | Whole plant, Antrasen derivatives glycoside anthraquinone |

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| *Convallaria majalis* L | İnciçiçeği | İstanbul, Kars | Perennial herbs, 4-5 | Flowers, fruit; glycosides convallarin and convallamarin |
| *Colchicum attica* (Spruner) Boiss. & Spruner | Acı Çiğdem, Karçiçeği, Ayı Güz , İtboğan, Vargit, Zehirli çiğdem, Kalkgit | Bursa, Bilecik, Bolu, Manisa, Kütahya, Afyon, Ankara, İzmir, Burdur, Isparta | Perennial herbs, 100-2000 m., 11-4. | Seeds, colchicin, democolhicin, colchicein |
| *C. autumnale* L | Sonbahar Çiğdemi | Trabzon, Edirne, Balıkesir | Perennial herbs, 9-10 | Whole plant; colchiceine (alkoloid) |
| *C. baytopiorum* CD. Brickell | | Antalya | 50-1000m., 10-11. | Whole plant, Alkoloid, colchiceine |
| *C. speciosum* Steandn | Güzel Çiğdem, Cambırt, Çamağ, Galeden | Giresun, Trabzon, Artvin, Rize, Kastamonu | Perennial herbs, 600-3000 m. , 9-10. | Whole plant, Alkoloid, colchiceine |
| *C. cilicicum* (Boiss.) Dammer | | Muğla, Maraş, Antalya, Isparta, İçel, Niğde, Adana, Hatay | 35-1980 m., 9-10 (-11). | Whole plant, Alkoloid, colchicine |
| *C. kotschyi* Boiss. | | Bolu, İzmir, Maraş, Muş, Bitlis, İsparta, İçel, Gaziantep, Diyarbakır, Mardin | 1000-3000 m., 8-11. | Whole plant, colchiceine |
| *C. variegatum* L. | Çiğdem, Alacalı Çiğdem | İzmir, Aydın, Muğla, Antalya, Burdur, Konya, Isparta | Bulbous Perennial herbs, 150-1450 m., 9-11. | Whole plant, alkoloid , colchiceine |
| *Merendera trigyna* (Steandn ex Adam) Stapf | | Kastamonu, Amasya, Samsun, Erzurum, Kars, Konya, Ankara, Sivas, Erzurum, Van, Aydın, Antalya, Isparta, Urfa, Hakkari | Perennial herbs, 1300-3400 m., (-3) 4-6 (-7). | Whole plant, alkoloid , colchiceine.aminoacids |
| *Ornithogalum narbonense* L | Salepotu, Akyıldız | Kırklareli, Çanakkale, İstanbul, Kastamonu, Samsun, Artvin, Erzurum, İzmir, Eskişehir, Konya, Yozgat, Malatya, Diyarbakır, Ağrı, Van, İzmir, Denizli, Burdur, Mersin, Adana, Gaziantep, Adıyaman, Hakkari, Siirt | Bulbed perennial, 3000 m, 6-8 | Bulb, unknown |
| *Andratrum album* L. | Beyaz Çöpleme | Adana, Giresun, Ordu, Rize, Artvin | Perennial herbs, 1400-1900 m., 6-8. | Whole plant, Protoandratrine |
| **Linaceae** | | | | |
| Linum mucronatum *Bertol* | Keten, Zeynek | Tunceli, Gaziantep, K.Maraş, Urfa, Mardin, Muğla, Kars, Erzurum, Ankara, Sivas, Erzincan, Gümüşhane, Niğde, Kayseri, Van, Diyarbakır | Perennial herbs, 450-1200 m., 5-6 (-8). | Whole plant, Linamarosid (siyanogenetik glycoside) |

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| **Loranthaceae** | | | | |
| Viscum album | Ökse otu | Kırlareli, Balıkesir, Bolu, Kastamonu, Çorum, Artvin, İzmir, Bilecik, İsparta ,Ankara, Afyon, Bursa, Antalya, İçel, Adana, Hatay, Samsun, Kütahya, Yozgat, Denizli, Tekirdağ, Manisa, Kayseri | Semiparacidic shrubs, 300-2000 m., 3-6. | Whole plant (except for fruits), Viscotoxine |
| **Meliaceae** | | | | |
| Melia azederach *L.* | Tesbih ağacı, Yalancı tesbih | İzmir, Aydın, Adana, Hatay | Small trees | Leaves, flowers and fruits; Resinous compounds |
| **Oleaceae** | | | | |
| Ligustrum vulgare *L.* | Kurtbağrı, Kurtbaharı, Adi ligusturum | Çorum, Kastamonu, Ordu, Trabzon, Rize, Artvin, Afyon, Ankara, Edirne, Tekirdağ, İstanbul, Zonguldak | Shrubs or small trees, 1500 m., 6. | Fruit and Leaves; Hellebrin,Glycoside |
| **Papaandraceae** | | | | |
| *Chelidonium majus* L. | Kırlangıçotu,Temre otu | Tekirdağ, İstanbul, Bursa, Bolu, Kastamonu, Zonguldak, Amasya, Tokat, Giresun, Samsun, Artvin | Perennial, 1450 m., 4-8. | Whole plant, Chelidonin(Chelidoksantin), homochelidonin, sanguinarin, protobin and other alkoloids |
| *Corydalis cava* (L.) Schw. –Koridalis | | Kocaeli, Bolu, Sakarya | 100-1500 m., 4-5. | Whole plant, Bulbakarbin and other alkoloids |
| *Glaucium corniculatum* (L.) Rud | Boynuzlu Gelincik,Boynuzlu haşhaş, Gülfatma | Tekirdağ, Çanakkale, İstanbul, Bursa, Bilecik, İzmir, Kütahya, Konya, Kastamonu, Kayseri, Malatya, Van, Mersin, Adana | Annual or perennial herbs, 1000-2000 m., 5-7. | Whole plant, Glausin, protobin, Sanguinarin and other alkoloids |
| *Papaandr orientale* L. | Doğu Haşhaşı, Yabani haşhaş | Ağrı, ArtvinErzurum, Van, Kars | Perennial herbs, 1950-2800 m., 6-8. | Whole plant, Alkoloid (genellikle oripavin ) |
| *P. pseudo-orientale* (Fedde) Medv | Alahaşhaş | Niğde, Kayseri, Sivas, Tunceli, Giresun, Elazığ, Malatya, Erzincan, Gümüşhane, Artvin, Kars, Ağrı, Van, Hakkari | 1000-19000 m., 6-7. | Whole plant, Salutaridin, macranthorridin, isothebain |
| *P. somniferum* L. | Haşhaş | Çanakkale, İstanbul, Kastamonu, Amasya, Eskişehir, Elazığ, Mersin | Annual herbs, 5 | Immature fruits; Morfin and kodein, papaandrin, kelidonin |
| **Phytolaccaceae** | | | | |
| *Phytolacca americana* L. | Şekerciboyası | İstanbul, Sakarya, Ordu, Trabzon, Giresun, Artvin, Rize, Antalya, Diyarbakır | Perennial herbs, 500 m., 6-9. | Whole plant, Fitolaktin, fitolakkatoksin |
| *Phytolacca pruinosa* Fenz | | İçel, Hatay, Adana | Shrubs, 1000-1400 m., 5-6. | Whole plant, Fitolaktin, fitolakkatoksin |

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| **Polygalaceae** | | | | |
| *Polygala anatolica* Boiss. & Heldr | | Çanakkale, İstanbul, Bolu, Çankırı, Kastamonu, Gümüşhane, Balıkesir, Kütahya, Konya, Ankara, Kayseri, Sivas, Erzincan, Bitlis, Denizli, Mersin, Hakkari | Perennial herbs, 30-2500 m., 5-9. | Roots, saponin |
| **Polygonaceae** | | | | |
| *Rumex acetosella* L | Ekşiot, Trişov, Kuzukulağı, Eandlik | Edirne, Çanakkale, İstanbul, Bolu, Kastamonu, Amasya, Ordu, Giresun, Rize, Artvin, İzmir, Kütahya, Ankara, Kayseri, K.Maraş, Tunceli, Bitlis, Ağrı, Isparta | Perennial herbs., 2300 m., 5-8. | Whole plant, Anthocyanine,anthraquinone, caumarin, flavonoid and hydrocarbon |
| *R. conglomeratus* Murray | Labada | Çanakkale, İstanbul, Zonguldak, Bitlis, Muğla, Isparta, Konya, Adana | Perennial, 1300 m., 5-9. | Whole plant, Anthraquinone, hydrocarbon, saponin and tanin. |
| *R. crispus* L. | Labada | Çanakkale, İstanbul, Bolu, Kastamonu, Artvin, Kars, İzmir, Ankara, Tunceli, Diyarbakır, Konya, Gaziantep | Perennial, 2300 m., 5-8. | Whole plant, Anthraquinone, flavonoid hydrocarbon, saponin and tanin, Rumisin, Hırızorobin (root) |
| *R. obtusifolius* L. subsp. *subalpinus* (Schur) Čelak | Labada | İstanbul, Bursa, Bolu, Kastamonu, Sinop, Gümüşhane, Artvin | Perennial, 1200 m., 5-9. | Whole plant, Anthraquinone, Rumisin |
| R. scutatus L. | Labada | Bursa, Ankara, Gümüşhane, Rize, İzmir, Konya, Adana, Sivas, Muş, Muğla, Antalya, K.Maraş, Hakkari | Perennial, 300-2200 m., 6-8. | Whole plant, Anthraquinone, flavonoid hydrocarbon and tanin |
| **Primulaceae** | | | | |
| *Anagallis arandnsis* L. | Bağırsakotu, Fare kulağı, Sülük otu | İstanbul, Bolu, Zonguldak, Sinop, Samsun, Artvin. İzmir, Nevşehir, Aydın, Muğla, İçel, Adana, Hatay,Siirt, Tekirdağ, Çanakkale, Ankara, Kars, Antalya, Konya, Maraş | Annual herbs, 1400-2440 m., 3-9. | Saponin glycoside |
| *Primula algida* Adams | Çuha çiçeği, Evandlbahar otu, Suçiçeği, Tutya | Gümüşhane, Erzurum, Artvin, Ağrı, Kars, Van, Hakkari | Perennial herb, 2000-3600 m., 5-8. | Saponin glycoside |

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| **Pteridaceae** | | | | |
| *Pteridium aquilinum* (L.) Kuhn | Kartal eğreltisi, İfteri | İstanbul, Zonguldak, Amasya, Ordu, Trabzon, Artvin, Balıkesir, Antalya | Perennial herb, 7-10 | Root and leaves, Thiaminaz and other compounds |
| **Ranunculaceae** | | | | |
| *Actaea spicata* L. | Domuz üzümü | Bolu, Zonguldak, Trabzon, rize, Artvin | Shrubs, 1700-2100 m., 5-6. | Protoanemonin compound |
| *Aconitum cochleare* Worosh | Van Kurtboğanı | Van | Perennial herb, 2700-3000 m., 7-8. | Whole plant, specially roots, Diterpene Alkaloids |
| *Adonis aestivalis* L. | Ateşçiçeği, Kandamlası, Kanava otu, Keklik gözü | Çanakkale, Ankara, Amasya, Gümüşhane, Konya, Erzurum, Artvin, Yozgat, Elazığ, Antalya, Gaziantep, Urfa, Mardin | Annual herbs, 900-1200 m., 5-9. | Whole plant, especially flowers poisounus; cardiac glycoside, protoanemonin (ranunculin), Simarin, Adonitoksin. |
| *A. coronaria* L | Manisa lalesi, Dağ lalesi | İstanbul, Bursa, Samsun, İzmir, Muğla, Antalya, Mersin, Hatay | Perennial herb, 50-700 m., 2-4. | Whole plant, Ranunculin Porotoanemonin, |
| *Aquilegia olympica* Boiss | Haseki Küpesi | Amasya, Gümüşhane, Artvin, Kayseri, K.Maraş, , Van Erzincan | Perennial herb, 1700-2800 m., 6-7. | Whole plant, Alkoloid |
| *Caltha polypetala* Hochst. Ex Lorent | Bataklık Nergisi, Lilpar, Su nergisi | Kastamonu, Gümüşhane, Artvin, Kars, Niğde, Sivas, Tunceli, Erzurum, Bitlis, Van, Hakkari | Perennial herb, 1700-3600 m., 4-7. | Whole plant, Protoanemonin |
| *Consolida orientalis* (Gay) Schröd | Hezeren, Konsolida | Çanakkale, Ankara, İstanbul, Çorum, Samsun, Sivas, Gümüşhane, İzmir, Uşak, Konya, Nevşehir, K.Maraş, Malatya, Muş, Muğla, Isparta, Konya, Gaziantep, Hakkari | Annual herbs, 1900 m., 5-8. | Flowers, aromatik acids (P-kumaik acid, P-hidroksi, benzoik acid, klorojenik acid and kafeit acid) norditerpenoid alkaloids (delsoline, delcosine, gigactonine, and takaosamine) |
| *Delphinium ajacis* L. | Bahçe Hezareni | İstanbul | 1900 m | Seed, delphinin, delphonin and stafisagrin |
| *D. albiflorum* DC | | Kastamonu, Amasya, Kars, Tunceli, Erzurum, Ağrı | Perennial herb, 1800-2100 m., 6-7. | Whole plant, Alkoloid |
| *D. carduchorum* Chowdhuri & Davis | Hezarem | Hakkari, Van | Perennial herb, 2250-2850 m., 7-8. | Whole plant, Diterpenoid |
| *D. cyphoplectrum* Boiss | Hezarem | Kars, Van | Perennial herb, ., 1900-2900 m., 6-7. | Whole plant, glycoside (cymarin) |
| *H. andsicarius* Aucher | Amanus Çöplemesi | Adıyaman, Htay, K.Maraş, Adana, Gaziantep | Perennial herbs, 550-1300 m., 3-5. | Whole plant, Cardiac glycoside, flavonoid and saponin |
| *Ranunculus arandnsis* L | Tarla Düğünçiçeği | Çanakkale, İstanbul, Bolu, Kastamonu, Samsun, Gümüşhane, Artvin, Kars, | Annual herbs, 1850 m., 3-6. | Flowers, Ranunkulin |

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| | | Ankara, Kayseri, Sivas, Elazığ, Bitlis, Denizli, Antalya, Konya, Mersin, Gaziantep, Diyarbakır, Mardin | | |
| *R. sceleratus* L. | Zehirli Düğünçiçeği | Çanakkale, İstanbul, Bolu, Samsun, Ankara, Kayseri, K.Maraş. Bitlis, Burdur, Hatay | Perennial., 1750 m., 5-7. | Whole plant, Simarin, adonitoksin, hellebrin, hellaborin and ranunculin. |
| *Thalictrum flavum* L. | Çayır sedefi | , Sakarya, İzmir, K.Maraş, Van, Adana | Perennial, 1400 m., 6-7. | Rhizome, flavon derivatives and alkoloids (berberin, palmatin, jatrorrhizin, magnoflorin ect.) |
| *Thalictrum isopyroides* C.A.Mey | Karakatran otu | Gümüşhane, Ankara, Sivas, K.Maraş, Erzincan, Adana, Malatya, Mardin | Perennial herb, 1100-1800 m., 5. | Whole plant, Alkoloid |
| **Rosaceae** | | | | |
| *Laurocerasus officinalis* Roemer | Taflan, Lazkirazı, Karayemiş,Karamiş, Kattak, Laz üzümü | Balıkesir, İstanbul, Bolu, Zonguldak, Kastamonu, Samsun, Ordu, Trabzon, Rize, Hatay | Shrub or small trees,20-2000 m., 4-6. | Leaves of Taflan species siyonagenetik glycoside |
| *Prumus amygdalus* Batsch | acıbadem | | | Sionagenetik glycoside |
| *P.armeniaca* L. | zerdali | | | Leaves and seeds; Amygdalin glycoside |
| *Armeniaca vulgaris* Lam | Kayısı | Kars, Ankara | Trees, 3-4 | Leaves and seeds. Amygdalin glycoside. |
| *Prunus spinosa* L. | | Sivas, adana, Çanakkale, Kocaeli, Zonguldak, Ankara, Sinop, Amasya, Kars, Balıkesir, Manisa, Kütahya | Thorny shrubs or small trees, 1700 m., 3-4. | Anthocyanine |
| *P. domestica* L. | Erik, Karaerik, İtalyan eriği | Kırklareli, Bolu, Zonguldak, Sinop, Samsun, Trabzon, Kütahya, Niğde, Antalya, İçel, Hakkari | Tall trees, 1900m., 3-4. | Seeds and leaves; Malik acid, sitrik acid and tartarik acid. |
| *Amygdalus communis* L. | Acıbadem,Badem | Bolu, Amasya, Gümüşhane, Çanakkale, Balıkesir, Kütühya, Ankara, Elazığ, Van, Adana, Gaziantep, Mardin | Trees, 150-1800 m., 3-4. | Seeds; Amygdalin (sionagenetik glycoside), and Siyanhidrik acid |
| **Rubiaceae** | | | | |
| *Galium andrum* L. subsp. andrum | Yoğurtotu | Edirne, İstanbul, Bursa, Bolu, Kastamonu, Sinop, Gümüşhane, Erzincan, Rize, Kars, İzmir, Bilecik, Eskişehir, Niğde, Kayseri, K. Maraş, Erzurum, Ağrı, Muğla, Isparta, Konya, Gaziantep, Urfa, Mardin | Perennial herbs, (30)100-2400 m., (5-) 8886-8. | Whole plant, Alkoloid,saponin |

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| *Rubia tinctorum* L. | Kökboya, Runas | Çanakkale, İstanbul, Çankırı, Sinop, Erzurum, İzmir, Kütahya, Konya, Ankara, Nevşehir, K. Maraş, Erzincan, Muş, Van, Antalya, Niğde, Hatay, Mardin, Siirt | Perennial herbs, 400-2000 m., 5-8. | Whole plant, Anthraquinone, alkoloid |
| **Rutaceae** | | | | |
| *Ruta chalepensis* L. | Yabani Sedefotu | Samsun, Trabzon, Antalya, Mersin, Adana | Perennial herbs, 300 m., 5-6. | Whole plant, Alkoloid, coumarin and essential oils |
| **Scrophulariaceae** | | | | |
| *Digitalis grandiflora* Miller | Büyükçiçekli Yüksükotu | Kırklareli | Bi- or perennial herbs, 450-500 m., (6-) 7. | Leaves, Kardiyoactive glycoside,digitalin, digitoxin, digoxinum |
| *D. cariensis* Boiss. Ex Jaub.& Spach | Muğla Yüksükotu | Muğla, Antalya, Denizli, Isparta, Mersin | Perennial herbs, 800-1700m., 6-7. | Leaves, Saponin, digitalin, digitoxin, digoxinum |
| *D. davisiana* Heywood | Alanya Yüksükotu | Muğla, Isparta, Antalya, Mersin | Perennial herbs, 570-1600 m., 6-7 (-8). | Leaves, digitalin, digitoxin, digoxinum |
| *D. ferruginea* L. | Pasrenkli Yüksükotu | Kırklareli, Bursa, Bolu, Zonguldak, Sinop, Ordu, Gümüşhane, Trabzon, Artvin, Çanakkale, İzmir, Eskişehir, Aydın, Muğla, Antalya, Adana, Giresun, Rize, İstanbul | Bi-or perennial herbs, 2700 m., 6-9. | Leaves; Cardiac glycoside, digitalin, digitoxin, digoxinum, |
| *D. lamarckii* Ivan | | Bilecik, Bolu, Kastamolu, Çorım, Ordu, Gümüşhane, Eskişehir, Ankara, Yozgat, Erzincan, Konya | Perennial herbs, 1500 m., 5-8. | Leaves, digitalin, digitoxin, digoxinum |
| *D. lanata* Ehrh | Yünlü Yüksükotu | Kırklareli, Tekirdağ, Çanakkale, İstanbul, Bursa | Bi-or perennial herbs, 50-100 m., 5-6. | Leaves, digitalin, digitoxin, digoxinum |
| *D. trojana* Ivan | Truva Yüksükotu | Çanakkale, Balıkesir | Bi- or perennial herbs, 90-800 m., 5-6. | Leaves, digitalin and digoxin, digoxinum |
| *D. viridiflora* Lindley | Yeşilçiçekli Yüksükotu | Kırklareli | Perennial herbs, 800-1040 m., 5-6. | Leaves, digitalin, digoxinum |
| *Scrophularia canina* L | Köpek Sıracaotu | Tekirdağ, Çanakkale, İstanbul, Bursa, Bolu, Çankırı, Sinop, Samsun, Gümüşhane, İzmir, Konya, Denizli, Isparta, Mersin, Gaziantep, Urfa | Perennial herbs., 1500 m., 4-7. | Whole plant, İridoid, saponin |
| *Andrbascum cheiranthifolium* Boiss | | Kastamonu, Çorum, Giresun, Gümüşhane, İzmir, Kütahya, Ankara, Yozgat, Erzincan, Bitlis, Aydın, Muğla, Antalya, Konya, Adana, Manisa, | Biannial herb, 5-9 | Whole plant, Saponin, hydrocarbon, steroid |

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| | | Denizli, Eskişehir, Kayseri, Diyarbakır, Sivas, Van, Ağrı, Hakkari, K. Maraş, Malatya, Isparta | | |
| **Solanaceae** | | | | |
| *Hyoscyamus albus* L. | Beyaz Banotu | Edirne, Balıkesir, İstanbul, Zonguldak, Trabzon, İzmir, Denizli, Hatay, Gaziantep, Mardin | Annual, biannial or perennial herb, 1200 m., 3-7. | Whole plant, atropin ,hyosyamin and skopomin alkoloids. |
| *H. reticulatus* L. | Morçiçekli Banotu | Çanakkale, İstanbul, Bolu, Ankara, Çorum, Sivas, Gümüşhane, Artvin, İzmir, Eskişehir, Ankara, Niğde, Sivas, Malatya, Erzincan, Van, Ağrı, Burdur, Isparta, Konya, Hatay, Urfa, Siirt | Annual or bianial herbs, 10-1700 m., 4-8. | Whole plant, tropan skopolamin alkoloids and atropin |
| *Nicotiana glauca* Graham | Yabani Tütün | İzmir, Aydın, Antalya, Mersin | 5-8 | Leaves, Nikotin anabasin alkoloids |
| *N. tabacum* L. | Tütün | İstanbul, Bursa, Sakarya, Diyarbakır, Denizli, Mardin | Annual herbs, 6-10 | Whole plant; Nicotine, anabasin |
| *Physochlaina orientalis* ( Bieb.) G. Don | Yalancı Banotu | Gümüşhane | Perennial herb, 1400-1500 m., 5. | Traponal derivatiands alkoloids |
| *Solanum alatum* Moench | Kanatlı Köpeküzümü | Çanakkale, Balıkesir, İstanbul, Kocaeli, Kastamonu, Samsun, Trabzon, İzmir, Eskişehir, Elazığ, Bitlis, Kars, Aydın, Muğla, Antalya, Mersin, K. Maraş, Adıyaman | Annual herbs, 1350 m., 6-11. | Solanin, gliko-alkaloids |
| *S. dulcamara* L. | Yabanyasemini | Edirne, Kırklareli, İstanbul, Sakarya, Zonguldak, Samsun, Giresun, Rize, Kars, İzmir, Bilecik, Ankara, Nevşehir, K. Maraş, Malatya, Ağrı, Aydın, Antalya, Mersin, Siirt, Hakkari | Perennial herb, 2300 m., 5-9. | İmmature fruits, steroidal alkaloids, Solanin and gliko-alkaloids, saponin, solanidine |
| **Taxaceae** | | | | |
| *Taxus baccata* L | Porsuk, Kadım ağacı, Püren ağacı, Porsuk ağacı, Gidirme | İstanbul, Kırklareli, Bolu, Kastamonu, Artvin, Kütahya, Denizli, Mersin, Hatay | Trees, 1000-1900 m | Leaves, seeds, young shoot; Taxin, berberin, magnoflorin (taliktrin), Taksin and Efedrin |
| **Thymelaeaceae** | | | | |
| *Daphne glomerata* Lam. | Defne | Trabzon, Gümüşhane, Erzurum, Artvin | Small shrubs, 1400-2500 m., 5-7. | Seed, daphnin dthydroxy–coumarin |

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| *D. mezereum* L | Mezeryon Defne | Giresun, Gümüşhane, Trabzon, Erzurum, Rize, Artvin | Shrubs, 1600-2130 m., 3-6. | Whole plant; Dafnin, dafnetin glycoside and mezerein derivative resine. |
| *D. oleoides* Schreber | Zeytin yapraklı Defne, Gökçe, Yaygıç, Havadana | Bursa, Kastamonu, Sivas, Gümüşhane , Balıkesir, Kütahya, Isparta, Niğde, Erzincan, Denizli, Burdur, Antalya, Konya, Niğde, K. Maraş, Erzurum, Kayseri, Van, Kars, Hatay | Shrubs, 1050-3200 m., 5-9. | Whole plant, Dafnin and dafnetin |
| *D. pontica* L. | Sırımağu, Kurtbağı, Sırımbağı, Pontik defnesi | İstanbul, Kırklareli, Bursa, Sakarya, Bolu, Zonguldak, Kastamonu, Ankara, Çankırı, Sinop, Samsun, Amasya, Ordu, Trabzon, Gümüşhane, Rize, Balıkesir | Shrubs, 2200 m., 3-8. | Whole plant, Coumarin, steroid, triterpenoid |
| **Umbelliferae (Apiaceae)** | | | | |
| *Cicuta virosa* L. | Subaldıranı | Erzurum | Çok yıllık otsu, 6 | Root, Cicutoxin |
| *Conium maculeatum* L. | Baldıran, Ağu, Yılanotu | Çanakkale, Balıkesir, İstanbul, Bursa, Zonguldak, Sinop, Trabzon, Gümüşhane, Kars, Balıkesir, Kütahya, Ankara, Sivas, Erzincan, Kars, Mersin, Gaziantep, Diyarbakır, Hakkari | Annual or biannial herbs, 2400 m., 4-8. | Fruit,root;Coniine, N-methylconiine, conhydrine, pseudoconhydrine, g-coniceine |
| *Echinophora tournefortii* Jaub.&Spach | | Ankara, Kastamonu, Eskişehir, Konya, Kayseri, Denizli, Antalya | Perennial herb, 500-1750 m., 7-9. | Whole plant,Konin, metilkoniin , konisein alkoloids, essential oils |
| *Ferula orientalis* L. | Heliz, Helizan, Çakşır otu, Çağşır, Heliz, Helizan, Siyabu | Gümüşhane, Kars, Erzincan, Erzurum, Bitlis, Hakkari | Perennial herb, 1700-1800m., 5-6. | Whole plant, rezine rezino-tannol (asrezinotannol), ferulik acid,. sesquterpenoid |
| *Oenanthe pimpinelloides* L | Surezenesi | Edirne, Çanakkale, İstanbul, Sakarya, Bolu, Zonguldak, Amasya, Ordu, İzmir, Muğla, Mersin | Perennial herb, 1300 m., 4-7. | Whole plant, Oenantotoksin (poliasetilen türevi) compounds |
| Prangos ferulacea (L) Lindl | | Kastamonu, Giresun, Gümüşhane, Kars, Erzurum, Ağrı, Konya, K. Maraş, Van, Hakkari | Perennial herbs., 600-2500 m.,5-7. | Whole plant, Coumarin, essential oils |
| **Zygophyllaceae** | | | | |
| *Peganum harmala* L | Yüzerlik, Üzerlik | Çanakkale, İstanbul, Bolu, Kastamonu, Amasya, Kars, İzmir, Eskişehir, Kayseri, Konya, K.Maraş, Elazığ, Erzincan, Van, Denizli, Burdur, Niğde, Urfa, Mardin | Perennial herbs, 1500 m., 5-7. | Whole plant, İndol derivative alkoloids |
| *Tribulus terrestris* L. | Çoban çökerten, Demirdikeni, Dadaş otu | Çanakkale, İstanbul, Kocaeli,Sakarya, Zonguldak, Amasya, Samsun, Artvin, İzmir, Ankara, Kayseri, Elazığ, Kars, Denizli, Antalya, Gaziantep | Annual herbs, 1200 m., 6-9. | Alkoloid and saponin, steroidal saponin, Floeretrin resin |

**Table 2. Local name and active constituents of poisonous plants of Northern Cyprus.**

| Scientific name | Local name | Toxic part and effective component |
|---|---|---|
| **Berberidaceae** | | |
| *Leontice leontopetalum L.* | Kırbaş, Patpatı | Whole plant |
| **Guttiferae** | | |
| Hypericum triquetrifolium *Turra.* | Koyunkıran | Hypericin compounds |
| **Oxalidaceae** | | |
| *Oxalis corniculata L.* | Ekşilice | Oxalic acid |
| *Oxalis pes- caprae L.* | Ekşilice | Oxalic acid |
| **Umbelliferae** | | |
| *Ferula communis L.* | Gavcar | Whole plant, rezino-tannol (asrezinotannol), ferulik acid, sesquterpenoid |
| **Primulaceae** | | |
| *Anagallis arvensis L.* | Fare kulağı | Acired volatile oil, enzymes, saponins, tannins, bitter principle and a compound known as primin. |
| **Apocynaceae** | | |
| *Nerium oleander L.* | Zakkum | Leaves; Oleandrosin, neriosid, digitoxin, rosagenin glicoside, flavanoide, saponine, cardiotonik glycoside,neriin, neriantin |
| **Solanaceae** | | |
| *Solanum nigrum L.* | Köpek üzümü | Solanin, gliko-alkaloids |
| *Solanum villosum Mill.* | Köpek üzümü | Solanin, gliko-alkaloids |
| *Solanum elaeagnifolium Cav.* | Köpek üzümü | Solanin, gliko-alkaloids |
| *Datura stramonium L.* | Şeytan elması | Atropine and scopolamine |
| *Datura innoxia Mill.* | Şeytan elması | Atropine and scopolamine |
| *Hyoscyamus albus L.* | Banotu | Neurotoxic alkaloids including hyoscyamine, atropine and scopolamine |
| *Hyoscyamus aureus L.* | Banotu | Neurotoxic alkaloids including hyoscyamine, atropine and scopolamine |
| *Nicotiana glauca Graham.* | Tütün | Leaves, Nikotin anabasin alkoloids |
| **Euphorbiaceae** | | |
| *Euphorbia helioscopia L.* | Sütleğen, Saçkıranotu | Leaves,Seed, latex ; resine, öforon, öforban, diterpene, triterpene |
| *Ricinus communis L.* | Kene out, Gurtunya | Seed, leaves; Ricinin, toksalbumin, Ricinoelik acid, strikinin alkoloids. |
| **Amaryllidaceae** | | |
| *Narcissus tazetta L.* | Nergis | toxic-alkaloid lycorin |
| **Liliaceae** | | |
| *Muscari comosum (L.) Mill.* | Misk soğanı | Homoisoflavones |
| **Araceae** | | |
| *Arum dioscoridis Sm.* | Yılan yastığı | Aronin (saponin glycoside),irritan juice |
| *Arum hygrophilum Boiss.* | Yılan yastığı | Aronin (saponin glycoside),irritan juice |
| *Arisarum vulgare Targ-Tozz.* | Küçük yılan yastığı | Aronin (saponin glycoside),irritan juice |
| **Gramineae** | | |
| *Sorghum halepense (L.) Pers.* | Kocadarı | Dhurrin cyanogenetic glikozide |

L., *O. pes-caprae* L (Oxalidaceae), *Ferula communis* L.(Umbelliferae), *Anagallis arvensis* (Primulaceae), *Nerium oleander* L. (Apocynaceae), *Solanum nigrum* L., *S. villosum* Mill., *S. elaeagnifolium* Cav., *Datura stramonium* L., *D. innoxia* Mill., *Hyoscyamus albus* L., *H. aureus* L., *Nicotiana glauca* Graham. (Solanaceae), *Euphorbia helioscopia* L., *Ricinus communis* L., (Euphorbiaceae), *Narcissus tazetta* L. (Amaryllidaceae), *Muscari comosum* (L.) Mill.(Liliaceae), *Arum dioscoridis* Sm., *A. hygrophilum* Boiss., *Arisarum vulgare* Targ-Tozz. (Araceae) and *Sorghum halepense* (L.) Pers. (Gramineae) (Table 2).

Interest in medicinal and poisonous plants is increasing because it is recognized that plants are still a vast source of novel chemical compounds. They can be good starting points for herbal drug development, because synthetic drugs often produce serious side-effects, moreover pesticides of plant origin are usually environmentally benign. Any native or introduced plant can be poisonous including ferns, herbaceous plants, woody shrubs, and trees. Identifying plants that are poisonous is difficult since poisonous plants do not appear distinctly different from their nontoxic relatives or counterparts. Plant poisoning ranges from minor irritation to death. Plants basically poison on contact, ingestion, or by absorption or inhalation. They cause painful skin irritations upon contact and internal poisoning when eaten. It is difficult to say how much poisonous plants are because some plants require contact with a large amount of the plant before noticing any adverse reaction while others will cause death with only a small amount. Every plant will vary in the amount of toxins it contains due to different growing conditions and slight variations in subspecies. Moreover every person has a different level of resistance to toxic substances, some being more sensitive to a particular plant. Ingestion of a potentially toxic plant is the number one route of poisoning in living beings. It is important to emphasize that many, but certainly not all, toxic plants are not very palatable but we may consume toxic plants or plant parts such as seeds inadvertently incorporated into foodstuffs. The concentrations of toxic constituents in plants can vary from year to year, throughout the growing season of the plant, or as a result of environmental factors such as drought (Pfister, 1988). *Peganum harmala* has been reported to show toxicity (Mahmoudian *et al*. 2002). The fruits of this species are very commonly used for decoration purposes in the east Anatolian part of Turkey and seeds are burnt to avoid the evils,therefore if children consume these it could prove toxic.The roots of *Apocynum venetum* L. from family Apocynaceae are poisonous as against this *Nerium oleander* from the same family has leaves as poisonous. *N. oleander* is a wide spread natural Mediterranean element in the Mediterranean basin. Due to its nice looking flowers and evergreenness, it is preferred as an ornamental plant in parks and gardens. However, the whole plant, either in fresh or dry form, is poisonous and a few leaves or flowers can prove fatal. Moreover, the poisonous smoke of the plant while burning can be dangerous. It is reported that its toxicity come from oleandroside and nerioside cardiac glycosides (Kakrani,1981; Dogan *et al*., 2005).They cause nausea, severe stomach pains, diarrhoea, vomiting, weakness, irregular heartbeat, dilation of pupils, dizziness, drowsiness, respiratory paralysis and death. The poisonous properties of *Cionura erecta* (L.) Griseb. are known since antiquity. It has been used to exterminate harmful animals and the name "Apocynon," given to this plant by Dioscorides refers to that particular usage (Baumann, 1996; Myrianthopoulos *et al*., 2007). Leaves and flowers of *Cannabis sativa* are poisonous. Although no fatalities of humans have been reported, the effects on a young child accidentally ingesting these plants are bound to be very disturbing to the parents

(Jones, 1978; Smith, 1988). *Conium macualtum* fruits and roots are poisonous, these contain the alkaloid coniin which is known to have been used as an official poisonous substance by the old Greeks (Ozturk & Ozcelik, 1987). Moreover, it is now believed that Socrates, one of the important corner stone of the science of history throughout the Hellenistic era, was killed by poisoning with this plant (Ober, 1997). *Agrostemma githago* seeds as contaminant of wheat, oats, and ground corn are poisonous. Symptoms are severe stomach pain, vomiting, diarrhea, dizziness, weakness, slow breathing (Russell *et al*.1997). The whole plant in particular flowers of *Adonis aestivalis* are poisonous. A toxic principle is present in very small quantities in the plant (Stary, 1983; Frohne & Pfänder, 1984). The plant is poisonous to horses. The plants of *Artemisia absinthium* too are poisonous, but toxicity occurs if large quantities are eaten (Alice *et al*.,1997). All parts of *Digitalis ferruginea* are poisonous (Chiej, 1984). Fruits of *Ecballium elaterium* are highly poisonous. The juice of the fruit is irritative to some skins and antirheumatic, cardiac and purgative (Niebuhr,1970; Chiej, 1984). All parts of *Euphorbia cyparissias* are poisonous. Symptoms are nausea, vomiting, diarrhea when ingested, as well as redness, swelling, blisters after some delay following contact with skin (Russell *et al*., 1997). Young shoots of *Equisetum arvense* are poisonous, but leaves and stems contain thiaminase which causes thiamine deficiency in horses. In Canada, horses have been poisoned by ingesting field horsetail (Cheeke & Shull, 1985). All parts of *Juniperus excelsa* are poisonous. Antibacterial diterpenes from the leaves and seeds of have been reported by Muhammad *et al*. (1992). All parts of *Peganum harmala* are poisonous. The symptoms mainly are neuro-sensorial, hallucination, slight elevation of body temperature and cardio-vascular disorders such as ; bradycardia and low blood pressure (Mahmoudian *et al*., 2002). Seeds of *Lathyrus sativus* are poisonous. The seed contains a toxic amino-acid which in large quantities, can cause a very serious disease of the nervous system known as 'lathyrism' (Frohne & Pfander, 1984). Seeds of *Lolium temulentum* are poisonous. The seed is not poisonous but it is often infected by a fungus which is very toxic. It is probably safer not to eat the seed because of the risk involved. Leaves and flowers of *Nicotiana glauca* are poisonous. Symptoms are vomiting, diarrhea, slow pulse, dizziness, collapse, and respiratory failure (Russell *et al*., 1997). All parts of *Ranunculus sceleratus* are poisonous. It contains a toxic irritant that produces protoanemonin upon mastication (Cooper & Johnson, 1984). Leaves and stems of *Rumex acetosella* plant are toxic and ingesting large quantities cause poisoning and death in sheep (Cooper & Johnson 1984). Leaves, stem cork and fruit of *Sambucus nigra* are poisonous. This shrub contains cyanogenic glycosides. Berries eaten raw can cause nausea and vomiting in humans (Cooper & Johnson, 1984). The leaves and flowers of *Tanacetum vulgare* are poisonous and symptoms are weak pulse, stomach pain, convulsions (Russell *et al*., 1997). Seeds of *Vicia sativa* are poisonous. In the western United States, poultry that ingested the seeds of common milk vetch were poisoned and died (Cheeke & Shull, 1985). Leaves and flowers of *Viburnum lantana* are poisonous. The fruit is of very low or zero toxicity, but large quantities of the fruit can cause vomiting and diarrhoea (Altmann, 1980; Frohne & Pfander, 1984). Relatively few tests are available to detect plant toxins in either ante-mortem or post-mortem samples. In many cases, the best way to support a diagnosis of plant poisoning is to confirm the presence of a toxic plant in our surroundings (this will require positive identification of the suspect plant), to confirm that the plant has been ingested (noting that the candidate plants have been chewed and/or finding plant fragments in vomitus or gastrointestinal tract samples), and to correlate

clinical findings, where possible, with those known to be associated with the suspect plant. There are few antidotal therapies for treating plant poisonings. The best approach for treating involve induction of emesis and a cathartic to hasten elimination of the plant from the gastrointestinal tract. Some common misconceptions about poisonous plants are watch the animals and eat what they eat. Most of the time this statement is true, but some animals can eat plants that are poisonous to humans. Boil the plant in water and any poisons will be removed, this may remove many poisons, but not all. Plants with a red color are poisonous. Some plants that are red are poisonous, but not all. Most poisonous principles are considered to be secondary metabolites or by-products from the essential functions of the plant. These are compounds that aren't considered fundamental to the life of the plant. Although there are many theories as to why plants produce these nonessential compounds, one of the key theories maintains that plants have evolved to produce these compounds in order to deter animals from grazing on them and to keep insects from eating them (Ditamaso, 1994).

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