

An Overview of the Medicinal Plants of Turkey

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7.1 INTRODUCTION

Plant species have different uses in different countries as well as different areas of the same country (Farnsworth and Soejarto 1991; Plotkin 2000; Hamilton 2004; Halberstein 2005). The relationship between humans and plants has existed since the existence of human beings, and the earliest documented record dates from the Paleolithic age (50,000 BC); plants were found in the grave of a Neanderthal man in the southern part of Hakkari (far southeast edge of Turkey) (Baytop 1984, 1999).

A number of plant remedies have been described on the clay tablets that have survived from Mesopotamian civilizations such as Sumerians, Assyrians and Akkadians, and Hettites. In fact, the study of medicinal botany began when plants were classified according to their uses, such as pain- and illness-healing plants and poisonous ones (Ozturk and Ozelik 1991; Ozturk et al. 2008; Mert et al. 2008). It was during this period that the knowledge and manipulation of plant properties became associated with individuals.

Nature has bestowed upon plants active molecules with natural affinities with the human body. As such, it is not surprising that we find remedies for several diseases by using plants. People nowadays are using the powerful curative properties of the plant world to stimulate the functioning of the organism and improve their physical as well as mental well-being. The role of medicinal plants in the maintenance of health and treatment of diseases as therapeutic alternatives throughout the world is progressing at a fast speed (WHO 2002). Nature cures and herbal medicinal products are

indispensable. These have played a dominating role in the development of human civilization. The search for lands of spices led to the discovery of continents but at the same time colonial invasions of other areas. Presently, more than 20,000 species of plants from our rich global plant diversity are used as herbal drugs. Out of these, more than 120 compounds from 90 plant species are available as prescription drugs.

Developing countries are slowly realizing that they do not have the means to provide comprehensive health care to their masses and they have started to become more interested in traditional medicines. There is now more acceptance for phytotherapy, and demand for plant-based medicines for age-related disease (autoimmune, degenerative diseases), preventive medicines (antioxidants, edible vaccines, nutritional therapy, etc.), and plant-based anti-infectious agents is becoming more important. Medicinal plants will continue to play this role as long as modern medicine continues to be unable to meet the health care needs of people of the developed world (Melo, Filho, and Guerra 2005).

Turkey is one of the industrializing countries and one among the important gene centers of plant diversity in the world. Among the countries in southwest Asia and the Mediterranean basin, as well as whole of Europe, the richest flora has been reported for the Anatolian peninsula. The number of flowering plant taxa distributed in the country is estimated to be around 10,000, which is very near to the number recorded from the whole of Europe (Davis 1965–1985; Davis, Mill, and Tan 1988; Guner et al. 2000). These taxa are distributed in different phytogeographical regions and include nearly 3,300 endemics, which are mostly found in the Irano-Turanian region (Figures 7.1 and 7.2) (Ozgoke and Ozcelik 2004; Simsek et al. 2004).

The country includes a large part of the “fertile crescent” covering the valleys of the Tigris and Euphrates rivers (Figure 7.3), the southern slopes of the Taurus Mountains, and the eastern shores of the Mediterranean Sea. It was largely within these lands that many ancient civilizations flourished and domestication of many food and medicinal plants started (Baytop 1984). The plant wealth in Turkey has been evaluated as a source of medicines from ancient times. Most of the 600 plants documented in the book of Dioscorides, *Materia Medica*, originated from the Anatolian peninsula (Baytop 1984). A recent survey of traditional and folk medicine in Turkey has revealed that most of these plants are still in use by the local inhabitants (Yesilada and Sezik 2003). Therefore, *Materia Medica* may be assumed to be the oldest comprehensive document on Anatolian folk medicine. For example, *Ecbalium elaterium* fruit juice is used widely even now to treat sinusitis in Turkey; this had been reported only by Dioscorides. Its activity has also been reported in *Materia Medica* for some other illnesses and these usages are also practiced in the folk medicine of Turkey (Baytop 1984).



Figure 7.1a Geographical map of Turkey showing different states.

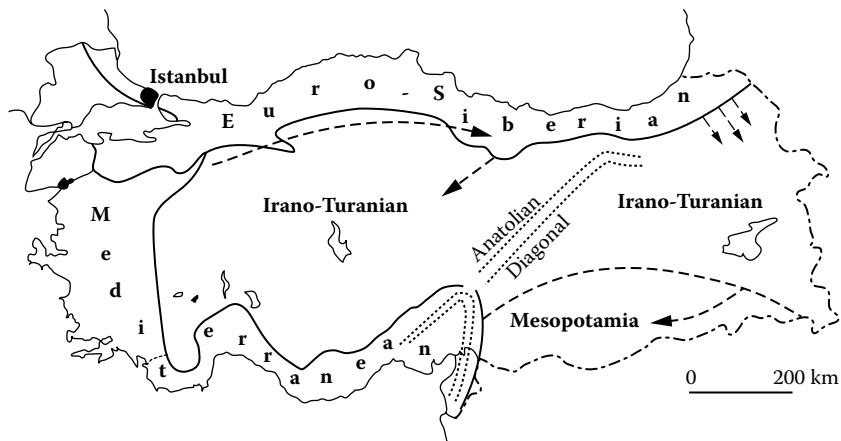


Figure 7.1b Phytogeographical divisions of Turkey.

However, abiotic pressures are posing a great threat for the traditional heritages in the country and a wealth of information is slowly vanishing. Extensive research has been conducted by several workers on the medicinal plants of Turkey during the last few decades (Baytop 1984, 1999; Ozturk and Ozcelik 1991; Tabata et al. 1994; Sezik et al. 1991; Sezik, Zor, and Yesilada 1992; Yesilada et al. 1993; Fujita et al. 1995; Surmeli et al. 2000; Orhan et al. 2003). The present chapter synthesizes the use of plants in folk medicine. An attempt has been made here to bring together the scattered information on the medicinal plants from the published records of Turkey for its availability to the researchers in the field of pharmacy, ethnobotany, and phytotherapy.



Figure 7.2 (a, b, c) A general view of the traditional herbal drug dealers.



Figure 7.2 (a, b, c) Continued



Figure 7.3 *Tilia europaea*. 

7.2 PRESENT SITUATION OF MEDICINAL PLANTS

The number of plant species used in Turkey as folk remedies has recently been figured to lie around 1,500, although the book of Baytop (1999) previously estimated them at around 500. Although scarcely practiced in Turkey, the traditional Greco-Arabic (Unani) medicine is still being practiced widely in the south and southeast regions of the country. Some principles reflect important components of the ancient Mesopotamian traditions. Akhtars or attars are still popular in procuring such remedies (Baser, Honda, and Miki 1986; Bingol 1995). The rural inhabitants are applying different plant remedies around their villages as well as specific remedies prepared from animals or natural materials (Sezik and Tumen 1984; Sezik and Basaran 1989).

Presently, the trade of medicinal plants mainly takes place in three groups:

- Traditional shops, which are old, with stalls and shelves arranged simply, unpackaged herbs stored in large plastic bags or in bundles; the dealers are not professional healers
- Stalls in open-air markets, which run in different places once a week, with bunches of herbs; stall keepers are professional plant collectors, with a low educational level and an empirical experience in herbal medicine, based on tradition
- Modern shops scattered in the city but carefully decorated; the products sold are industrially manufactured, attractively packaged, and displayed on shelves; the dealers are traders with knowledge about herbal drugs mostly derived from modern textbooks and the information provided by the company suppliers

7.3 HERBAL TEAS

In Turkey, tea commonly known as *çay* is a form of black tea produced from the Black Sea region. Wherever people go in Turkey, tea or coffee will be offered as a sign of friendship and hospitality, at homes, bazaars, and restaurants, before or after a meal. The Turks evolved their own way of making and drinking the black tea that became a way of life for Turkish culture (Sezik 1990; Basar et al. 1986; Baser 1996; Atoui et al. 2005). It is prepared by using two stacked kettles called *caydanlık*. Turkish tea is full flavored and too strong to be served in large cups; thus, it is always offered in small tulip-shaped glasses to enjoy it hot in addition to showing its color. The glasses are usually held by the rim, in order to save the drinker's fingertips from being burned. As a matter of fact, tea replaces both alcohol and coffee as the social beverage. Tea replaced coffee after the retreat of the Turks from Yemen.

Recently, in addition to black tea, other teas of plant origin—in particular, sage tea, linden flower tea, rose hip tea, and apple tea—have become popular in the country and are a buzzword of the day (Akcicek and Ozturk 1995). Herbal tea, also known as a tisane or ptisan, has been used for thousands of years, as is evident from the documents dating back to the ancient Egyptians, who discuss the enjoyment and uses of herbal tea. The word “tisane” originated from the Greek word *ptisane* (a drink made from pearl barley). It is any herbal infusion other than from the leaves of the tea bush (*Camellia sinensis*). Herbal teas are often consumed for their physical or medicinal effects, especially as stimulants, relaxants, or sedatives. Generally, the leaves, flowers, fruits, fruit peelings, dried fruits, dried flowers, roots, or herb is added to the boiling water (Ozturk and Ozcelik 1991; Zeybek 2003; Ozcan 2005). Almost all contain essential oils. Although the majority of the herbal teas are safe for regular consumption, some can have toxic or allergenic effects; in particular, different effects can be observed in different people. The problem is consumption of misidentified herbs as tea.

There are 53 natural herbal teas used in Turkey. The most important ones are

- dried flowers of lime tree (*Tilia*, locally known as Ihlamur) (Figure 7.3)
- sage (*Salvia* spp., locally known as adacay; Ulubelen 1964; Bayrak and Akgul 1987; Solmaz 1993a, 1993b; Haznedaroglu, Karabay, and Zeybek 2001; Bozan, Karabay, and Zeybek 2002; Sagdic 2003; Tepe, Donmez, and Unlu 2004; Tepe, Daferera, and Sokmen 2005; Tepe et al. 2006; Tepe, Eminagaoglu, and Akpulat 2007; Nickavar, Kamalinejad, and Hamidreza 2007; Akkol et al. 2008)
- mint, especially peppermint (*Mentha* spp., locally known as nane)
- rosehip (*Rosa canina*, locally known as kuşburnu)
- thyme (*Thymus* spp., locally known as kekik)
- oregano (*Origanum* spp., locally known as izmir kekigi)
- apple (*Malus sylvestris*, locally known as elma)
- lavender (*Lavandula stoechas*, locally known as karabas otu)
- melisa (*Melisa officinalis*, locally known as ogul otu)
- camomile (*Matricaria chamomilla*)
- anise (*Pimpinella anisum*, locally known as anason)
- licorice root (*Glycyrrhiza glabra*, locally known as meyan)
- the species of *Sideritis*, *Chrysanthemum*, *Stachys*, *Phlomis*, *Rubus*, and *Citrus* tea, including bergamot, lemon, and orange peel (Ezer and Sezik 1988; Sezik 1990; Ezer et al. 1995; Baser 1996; Isik et al. 1995; Sayar et al. 1995; Surmeli et al. 2000; Dogan et al. 2005; Kukic, Petrovic, and Niketic 2006; Sagdic, Aksoy, and Ozkan 2006)

A special drink locally known as “salep” is prepared from the tubers of orchids (*Orchis* and *Ophrys*) during the winter season as a protection from a bad cold (Figure 7.4).



Figure 7.4 *Orchis collina*.

7.4 AROMATIC AND ESSENTIAL-OIL-BEARING PLANTS

A large number of plants from over 300 families are rich in aromatics (Miliauskas, Venskutonis, and van Beek 2004). The number of plants used industrially for the production of aromatic compounds is around 40. The family Lamiaceae (Labiatae), commonly known as mint family, is one of the few plant families with various aromatic plants rich in essential oils—in particular, volatile oils, iridoids, flavonoids, and diterpenoids (Baytop 1984; Triantaphyllou 2001; Stefanini et al. 2006). It includes nearly 200 genera and more than 3,000 taxa; a large number of these are spices, medicinals, and odorous plants. Several pharmacological activities have been illustrated for these plants (Richardson 1992). Members of this family have been used in Turkish traditional and folk medicine since ancient times (Basar et al. 1986; Baytop 1999; Dogan, Bayrak, and Akgul 1985; Dogan et al. 2005; Everest and Ozturk 2005).

Lavandula officinalis, *Lavandula angustifolia* ssp. *angustifolia*, *Melissa officinalis*, *Mentha pulegium*, *M. longifolia*, *M. aquatica*, *M. sauveolens*, *M. viridis*, *M. spicata*, *Origanum dictamnus*, *O. majorana*, *O. vulgare* ssp. *hirtum*, *O. vulgare* ssp. *vulgare*, *Rosmarinus officinalis*, *Salvia fruticosa*, *Satureja thymbra*, *Sideritis* spp., *Teucrium chamaedrys*, *T. polium*, *Thymus* spp., *Glycyrrhiza glabra*, *Paliurus spina-christi*, and *Crataegus monogyna* are used as culinary herbs also in the toothpaste and chewing gum industries (Mimica-Dukic et al. 2003; Sadic 2003). These species are also mixed with green tea to make mint tea.

The following plants are used for the following purposes:

Coridothymus spicatus for hyperglycemia, hypertension, and stomach ailments

Lavandula stoechas against cold, rheumatismal pains, and urinary diseases, as a diuretic, pain killer, wound healer, antiseptic, and expectorant

Melissa officinalis as a sedative, in gastric disorders, as a degasifier, sudorific, and antiseptic
Mentha species for nervous gastric pains and nausea, as a degasifier, an antiseptic, and a spice
Origanum majorana for abdominal pain and gastric troubles, as a tranquilizer, diuretic, degasifier, and sudorific, for constipation, and as spice
O. onites for diabetes, abdominal pain, stomachache, against colds, and as an immunostimulant (children)
Rosmarinus officinalis for constipation, as a stimulant of the digestive system, for bilious conditions, as a diuretic, and in wounds (external)
Salvia fruticosa as an antifatulent, for vigor, as a stimulant and antiseptic (ear–throat) (Yildirim et al. 2000; Tepe et al. 2006)
Sideritis brevidens as a carminative and degasifier
Teucrium pollium against eczema, hemorrhoids, and diabetes
Tymbra spicata for colds
Thymus species for gastric disorders, as a sedative and an antiseptic, for worm removal, speeding blood circulation, for bilious conditions, against psoriasis (with honey), and as a spice tea (Sezik and Saracoglu 1988; Altanlar et al. 2006)

Lamiaceae has a great diversity and distribution in Turkey, being represented by 45 genera and 567 taxa. From these species, 256 taxa (45.3%) are endemic to Turkey (Davis 1965–1985; Davis et al. 1988; Hedge 1986; Guner et al. 2000; Triantaphyllou, Blekas, and Boskou 2001; Damien Dorman et al. 2003; Kosar, Dorman, and Hiltunen 2005), which includes the endemic monotypic genus *Dorystoechas hastata* occurring in southern parts of Turkey. The most important genera are *Coridothymus*, *Lamium*, *Lavandula*, *Marrubium*, *Melissa*, *Mentha*, *Origanum*, *Phlomis*, *Rosmarinus*, *Salvia*, *Satureja*, *Sideritis*, *Stachys*, *Teucrium*, *Thymus*, and *Thymbra*. The genera of *Nepeta* (76 species), *Salvia* (88 species), *Stachys* (81 species), *Sideritis* (45 species), *Thymus* (39 species), *Phlomis* (34 species), *Nepeta* (34 species), *Lamium* (30 species), *Teucrium* (29 species), *Origanum* (24 species), *Marrubium* (19 species), *Scutellaria* (16 species), *Micromeria* (14 species), *Satureja* (14 species), *Ajuga* (13 species), and *Ballota* (11 species) are the largest genera in Turkey (Ozgen et al. 2006; Nakiboglu et al. 2007). A comparison of the total number of species, endemics percentages, and number of medicinal species is given in Figure 7.5.

7.5 ENDEMICS OF SOME IMPORTANT GENERA

Dorystoechas hastata

Origanum boisseri, *O. saccatum*, *O. solymicum*, *O. hypericifolium*, *O. simpyleum* L., *O. haussknechtii*, *O. brevidens.*, *O. leptocladum*, *O. amanum*, *O. bilgeri*, *O. micranthum*, *O. minutiflorum*, *O. husnubaseri*, *O. symes*, *O. munzurense*

Thymus cilicicus, *T. revolutus*, *T. pulvinatus*, *T. convolutus*, *T. argaeus*, *T. brachyphilus*, *T. cappadocicus* var. *pruinus* var. *cappadocicus* var. *globifer*, *T. haussknechtii*, *T. pectinatus* var. *pectinatus* var. *pallasicus*, *T. canoviridis*, *T. spathulifolius*, *T. cariensis*, *T. samius*, *T. zygioides* var. *lycaonicus*, *T. aznavourii*, *T. fedtschenkoi* var. *handelii*, *T. sipyleus* var. *sipyleus* var. *davisanus*, *T. bornmuel-leri*, *T. praecox* var. *laniger*, *T. longicaulis* var. *antolyanus*

Salvia divaricata, *S. aucheri*, *S. tigrina*, *S. recognita*, *S. pilifera*, *S. reeseana*, *S. cedronella*, *S. adeno-phylla*, *S. rosifolia*, *S. huberi*, *S. wiedemannii*, *S. pisidica*, *S. freynian*, *S. potentillifolia*, *S. albimac-ulata*, *S. tchihatcheffii*, *S. heldreichiana*, *S. caespitosa*, *S. haussknechtii*, *S. ballsiana*, *S. quezelii*, *S. cadmica*, *S. smyrnaea*, *S. blepharochlaena*, *S. euphratica*, *S. kronenburgii*, *S. sericeo-tomentosa*, *S. cryptantha*, *S. hypargeia*, *S. eriophora*, *S. chrysophylla*, *S. chionontha*, *S. longipedicellata*, *S. yosgadensis*, *S. modesta*, *S. tobeyi*, *S. odontochlamys*, *S. cyanescens*, *S. vermifolia*, *S. halophila*, *S. adenocaulon*, *S. dichroabtha*, *S. aytachii*, *S. nydeggeri*

Sideritis sipylea, *S. hololeuca*, *S. phlomoides*, *S. erythrantha* var. *erythrantha* var. *cedretorum*, *S. brevidens*, *S. stricta*, *S. vulcanica*, *S. condensata*, *S. tmolea*, *S. congesta*, *S. cilicica*, *S. niveo-tomentosa*, *S. arguta*, *S. lycia*, *S. leptoclada*, *S. brevibracteata*, *S. albiflora*, *S. rubriflora*, *S.*

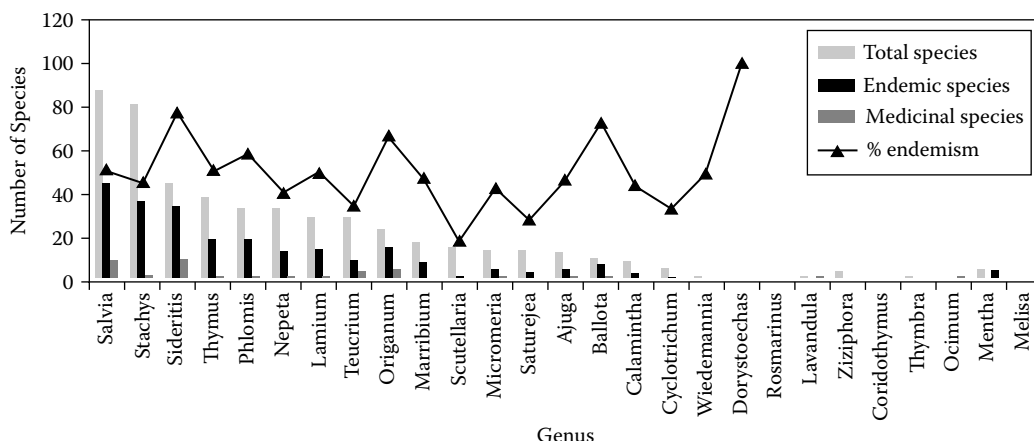


Figure 7.5 Total species, endemics, and percentage and number of medicinal species from Lamiaceae.

argyrea, *S. bilgerana*, *S. hispida*, *S. dichotoma*, *S. trojana*, *S. phrygia*, *S. amasiaca*, *S. galatica*, *S. armeniaca*, *S. germanicopolitana* subsp. *germanicopolitana* subsp. *viridis*, *S. libanotica* subsp. *linearis*, *S. serratifolia*, *S. pisidica*, *S. akmanii*, *S. gulendaminae*, *S. caesarea*, *S. vuralii*, *S. huber-moranthii*

Family Lamiaceae is one of the major sources of culinary and medicinal plants all over the world (Marinova and Yanishlieva 1997). The rich spicy quality of basil, rosemary, lavender, oregano, thyme, sage, and mint makes the plants of this family useful in cooking. People in various cultures in different parts of the world in one way or another use these aromatic plants to season their food, perfume their bodies, and treat ailments (Dogan et al. 1985; Ozturk and Ozcelik 1991; Ozturk, Pirdal, and Uysal 1992; Gue'don and Pasquier 1994; Isik et al. 1995; Sayar et al. 1995; Atta and Alkofahi 1998; Basar et al. 1999; Arias et al. 2001; Ali et al. 2002; Barbour et al. 2004; Ghorbani and Motamed 2004; Capecka, Mareczek, and Leja 2005; Arumugam et al. 2006; Nickavar, Alinaghi, and Kamalinejad 2008). Species of *Mentha*, *Thymus*, *Lavandula*, *Ocimum*, *Origanum*, *Melissa*, and *Satureja* are used as culinary and flavoring plants in addition to their wider use as herbal teas. These species are available in local markets or in traditional medicinal plant stores.

Many species of the family are used in traditional and modern medicine. Endemics are especially used locally by indigenous people in different parts of Turkey (Table 7.1) (Sezik and Basaran 1989; Yucel and Ozturk 1998; Baser 2001; Elmastas et al. 2005; Gulluce et al. 2007). According to Baytop (1984), 70 species of Lamiaceae belonging to 23 genera are used for medicinal purposes in Turkey. If we add to this the thyme species, this number goes up to 110. However, based on our findings, more than 78 taxa have medicinal uses. Considering the total number of the mint family in Turkey, 12.4% of taxa are of medicinal value. They are used in the treatment of 30 different ailments (Tables 7.2–7.5).

7.6 COMMENTS ON TURKISH MINT SPECIES

Genus *Mentha* is represented by 15 taxa in Turkey; the most common are *M. longifolia*, *M. suaveolens*, *M. pulegium*, and *M. aquatica* (Ozturk, Secmen, and Pirdal 1986; Richardson 1992; Voirin and Bayet 1992; Voirin, Saunois, and Bayet 1994; Miura, Kikuzaki, and Nakatani 2002; Parejo et al. 2002; Damien Dorman et al. 2003). All are perennial herbs, flowering in late spring and early

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Table 7.1 Most Important Plants Used as Medicine in Turkey

| Family | Botanical Name | Local Name | Plant Part Used | Treatment |
|------------------|--|---|-----------------|---|
| Amaryllidaceae | <i>Galanthus nivalis</i> L. | Kardelen, aktas | Bulb | Nervine, emmenagogue |
| Anacardiaceae | <i>Pistacia lentiscus</i> L. var. <i>latifolius</i> Coss. | Sakiz, damla sakizi, mezeke sakizi, mesteki | Gum | Anthalitis, mucolytic, strengthen gums |
| Anacardiaceae | <i>Pistacia vera</i> L. | Fistik sakizi | Gum | Antihemorrhoidal, stomachic |
| Anacardiaceae | <i>Pistacia terebinthus</i> L. | Menengic sakizi | Gum | Antiseptic |
| Anacardiaceae | <i>Cotinus cogglyria</i> Scop. | Boyaci somagi, sariboya, sarican | Leaf | Antiseptic, anti-inflammatory |
| Anacardiaceae | <i>Rhus coriaria</i> L. | Sumak, somak | Leaf | Antiseptic |
| Apocynaceae | <i>Nerium oleander</i> L. | Zakkum | Leaf | Diuretic, cardiac |
| Araceae | <i>Acorus calamus</i> L. | Egir, azakegeri, hazanbel, hazambel | Root | Antispasmodic, carminative, diaphoretic |
| Araceae | <i>Arum italicum</i> Miller | Yilanyastigi | Tuber | Laxative, vesicant |
| Araliaceae | <i>Hedera helix</i> L. | Duvarsarmasigi | Leaf | Vesicant |
| Aristolochiaceae | <i>Aristolochia</i> sp. | Zeravent, lohusaotu | Root | Analgesic, laxative, antidermatosis |
| Aristolochiaceae | <i>Asarum europaeum</i> L. | Azaron, avsarotu, cetukotu, kediotu, meyhaneoti | Root | Emetic, mucolytic, diuretic, anti-inflammatory, laxative, emmenagogue |
| Berberidaceae | <i>Leontice leontopetalum</i> L. | Kirkbas yavrusu, arslanayagi, arslankulagi, patlangac | Bulb | Emmenagogue |
| Boraginaceae | <i>Alkanna orientalis</i> (L.) Boiss. | Kamburuyan, sari havaciva, kurbagaotu | Root | Emmenagogue |
| Boraginaceae | <i>Alkanna tinctoria</i> (L.) Tausch | Havaciva | Root | Antidiarrheal, antidermatosis |
| Cannabaceae | <i>Humulus lupulus</i> L. | Serbetciotu | Flower | Stomachic, diuretic |
| Capparaceae | <i>Capparis ovata</i> Desf. | Kebere | Fruit | Diuretic, antidiarrheal, nervine |
| Caprifoliaceae | <i>Viburnum opulus</i> L. | Gilaburu | Fruit | Diuretic, sedative, laxative |
| Caryophyllaceae | <i>Dianthus barbatus</i> L. | Husnuyusuf | Flower | Diaphoretic, diuretic, sedative, cardiac |
| Caryophyllaceae | <i>Gypsophila arrostii</i> Guss. var. <i>nebulosa</i> (Boiss. et Heldr.) Bark. | Coven | Root | Diuretic, mucolytic |
| Caryophyllaceae | <i>Silene vulgaris</i> (Moench) Garke | Giviganotu, ibis-gibis | Whole plant | Excretory or genitourinary system diseases |
| Caryophyllaceae | <i>Stellaria media</i> (L.) Vill. | Kusotu, sercedili, serceotu | Whole plant | Diuretic, mucolytic |
| Compositae | <i>Achillea millefolium</i> L. | Civanpercemi, akbasli, barsamaotu, beyaz civanpercemi, binbiryaprakotu, kandilicegi, marsamaotu | Whole plant | Antidermatosis, antihemorrhoidal |
| Compositae | <i>Artemisia absinthium</i> L. | Pelinotu | Whole plant | Diuretic, stomachic, nervine, antihelminthic |
| Compositae | <i>Carthamus lanatus</i> L. | Yunlu aspir | Flower | Diaphoretic, antihelminthic, emmenagogue |
| Compositae | <i>Centaurea cyanus</i> L. | Peygambercicegi | Flower | Antidiarrheal, nervine, stomachic |

| | | | | |
|----------------|---|--|-------------|---|
| Compositae | <i>Cichorium intybus</i> L. | Hindiba | Leaf | Diuretic, laxative, diaphoretic, nervine, stomachic |
| Compositae | <i>Cnicus benedictus</i> L. | Mubarekdikeni | Whole plant | Diuretic, appetizer, anti-inflammatory, hypotensive, sedative |
| Compositae | <i>Cynara scolymus</i> L. | Enginar | Leaf | Stomachic, diuretic |
| Compositae | <i>Gundelia tournefortii</i> L. | Kenger, enger, kengel, kengiotu, kengir | Gum | Strengthen gums, stomachic |
| Compositae | <i>Helianthus tuberosus</i> L. | Yerlimasi | Tuber | Galactagogue, diuretic, aphrodisiac |
| Compositae | <i>Helichrysum</i> sp. | Olmezcecek, altinotu, altincicek, herdemtaze | Flower | Diuretic, cholagogue, lithonriptic |
| Compositae | <i>Inula helenium</i> L. | Andizotu koku | Root | Diuretic, antitussive, antihelminthic, nervine |
| Compositae | <i>Inula viscosa</i> (L.) Aiton: | Yapiskan andiz | Leaf | Antidermatosis |
| Compositae | <i>Lactuca sativa</i> L. | Marul | Whole plant | Analgesic, galactagogue, diuretic, laxative |
| Compositae | <i>Matricaria chamomilla</i> L. | Papatya | Flower | Diuretic, carminative, sedative, stomachic, antidermatosis |
| Compositae | <i>Scolymus hispanicus</i> L. | Altindikeni, saridiken | Whole plant | Diuretic, lithonriptic |
| Compositae | <i>Scorzonera latifolia</i> (Fisch. et Mey) DC. | Benis, cingenesakizi, kandilsakizi, karasakiz, markosakizi, selepetsakizi, yerlemesakizi | Root | Analgesic, antihelminthic |
| Compositae | <i>Silybum marianum</i> (L.) Geartner | Davedikeni, akkiz, devekengeli, kengel, kibbun, meryem ana dikeni, sutlukengel, sevkulmeryem | Whole plant | Anti-inflammatory, appetizer, sedative, analgesic |
| Compositae | <i>Tanacetum vulgare</i> L. | Solucanotu | Flower | Nervine, stomachic, antihelminthic |
| Compositae | <i>Taraxacum officinale</i> Weber | Radika, arslandisi | Root | Diuretic, laxative |
| Compositae | <i>Tragopogon porrifolius</i> L. | Sari iskorcina, salsifi, tekesakali | Root | Analgesic, antihelminthic |
| Compositae | <i>Tussilago farfara</i> L. | Oksurukotu | Leaf | Antitussive |
| Compositae | <i>Xanthium spinosum</i> L. | Pittrak | Leaf | Diuretic, sedative, diaphoretic |
| Convolvulaceae | <i>Convolvulus arvensis</i> L. | Tarla sarmasigi, kuzu sarmasigi | Root | Laxative |
| Convolvulaceae | <i>Convolvulus scammonia</i> L. | Mahmude | Root | Laxative |
| Cornaceae | <i>Cornus mas</i> L. | Kizilcik | Fruit | Antidiarrheal |
| Corylaceae | <i>Corylus maxima</i> Miller | Findik | Leaf | Diuretic |
| Cruciferae | <i>Brassica nigra</i> (L.) Koch. | Hardal | Seed | Stomachic, analgesic |
| Cruciferae | <i>Eruca sativa</i> Miller | Roka | Leaf | Stimulant, nervine, antitussive |
| Cruciferae | <i>Isatis tinctoria</i> L. | Civiotu | Whole plant | Antidiarrheal, antidermatosis |

(continued)

Table 7.1 Most Important Plants Used as Medicine in Turkey (Continued)

| Family | Botanical Name | Local Name | Plant Part Used | Treatment |
|------------------|--|---|-----------------|--|
| Cruciferae | <i>Nasturtium officinale</i> R. Br. | Suteresi | Whole plant | Nervine, nutritive, diuretic, stomachic |
| Cucurbitaceae | <i>Citrullus colocynthis</i> (L.) Schrader | Acikarpuz | Fruit | Diuretic, antidiarrheal |
| Cucurbitaceae | <i>Cucumis sativus</i> L. | Hiyar | Seed | Anthelminthic |
| Cucurbitaceae | <i>Ecballium elaterium</i> A. Richard | Esek hiyari, acidulek, acidulelek, acikavun, cirtlak, cirtatan, hiyarcik, kargaduvelegi, seytankelegi, yabanhiyar | Fruit | Laxative, diuretic |
| Cucurbitaceae | <i>Lagenaria vulgaris</i> Ser. | Su kabagi, kantar kabagi, testi kabagi | Seed | Diuretic, laxative, anti-inflammatory |
| Cupressaceae | <i>Juniperus communis</i> L. | Ardic kozalagi | Cone | Diuretic, diaphoretic, antiseptic |
| Dioscoraceae | <i>Tamus communis</i> L. | Dovulmusavratotu, aciot, karaasma, sincan | Root | Diuretic, laxative, emetic |
| Eleagnaceae | <i>Eleagnus angustifolia</i> L. | İgde | Leaf, flower | Diuretic, anti-inflammatory |
| Ephedraceae | <i>Ephedra campylopoda</i> C.A. Mayer | Denizuzumu | Whole plant | Diaphoretic, analgesic |
| Ericaceae | <i>Arbutus andrachne</i> L. | Sandal | Leaf | Antidiarrheal, antiseptic |
| Ericaceae | <i>Arbutus unedo</i> L. | Kocayemis, dagcilegi | Leaf, fruit | Antidiarrheal, antiseptic, diuretic |
| Ericaceae | <i>Rhododendron ponticum</i> L. | Komar | Leaf | Analgesic, diuretic |
| Ericaceae | <i>Vaccinium vitis idaea</i> L. | Kirmizi meyvali ayi uzumu | Leaf | Diuretic, antiseptic |
| Fagaceae | <i>Castanea sativa</i> Miller | Kestane | Leaf, bark | Hypotensive, antidiarrheal |
| Gentianaceae | <i>Erythraea centaurium</i> Pers. | Kantaron, kucuk kantaron, kantarion, kirmizi kantaron | Flower | Stomachic, digestive |
| Gentianaceae | <i>Gentiana lutea</i> L. | Centiyane | Root | Stomachic, antidermatosis |
| Gentianaceae | <i>Gentiana olivieri</i> Griseb. | Afat | Root | Stomachic, anti-inflammatory |
| Poaceae | <i>Arundo donax</i> L. | Kamis, masura kamisi | Root | Diuretic, diaphoretic, blood purifier |
| Poaceae | <i>Hordeum distichon</i> L. | İkisirali arpa | Seed | Diuretic, nerve |
| Poaceae | <i>Secale cereale</i> L. | Cavdar | Seed | Laxative |
| Guttiferae | <i>Hypericum perforatum</i> L. | Binbirdelikotu | Whole plant | Antiseptic, antidiarrheal, sedative, anthelminthic |
| Hamamelidaceae | <i>Liquidambar orientalis</i> Miller | Gunluk | Oil | Stomachic |
| Hippocastanaceae | <i>Aesculus hippocastanum</i> L. | Atkestanesi | Bark | Antidiarrheal, antifibrinolytic, anti-inflammatory, antihemorrhoidal |
| Iridaceae | <i>Crocus sativus</i> L. | Safran | Flower, stigma | Stimulant, stomachic, emmenagogue |
| Iridaceae | <i>Iris pseudocorus</i> L. | Bataklik suseni, kazip egir, sari susen, yalanci egir | Seed | Carminative, antidiarrheal, stomachic |

| | | | | |
|--------------|---|--|-------------|---|
| Juglandaceae | <i>Juglans regia</i> L. | Ceviz | Leaf | Stomachic, antidiarrheal, antidiabetes, antiseptic |
| Lauraceae | <i>Laurus nobilis</i> L. | Defne | Leaf | Diaphoretic, antiseptic |
| Fabaceae | <i>Anagyris foetida</i> L. | Ziviroik | Seed | Laxative, antihelminthic, emetic |
| Fabaceae | <i>Astragalus aureus</i> Willd. | Kitre zamki | Gum | Vesicant |
| Fabaceae | <i>Cerantonis siliqua</i> L. | Keciboynuzu, harnup, harup | Fruit | Diuretic, laxative |
| Fabaceae | <i>Genista lydia</i> Boiss. | Katirtirmagi | Flower | Diuretic, laxative, diaphoretic |
| Fabaceae | <i>Glycyrrhiza glabra</i> L. | Meyan | Root | Diuretic, mucolytic |
| Fabaceae | <i>Lupinus albus</i> L. subsp. <i>albus</i> | Termye, acibakla, delicebakla, lupen | Seed | Diuretic, antihelminthic, nervine, antidiabetes |
| Fabaceae | <i>Lathyrus sativus</i> L. | Mudurmuk, burcak, kulur | Seed | Sedative, diuretic, nervine, aphrodisiac |
| Fabaceae | <i>Ononis spinosa</i> L. | Kayiskiran, kayikicegi, yandak, yantak | Root | Diuretic, lithontripctic |
| Fabaceae | <i>Robinia pseudoacacia</i> L. | Akasya | Flower | Sedative, antidiarrheal |
| Fabaceae | <i>Spartium junceum</i> L. | Katirtirmagi, adi katirtirmagi | Flower | Diuretic, anesthetic |
| Fabaceae | <i>Trigonella foenum-graecum</i> L. | Boyotu, buyotu, cemenotu | Seed | Mucolytic, laxative |
| Leguminosae | <i>Vicia faba</i> L. | Bakla | Flower | Diuretic, lithontripctic |
| Liliaceae | <i>Asparagus acutifolius</i> L. | Yabani kuskonmaz, tilkisen, aciot | Root | Diuretic, lithontripctic |
| Liliaceae | <i>Asparagus officinalis</i> L. | Kuskonmaz | Root | Diuretic, lithontripctic |
| Liliaceae | <i>Asphodelus aestivus</i> Brot. | Ciris | Root | Diuretic, antidermatosis |
| Liliaceae | <i>Colchicum autumnale</i> L. | Acigidem tohumu | Seed, bulb | Diuretic, diaphoretic, purgative |
| Liliaceae | <i>Polygonatum multiflorum</i> (L.) All. | Muhrusuleyman, bogumlucaotu | Root | Antidiarrheal, analgesic, antidiabetes |
| Liliaceae | <i>Ruscus aculeatus</i> L. | Tavsanmemesi | Root | Diuretic, diaphoretic, stomachic, lithontripctic, anti-inflammatory |
| Liliaceae | <i>Urgenia maritima</i> (L.) Baker | Adasogani | Bulb | Diuretic, cardiac |
| Linaceae | <i>Linum usitatissimum</i> L. | Keten | Seed | Analgesic, laxative |
| Loranthaceae | <i>Viscum album</i> L. | Cekem | Fruit | Hypotensive, analgesic, |
| Malvaceae | <i>Alcea rosea</i> L. | Gul hatmi | Flower | Diuretic, anti-inflammatory |
| Malvaceae | <i>Althaea officinalis</i> L. | Hatmi | Flower | Anti-inflammatory |
| Malvaceae | <i>Hibiscus esculentus</i> L. | Barnya | Flower | Laxative, vesicant |
| Malvaceae | <i>Malva sylvestris</i> L. | Buyuk ebegumeci, ebegumeci | Leaf | Gargle |
| Moraceae | <i>Morus alba</i> L. | Beyaz dut | Leaf | Diuretic, anti-inflammatory |
| Moraceae | <i>Morus nigra</i> L. | Kara dut | Fruit, bark | Gargle, laxative, antihelminthic |
| Myrtaceae | <i>Eucalyptus globulus</i> Labill. | Okaliptus | Leaf | Antidiarrheal, antiseptic, mucolytic |

(continued)

Table 7.1 Most Important Plants Used as Medicine in Turkey (Continued)

| Family | Botanical Name | Local Name | Plant Part Used | Treatment |
|----------------|--|--|-----------------|---|
| Orchidaceae | <i>Orchis</i> sp., <i>Ophrys</i> sp., <i>Dactylorhiza</i> sp. | Salep | Tuber | Aphrodisiac, antidiarrheal |
| Paeoniaceae | <i>Paeonia mascula</i> (L.) Miller | Sakayik, Orman gulu | Root | Sedative, antidiarrheal |
| Papaveraceae | <i>Chelidonium majus</i> L. | Kirlangicotu, temereotu | Whole plant | Diuretic, laxative, sedative |
| Papaveraceae | <i>Fumaria officinalis</i> L. | Sahtereotu, tilki kisnisi | Whole plant | Diuretic, weight loss, sedative, hypotensive |
| Papaveraceae | <i>Glaucium flavum</i> Grantz | Boynuzlu hashas, gulfatma, sari boynuzlugulincik | Whole plant | Sedative, antitussive |
| Papaveraceae | <i>Papaver rhoeas</i> L. | Gelincik, asotu | Flower | Sedative, antitussive, sedative, |
| Phytolaccaceae | <i>Phytolacca americana</i> L. | Sekerciboyasi | Root | Emetic, laxative |
| Pinaceae | <i>Pinus pinea</i> L. | Cam fistigi | Seed | Nervine |
| Pinaceae | <i>Pinus</i> sp. | Cam terementisi | Terebinth | Respiratory and excretory or genitourinary system diseases |
| Plantaginaceae | <i>Plantago coronopus</i> L. | Sinirlot, kargaayagi | Leaf | Antidiarrheal, diuretic, mucolytic |
| Polygonaceae | <i>Polygonum bistorta</i> L. | Kurpencesi | Root | Antidiarrheal, antiseptic, diuretic, mouth ulcers, antifibrinolytic |
| Polygonaceae | <i>Polygonum cognatum</i> Meissn. | Madimak | Root | Diuretic, antidiabetes |
| Polygonaceae | <i>Rheum ribes</i> L. | Ravent, ugun | Root | Stomachic, laxative |
| Polygonaceae | <i>Rumex acetosella</i> L. | Kuzukulagi | Root/leaf | Diuretic, anti-inflammatory, cholagogue/vesicant |
| Primulaceae | <i>Cyclamen coum</i> Miller | Siklamen | Tuber | Emetic, laxative, stimulant |
| Primulaceae | <i>Primula vulgaris</i> L. | Cuhacicegi | Root | Diuretic, mucolytic, sedative |
| Ranunculaceae | <i>Adonis aestivalis</i> L. | Kekikgozu otu | Whole plant | Cardiac, diuretic |
| Ranunculaceae | <i>Delphinium staphisagria</i> L. | Mevzek, kokarot, mezevek, muzudek | Whole plant | Lice treatment |
| Ranunculaceae | <i>Nigella sativa</i> L. | Corekotu | Whole plant | Diuretic, galactagogue, stomachic, emmenagogue |
| Ranunculaceae | <i>Nigella arvensis</i> L. | Yabani corekotu | Whole plant | Diuretic |
| Ranunculaceae | <i>Ranunculus ficaria</i> L. | Basurotu, yaglicicek | Root | Antihemorrhoidal |
| Ranunculaceae | <i>Thalictrum flavum</i> L. | Cayirsedefi | Root | Laxative, diuretic |
| Rhamnaceae | <i>Paliurus spina-christi</i> Miller | Karacali, calidikeni, calitohumu, caltidikeni, cesmezen, isadikeni, karadiken, kunar, sincandikeni | Fruit | Antidiarrheal, diuretic, lithonriptic |
| Rhamnaceae | <i>Rhamnus frangula</i> L. | Cehri, barut agaci, erkek akdiken | Bark | Laxative, stomachic |

| | | | | |
|------------------|------------------------------------|--|-------------------------|--|
| Rhamnaceae | Zizyphus jujuba Miller | Hunnap | Aboveground parts | Antidiarrheal, stomachic |
| Rosaceae | Amygdalus communis L. | Badem | Oil | Laxative |
| Rosaceae | Cerasus avium (L.) Moench | Kiraz | Bark, leaf, flower, gum | Antidiarrheal, anti-inflammatory, laxative, antihelmintic, antitussive |
| Rosaceae | Crataegus monogyna Jacq. | Alic meyvasi | Fruit | Sedative, hypotensive, diuretic, antidiarrheal |
| Rosaceae | Cydonia oblonga Miller | Ayva | Seed | Antidiarrheal, gargle |
| Rosaceae | Geum urbanum L. | Sukaranfili, yalliceotu, zencefil | Root | Antidiarrheal, nervine, stomachic |
| Rosaceae | Mespilus germanica L. | Musmula | Fruit | Antidiarrheal |
| Rosaceae | Prunus domestica L. | Erik | Fruit | Laxative |
| Rosaceae | Prunus laurocerasus L. | Tafian, lazkirazi, lazuzumu, karayemis | Leaf | Sedative, antitussive, antidiarrheal |
| Rosaceae | Prunus spinosa L. | Cakal erigi | Leaf, flower, fruit | Antidiarrheal, diuretic, antihelmintic, laxative |
| Rosaceae | Rosa canina L. | Yabani gul, kusburnu, kopek gulu, gulburnu, gulelmasi, itburnu, sillan | Fruit | Antidiarrheal, nervine, antidiabetes |
| Rosaceae | Rubus idaeus L. | Bogurtlen | Leaf | Antidiarrheal, diuretic, nervine, antidiabetes |
| Rosaceae | Sarcopoterium spinosum (L.) Spach. | Aptesbozanotu | Bark | Antidiabetes |
| Rosaceae | Sorbus domestica L. | Uvez | Fruit | Antidiarrheal |
| Rubiaceae | Rubia tinctorum L. | Kokboya | Root | Urinary disorders, antibilious, laxative |
| Rutaceae | Ruta graveolens L. | Sedefotu | Whole plant | Sedative, diaphoretic, stomachic |
| Salicaceae | Salix alba L. | Sogut | Bark | Sedative, analgesic, nervine, anti-inflammatory, antidiarrheal |
| Scrophulariaceae | Digitalis purpurea L. | Yuksukotu | Leaf | Diuretic, cardiac |
| Solanaceae | Atropa belladonna L. | Guzelavratotu | Leaf | Analgesic, antispasmodic |
| Solanaceae | Hyoscyamus niger L. | Banotu | Leaf | Sedative, analgesic |
| Solanaceae | Mandragora autumnalis Bertol | Adamotu | Root | Analgesic, sedative, aphrodisiac |
| Solanaceae | Solanum nigrum L. | Kopekuzumu, ituzumu, tilkiuzumu | Fruit | Analgesic, antidermatosis, antihemorrhoidal |
| Taxaceae | Taxus baccata L. | Porsuk, kadin agaci, puren agaci | Leaf | Sedative, carminative |
| Thymelaceae | Daphne mezereum L. | Defne | Bark | Diuretic, laxative, diaphoretic |
| Umbelliferae | Anethum graveolens L. | Dereotu, durakotu, tereotu, turakotu | Fruit | Carminative, digestive |
| Umbelliferae | Angelica sylvestris L. | Melekotu | Root | Antidiarrheal, sedative |
| Umbelliferae | Ammi visagna (L.) Lam. | Disotu | Fruit | Diuretic, lithonriptic, carminative, antihelmintic |

(continued)

Table 7.1 Most Important Plants Used as Medicine in Turkey (Continued)

| Family | Botanical Name | Local Name | Plant Part Used | Treatment |
|----------------|---|---|-----------------|--|
| Umbelliferae | <i>Apium graveolens</i> L. | Kereviz | Seed | Carminative, diuretic, stimulant |
| Umbelliferae | <i>Conium maculatum</i> L. | Baldiran otu | Fruit | Analgasic, sedative, aphrodisiac |
| Umbelliferae | <i>Coriandrum sativum</i> L. | Kisnis, kara kimyon | Seed | Stomachic, carminative, digestive |
| Umbelliferae | <i>Daucus carota</i> L. subsp. <i>sativus</i> (Hoffm.) Atc. | Havuc, yergecen, kesur, porcuklu | Fruit | Carminative, emmenagogue, diuretic, antihelminthic |
| Umbelliferae | <i>Eryngium campestre</i> L. | Bogadikeni, deveelmasi, devecidikeni, devedikeni, gozdikeni, tengeldikeni | Whole plant | Antitussive, diuretic, stomachic, aphrodisiac |
| Umbelliferae | <i>Ferula elaeochytris</i> Korovin | Caksirotu | Root | Aphrodisiac |
| Umbelliferae | <i>Foeniculum vulgare</i> Miller | Rezene, arapsaci | Seed | Carminative, galactagogue, stomachic |
| Umbelliferae | <i>Petroselinum crispum</i> (Miller) A.W. Hill | Maydanoz | Seed | Diuretic, antibilious, emmenagogue |
| Umbelliferae | <i>Pimpinella anisum</i> L. | Anason meyvasi, enison, nanahan, raziyaner-umi | Fruit | Carminative, sedative, stomachic, galactagogue |
| Umbelliferae | <i>Prangos pabularia</i> Lindl. | Prangos | Fruit | Carminative, stimulant |
| Urticaceae | <i>Urtica dioica</i> L. | Isirgan, dizlegen | Leaf | Blood purifier, diuretic, stomachic |
| Valerianaceae | <i>Centranthus ruber</i> (L.) DC. | Kirmizi kantaron, kirmizi kediotu, kirmizi mahmuzcicegi | Root | Antispasmodic, sedative |
| Valerianaceae | <i>Valeriana officinalis</i> L. | Kediotu | Root | Antispasmodic, sedative |
| Verbenaceae | <i>Vitex agnus-castus</i> L. | Hayit, ayid, ayit, besparmakotu | Fruit | Diuretic, carminative, sedative |
| Violaceae | <i>Viola odorata</i> L. | Kokulu menekse | Whole plant | Diaphoretic, gargle |
| Violaceae | <i>Viola tricolor</i> L. | Menekse | Whole plant | Diuretic, blood purifier |
| Zygophyllaceae | <i>Peganum harmala</i> L. | Uzerlik | Seed | Antihelminthic, sedative, anesthetic, diaphoretic |
| Zygophyllaceae | <i>Tribulus terrestris</i> L. | Demirdikeni, carikdikeni, cobancokerten, devecokerten | Fruit | Lithontriptic, diuretic, nervine |

Table 7.2 Some Lamiaceae Genera Used Medicinally in Turkey

| Genera | Number of Species |
|---------------------|-------------------|
| <i>Salvia</i> | 10 |
| <i>Sideritis</i> | 11 |
| <i>Lamium</i> | 2 |
| <i>Wiedemannia</i> | 1 |
| <i>Rosmarinus</i> | 1 |
| <i>Stachys</i> | 3 |
| <i>Phlomis</i> | 3 |
| <i>Thymbra</i> | 1 |
| <i>Lavandula</i> | 2 |
| <i>Dorystoechas</i> | 1 |
| <i>Ocimum</i> | 2 |
| <i>Thymus</i> | 3 |
| <i>Origanum</i> | 7 |
| <i>Coridothymus</i> | 1 |
| <i>Teucrium</i> | 5 |
| <i>Ajuga</i> | 2 |
| <i>Mentha</i> | 5 |
| <i>Cyclotrichum</i> | 1 |
| <i>Nepeta</i> | 2 |
| <i>Micromeria</i> | 2 |
| <i>Ziziphora</i> | 1 |
| <i>Melisa</i> | 1 |
| <i>Ballota</i> | 2 |

Table 7.3 Medicinal Uses of Some Important Taxa from Mint Family

| Scientific Name | Pharmacological Effects |
|-------------------------------|--|
| <i>Coridothymus spicatus</i> | Hyperglycemia, hypertension, stomach ailments |
| <i>Lavandula stoechas</i> | Cold, diuretic, urinary diseases, pain killer, wound healer, antiseptic, rheumatismal pains, expectorant |
| <i>Melissa officinalis</i> | Sedative, gastric disorders, degasifier, sudorific, antiseptic |
| <i>Mentha species</i> | Nervous gastric pains and nausea, degasifier, antiseptic, spice |
| <i>Origanum majorana</i> | Abdominal pain, tranquilizer, gastric troubles, diuretic, degasifier, sudorific, constipation, spice |
| <i>Origanum onites</i> | Diabetes, abdominal pain, stomachache, cold, immunostimulant (children) |
| <i>Rosmarinus officinalis</i> | Constipation, stimulant of digestive system, antibilious, diuretic, wounds (external) |
| <i>Salvia fruticosa</i> | Removal of gas, increase vigor, stimulant, antiseptic (ear-throat) |
| <i>Sideritis brevidens</i> | Carminative, degasifier |
| <i>Teucrium pollium</i> | Eczema, hemorrhoids, diabetes |
| <i>Tymbra spicata</i> | Cold |
| <i>Thymus species</i> | Gastric disorders, sedative, antiseptic, worm removal, speeding blood circulation, antibilious, psoriasis (with honey), spice, tea |

AU: inserted "increase" in front of "vigor"

| Table 7.4 Disease Types and Genera of Lamiaceae Used for the Treatment | |
|--|---|
| Disease Type | Genera |
| Antiseptic | <i>Salvia, Mentha, Cyclotrichum, Micromeria, Nepeta, Ziziphora, Thymus, Origanum, Thymbra, Coridothymus, Lavandula, Melissa</i> |
| Constipation | <i>Lamium, Rosmarinus, Origanum, Ajuga</i> |
| Carminative | <i>Rosmarinus</i> |
| Stomachic | <i>Origanum, Dorystoechas, Mentha, Cyclotrichum, Ocimum, Micromeria, Nepeta, Teucrium, Ballota, Stachys, Thymus, Origanum, Melissa, Thymbra, Coridothymus</i> |
| Appetizing | <i>Sideritis, Phlomis, Thymbra, Stachys, Dorystoechas, Mentha, Cyclotrichum, Micromeria, Nepeta, Ziziphora, Teucrium</i> |
| Tranquilizer | <i>Sideritis, Phlomis, Thymbra, Stachys, Origanum, Ocimum, Mentha, Thymus, Origanum, Thymbra, Coridothymus, Lavandula, Melissa,</i> |
| Tonic | <i>Salvia, Lamium, Teucrium, Ajuga, Stachys, Lavandula</i> |
| Diabetes | <i>Salvia, Teucrium</i> |
| Psoriasis | <i>Thymus, Origanum, Thymbra, Coridothymus</i> |
| Stimulant | <i>Salvia, Sideritis, Phlomis, Thymbra, Stachys, Teucrium, Stachys, Rosmarinus, Thymus, Origanum, Thymbra, Coridothymus</i> |
| Wound healer | <i>Rosmarinus, Dorystoechas, Ajuga, Stachys, Lavandula, Salvia</i> |
| Diuretic | <i>Rosmarinus, Origanum, Ajuga, Ballota, Ocimum, Lavandula</i> |
| Urinary antiseptic | <i>Ocimum, Lavandula,</i> |
| Bilious | <i>Rosmarinus, Thymus, Origanum, Thymbra, Coridothymus, Lavandula, Mentha,</i> |
| Expectorant, balsamic | <i>Lavandula,</i> |
| Degasifier | <i>Salvia, Sideritis, Phlomis, Thymbra, Stachys, Origanum, Mentha, Cyclotrichum, Micromeria, Nepeta, Ziziphora, Ocimum, Melissa</i> |
| Sudorific | <i>Origanum, Ajuga, Melissa</i> |
| Menstruation | <i>Ajuga, Ballota</i> |
| Worm removal | <i>Ballota, Thymus, Origanum, Thymbra, Coridothymus, Mentha</i> |
| Asthma | <i>Stachys, Lavandula, Mentha</i> |
| Speeding blood circulation | <i>Thymus, Origanum, Thymbra, Coridothymus</i> |
| Aphrodisiac | <i>Salvia</i> |
| Rheumatism pains | <i>Lavandula, Mentha</i> |
| Hair tonic | <i>Kekik</i> (<i>Thymus, Origanum, Thymbra, Coridothymus</i>) |
| Itch | <i>Thymus, Origanum, Thymbra, Coridothymus, Nane</i> |
| Hair loss, dandruff | <i>Thymus, Origanum, Thymbra, Coridothymus, Lavandula, Ocimum</i> |
| Forgetfulness | <i>Rosmarinus</i> |
| Eczema | <i>Lavandula</i> |
| Headache | <i>Mentha</i> |
| Stinging of poisonous insects | <i>Ajuga</i> |
| Spice | <i>Ocimum, Thymus, Origanum, Thymbra, Coridothymus</i> |
| Tea | <i>Thymus, Origanum, Thymbra, Coridothymus, Mentha</i> |
| Perfume | <i>Mentha, Lavandula</i> |

summer and reproducing with the help of seeds as well as vegetatively. Tables 7.2–7.5 reveal that members of the mint family are widely used by locals as condiments as well as for the preparation of mint tea against flu, lung and stomach disorders, whooping cough, and as a diuretic. The plants flourish equally well in sunny and shady habitats; however, growth in moist habitats and alongside watercourses is more profuse, with dark-green, bigger leaves, short roots, longer shoots, and higher fruit production.

Table 7.5 Disease Types Where Lamiaceae Genera Are Mixed with Other Plants for Treatment

| Disease/condition Type | Genera Used and Numbers of Other Plants Mixed for Treatment |
|-------------------------|--|
| Mouth odor (M) | <i>Lavandula</i> + <i>Salvia</i> + other plants |
| Feet sweating (M) | <i>Salvia</i> + two other plants |
| Headache (M) | <i>Lavandula</i> + three other plants |
| Toothache (M) | <i>Mentha</i> + <i>Anthemis</i> |
| Degasifier (M) | <i>Mentha</i> + two, three, or five other plants |
| Indigestion (M) | <i>Salvia</i> + three other plants |
| Appetizer (M) | <i>Teucrium</i> + two other plants, <i>Mentha</i> + two other plants |
| Heart palpitation (M) | <i>Rosmarinus</i> + three other plants |
| Anemia (M) | <i>Salvia</i> + three other plants |
| Vomiting (children) (M) | <i>Mentha</i> + two other plants |
| Vigor (M) | <i>Mentha</i> + two other plants, <i>Salvia</i> + two other plants |
| Diarrhea (M) | <i>Mentha</i> + <i>Thymus</i> + three other plants |
| Cough (M) | <i>Salvia</i> + two other plants, <i>Thymus</i> + three other plants |
| Nerve sedative (M) | <i>Thymus</i> + <i>Rosmarinus</i> + <i>Lavandula</i> + <i>Mentha</i> + <i>Rosa</i> |
| Sedative (M) | <i>Lavandula</i> + <i>Ocimum</i> + four other plants |
| Insomnia (M) | <i>Mentha</i> + two other plants |

Note: M = mixture.

M. longifolia and *M. suaveolens* grow in open as well as shady habitats, but best growth is seen in moist places. In moist habitats they are completely dominant or are one of the dominant species in the community. Sometimes these are seen to grow in the form of pure stands in moist habitats. *M. longifolia* is distributed between 0 and 1450 m, mostly in wet habitats. *M. longifolia* and *M. suaveolens* are found alongside roads, along wet sea coasts, among the stones in running waters, and in abandoned fields, calcareous habitats, woods, ponds, and on steep slopes. They also grow in open and dry habitats. Altitude affects the number of individuals in *M. suaveolens* and *M. aquatica*. These are found between 0 and 1000 m. *M. aquatica* is not resistant to dry habitats (Figures 7.6–7.8) (Ozturk and Gork 1978, 1979a, 1979b, 1979c, 1979d).

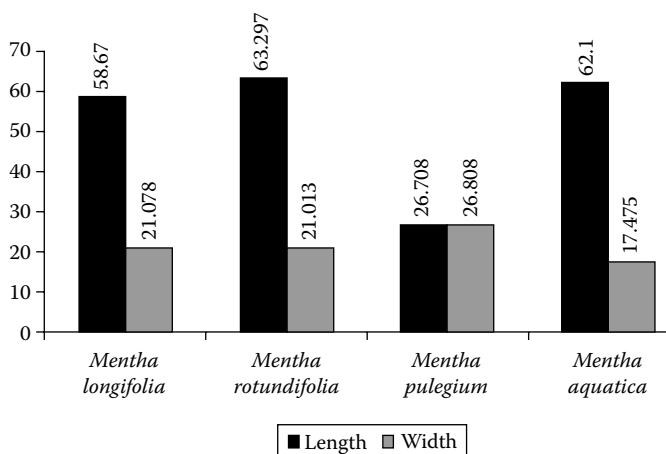


Figure 7.6 Length and width of wild mint plant species.

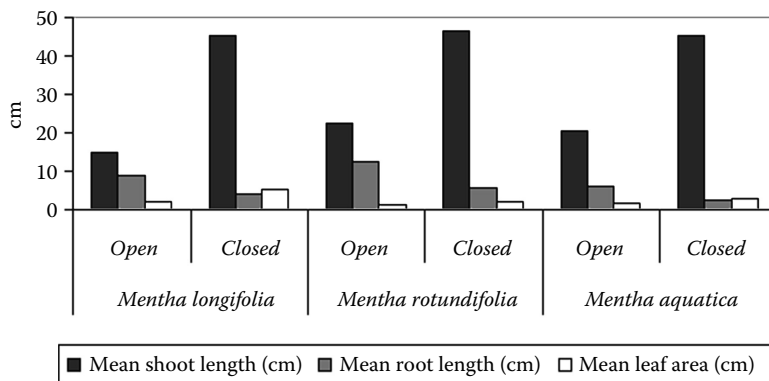


Figure 7.7 Measurements of root, shoot, and leaves of wild mint species in different habitats.

The soils are generally of sandy-loam texture, calcareous or noncalcareous in nature; pH varies between acidic to alkaline. Major constituents of the mint oil are menthone, isomenthone, pulegone, and menthofuran. *M. longifolia* plants are 40–120 cm long, with white or purplish white flowers; shoots contain 0.22% volatile oil, with 15–29% menthol content in dry matter, and terpinolene lies around 20 ppm. *M. suaveolens* plants are 40–100 cm tall, with white or lilac flowers and volatile oil content of 0.14%. *M. pulegium* is 10–40 cm tall, with lilac flowers; volatile oil content in shoots is 0.12% and 60% is pulegon. These plants contain 90 ppm terpinolene. Pulegone in the samples growing on open, dry, flooded habitats is higher.

M. aquatica plants are 20–90 cm tall, with lilac flowers; shoots contain 0.42% volatile oil and 5–37% menthol in the dry matter. Only a small amount of oleum menthae is produced on a household basis in Turkey; a major amount consumed by the pharmaceutical industry is imported. Out of 10 tons of *Mentha pulegium* exported by some Mediterranean countries, nearly 2 tons are from Turkey. Wild mints are widely used by locals as condiments as well as for the preparation of mint tea, which is used against flu, lung and stomach disorders, and whooping cough, and as diuretic.

Au: not clear how habitat can be dry & flooded: p

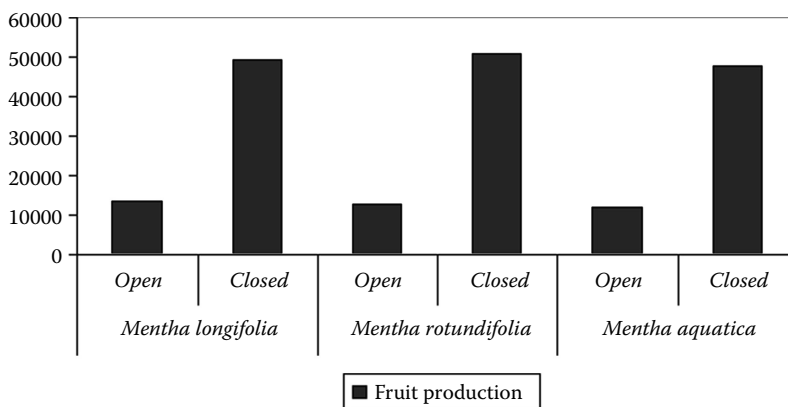


Figure 7.8 Fruit measurements of wild mint species in different habitats.

7.7 CONCLUSIONS

Nearly 80% of the world's population (approximately 5.3 billion humans) relies on plant-based medicines and billions of dollars are spent on phytochemicals. The world trade of herbal raw materials is around \$8 billion, which comes to over \$60 billion of global consumer sales value. The annual growth rate for botanicals is 10% in Europe and 20% in the United States. Approximately 0.5 million tons of medicinal plants are shown in the world trade. In 2001 global sales of herbal drugs were around \$62 billion and expectations for 2010 are US\$3 trillion.

Several modern medicines of plant origin are sold on the market in huge quantities. The most important ones are ajmaline (*Rauwolfia serpentina*), atropine (*Atropa belladona*), codeine and noscapine (*Papaver somniferum*), colchicine (*Colchicum autumnale*), digoxin (*Digitalis purpurea*), ephedrine (*Ephedra sinica*), and monocrotaline (*Crotalaria sessiliflora*)—used for the treatment of heart arrhythmia, traditionally for insanity, dilation of the pupil of the eye, analgesic-sedative, antitumor/gout, cardiogenic, chronic bronchitis, and antitumor/skin cancer, respectively (Choudhry 2000). At present herbal products with top annual sales in Europe are tebonin (\$200 million), ginsana (\$50 million), kwai (\$40 million), and efarmol/epogam (\$30 million). The highest importer of medicinal plants in Europe is Germany (64,000 herbal drugs; 38%) followed by France (17%), Italy (9%), UK (6%), and Spain (6%). Germany alone is earning \$230 million from *Ginkgo biloba*, \$30 million from *Hypericum* species, \$18 million from *Myrtus communis*, and \$18 million from *Urtica* species. In India and Pakistan 75% of the population depend on medicinal plants and in Africa around 80% do.

The extraordinarily varied flora of Turkey includes many plants with medicinal value. The general abuse of the environment is affecting these species in the same way as it does others in Turkey's flora. The harvesting and export of certain plants for medicinal purposes or the extraction of oil is damaging the flora and vegetation and is seriously threatening certain species (Demiriz and Baytop



Figure 7.9 *Gypsophila* ssp.



Figure 7.10 *Digitalis grandiflora*.

1985; Myers et al. 2000; Aguilar-Støen and Moe 2007). The widespread harvesting of as yet abundant species, such as *Laurus nobilis*, *Origanum heracleoticum*, and *O. onites*, for the export of their leaves and flowers suggests that soon they will eventually be threatened by extinction.

Some species of *Gypsophila* (Figure 7.9) (especially *G. paniculata* L. and *G. venusta* Fenzl.) are gathered for the export of their roots. Widespread harvesting of these species and deep ploughing by mechanical methods have greatly reduced their numbers in central Anatolia, so collectors are now concentrating on the plants found in eastern Anatolia. An alarming decrease in the numbers of *Gentiana lutea* is an example. It has been widely harvested for the medicinal value of its roots in the mountain localities of western Anatolia (Uludag, Bozdag, etc.), where it was abundant before 1940. Consequently, this species can now be found only in very isolated, precipitous localities—and, even then, infrequently. *Digitalis grandiflora* (Figure 7.10), widely distributed throughout eastern and central Europe, is represented in Turkey in Europe by one isolated colony, restricted to the locality of Kırklareli. This species was collected in large quantities for chemical and pharmacological research. Today, 10 years after that intensive harvesting, the population has been unable to recover its former strength and only a few individual specimens are to be encountered.

Some biennial species of *Papaver* are in a similar situation. The collection of practically whole populations of these species for chemical research is leading to their extinction. A report has been prepared about the most endangered plant species, which have been collected for traditional purposes. Out of 50 species mentioned in this endangered plant list, because of intensive exploitation, are *Acorus calamus* (rhizome), *Ankyropetalum gypsophilloides* (root), *Ballota cristata* (whole plant), *Barlia robertiana* (tuber), *Gentiana lutea* (root) (Figure 7.11), *Gypsophila arrostii* var. *nebulosa* (root), *Lycopodium annotinum* (whole plant), *Origanum minutiflorum* (whole plant), *Paeonia mascula* (tuber), and *Ruscus aculeatus* (root) are the first 10 most endangered medicinal plant species in Turkey.



Figure 7.11 (See color insert.) *Gentiana lutea*.

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