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# Fidelity Level and Knowledge of Medicinal Plants Used to Make Therapeutic Turkish Baths

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**ABSTRACT** The value and importance of indigenous knowledge are now being increasingly acknowledged all over the world. For this reason, the aims of this study is not only to identify the medicinal plants used for Therapeutic Turkish Baths by local people of various areas in Turkey, but also to draw attention to the traditional knowledge that is in danger of being lost. In this study, a total of 105 people from twenty-one provinces (N=5) were interviewed. Information was gathered through scientifically guided questionnaires, interviews and general conversations and fidelity level (FL) of species were determined. According to the results of the identification, 42 plants are being used to make Therapeutic Turkish Baths for medicinal purposes in Turkey. Among them 29 plants are wild and 13 plants are cultivated plants. Most used families were *Lamiaceae, Asteraceae, Fabaceae, Malvaceae* and *Poaceae*. The category that has the highest FL value is *Cucumis sativus* (100%) followed by *Rosmarinus officinalis* (93%). The lowest is *Thymus vulgaris* (32%). The data obtained from our informants and analyses in the present paper clearly show that folk knowledge on medicinal plants and plant uses is still alive in the studied region.

## INTRODUCTION

For centuries, medicinal plants have been used throughout the world for the treatment and prevention of various diseases, particularly in developing countries where infectious ailments are indigenous and modern health facilities and services are inadequate (Kisangau et al. 2009). Herbal medicine is still the mainstay of about 75 - 80% of the world population, mainly in the developing countries, for primary health care because of better cultural acceptability, better compatibility with the human body and lesser side effects besides being cheap and locally available (Kamboj 2000; Pal and Shukla 2003). Therefore, many conventional drugs originated from plant sources and so, a century ago, most of the few effective drugs were plant based. Examples include digoxin (from foxglove), quinine (from cinchona bark), and morphine (from the opium poppy) (Vickers and Zollman 1999; Pal and Shukla 2003).

Phytopreparations for external use such as salves, gels, creams, baths and liniments (liquid ointments) contain biologically active substances that are for the most part non-toxic, produce no irritation, and induce no allergic reactions (Ugulu and Baslar 2010). In addition, these preparations provide highly effective treatment of many strains of microbes and viruses, including those having acquired resistance to many antibiotics and synthetic drugs (Semkina 2005). The search for new forms of phytopreparations requires more detailed characterization of the components of such mixtures. The therapeutic and antiviral effects of many medicinal plant therapies are related to the presence of biologically active substances such as alkaloids, cardenolides, flavonoids, triterpene and steroidal saponins, anthraquinones, polysaccharides, coumarins, chromones, carotenoids, fatty and ethereal oils, organic acids, etc. (Sizova and Popova 2006).

In recent years, there has been a substantial increase in the popularity of plant-based medicine for a variety of illnesses and symptoms, as well as for preventive health practices and general self-care (Johnson and Blanchard 2006). According to the World Health Organization (WHO 1998), the use of medicinal phytopreparations all over the world exceeds that of the conventional drugs by two to three times (Pal and Shukla 2003). Some studies related to usage of herbal medicine showed that 42% of the North American population (Eisenberg et al. 1998), 48% of the population in Australia (WHO 1998), 39% of the population in Canada (Erci 2007), 31% of the population in Belgium, and

49% of the population in France (Fisher and Ward 1994) has used complementary and alternative medicine (CAM) at least once. In this connection, many studies about type of CAM used have been conducted in Turkey (Erci 2007). These studies indicated that herbal (40.6%) and diets (26.6%) therapies have been used most frequently (Tan et al. 2004; Isikhan et al. 2005). Another study found that patients were mostly using herbal products (72.5% and prayer (44.9%) in Turkey (Oguz and Pinar 2000).

Usage and prevalence of medicinal plants, traditional ethno-botanical knowledge about herbal remedies and CAM therapies have been investigated in different areas of Turkey (Dogan et al. 2005; Kultur 2007; Kargioglu et al. 2008; Ugurlu and Secmen 2008; Ugulu et al. 2009a; Ugulu et al. 2009b; Cakilcioglu and Turkoglu 2010; Ugulu and Baslar 2010; Dogan et al. 2011). Although there have been many investigations about medicinal plants used in Turkey, few of them are related to medicinal preparations for external use. In this perspective, this study attempted to look into traditional baths that are used by Turkish people for curing various ailments. Objectives of the study were: (1) to identify and document Therapeutic Turkish Baths, (2) medicinal plant species used to make Therapeutic Turkish Baths and usage by Turkish people and (3) to record traditional knowledge of the use of these baths.

## MATERIALS AND METHODS

### Study Area

Turkey is a country that has a wide variety of topographical and climatic conditions, which form the basis of seven different regions, namely, Marmara, Aegean, Mediterranean, Central Anatolian, Black Sea, Eastern Anatolian and South Eastern Anatolian. The study was carried out by interviewing resource persons in three provinces from every region of Turkey. The provinces chosen are shown in Table 1.

### Data Collection

The information includes various data such as bath names and therapeutic effects of baths, plants in baths and local names of plants, parts of plants used, methods of preparation. Interviews were done elderly people of the provinces and districts, experienced adults and patients in various places between the periods 2007–2008. Five inhabitants were selected from provinces based on one of the following criteria: that they have been living in the region for more than 10 years, used plants as the main medicine or identified as medicinal plant extractors or traditional healers. The information was checked with other areas, neighboring provinces and districts, to verify the accuracy. During the step of identifying plants, the preparers of baths from different cities of Turkey were asked questions about the baths they have prepared and which plants they have used. Information was gathered through scientifically guided questionnaires, interviews and general conversations.

After conducting interviews with preparers, it is shown in the table which plant is used in which bath (Table 2). The taxonomic determination of the plants was carried out according to Davis (1988) and Guner et al. (2001) and compared to the specimens kept in the Herbarium of Buca Educational Faculty, Dokuz Eylul University (DEBB). Voucher herbarium specimens were prepared and deposited in the DEBB Herbarium. The specific names of the identified plants are also shown in the table.

### Data Analysis

The fidelity level (FL), the percentage of informants claiming the use of a certain plant for the same major purpose, was calculated for the most frequently reported diseases or ailments as:

$$FL\ (\%) = (N_p / N) \times 100$$

where $N_p$ is the number of informants that claim a use of a plant species to treat a particu-

**Table 1: The selected provinces for study**

| *Regions of Turkey* | *Aegean* | *Black Sea* | *Central Anatolian* | *Eastern Anatolian* | *Marmara* | *Mediterranean* | *South Eastern Anatolian* |
|---|---|---|---|---|---|---|---|
| *Provinces* | Izmir<br>Denizli<br>Mugla | Trabzon<br>Zonguldak<br>Sinop | Ankara<br>Konya<br>Kayseri | Erzurum<br>Malatya<br>Agri | Istanbul<br>Bursa<br>Edirne | Antalya<br>Isparta<br>Adana | Gaziantep<br>Diyarbakir<br>Adiyaman |

**Table 2: Plants which are used to make Therapeutic Turkish Baths**

| *Baths* | *Plants in bath* | *Local names of the plants* | *Families of the plants* | *Plant part used* | *Other substances in bath* | *Preparation of bath* |
|---|---|---|---|---|---|---|
| *Bath for Backaches* | *Jasminum officinale* L. (1) (DEBB. 562) | Yasemin | Oleaceae | Flowers | Lavender oil (3)<br>Almond oil (4) | • 1 and 2 are boiled.<br>• The boiled mixture is strained. |
| | *Spinacia oleracea* L. (2) (DEBB. 468) | Ispanak | Chenopodiaceae | Leaves | | • 3 and 4 are added to filtrate.<br>• The mixture is diluted and applied as body or local bath. |
| *Bath for Backaches* | *Peganum harmala* L. (1) (DEBB. 534) | Uzerlik | Zygophyllaceae | Leaves | Carnation oil (4) | • 1, 2 and 3 are waited in hot water about 15 minutes. |
| | *Rosmarinus officinalis* L. (2) (DEBB. 526) | Biberiye | Lamiaceae | Flowers | | • The waited mixture is strained.<br>• 4 is added to filtrate. |
| | *Citrus x limon* (L.) Burm.f. (3) (DEBB. 523) | Limon | Rutaceae | Fruits | | • The mixture is diluted and applied as body or local bath. |
| *Bath for Dry Skin* | *Rosmarinus officinalis* L. (1) (DEBB. 526) | Biberiye | Lamiaceae | Flowers | Viola oil (4) | • 1, 2 and 3 are waited in hot water about 30 minutes. |
| | *Calendula officinalis* L. (2) (DEBB. 564) | Aynisafa | Asteraceae | Flowers | | • The waited mixture is strained.<br>• 4 is added to filtrate. |
| | *Punica granatum* L. (3) (DEBB. 525) | Nar | Punicaceae | Fruits (Juice) | | •The mixture is diluted and applied as body or local bath. |
| *Bath for Eczema* | *Platanus orientalis* L. (1) (DEBB. 567) | Çýnar | Platanaceae | Bark | Vinegar (4)<br>Pine oil (5) | • 1 or 2 is boiled.<br>• 3 is waited in hot water about 15 minutes. |
| | *Quercus coccifera* L. (2) (DEBB. 555) | Mese | Fagaceae | Bark | | • The boiled bark and waited thyme is strained.<br>• The filtrates are mixed. |
| | *Thymus vulgaris* L. (3) (DEBB. 565) | Kekik | Lamiaceae | Leaves | | • 4 and 5 are added to this mixture.<br>• The last mixture is diluted and applied as body or local bath. |
| *Bath for Hair Care* | *Salvadora persica* Wall. (1) (DEBB. 568) | Misvak | Salvadoraceae | Seeds | Vinegar (4) | • 1 and 2 are waited in hot water about 15 minutes. |
| | *Viola sp.* L. (2) (DEBB. 570) | Menekse | Violaceae | Leaves | | • 3 is boiled. |
| | *Camellia sinensis* (L.) Kuntze (3) (DEBB. 574) | Çay | Theaceae | Leaves | | • The waited mixture and boiled tea (3) is strained.<br>• The filtrates are mixed and 4 is added to this mixture.<br>• The last mixture is diluted and applied as head bath. |
| *Bath for Itch and Skin Diseases* | *Triticum durum* L. (1) (DEBB.575 ) | Durum Bugday | Poaceae | Seeds | Corn oil (4) | • 1, 2 and 3 are boiled.<br>• The boiled mixture is strained. |
| | *Secale cereale* L. (2) (DEBB. 578) | Çavdar | Poaceae | Seeds | | • 4 is added to filtrate.<br>• The mixture is diluted and applied as body or local bath. |
| | *Juniperus oxycedrus* L. (3) (DEBB. 579) | Ardiç | Cupressaceae | Leaves | | |
| *Bath for Muscle Aches* | *Linum usitatissimum* L. (1) (DEBB. 478) | Keten | Linaceae | Seeds | Lavender oil (3)<br>Mentha oil (4) | • 1 and 2 are boiled.<br>• The boiled mixture is strained. |
| | *Althaea officinalis* L. (2) (DEBB. 531) | Hatmi | Malvaceae | Fruits | | • According to preference, 3 or 4 is added to filtrate. |

**Table 2: Contd.....**

| *Baths* | *Plants in bath* | *Local names of the plants* | *Families of the plants* | *Plant part used* | *Other substances in bath* | *Preparation of bath* |
|---|---|---|---|---|---|---|
| | | | | | | • The mixture is diluted and applied as body or local bath. |
| *Bath for Muscle Aches* | *Rosmarinus officinalis* L. (1) (DEBB. 526) | Biberiye | Lamiaceae | Flowers | Hyacinth oil (6) | • 1, 2, 3, 4 and 5 are waited in hot water about 15 minutes. |
| | *Lavandula angustifolia* Miller (2) (DEBB.560) | Lavanta | Lamiaceae | Flowers | | • The waited mixture is strained.<br>• 6 is added to filtrate. |
| | *Origanum majorata* L. (3) (DEBB. 487) | Mercanközk | Lamiaceae | Roots | | • The mixture is diluted and applied as body or local bath. |
| | *Capsella bursa-pastoris* Medik. (4) (DEBB. 580) | Çoban çantasi | Brassicaceae | Leaves | | |
| | *Dianthus caryophyllus* L. (5) (DEBB. 506) | Karanfil | Caryophyllaceae | Flowers | | |
| *Bath for Pimples* | *Hypericum perforatum* L. (1) (DEBB. 582) | Kantaron Ihlamur | Clusiaceae | Flowers | Milk (5) | • 1, 2 and 3 are boiled.<br>• The boiled mixture is strained. |
| | *Tilia rubra* DC. (2) (DEBB. 584) | | Tiliaceae | Flowers | | • The filtrate is mixed with 4 and 5. |
| | *Mentha x piperita* L. (3) (DEBB. 571) | Nane | Lamiaceae | Leaves | | • The mixture is diluted and applied as body or local bath. |
| | *Cucumis sativus* L. (4) (DEBB. 471) | Salatalik | Cucurbitaceae | Fruits (Juice) | | |
| *Bath for Pimples* | *Malva sylvestris* L. (1) (DEBB. 585) | Ebegümeci | Malvaceae | Leaves | Eucalyptus oil (2)<br>Milk (3) | • 1 is boiled.<br>• The boiled mixture is strained.<br>• 2 and 3 is added to filtrate.<br>• The mixture is diluted and applied as body or local bath. |
| *Bath for Rheumatism* | *Juglans regia* L. (1) (DEBB. 583) | Ceviz | Juglandaceae | Leaves | Vinegar (4) | • 1, 2 and 3 are boiled.<br>• The boiled mixture is strained. |
| | *Glycyrrhiza glabra* L. (2) (DEBB. 514) | Meyan | Fabaceae | Roots | | • 4 is added to filtrate.<br>• The mixture is diluted and applied as body or local bath. |
| | *Iris pseudocorus* L. (3) (DEBB. 538) | Süsen | Iridaceae | Leaves | | |
| *Bath for Skin Wrinkles* | *Mentha x piperita* L. (1) (DEBB. 571) | Nane | Lamiaceae | Leaves | Milk (3) | • 1 is boiled.<br>• The boiled mixture is strained. |
| | *Cucumis sativus* L. (2) (DEBB. 471) | Salatalik | Cucurbitaceae | Fruits (Juice) | | • 2 and 3 is added to filtrate.<br>• The mixture is diluted and applied as body or local bath. |
| *Bath for Skin Wrinkles* | *Matricaria chamomilla* L. (1) (DEBB. 561) | Papatya | Asteraceae | Flowers | Rosemary oil (3)<br>Lavender oil (4) | • 1 and 2 are boiled.<br>• The boiled mixture is strained. |
| | *Melissa officinalis* L. (2) (DEBB. 577) | Melisa | Lamiaceae | Leaves | | • 3 and 4 are added to filtrate.<br>• The mixture is diluted and applied as body or local bath. |
| *Moisturizer Bath* | *Tulipa sp.* L. (1) (DEBB. 524) | Lale | Liliaceae | Bulbus | Milk (4) | • 1, 2 and 3 are crushed. |

**Table 2: Contd.....**

| *Baths* | *Plants in bath* | *Local names of the plants* | *Families of the plants* | *Plant part used* | *Other substances in bath* | *Preparation of bath* |
|---|---|---|---|---|---|---|
| | *Petroselinum crispum* (Miller) A. W. Hill (2) (DEBB. 543) | Maydanoz | Apiaceae | Seeds | Violet oil (5) | • The crushed material is boiled.<br>• The boiled mixture is strained. |
| | *Cucumis sativus* L. (3) (DEBB. 471) | Salatalik | Cucurbitaceae | Seeds | | • 4 and 5 are added to filtrate.<br>• The mixture is diluted and applied as body or local bath. |
| *Recreative Bath* | *Calendula officinalis* L. (1) (DEBB. 581) | Aynisafa | Asteraceae | Flowers | Lavender oil (3) | • 1 and 2 are boiled.<br>• The boiled mixture is strained. |
| | *Melissa officinalis* L. (2) (DEBB. 577) | Melisa | Lamiaceae | Leaves | | • 3 is added to filtrate.<br>• The mixture is diluted and applied as body bath. |
| *Recreative Bath* | *Pelargonium sp*. L'her (1) (DEBB. 573) | Sardunya | Geraniaceae | Leaves | Mentha oil (4) | • 1, 2 and 3 are waited in hot water about 15 minutes. |
| | *Lavandula angustifolia* Miller (2) (DEBB. 560) | Lavanta | Lamiaceae | Flowers | | • The waited mixture is strained.<br>• 4 is added to filtrate. |
| | *Abies nordmanniana* (Steven) Spach (3) (DEBB. 576) | Köknar | Pinaceae | Leaves | | • The mixture is diluted and applied as body bath. |
| *Recreative Bath* | *Salvia officinalis* L. (1) (DEBB. 572) | Adaçayi | Lamiaceae | Leaves | Milk (7)<br>Honey (8) | • 1, 2, 3, 4, 5 and 6 are waited in hot water about 15 minutes. |
| | *Laurus nobilis* L. (2) (DEBB. 566) | Defne | Lauraceae | Leaves | | • The waited mixture is strained.<br>• According to preference, 7 or 8 is added to filtrate. |
| | *Thymus vulgaris* L. (3) (DEBB. 565) | Kekik | Lamiaceae | Leaves | | • The mixture is diluted and applied as body bath. |
| | *Mentha x piperita* L. (4) (DEBB. 571) | Nane | Lamiaceae | Leaves | | |
| | *Lavandula angustifolia* Miller (5) (DEBB. 560) | Lavanta | Lamiaceae | Flowers | | |
| | *Rosmarinus officinalis* L. (6) (DEBB. 526) | Biberiye | Lamiaceae | Flowers | | |
| *Recreative Bath* | *Ocimum basilicum* L. (1) (DEBB. 569) | Feslegen | Lamiaceae | Seeds | Milk (4) | • 1, 2 and 3 are waited in hot water about two hour. |
| | *Laurus nobilis* L. (2) (DEBB. 566) | Defne | Lauraceae | Leaves | | • The waited mixture is strained.<br>• The filtrate is mixed with 4. |
| | *Medicago sativa* L. (3) (DEBB.563) | Yonca | Fabaceae | Leaves | | • The mixture is diluted and applied as body bath. |
| *Sedative Bath* | *Papaver rhoeas* L. (1) (DEBB. 493) | Gelincik | Papaveraceae | Flowers | Olive oil (3)<br>Vinegar (4) | • 1 and 2 are crushed. |
| | *Morus nigra* L. (2) (DEBB. 492) | Karadut | Moraceae | Fruits | | • The crushed materials are waited in hot water about two hour.<br>• The boiled materials are strained.<br>• 3 and 4 are added to filtrate.<br>• The mixture is diluted and applied as body bath. |

**Table 2: Contd.....**

| *Baths* | *Plants in bath* | *Local names of the plants* | *Families of the plants* | *Plant part used* | *Other substances in bath* | *Preparation of bath* |
|---|---|---|---|---|---|---|
| *Skin Emollient Bath* | *Matricaria chamomilla* L. (1) (DEBB. 561) | Papatya | Asteraceae | Flowers | Honey (4)<br>Lavender oil (5) | • 1, 2 and 3 are waited in hot water about 15 minutes.<br>• The waited mixture is strained.<br>• According to preference, 4, 5 or 6 is added to filtrate.<br>• The mixture is diluted and applied as body or local bath. |
| | *Althaea officinalis* L. (2) (DEBB. 531) | Hatmi | Malvaceae | Flowers | Milk (6) | |
| | *Rosa damescena* L. (3) (DEBB. 489) | Gül | Rosaceae | Flowers | | |

lar disease, and *N* is the number of informants that use the plants as a medicine to treat any given disease (Alexiades 1996) .

## RESULTS

One hundred five people were interviewed in this study and at the end of these interviews the plants which are used to make Therapeutic Turkish Baths are presented in Table 2 arranged in alphabetical order of the names of baths, with the relevant information. According to the results of the identification, 42 plants are being used to make Therapeutic Turkish Baths for medicinal purposes in Turkey (Table 2). Among them 29 plants are wild and 13 plants are cultivated plants.

Some species were recorded as being used for more than one purpose. Among the recorded species, *Rosmarinus officinalis, Lavandula angustifolia, Mentha x piperita* and *Cucumis sativus* are the most popular plants used to make traditional Turkish baths in the treatment of many ailments. The usage numbers of these species: *Rosmarinus officinalis* (4 different usages), *Lavandula angustifolia* (3 different usages), *Mentha x piperita* (3 different usages) and *Cucumis sativus* (3 different usages).

Further analysis on the families has shown that family *Lamiaceae* is represented by highest number of species (7 species). *Asteraceae, Fabaceae, Malvaceae* and *Poaceae* are represented by two species, respectively. The rest are represented by one species each (27 families). In a study carried out in Izmir, it was seen that plants belonging to the families of *Lamiaceae, Asteraceae, Fabaceae* (Ugulu et al. 2009), *Asteraceae, Liliaceae* in Alasehir (Ugulu 2011), *Asteraceae, Fabaceae, Lamiaceae* in Catalca (Genc and Ozhatay 2006), *Rosaceae, Asteraceae, Lamiaceae* in Merzifon (Ezer and Arisan 2006), *Asteraceae, Rosaceae, Lamiaceae* in Sivrice (Cakilcioglu and Turkoglu 2010) are used commonly by the people of the regions. The results of these studies showed that the plants belonging to *Asteraceae* and *Lamiaceae* families are the most used species in Turkey.

Local people used different part of the plant species to prepare herbal medicine. All parts of various plants are used in the traditional medication of different diseases, however, the most frequently used parts are leaves. These results are in agreement with Ugulu and Baslar (2010),

**Table 3: Most commonly used medicinal plants and their major uses with their fidelity level (0 = The Least, 100 = The Highest Efficiency)**

| *Species and family* | *Local name* | *Uses* | *Fidelity Level (FL)* |
|---|---|---|---|
| *Cucumis sativus* L. | Salatalik | Moisturizer, pimples | 100% |
| *Rosmarinus officinalis* L. | Biberiye | Muscle aches, moisturizer | 93.3% |
| *Rosa damescena* L. | Gül | Skin emollient | 87.6% |
| *Matricaria chamomilla* L. | Papatya | Skin emollient, skin wrinkles | 80.9% |
| *Lavandula angustifolia* Miller | Lavanta | Muscle aches, recreative | 74.2% |
| *Mentha x piperita* L. | Nane | Recreative, pimples | 63.8% |
| *Ocimum basilicum* L. | Feslegen | Recreative | 59.0% |

where leaves are found to be the most frequently used parts. The local people also used other ingredients, such as flour, honey, oil to prepare the remedies.

The category that has the highest FL value is *Cucumis sativus* (100%) followed by *Rosmarinus officinalis* (93%). The lowest is *Thymus vulgaris* (32%). The fidelity level calculated for medicinal plants showed (Table 3).

It is revealed that some of the plants are collected for commercial purposes by local people: *Camellia sinensis, Hypericum perforatum, Dianthus caryophyllus, Laurus nobilis, Rosmarinus officinalis, Malva sylvestris, Mentha x piperita, Morus nigra, Juglans regia, Spinacia oleraceae, Punica granatum, Rosa damescena, Petroselinum crispum, Salvia officinalis, Thymus vulgaris, Tilia rubra, Cucumis sativus, Citrus x limon.* These plants have great economic importance in Turkey and, *Laurus nobilis* and *Tilia rubra* are also exported abroad. *Hypericum perforatum* and *Malva sylvestris* are wild harvested and these plants are sold bazaars and markets.

## DISCUSSION

The data obtained from our informants and analyses in the present paper clearly show that although modern pharmaceuticals have taken the place of folk cures in many parts of the world, the use of herbs for the making of home remedies and folk knowledge on medicinal plants still remains of some importance in the studied region. In the present study, it was found that most people (72%) continue to use traditional systems of health care including medicinal plants alone or in combination with other ingredients, such as flour, honey, oil. This indicates that ethno-botanical studies constitute a valuable first step in the bio-prospection process, which may lead to the development of new plant-based medicines. However, phytopreparations such as salves, gels, creams, baths and liniments are complex mixtures. In addition to the pharmacologically active components, they contain other chemical compounds that can influence their activity (for example by modulating either their bioavailability or stability), as well as inactive or inert materials, and sometimes allergenic or toxic compounds (Canigueral 2002).

The baths reported by the informants usually contain a range of pharmacologically active compounds; in some cases, it is not known which ingredients are important for the therapeutic effect (Schulz et al. 2001). For example, bath for muscle aches in this study consists of five medicinal plants: *Rosmarinus officinalis, Lavandula angustifolia, Origanum majorata, Capsella bursa-pastoris* and *Dianthus caryophyllus.* One of these five medicinal plants may be the remedy for evil eye and the rest are for masking and keeping the knowledge secret. On the other hand, many herbalists believe that the poly-herbal treatment increases healing power than the use of a single medicinal plant although each medicinal plant is used as a remedy (Teklehaymanot et al. 2006).

Herbal products are used through developed and developing countries as home remedies, numerous drug products and raw materials for the pharmaceutical industry, and represent a substantial proportion of the global drug market (Pal and Shukla 2003). Increasing requirements on the quality of drugs, including those based on plant raw materials, lead to the need for developing methods of standardization of herbal products. The establishment of pharmaco-vigilance programmes for herbal products is the main tool to reach this objective, and the WHO has issued a guideline addressing this topic (WHO 2004). The pharmaco-vigilance of herbal products faces specific challenges, inc-

luding those related to the incorrect or missing description of ingredients in herbal preparations and to how herbal medicines are perceived, sourced and utilized (Barnes 2003).

The task related to developing methods of standardization of phytopreparations can be solved using the main classes of active substances contained both in ready-to-use medicinal forms and in the initial raw materials. These principal classes include polyphenols, tocopherols, flavonoids, ubiquinones, vitamins, and others (Dyachok et al. 2004). The rational combination of phytopreparations with appropriate supplementary substances and the use of optimum technological schemes in the production of medicinal forms for external use (salves, gels, creams, baths, and liniments) provide for a significant increase in the quality and therapeutic efficacy of phytopreparations intended for the treatment and prophylaxis of various disorders in dermatology, gynecology, dentistry, and cosmetology (Ugulu and Baslar 2010).

The category that has the highest FL value is *Cucumis sativus* (100%) followed by *Rosmarinus officinalis* (93%). The lowest is *Thymus vulgaris* (32%). Obviously, the remedies for frequently reported ailments have the highest FL value and those with low number of reports have lowest FL values. The remedies such as *Thymus vulgaris* (32%) have low FL value because the majority of the informants do not know the dosage and the methods of preparation of the remedies.

As a result, interest in herbal remedies and the studies about phytoremediation has gained momentum in recent years and largely effort is being made to prove the efficacy of plant extracts. In the studied region, the findings of this study clearly document that the use of plant based therapies is common and is more likely to be used by those with chronic diseases. It is hoped that the present study conducted in Turkey will provide new ideas for future work in this field.

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