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Ethnopharmacological survey of medicinal plants in Maden (Elazig-Turkey)

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ABSTRACT

Aim of the study: This study aimed to identify wild plants collected for medical purposes by the local people of Maden County, located in the Eastern Anatolia Region of Turkey, and to establish the uses and local names of these plants.
Materials and methods: Field study was carried out over a period of approximately 2 years (2008–2010). During this period, 131 vascular plant specimens were collected. Demographic characteristics of participants, local plant names, utilized parts and preparation methods of the plants were investigated and recorded. In the scope of the study, the plant species were collected; herbarium materials were prepared; and the specimens were entitled. The Zazas are of the major ethnic group in the region. In addition, the relative importance value of the species was determined and informant consensus factor (FIC) was calculated for the medicinal plants included in the study.
Results: A total of 88 medical plants belonging to 41 families were identified in the region. 4 plants out of 88 were recorded to be used for curative purposes for the first time. It was determined that the local names of four different kinds of plants used in Maden were same as the different kinds of plants used in different regions. The most encountered medicinal plant families were Urticaceae (>21%), Rosaceae and Lamiaceae (>17% of use-reports), Asteraceae (>13%), Fabaceae (>8%), Brassicaceae (>7%), Poaceae (>4%); the most common preparations were decoction and infusion. *Mentha spicata* L. subsp. *spicata, Rosa canina* L. and *Urtica dioica* L. was the plants most used by the local people. *Anthemis wiedemanniana* Fisch. and Mey., *Bunium paucifolium* DC. var. *brevipes* (Freyn & Sint.) Hedge & Lam., *Tchihatchewia isatidea* Boiss., *Thymus haussknechtii* Velen. were found to be the endemic plants used for medical purposes in Maden, Turkey. The medicinal uses of *Bunium paucifolium* DC. var. *brevipes* (Freyn & Sint.) Hedge & Lam., *Hippophae rhamnoides* L. subsp. *caucasica* Roussi, *Gladiolus atroviolaceus* Boiss., *Ixiolirion tataricum* (Pallas) Herbert subsp. *montanum* (Labill.) Takht. were recorded for the first time.
Conclusion: Herbal treatment has become a tradition for the residents of the study region. These plants, which are used in the treatment of many diseases. Comparison of the data obtained in this study from the plants growing in Maden with the experimental data obtained in the previous laboratory studies proved most of the ethnobotanical usages. Literature review showed that curative plants of Maden are used in different parts of the world in the treatment of the same or similar diseases. If a plant is used to treat the same disease in different places across the world then its pharmacologic effect could be accepted. It would be beneficial to conduct pharmacologic studies on such plants. These plants, used in the treatment of many different diseases, are in this region at abundant amounts. Drying enabled local people to use medicinal plants during all seasons of the year. This study identified not only the wild plants collected for medical purposes by local people of Maden County in the Eastern Anatolia Region, but also the uses and local names of these plants. It is tried to generate a source for persons studying in ethnobotany, pharmacology and chemistry sciences by comparing knowledge gained from traditionally used herbs with previous laboratory studies.

1. Introduction

Turkey has a very extraordinary rich flora and a great knowledge of folkloric medicines, and consequently represents a potential resource for such studies (Hudson et al., 2000). Turkey is one of the richest countries in the world in terms of plant diversity. To date

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approximately 10,500 plant species have been identified within her borders and 30% of these are endemic (Davis, 1965–1985; Güner et al., 2000). Endemism is one of the most important indicators to evaluate environmental value of an area. In Turkey, the rate of endemism in plant species is relatively high when compared with other European countries (Ugulu et al., 2008). Medical folklore researches about diseases in which herbal drugs are used colloquially in Turkey, their effects and names have been going on increasingly since Republican period (1923) (Baytop, 1999).

East Anatolia has a rich flora, due to its variable climate and high number of ecological zones. This diversity in flora provides a rich source of medicinal plants, which has long been utilized by Anatolian cultures, and hence accounts for the accumulation of remarkable medicinal folk knowledge in the region (Özgökçe and Özçelik, 2004).

Documentation of the indigenous knowledge through ethnobotanical studies is important for the conservation and utilization of biological resources (Muthu et al., 2006). Therefore, establishment of the local names and indigenous uses of plants has significant potential societal benefits (Bağcı, 2000).

Majority of the Turkish people living in rural areas traditionally use plants. Generally, they use plants for nourishment and medical purposes. As the case in the other countries of the world, in recent years, the plants – used traditionally for curative purposes – have attracted attention of the researchers (Ekici et al., 1998; Yeşilada et al., 1999; Tuzlacı and Tolon, 2000; Dogan et al., 2004; Şimşek et al., 2004; Uzun et al., 2004; Kargıoğlu et al., 2008; Kültür, 2008; Yıldırım et al., 2008; Koyuncu et al., 2009; Cansaran and Kaya, 2010; Çakılcıoğlu et al., 2010; Tuzlacı et al., 2010; Bulut, 2011; Güneş and Özhatay, 2011; Öztürk and Ölçücü, 2011).

This study identified not only the wild plants collected for medical purposes by local people of Maden County in the Eastern Anatolia Region, but also the uses and local names of these plants. Also, with a view that chemical researches about herbs used in traditional medicine are valuable in terms of treatment, we tried to create a source for researchers in ethnobotany, pharmacology and chemistry science by comparing the knowledge we gained with ethnobotany and previous laboratory studies in Turkey and world.

2. Materials and methods

2.1. Study area

Study area was located on the east of Anatolian diagonal, in the skirts of South-Eastern Taurus Mountains (Çakılcıoğlu et al., 2008), in the Upper Euphrates Region of the Eastern Anatolia Region (Şengün, 2007). Maden (Fig. 1) belongs to the Iran-Turan Plant Geography Region and falls within the B7 grid square according to the Grid classification system developed by Davis (1965–1985).

Maden County has always witnessed continuous interstate conflicts; it changed hands for a short time, as the Dicle Valley where it is located has always been one of the most important routes, and still constitutes a border between Mesopotamia and Anatolia. The district has therefore fallen under domination of many nations and hosted their civilizations and cultures (Yiğit, 1995).

According to the data obtained from the website of Maden County Administration (http://www.maden.bel.tr/, http://www.maden.gov.tr/), The history of Maden County dates back 2000 B.C. In 1450 B.C., the region was dominated by the Mitanni Kingdom AD followed in 30 B.C. to 180 AD by the Roman Empire and in 1077 AD by the Seljukians. In 1515, the region was annexed to the Ottoman Empire. Maden County was governed as a district governorship of Diyarbakır until 1889, as a lieutenant governorship between 1889 and 1924, and as a governorship between 1924 and 1927. After 1927 the county became the District Governorship of Elazığ. Copper deposits in Maden County were explored by Asurians in 2000 B.C. However, it was reported that mankind first explored copper in 7000–8000 B.C. between the Euphrates and the Dicle Valleys, namely in the field of our study (Tarring and Cordero, 1958).

Maden County is bounded to the east by Ergani and Dicle, to the west by Sivrice and Elazığ, to the south by Ergani, Çermik and Çüngüş and to the north by Palu and Alacakaya. It is situated between longitudes 39–40° east and latitudes 38–39° north. The county is 1054 m above sea level. The county is located on the slope of Mount Mihrap (1755 m). Mount Keyil (2052 m), Mount Suvar (2046 m), Mount Mihrap (1773 m), Mount Rute (1824 m) and Mount Runik (1807 m) are main highest mountains of the county. Behramaz and Gezin plains are located within the boundaries of the county. Today, the county serves as the center for 37 villages. As the county is situated between Elazığ and Diyarbakır, it has a rich culture, influenced by both cities.

The Zazas are of the major ethnic group in the region, with small minorities of Turkish and Kurdish groups in the county. The Zazas' native language is Zazaki, which belongs to the Iranian group of the Indo-European family of languages. The Zazas mostly live in the Eastern Anatolia Region of Turkey (Arakelova, 1999–2000). Turkey's population is 70.586.256 as of the date of 31th December 2007 (http://www.tuik.gov.tr/18.05.2008). As Turkish Republic recognizes only religious minorities about ethnicity of population, there exists a difficulty to access official and precise datum. People of Turkish origin are approximately 50 million and people of Kurdish and Zazaish origin are about 12 million 600 thousand (Demirtaş, 2008). Today, the precise population number of people of Zazaish origin is not known (Kuzu, 2010). Zazaish people are a community who honorably preserved their own identity and adopted being neither Turkish nor Kurdish. However a significant part of Zazaish people adopt Kurdish upper identity today (Önder, 1999).

A floristic study was initially conducted to determine the flora of our study area (Çakılcıoğlu and Civelek, 2011). In this study, 63 families, 284 types and 506 species and subspecies-level of taxons were identified. The number of endemic taxons was 45, with a ratio of 8.9% to the total flora.

Study permit was obtained from the Maden County Administration and Gendarmerie for the questionnaire administered to the citizens of the towns and villages affiliated to Maden.

2.2. Interviews with local people

A questionnaire was administered to the local people, through face-to-face interviews (Appendix A). Mean age of the respondents was 62 years (in 32–92 years range). Interviews were made on the busy hours of the common areas (bazaars, tea houses, farms, gardens etc.) visited by the citizens of Maden County and its villages. The respondents of the questionnaire are Turkish citizens. As we think that young people are not suitable for an ethnobotanical study, the questionnaire was only administered to people over 30 who know about medicinal plants. The people who had knowledge of plants were visited at least for two times; one of these visits is particularly paid to their houses. During the interviews, demographic characteristics of the study participants, and local names, utilized parts and preparation methods of the plants were recorded. The people who participated in the study were requested to indicate the wild plants they used. These plants were collected from the work book.

Residents that only spoke the native language were interviewed with the help of pharmaceutical technician Menan Artan and the statistical calculations were made by botanist Selima Khatun.