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## Original Research Article

# Ethnopharmacological survey of medicinal plants in Ulukışla (Niğde-Turkey)



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## ABSTRACT

This study aimed to identify wild plants collected for medicinal purposes by the local people of Ulukışla County, located in the Central Anatolia Region of Turkey and to establish the uses and local names of these plants.

A field study was carried out over a period of approximately 2 years (2002–2003). During this period, 59 vascular plant specimens were collected. Demographic characteristics of participants, local plant names, plant parts used and preparation methods of the plants were investigated and recorded. Within the scope of the study, the plant species were collected; herbarium materials were prepared; and the plant specimens were named. In addition, the relative importance value of the species was determined and was calculated for the medicinal plants included in the study.

A total of 59 medical plants belonging to 27 families were identified in the region. The most common families were Lamiaceae, Rosaceae, Asteraceae, Poaceae and Apiaceae.

This study identified not only the wild plants collected for medical purposes by local people of Ulukışla County in the Central Anatolia Region, but also the uses and local names of these plants. Comparison of the data obtained in this study from the plants growing in Ulukışla with the experimental data obtained in previous laboratory studies showed mostly the same ethnobotanical usages. The plant flora of Ulukışla is threatened by such factors as grazing, expansion of new agricultural lands, and unsustainable picking of plants to generate income. Steps should be taken immediately to ensure the inclusion of relevant flora within conservation designations.

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## 1. Introduction

Turkey has a rich flora due to its geographical location, geomorphologic structure and the influence of various climate

types. The number of species listed in the Flora of Turkey is 9996, including plants with foreign origins, along with cultivated plants. Based on Vol. 11 of the Flora of Turkey, the number of species and sub-species taxa in Turkey is 10,754, the number of endemic species is 3708, and the rate of endemism

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is 34.48% (Davis et al., 1988; Güner et al., 2000). An additional 719 taxa were added to this number with recently recorded and defined taxa collected in Turkey and published afterwards. Thus, the total number of taxa in Turkey and Eastern Aegean Islands flora has reached 11,473, whereas the number of endemic taxa rose to 4207 (Özhatay and Kültür, 2006; Özhatay et al., 2009, 2011).

There has been medical folklore research into herbal medicines, the diseases they are used to treat and their effects since the Republican period (1923) in Turkey (Baytop, 1999). Documentation of indigenous knowledge through ethnobotanical studies is important for the conservation and utilization of biological resources (Muthu et al., 2006). The majority of the Turkish people living in rural areas traditionally use plants. Generally, they use plants for nourishment and medical purposes (Cakilcioglu et al., 2011).

This study identified not only the wild and cultivated plants collected for medical purposes by the local people of Ulukışla County in the Central Anatolia Region, but also the uses and local names of these plants. No previous floristic and ethnobotanic studies are reported to have been conducted in Ulukışla.

## 2. Materials and methods

### 2.1. Study area

The study area was located in the Central Kizilirmak section of the West Anatolian diagonal of the Central Anatolia Region. Ulukışla (Fig. 1) is included in the Iran-Turan Plant Geography Region and falls within the C5 grid square according to the Grid classification system used in the Flora of Turkey (Davis, 1965–1985).

According to the data obtained from the website of Ulukışla County Administration (<http://www.ulukisla.bel.tr/>, <http://www.ulukisla.gov.tr/>), the county has a surface area of 1502 km<sup>2</sup> and an elevation of 1427 m. It is located in the centre of a valley that stands among the Bolkar Mountains,



**Fig. 1 – Geographical location of the study area, Ulukışla County in Turkey.**

Konya Plain, Aladağ and Hasandağ. Niğde province is located between latitudes 37°, 25'–38°58' North longitudes and 33°10'–35°25' East.

Ulukışla locality has always been lively and active due to its geographical location and strategic significance. The locality has hosted communities of different cultures throughout history. The first remarkable historical event in the region was its annexation by the Hittite Empire. Ulukışla has gold, silver, lead, lignite and rich gypsum deposits.

A floristic study was initially conducted to determine the flora of our study area (Martin and Aydoğdu, 2005). In this study, 60 families, 234 types and 430 species and subspecies-levels of taxons were identified. The number of endemic taxons was 66, with a ratio of 15.3% of the total flora.

### 2.2. Interviews with local people

Interviews were made during the busy hours of the common areas (bazaars, gardens, tea houses, etc.) visited by the citizens of Ulukışla County and its villages. The respondents of the questionnaire were Turkish citizens. The average age of the respondents was 51 years. A questionnaire was administered to the local people, through face-to-face interviews (Supplementary Appendix A). During the interviews, the 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.

### 2.3. Plant materials

The field study was carried out over a period of approximately 2 years (2002–2003). During this period, information about the medicinal use of 47 wild and 12 cultivated plants was collected. The plants were pressed in the field and prepared for identification. Plants were identified using the standard text, “Flora of Turkey and the East Aegean Islands” (Davis, 1965–1985; Davis et al., 1988) and were compared with the specimens in Niğde University Herbarium. The names of plant families were listed in alphabetic order. Scientific names of plant species were identified according to the International Plant Name Index (IPNI: <http://www.ipni.org>). We examined whether the plants used had literature records.

### 2.4. Calculations

The use value (Trotter and Logan, 1986), a quantitative method that demonstrates the relative importance of species known locally, was also calculated according to the following formula:  $UV = U/N$ , where  $UV$  refers to the use value of a species;  $U$  is the number of citations per species; and  $N$  is the number of informants.

The current recorded use of medicinal plants as conventional and modern remedies shows the high volume utilized. There may be some plants which are currently not used for medicinal purposes but which may actually have medicinal effects (Kaya, 2006). Knowing the use value of a similar plant may be useful in determining the use reliability and

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