

Ethnobotanical analysis of Karabakh

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The ethnobotanical characterization of Karabakh has been discussed in the paper. Based on surveys and literature data, 101 species of medicinal plants, 44 species of wild food - fruits and berries, 28 species of wild vegetables, 20 species of spices, 10 species of dyes and more than 300 forage plants were widely used by humans in the area. Although data on some areas (Shusha, Khankendi, Khojavend) were obtained from local temporary settlers and refugees' communities, Tartar and Barda districts were fully inspected, and plants were collected from some villages in Fizuli, Agdam and Agjabadi districts. Frequencies of use were determined. In the course of the study, the methods of using plants by modern and classical ethnobotanical methods were determined. Further research is expected to address the effects of the war.

Keywords: *Karabakh, flora, medicinal and food plants, ethnobotany*

INTRODUCTION

Plants meet basic human needs such as medicine, agriculture, food and fodder. Some important plants no longer play such an important role in the economic life of the population, as people displaced from their ancestral lands have already settled in big cities and both plants and their uses have been forgotten since the territory of Karabakh has been under occupation for 27 years. The present-day Karabakh belongs to the Karabakh economic region of the Lesser Caucasus botanical-geographical region of Azerbaijan formed with rich flora and colorful vegetation. Some of these territories have been completely occupied, some of them have been occupied and looted by the ongoing conflict. More than 35% of the total plants in the flora of Azerbaijan have spread in this area (Flora of Azerbaijan, 1952-1961). 70% of the species composition of the region is spread in modern Azerbaijan, which is a small part of the Caucasus as can be seen from the results of long-term and detailed botanical-systematic, geobotanical researches, as well as classical sources (Conspect of Flora of the Caucasus, 2003-2006).

The plants traditionally used in the territory of Karabakh were analyzed by V.A.Petrov (1940) about 80 years ago. Petrov's work is considered to be one of the most unique in terms of both theme and approach to the topic. The book contains extremely important materials not only for ethnographers but also for botanists. During the development of the collected materials, it became clear that there are many sources on the methods and forms of application of different species, based on the experience of the people on the use of different plant species. These only apply to herbs. At the same time, there is a very important group of plants (trees and shrubs) that do not play such an important role in the economic life of the population. However, plants are widely reflected not only in domestic use, but also in the ideology and culture of the people in the early stages of the history of the study. This issue was not touched upon in Karabakh after Petrov. The fact that 20% of Azerbaijani lands were occupied for many years did not allow research in the region, and although Armenians were considered to have occupied the territories, not only ethnobotany, but also a single sentence about vegetation.

Karabakh is formed by rich flora and colorful vegetation. These include dense forests, wild vegetables and medicinal plants found in mountain meadows. At present, 4961 higher plant species belonging to 159 families and 1117 genera are distributed in Azerbaijan (Asgarov, 2016), of which more than 1500 are medicinal (Mehdiyeva, 2011; Ibadullayeva et al., 2013; 2018), up to 800 fragrant and spicy (Ibadullayeva et al., 2007), up to 200 wild vegetables (Kasumov et al., 2009; Asadov et al., 1989), etc. are useful plants (Munir et al., 2018; Ibadullayeva et al., 2010, 2012, 2015).

In fact, the territory of Karabakh got its name due to the rich vegetation, numerous medicinal plants and large fields. In the ancient Azerbaijani language, the word "gara" means "big" and "bag" means a "green area or garden", ie "big garden". According to ancient Greek scholars, in the Middle Ages, Karabakh was part of the Albanian state. According to the manuscripts, in the first century AD, Caucasian Albania exported medicinal plants in glass boxes to Rome. Apparently, in the first century, Karabakh challenged the world with its botanist (Alakbarli, 2009). One of the most famous doctors of Azerbaijan in the 16th century was Yusif Garabaghi, who was called a "genius teacher". He was born in Karabakh, spent most of his life and work in Central Asia, and taught at a madrassa in Samarkand.

As can be seen, the use of medicines by local communities in Karabakh dates back to ancient times, the search for and discovery of new treatments, the identification of methods to combat diseases, and so on, have long been influenced by Sufi views. However, despite these obstacles, the search for new treatments in nature, as well as their more affordable forms and methods of application, continued. There are a number of promising reasons for ethnobotanical research, ie the study of the various relationships between plants and humans, the connection with human culture in the Karabakh region: the first is the richness of flora and plant diversity of landscapes. The territory of Azerbaijan is one of the "hot-spot biodiversity" regions of the world due to its biological diversity, and let's not forget that Karabakh is the ancient and eternal territory of Azerbaijan. The second aspect that emphasizes the importance of studying the cultural interactions of this region is the cultural richness, an-

tiquity and diversity of manifestations in the territories of Karabakh. Although a large part of the population of the area has settled in other regions for many years, a major return will be made to ensure that the ethnic use of Karabakh's medicinal plants is engraved in the repeated memories of local communities.

The most typical small areas of Karabakh are typical landscapes, corners with special beauty, endemic, relict and endangered species, perennial trees, examples of garden-park art, waterfalls, caves, rare lakes, groundwater wells, other places of interest in the territory of the Republic. manifested as natural monuments. The issue of collection (partial and limited collection) of rare and other protected species should be approached with extreme caution (Red Book of Azerbaijan, 2013). Plants can disappear in any region, and thus all knowledge about them can be destroyed, and sometimes this knowledge can disappear forever, for which information about plants must be constantly collected and communicated to people. The protection of plants remains an emotional and "occupying" issue, as there have been many wars in the occupied territories for many years in Karabakh, invasive plants continue to grow, and excessive collection of other essential plants has led to a decline in plant communities. Excessive use of plant resources, as well as over-harvesting and non-compliance with post-harvest regulations, and lack of control mechanisms have increased the pressure on biodiversity. Conducting ethnobotanical research in the regions is a way to develop new drugs for the treatment of diseases. Today, ethnobotany and ethnopharmacology are widely used to discover new compounds (Kahramanova et al., 2017; Oksana et al., 2021; Ibadullayeva, 2020).

Refresh the memory of local communities in the great return to the liberated areas and to re-instill in them the useful properties of plants is the main purpose of this study. On the other hand, the place has caught the local names of our lands, our people, our food, our music, and our neighbors, who have settled in our ancient lands, have even changed and adopted the names of our plants. The name given by the people to the object studied in each ethnographic work is of great importance. That is why, of course, we consider it expedient to name the plant not only by its Latin name but also by its local names.

MATERIALS AND METHODS

Information on the research area: Karabakh economic region consists of 9 administrative divisions as Khankendi, Khojavend, Agjabadi, Aghdam, Shusha, Fuzuli, Khojaly, Tartar and Barda, Garabagh and Zangazur mountain range. Approximately 1,000,000 of the district's total population is mainly of temporary settlers and refugees. Tartar district belongs to lowland Karabakh and is considered to be one of the oldest settlements. The region is located in the western part of the Kur-Araz lowland, in the Karabakh plain. The territory of the Tartar region is 957 km² and the population is about 104,200,000 people. Barda district is located in the North-Western part of the Kur-Araz lowland, with a total area of 957.00 km² and a population of 136,000. The area of Aghdam district is 1150 km², the population is 153000, the relief is mainly plain, partly mountainous. The territory of the Agjabadi district, one of the largest agricultural districts of the Republic of Azerbaijan at the time, is 1756 km² and has a population of 128,100 people. The relief of the Agjabadi district is a plain, gradually rising from the north-east to the South-West. Fuzuli covers the sloping plains and lowlands of the Karabakh mountain range from the South-Eastern foothills to the Araz River. It borders Iran along the Araz River.

The territory of the Fizuli district is 1386 km² and the population is about 144,000 people. We have not been able to register yet due to incomplete information on other areas (Khankendi, Shusha, Khojavend and Khojaly).

Selection of informants: A survey was conducted in March-April (2020) and June-July (2021) between Tartar and Barda districts to conduct ethnobotanical research. In order to obtain information about local plants, plants were registered and a questionnaire survey was conducted with communities to clarify their knowledge of plants and forms of use. Because clinics are inaccessible to the rural population around the world, they depend on the traditional use of local plants, including meeting the demand for food plants (vegetables) in the wild.

Data collection: Data-specific assessment was collected through direct interactions with local people and observations during visits (Guber, 2001; Martin, 2001; Suffering. ethnographer,

2007). Group meetings were held with people who had sufficient knowledge of local plants, and individual meetings were arranged with healers (lohman in azeri) in the villages to verify the information. During the study, 110 informants about 60 plants in the Tartar district were interviewed. A survey was conducted with 140 communities in the Barda district and information was collected on 34 plants and 20 plants obtained from other places in the area. No vegetation has been collected from other areas yet, and the area's flora will be fully inspected once the effects of the war are over.

Collection and identification of plants: Medicinal and wild food plants were collected from the research area and brought to the Department of Ethnobotany of the Institute of Botany of ANAS. Herbariums of these plants were prepared and identified. Herbarium specimens of plant species are kept in the herbarium after adaptation to the flora of Azerbaijan (Flora of Azerbaijan: in 8 vol., 1952-1961; Conspect of the flora of the Caucasus, 2003-2006).

Data analysis: Data collected from various fields (villages, districts, etc.) were analyzed using the SPSS 9.00 statistical program. Based on the responses collected from the informants, the use of plants, medicines and food products and applications prepared from them were considered. The data were calculated by the FC frequency of each plant species reported by local data providers. The relative importance of plant species was estimated by the following formula by calculating the cost of use, as described by Phillips and Gentry (1993). The value used for the species is $UV_i \frac{1}{4} XU_i = Ni$, where the number previously referenced for each specific species is represented by U_i and the total number of data interviewed by N_i .

RESULTS AND DISCUSSION

Materials collected from Karabakh do not actually cover the plants used by the population. So far, the methods of using wild food plants, as well as whether they are used as medicine have been determined.

Numerous studies show that in order to understand the relationship between the activities of human society and vegetation is necessary to analyze the region ethnobotanically at first. Therefore, one of the main conditions is to collect data on how and

why plants are used among people, both now and in the past. People living in the area in the form of ethnic groups have used only plants as both food and medicine since the Stone Age, and many of them are still used today.

Some of the ethnobotanical data on plants in Karabakh were collected orally on the basis of surveys conducted in temporary settlers and refugees. Other surveys were conducted among local communities in Tartar and Barda districts, and some were conducted in some villages in other districts. In particular, it should be noted that a significant part of the material collected on the basis of oral information is quickly forgotten. Therefore, publishing books and papers in the mother tongue are important. The beginning of the integration of science into the economy is connected with ethnobotany. It should also be noted that ethnobotany is a hybrid science, where it is necessary to draw conclusions from historical, political, archaeological, economic and scientific facts. Karabakh is one of the ancient Turkic and Albanian settlements, as well as Azerbaijani lands.

The study collected data from more than 200 local communities in more than 60 villages and found that different ethnic groups living in Karabakh used plants for the same purpose and in the same way. Oral surveys revealed that species belonging to different chapters were named with the same toponym according to their area of use. Based on the results of oral surveys, 101 species of medicinal plants, 44 species of wild food - fruits and berries, 28 species of wild vegetables, 20 species of spices, 10 species of dyes and more than 300 fodder plants were identified in the area. At present, we know very little about the current state of these species, including their distribution, phytochemical features, role and resources in the vegetation type. However, we hope that expeditions will be organized in the near future to study the flora and fauna.

In addition to wet plants, horse milk, sour milk and dried herbs are widely used in the area as a treatment.

In the frequent expressions of communities, wormwood is considered a medicine of local communities in increasing appetite, in infectious diseases of the internal organs of St. John's wort, in the treatment of violet and rose headaches. Research on common ethnobotanical methods and surveys

was carried out in the settlements of temporary settlers and refugees from most parts of the Karabakh region. Based on the experience of the people on the use of different plant species, field research has not yet been conducted in some areas. However, in a short period of time, a lot of material has been collected about the methods and forms of application of different species. At the same time, some very important plants have recently ceased to play such an important role in the economic life of the population, as refugees have already settled in large cities. As a result, it became clear that information about the importance of some forms of stagnant peasant activity in the economy and culture is still remembered. The most valuable data in the interviews was obtained mainly from the older generation. Although new forms of farming have emerged in recent years, the dominance of wild flora has rapidly collapsed for them, and information about some plants has almost been completely erased from memory. At present, to a certain extent, only folklore can give the impression of an eternal struggle between man and nature in the thinking of a society at a certain stage of development. The folklore information collected by ethnographers and archeologists in connection with material and cultural monuments really allows us to describe the history of Karabakh in a scientific way. Much of the past has probably been erased before it is written in the memory of the younger generation. For this reason, the best way to present the materials collected so far to the public after people return to their ancestral lands is considered.

Special rules for the collection of medicinal plants have been formed in folk medicine. The communities in the Karabakh region understand what they know about this: the medicinal plant must first be clearly identified. During the initial processing, after the raw material has dried, the non-compliant parts must be removed. Surface plant parts (leaves, flowers, grass, fruit) should be collected in the morning when it is dewy (between 8-10 am) and underground organs (roots, rhizomes) in the evening after 5 pm. Only need to collect well-developed healthy raw materials. Plants damaged by insects or microorganisms should be removed.

Vegetation of Karabakh is semi-deserts and semi-steppes in vertical zoning (up to 400 m above

sea level); steppe vegetation (400-800 m); mesophilic forests (1000-2000 m); high mountain vegetation (2000-2500 m); alpine-subalpine vegetation (2200-3000 m); rock vegetation (over 3,000) and wetland vegetation in river and lake deltas.

After obtaining information from other regions of Azerbaijan, it became clear that there are species that are unique to the area and their range is limited to Karabakh: *Sanguisorba officinalis* and *Salvia karabachenses*.

There are also some plants that are not found in the wild in the area, but are grown by people in the regions and used as medicine: *Tanacetum vulgare*, *Rosmarinus officinalis*, *Pimpinella anisum*, *Papaver somniferum*, *Mentha piperita*, *Matricaria matricarioides*, *Iris germanica*, *Kalanchoe pinnata*, *Ficus carica*, *Ephedra aurantica*, *Cucurbita maxima*, *Coriandrum sativum*, *Calendula officinalis*, *Bidens tripartita*, *Allium sativum* and *Aesculus hippocastanum*.

During the research, the frequency of plant use (FC) in the local flora was determined (Figure) and different ways of using the more mentioned plants were identified.

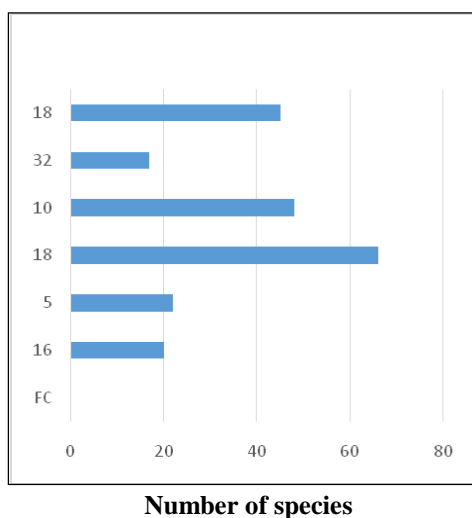


Fig. Some species for use

As you can see from the figure, 66 plants (*Bistorta major* S.F. Gray, *Chelidonium majus* L., *Convallaria majalis* L., *Bryonia alba* L., *Datisca cannabina* L., *Leonurus quinquelobatus* Gilib., *Nigella sativa* L. and etc.) by 18 times, 10 plants (*Cichorium intybus* L., *Crataegus transcaucasica* Pojark., *Matricaria matricarioides* (Less.) Porter, *Calendula officinalis* L., *Helichrysum plicatum*

DC., *Hippophae rhamnoides* L., *Mentha piperita* L. and etc.) 48 times have mentioned

In the territory of Karabakh by families: *Asteraceae* Dumort-17, *Rosaceae* Juss.- 8, *Lamiaceae* Lindl.-6, *Apiaceae* Lindl.-5, *Fabaceae* Lindl. and *Polygonaceae* Juss. -4, *Moraceae* L. and *Cucurbitaceae* Juss. -3, *Papaveraceae* Juss., *Violaceae* Batsch-2, *Viburnaceae* Barfin, *Valerianaceae* Batsch, *Monotropaceae* Nutt, *Anacardiaceae* Lindl., *Punicaceae* Horan, *Hippocastanaceae* DC., *Betulaceae* S.F.Gray, *Alliaceae* J.Agazdh., *Berberaceae* Juss., *Malvaceae* Juss., *Tilliaceae* Juss., *Brassicaceae* Burnett, *Sambucaceae* Batsch ex Borkh, *Rhamnaceae* Juss., *Fagaceae* Dumort, *Elaeagnaceae* Juss., *Peganaceae* (Engl.) Tiegh.ex Takht, *Primulaceae* Vent, *Plantaginaceae* Juss., *Salicaceae* Mirb., *Chenopodiaceae* Vent., *Cupressaceae* Rich., *Ranunculaceae* Juss., *Hypericaceae* Juss., *Cannabaceae* Juss., *Elaeagnaceae* Juss., *Urticaceae* Juss. each is used by 1 species as medicine or food.

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Qarabağın etnobotaniki təhlili

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Məqalədə Qarabağın etnobotaniki səciyyətləndirilməsindən bəhs edilir. Aparılan sorğular və ədəbiyyat məlumatlarından məlum olmuşdur ki, ərazidə 101 növ dərman bitkisi, 44 növ yabanı qida - meyvə və giləmeyvə, 28 növ yabanı tərəvəz, 20 növ ətirli-ədviiyyəli, 10 növ boyaq və 300-dən çox yem bitkisi insanlar tərəfindən geniş istifadə edilmiş. Bəzi ərazilər (Şuşa, Xankəndi, Xocavənd) barədə məlumatlar köçkün və qaçqın düşmüş yerli icmalardan alınsa da, Tərtər və Bərdə rayonları tam təftiş edilmiş, Fizuli, Ağdam və Ağcabədi rayonlarının bəzi kəndlərindən bitkilər toplanılmışdır. Toplanılan faydalı- dərman, qida və texniki bitkilər eyniləşdirilmiş və istifadə tezlikləri müəyyənləşdirilmişdir. Tədqiqat zamanı müasir və klassik etnobotaniki metodikalarla bitkilərin istifadə yolları təyin olunmuşdur. Tədqiqatların davamı üçün mühərribin törətdiyi fəsadların aradan qaldırılması gözlənilir.

Açar sözlər: Qarabağ, flora, dərman və qida bitkiləri, etnobotanika

Этноботанический анализ Карабаха

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В статье представлена этноботаническая характеристика Карабаха. Исследования и литературные данные показали, что в регионе широко используются 101 вид лекарственных растений, 44 вида дикорастущих растений - фруктов и ягод, 28 видов дикорастущих овощей, 20 видов пряно-ароматических растений, 10 видов красильных и более 300 видов кормовых растений. Хотя информация по некоторым районам (Шуша, Ханкенди, Ходжавенд) была получена от местных общин временных переселенцев и беженцев, Тертерский и Бардинский районы были исследованы полностью. Также были собраны растения в некоторых селах Физулинского, Агдамского и Агджабадинского районов. Собранные лекарственные, пищевые и технические растения были идентифицированы и определена частота их использования. В ходе исследования были определены способы использования растений современными и классическими методами этноботаники. Для проведения дальнейших исследований следует ожидать предотвращения последствий войны.

Ключевые слова: *Карабах, флора, лекарственные и пищевые растения, этноботаника*