



## Natural Medicinal Plants of Karakalpakstan Used in Folk Medicine

Abdiniyazova Gulnara Joldasbaevna <sup>a++</sup> and Baxieva Luiza Aminovna <sup>b#\*</sup>

<sup>a</sup> Department Agroecology and Introduction of Medicinal Plants, Faculty of Biology, Karakalpak State University Named after Berdakh, Nukus, Uzbekistan.

<sup>b</sup> Department of Biology, Karakalpak State University, Berdaha Nukus, Republic of Uzbekistan.

### Authors' contributions

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

### Article Information

#### Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/93545>

Original Research Article

Received 14 September 2022

Accepted 28 November 2022

Published 01 December 2022

## ABSTRACT

The article analyzes ethnobotanical data on the use of natural medicinal plants in Karakalpakstan. Currently, there are 63 families of medicinal plants, 444 species belonging to 240 genera, which grow in natural conditions in the region, which is 40% of the total flora. The use of herbs identified in the process of interviews with doctors in the form of a questionnaire on the use of these medicinal plants in folk medicine. During the study conducted in Karakalpakstan, a survey was conducted with doctors from Karakalpakstan in the form of a questionnaire [Appendix 1] in order to determine the level of use of medicinal plant species found in nature in the treatment of diseases in the region. However, it should be noted that it was not easy to get information from these doctors, as doctors have been passing on their medical secrets from generation to generation.

The results of ethnobotanical research revealed 50 types of plant species used for medicinal purposes by folk healers. Some of them have aroused interest and experiments are currently being conducted, the results of which will serve to strengthen the health of the population by introducing them into medical practice in the future.

In order to collect information about medicinal plants used in folk medicine on the territory of Karakalpakstan and their use in the treatment of various diseases, interviews were conducted with 16 representatives of the local population from different regions. During the conversations, the most widely used medicinal plants, their medicinal properties and methods of application in

<sup>++</sup> Senior Researcher, Ph.D of Biological Sciences;

<sup>#</sup> Candidate of Biological Sciences, Associate Professor;

\*Corresponding author: E-mail: bakhievaays@gmail.com;

medicine were studied. 50 species of medicinal plants, their medicinal properties and use in medicine were returned 60 times by the local population. They corresponded to Takhtakupyr (21), Chimbay (2), Kegeyli (4) and Ellikkala (13), Turtkul (20) districts.

**Keywords:** Natural medicinal plants; life forms; local names; ethnobotany.

## 1. INTRODUCTION

The Republic of Karakalpakstan is located in the northwestern part of Uzbekistan, with an area of 167.1 thousand square kilometers, or more than 37 percent of the entire territory of Uzbekistan. Karakalpakstan is delimited from the north and northeast of the country by Kazakhstan, from the east and southeast by the Bukhara region, from the south by Turkmenistan and the Khorezm regions.

The northern and southern coordinates of the Republic of Karakalpakstan are 40°55' and 45°35' in northern latitude, as well as in the western and eastern latitudes, the most extreme points occupy 56°-62.5 and 45°35' eastern lengths. Karakalpakstan includes Ustyurt, Kyzylkum and the lower reaches of the Amu Darya, as well as a complex of sandy-saline landscapes of Aralkum.

The flora and vegetation of the territory of Karakalpakstan has been studied by many scientists: Erezhepova (1978), Korovin et al. [1], Sherbaev [2,3] and others. The studies carried out by Sherbaev (1988) in recent years. It is of great importance, he noted the presence of 1110 species of higher plants for this territory, which belong to 467 genera and 97 families. A thorough analysis of this flora makes it possible to isolate medicinal plants from them.

Today, the need for drugs derived from natural plants is increasing. Currently, 60% of medicinal plants used in scientific medical practice are products isolated from plants. For example, almost 100% of cardiac preparations are made from plants (*Valeriana officinalis* L., *Leonurus panzerioides* M.Pop., *Digitalis purpurea* L.) [4]. As indicated in scientific sources, medicines made from natural plants have some advantages from drugs made artificially. Medicinal products made up of herbal products are harmless [5].

## 2. MATERIALS AND METHODS

In determining the Latin names of families, genera and species of medicinal plants distributed in the foothills of the Karakalpakstan: S.K. Cherepanov [6] also published the

International Plants Names Index (www.ipni.org) [7], www.plantarium.ru [8], and The Plant List (www.theplantlist.org) [9]. In determining: Plants determiner of Central Asia [10,11], data were used.

In order to collect information about medicinal plants used in folk medicine on the territory of Karakalpakstan and their use in the treatment of various diseases, interviews were conducted with 16 local residents from different regions. During the conversations, the most widely used medicinal plants, their medicinal properties and methods of application in medicine were studied. 50 species of medicinal plants, their medicinal properties and use in medicine were returned 60 times by the local population. They corresponded to Takhtakupyr (21), Chimbay (2), Kegeyli (4) and Ellikkala (13), Turtkul (20) districts [Table 1].

According to the available reviews, the use of medicinal plants in the treatment of diseases of the local population is associated with colds (15), diarrhea (9), digestive diseases (15), lowering blood pressure (8), hepatitis (6), pain relief (2), boosting immunity (5) times. Herbarium specimens of these plants were collected, their geographic coordinates were determined and photographed, reflecting the points of their growth in natural conditions.

## 3. RESULTS AND DISCUSSION

During the study conducted in Karakalpakstan, a survey was conducted with doctors from Karakalpakstan in the form of a questionnaire [Appendix 1] in order to determine the level of use of medicinal plant species found in nature in the treatment of diseases in the region. However, it should be noted that it was not easy to get information from these doctors, as doctors have been passing on their medical secrets from generation to generation.

Among plants with medicinal properties, locals call *Glycyrrhiza glabra* L. (boyan- Karakalpak), *Polygonum aviculare* L. (qizil tari- Karakalpak), *Capparis herbacea* Willd( qovul- Karakalpak), *Capsella bursa-pastoris* (L.) Medic. (shopan qalta- Karakalpak), *Cichorium intybus* L.

(shashiratqi- Karakalpak), *Cistanche salsa* (C.A. Mey.) G. Beck(cistanxe- Karakalpak), *Tribulus terrestris* L.(tribulus- Karakalpak), *Salsola richteri* (Moq.) Karel ex Litv.(sherkez- Karakalpak).

In the *Ferula foetida* (Bunge) Regel is a monocarpous plant with a height of 1.0-1.5 meters. (Kovrak-Uzbek, Sassi Gewrek- Karakalpak) (photo-3). It contains 9.35-65.15% of resins, 12-48% of glue and 5.8-20% of essential

oil, and from resins are extracted ferulic acid, asarezen, asarezenatanol, asarezenol and their esters with ferulic acid, as well as farnisiferol, umbelliferon compounds [5]. In sandy stony soils, in sandy soils, water is resistant. In particular, the city of Nukus in Karakalpakstan (around Achchik Lake, Sassik Lake) is distributed in the Lower Amudarya, Berdakh, Chilpik, Beruni, Sultan Uvays, Aralkum, Ustyurt plateau. Karakalpak herbalists recommend taking a pure resin of this plant and rubbing it under the tongue once a day.

**Table 1. Medicinal plants of Karakalpakstan used in traditional medicine**

No.	Family	Botanical name	Herbarium samples voucher (KK)
1	<i>Malvaceae</i> Juss.	<i>Althaea armeniaca</i> L.	specimen voucher A.Baxiev, 23.06.1977
2	<i>Fabaceae</i>	<i>Alhagi pseudalhagi</i> (M. Bieb.) Desv.	specimen voucher A.Baxiev, 29.06.1974
3		<i>Anabasis aphylla</i> L.	specimen voucher A.Baxiev, 25.06.1977
4	<i>Apocynaceae</i>	<i>Apocynum scabrum</i> Russan.	specimen voucher B.Saribayev 28.06.1988
5	<i>Asteraceae</i>	<i>Artemisia annua</i> L.	specimen voucher G.Abdiniyazova 26.06.2015.
6		<i>Artemisia vulgaris</i> L.	specimen voucher B.Saribayev 18.06.1989
7		<i>Bidens tribartita</i> L.	specimen voucher B.Saribayev 18.06.1979
8		<i>Centaureum spicatum</i> L.	specimen voucher B.Saribayev 19.06.1976
9		<i>Cichorium intybus</i> L.	specimen voucher G.Abdiniyazova 25.06.2015.
10		<i>Xanthium strumarium</i> L.	specimen voucher B.Saribayev 22.06.1989
11	<i>Asparagaceae</i>	<i>Asparagus officinalis</i> L.	specimen voucher G.Abdiniyazova 26.06.2015.
12	<i>Capparaceae</i>	<i>Capparis herbacea</i> Willd.	specimen voucher A.Baxiev, 20.06.1977
13	<i>Brassicaceae</i>	<i>Capsella bursa-pastoris</i> (L.) Medik.	specimen voucher B.Saribayev 18.06.1994
14		<i>Eruca sativa</i> Mill.	specimen voucher B.Saribayev 22.05.2015
15	<i>Chenopodiaceae</i>	<i>Chenopodium vulvaria</i> L.	specimen voucher specimen voucher G.Abdiniyazova 25.06.2014.
16		<i>Chenopodium album</i> L.	specimen voucher B.Saribayev 25.05.1994

No.	Family	Botanical name	Herbarium samples voucher (KK)
17		<i>Haloxylon ammodendron</i> (C.A. Mey.) Bunge	specimen voucher A.Baxiev, 25.06.1977
18		<i>Salsola richteri</i> (Moq.) Karel ex Litv.	specimen voucher A.Baxiev, 20.06.1977
19		<i>Salsola paletziana</i> Litv.	specimen voucher B.Saribayev 22.05.1994
20	<i>Orobanchaceae</i> Vent.	<i>Cistanche salsa</i> (C.A. Mey.) G.Beck	specimen voucher B.Saribayev 29.06.1989.
21	<i>Asclepiadaceae</i> R.Br.	<i>Cynanchum sibiricum</i> Willd.	specimen voucher G.Abdiniyazova 17.06.2012.
22	<i>Solanaceae</i> Juss.	<i>Datura stramonium</i> L.	specimen voucher G.Abdiniyazova 17.06.2012.
23	<i>Elaeagnaceae</i>	<i>Elaeagnus angustifolia</i> L.	specimen voucher G.Abdiniyazova 17.06.2012.
24	<i>Ephedraceae</i>	<i>Ephedra distachya</i> L.	specimen voucher G.Abdiniyazova 17.06.2012.
25	<i>Brassicaceae</i> Burnett	<i>Erysimum canescens</i> Roth	specimen voucher G.Abdiniyazova 17.06.2012.
26	<i>Apiaceae</i>	<i>Ferula foetida</i> (Bunge) Regel	specimen voucher G.Abdiniyazova 17.06.2012.
27	<i>Papaveraceae</i>	<i>Fumaria vaillantii</i> L.	specimen voucher G.Abdiniyazova 14.06.2010.
28	<i>Fabaceae</i>	<i>Glycyrrhiza glabra</i> L.	specimen voucher G.Abdiniyazova 18.08.2014.
29		<i>Medicago lupulina</i> L.	specimen voucher G.Abdiniyazova 17.06.2012.
30		<i>Melilotus officinalis</i> (L.) Pall.	specimen voucher G.Abdiniyazova 17.05.2012.
31		<i>Sphaerophysa salsula</i> (Pall.)DC.	specimen voucher G.Abdiniyazova 17.06.2014.
32	<i>Solanaceae</i> Juss.	<i>Hyoscyamus niger</i> L.	specimen voucher G.Abdiniyazova 18.06.2014.
33		<i>Lycopus europaeus</i> Murray	specimen voucher G.Abdiniyazova 24.05.2012. №109
34		<i>Solanum nigrum</i> L.	specimen voucher B.Saribayev 25.06.1978. №37
35	<i>Lamiaceae</i> Lindl.	<i>Mentha asiatica</i> Boriss.	specimen voucher A.Baxiev 15.06.1989
36	<i>Moraceae</i>	<i>Morus alba</i> L.	specimen voucher A.Baxiev 05.06.1991
37		<i>Morus nigra</i> L.	A.Baxiev 18.06.1993
38	<i>Nitrariaceae</i> Lindl.	<i>Peganum harmala</i> L.	specimen voucher G.Abdiniyazova 18.06.2014. №23
39	<i>Plantaginaceae</i> Juss.	<i>Plantago major</i> L.	specimen voucher G.Abdiniyazova 17.05.2012.
40		<i>Plantago lanceolata</i> L.	specimen voucher G.Abdiniyazova 17.06.2014.
41	<i>Portulacaceae</i> Juss.	<i>Portulaca oleracea</i> L.	specimen voucher G.Abdiniyazova 18.06.2014.
42	<i>Polygonaceae</i>	<i>Polygonum aviculare</i> L.	specimen voucher G.Abdiniyazova 24.05.2012. №135
43		<i>Polygonum amphibium</i> L.	specimen voucher B.Saribayev 25.06.1978. №39

No.	Family	Botanical name	Herbarium samples voucher (KK)
44		<i>Rheum tataricum</i> L.	specimen voucher A.Baxiev 15.06.1989
45	Ranunculaceae	<i>Ranunculus sceleratus</i> L.	specimen voucher A.Baxiev 05.06.1991
46	Rubiaceae Juss.	<i>Rubia tinctorum</i> L.	A.Baxiev 18.06.1993
47	Lamiaceae	<i>Mentha asiatica</i> Boriss.	specimen voucher G.Abdiniyazova 18.06.2014. №23
48	Zygophyllaceae R. Br.	<i>Tribulus terrestris</i> L.	specimen voucher G.Abdiniyazova 18.06.2015. №235
49	Urticaceae	<i>Urtica dioica</i> L.	specimen voucher G.Abdiniyazova 15.06.2014.
50	Verbenaceae	<i>Verbena officinalis</i> L.	specimen voucher G.Abdiniyazova 18.06.2014.

*Glycyrrhiza glabra* L.- perennial herbaceous plant of the legume family - *Fabaceae*, from 70 to 220 cm high. From the licorice root, the following targeted drugs were obtained: based on glycyrrhizic acid - glycyram (for the treatment of bronchial asthma, allergic dermatitis, eczema and other diseases), based on flavonoids - liquiriton and flacarbine (for the treatment of gastric ulcer and duodenal ulcer) from licorice root is used as an analgesic, anti-inflammatory, choleric and hepatoprotective, laxative, diuretic, anti-allergic and antispasmodic [4,5]. Licorice root in the form of a decoction, infusion, extract or powder is prescribed as an expectorant for lung diseases accompanied by cough; as an anti-inflammatory and antispasmodic agent - with hyperacid gastritis, peptic ulcer of the stomach and duodenum; in the composition of medicinal mixtures - as a diuretic and laxative [5].

*Polygonum aviculare* L.- annual plant. family of the Polygonaceae. The drug is prescribed in obstetric and gynecological practice as uterine bleeding, high blood pressure, gastritis, peptic ulcer of the stomach and duodenum, hemorrhoids, bronchitis, kidneys, liver and antiseptic.

#### 4. CONCLUSION

It is concluded that only 80 (18.2%) species of medicinal plants growing in natural and cultural conditions are currently used in the scientific medicine of the region. When identifying new species of medicinal plants, as well as in the preparation of medicines, it is necessary to pay sufficient attention to the phylogenetic proximity of species (genera and families).

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

#### REFERENCES

1. Korovin VM. Rayleigh-Taylor instability at the interface of conducting and nonconducting fluids in a variable magnetic field. *Akademiia Nauk SSSR Izvestiia Mekhanika Zhidkosti i Gaza*. 1983;19:31-7.
2. Sherbaev B. Composition of flora in the southern coast of the Aral Sea. *Bot J*. 1982;67:1372-7.
3. Sherbaev B. Flora and vegetative cover of Karakalpakiya. *Nukus. Karakalpakstan*. 1988;304.
4. Khozimatov KKh, Aprasidi GS, Khodzimatov OK. Wild-growing medicinal plants of Central Asia. Tashkent: Abu Ali Ibn Sino.1995;122.
5. Abdiniyazova GJ. Medicinal plants of Republic Karakalpakstan. Tashkent, Bayoz. 2017;168.
6. Czerepanov SK. Vascular plants of Russia and Adjacent states (the former USSR). *Sankt – Petersbur. Semya*. 1995; 95:812.
7. Available:www.ipni.org
8. Available:www.plantarium.ru
9. Available:http://www.theplantlist.org/
10. Plants determiner of Central Asia. Tashkent. Fan. 1968–1993;1–10.
11. Khojimatov OK, Abdiniyazova GJ, Valeriy V. Pak some wild growing plants in traditional foods of Uzbekistan // *Journal of Ethnic Foods*. 2015;2:25-28.

### APPENDIX-1

**Application form:**

«\_\_\_»\_\_\_\_\_ 20-- .

1. Full name\_\_\_\_\_
2. Age\_\_\_\_\_ Gender\_\_\_\_\_ Number of family members\_\_\_\_\_
3. Main job, home address \_\_\_\_\_
4. Assortment of species harvested from nature, volumes of procurements per year (season), prices (wholesale, retail), place of sale, unrealized balance.

**Table 1A.**

No.	Name of plants	Volumes	Price		Place of sale	Unrealized balance
			Wholesale	Retail		
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

5. Your wishes and suggestions for improving the legal framework for medicinal plants

\_\_\_\_\_

6. Ethnobotanical information.

\_\_\_\_\_

7. Notes.

\_\_\_\_\_

© 2022 Joldasbaevna and Aminovna; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:  
 The peer review history for this paper can be accessed here:  
<https://www.sdiarticle5.com/review-history/93545>