



MEDICINAL PLANTS OF KARAKALPAKSTAN

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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

The flora of Uzbekistan consists about 4 500 species of vascular plants due to it's biogeographically features, which make a center of medicinal plant diversity (sharply continental climate, availability sultry deserts and high mountains, abundance of endemic flora). About 600 species of medicinal plants has been used in traditional medicine, but according to last research we can confirm that in Uzbekistan are growing 1154 species, which are supposed to be medicinal.

Keywords: Karakalpakstan, medicinal plants, taxonomy, ethnobotany.

INTRODUCTION: The Republic of Karakalpakstan is the largest region of Republic of Uzbekistan, which is situated in the Northern part of Uzbekistan and occupied by about 37% or 167.1 thousand km² of the Uzbekistan's area.

In this region the amount of population is approximately 1,704,000 people. By natural complex Karakalpakstan is divided into 4 regions: Plateau Ustyrt of Karakalpakstan, Kizilkum part of Karapalkstan, Quyi Amudariya and newly appeared Aralqum (Sherbaev, 1988). According to literature, in Karakalpakstan grow around 1100 species of vascular plants (Sherbaev, 1988), about 343 species of them are supposed to be medicinal (Bakhiev et al., 1983; Dauletmuradov, 1991), but the total list of medicinal plants still are absent now.

The purpose of the present work was establishing the list of medicinal plants, which are widely used in official and folk medicine of Karakalpakstan and make comprehensive analysis of them in various aspects.

Taxonomical groups of vascular medicinal plants of Karakalpakstan

Table 1.

Section	Quantity			% of medicinal flora	% of total flora
	families	genera	species		
<i>Equisetophyta</i>	1	1	2	0.45	0.18
<i>Polypodiophyta</i>	1	1	1	0.22	0.09
<i>Pinophyta</i>	1	1	4	0.90	0.36
<i>Magnoliophyta:</i>	66	238	437	98.4	39.36
<i>Magnoliopsida</i>	52	202	381	85.8	34.32



<i>Liliopsida</i>	14	36	56	12.6	5.04
Total:	69	241	444	100	40

The leading 10 families of Karakalpakstan consist of 59.2 % from all flora of this region. Results of this analysis are given in Table 2. [1].

The leading families of medicinal plants

Table 2.

Nº	Family	Genera	Species	%
1	<i>Chenopodiaceae</i>	25	67	15.09
2	<i>Asteraceae</i>	26	47	10.58
3	<i>Fabaceae</i>	17	32	7.2
4	<i>Brassicaceae</i>	19	26	5.58
5	<i>Poaceae</i>	19	22	4.95
6	<i>Polygonaceae</i>	6	20	4.5
7	<i>Boraginaceae</i>	9	14	3.15
8	<i>Caryophyllaceae</i>	8	14	3.15
9	<i>Apiaceae</i>	7	11	2.48
10	<i>Ranunculaceae</i>	7	10	2.25
	Total	143 (59.3%)	263 (59.23%)	59.2

The largest number of medicinal species – 108, belonging to 15 genera that constitute 24.24% of the total quantity of medicinal flora of Karakalpakstan (Table 3).[1]

Leading genera of medicinal flora

Table 3.

Nº	Genus	Species	%
1	<i>Artemisia</i> L.	15	3.37
2	<i>Tamarix</i> L.	9	2.02
3	<i>Atriplex</i> L.	9	2.02
4	<i>Salsola</i> L.	9	2.02
5	<i>Calligonum</i> L.	8	1.8
6	<i>Astragalus</i> L.	8	1.8
7	<i>Anabasis</i> L.	7	1.57
8	<i>Chenopodium</i> L.	7	1.57
9	<i>Amaranthus</i> L.	6	1.35
10	<i>Acanthaphyllum</i> L.	5	1.12
11	<i>Cuscuta</i> L.	5	1.12
12	<i>Euphorbia</i> L.	5	1.12
13	<i>Haplophyllum</i> L.	5	1.12
14	<i>Ferula</i> L.	5	1.12
15	<i>Suaeda</i> L.	5	1.12
	Total	108 (24.26%)	24.24

According to obtained data, we can make conclusion that this situation expresses flora character not only for Uzbekistan, but for Central Asia as whole.

Ethnobotanical research has spread to almost all big towns of Karakalpakstan, such as Nukus, Kungrad, Takhtakupir, Khujaili and Muinaq. During this research we have visited markets (bazaar), met traditional practitioner (tawup) and they shared their unique knowledge about using medicinal plants to cure patients. As result of this investigation, we establish that tawup’s used only 50 species of medicinal plants, which belong to 45 genera and 30 families[1,2,3]. This entire

popular medicinal are used in Karakalpakstan for treatment of various diseases, as it is shown in Table 4. [4].

Studies have also been conducted on medicinal plants that are widely eaten by camels in the region[3].

During natural expeditions, the ranges of common salt-tolerant plants such as *Anabasis aphylla* L., *Xylosalsola richteri* (Moq.) Akhani & Roalson were studied[6,7].



Medicinal plants of Karakalpakstan used in traditional medicine

Table 4.

Family	Botanical name	Local name	Part used	Forms of preparation	Traditional uses
<i>Apiaceae</i>	<i>Ferula foetida</i> (Bunge) Regel	Sasiq gewrek	Gum	Fresh, extract	Rheumatism, bronchial asthma, lounge tuberculosis, diabetes, liver disease
<i>Asclepiadaceae</i>	<i>Cynanchum sibiricum</i> Willd.	Sutlimek	Seeds		Gall bladder diseases, dysentery
<i>Asparagaceae</i>	<i>Asparagus officinalis</i> L.	Dari sarisebil	Roots	extract	Kidney diseases, hepatitis
	<i>Asparagus persicus</i> Baker	Persiya sarise bil	Roots	extract	Urogenital diseases
<i>Asteraceae</i>	<i>Bidens tripartita</i> L.	Ushtarmaqli iyt oshagan	Leaves	bath	Dermal, liver diseases
	<i>Centaurea depressa</i> Bieb.	Tigizqabikli taskerire, botakoz	Flowers	decoction	Jaundice
	<i>Cichorium intybus</i> L.	Qadimgi shashirandi	Roots	decoction	Hepatitis, kidney and stomach problems, nervous system disorders, diabetes
	<i>Helichrysum arenarium</i> (L) Moench	Ulmas ut	Flowers	decoction	Gall bladder diseases, hepatitis cystitis
	<i>Onopordum acanthium</i> L.	Tikenekli onopordum	Aerial part	decoction	Antibacterial, heart diseases hemorrhoids
	<i>Xanthium strumarium</i> L.	Qadimgi oshagan	Fruits, leaves	extract	Antifungal, goiter, rheumatism
<i>Berberidaceae</i>	<i>Leontice ewersmannii</i> Bunge	Iversman torsildagi	Tubers	extract	Siphilisy, itching, neurology
<i>Boraginaceae</i>	<i>Heliotropium arguzioides</i> Kar. & Kir.	Semiz shop	Whole plant		Hepatitis and cirrhosis of liver
<i>Brassicaceae</i>	<i>Capsella bursa-pastoris</i> (L) Medik.	Qadimgi shopan qalta	Aerial part	decoction	To stop internal bleeding, kidney problems
	<i>Eruca sativa</i> Mill.	Undey	Leaves	extract	Dermal diseases
<i>Capparaceae</i>	<i>Capparis herbacea</i> Willd.	Tikenli gewil	Roots, fruits	extract decoction	Jaundice, rheumatism
<i>Chenopodiaceae</i>	<i>Anabasis aphylla</i> L.	Iyn siygek buyorguni	Shoots	extract	Lounge tuberculosis
	<i>Halostachys belangeriana</i> (Moq.) Botsch.	Qarabaraq	Leaves	decoction	Increase blood pressure
	<i>Haloxylon ammodendron</i> (C. A. Mey) Bunge ex Boiss.	Sekseyil	Whole plants	extract	Cardio-vascular diseases
	<i>Salsola richteri</i> (Moq) Kar. ex Litv.	Sherkez	Aerial plants	extract	Hypertonic, decrease blood pressure
<i>Convolvulaceae</i>	<i>Convolvulus arvensis</i> L.	Qoy pashegi	Leaves, roots	extract	Burn, ulcer, tuberculosis



<i>Elaeagnaceae</i>	<i>Elaeagnus orientalis</i> L.	Jiyde	Leaves, fruits	extract, fresh or dried fruits	High blood pressure
	<i>Elaeagnus oxycarpa</i> Schlecht.	Jigildik	Seeds	extract	High blood pressure
<i>Ephedraceae</i>	<i>Ephedra distachya</i> L.	Qosmasaqli qizilsha	Shoots	extract	Gastro-intestinal diseases, rheumatism, bronchial asthma, cough
<i>Fabaceae</i>	<i>Alhagi persarum</i> Boiss & Buhse	Parsi jantaq	Flowers	decoction	Astringent for dysentery, stomach disorder
	<i>Alhagi pseudalhagi</i> (Bieb.) Fisch.	Qadimgi jantaq	Aerial parts	decoction	Stomach disorder
	<i>Glycyrrhiza glabra</i> L.	Boyan	Roots	decoction	Gastritis, bronchial asthma, cough
	<i>Melilotus officinalis</i> (L.) Pall.	Dari qasqa jonishqa	Leaves	powder	To remove pus from the wounds
<i>Lamiaceae</i>	<i>Mentha asiatica</i> Boriss.	Aziya jalpizi	Aerial parts	decoction	Sedative, gastro-intestinal problems
<i>Malvaceae</i>	<i>Althaea armeniaca</i> Ten.	Sharbexiya	Roots	decoction	Expectorant, anti-inflammation, pains in the small of the back
<i>Moraceae</i>	<i>Morus alba</i> L.	Aq tut	Leaves, bark, fruits	decoction fresh	Kidney, hypertonia, bronchitis, anemia, diabetes
	<i>Morus nigra</i> L.	Qara tut	Leaves, bark, fruits	decoction fresh	Fruits juice against cough, laxative, anemia
<i>Papaveraceae</i>	<i>Papaver pavoninum</i> Srenk	Pavliniya koknari, jabayi koknar	Flowers	extract	Dermal diseases
	<i>Roemeria refracta</i> DC.	Iymek remeriya	Flowers	extract	Kidney
<i>Peganaceae</i>	<i>Peganum harmala</i> L.	Adiraspan	Aerial parts	Smoke, bath	Antibacterial, radiculitis
<i>Plantaginaceae</i>	<i>Plantago lanceolata</i> L.	Qalemush atqulaq	Leaves	extract	Liver diseases
	<i>Plantago major</i> L.	Ulken atqulaq	Leaves	Fresh leaves, extract	Applied for injury to bleeding stop, gastritis, colitis
<i>Polygonaceae</i>	<i>Rheum turkestanicum</i> Janisch	Tuye japiraq	Roots	extract	Stomach disorders
<i>Portulacaceae</i>	<i>Portulaca oleracea</i> L.	Semiz ot	Whole plants	fresh	Fresh juice to stop bleeding, hemoptysis, eye inflammation
<i>Ranunculaceae</i>	<i>Thalictrum isopyroides</i> C.A.Mey.	Dong maraloti	Roots	extract	Nervous system diseases
<i>Rhamnaceae</i>	<i>Zizyphus jujuba</i> Mill.	Jilan jiyde	Fruits	fresh, extract	Hypertonia, rheumatism, tuberculosis



<i>Rosaceae</i>	<i>Amygdalus spinosissima</i> Bunge	Bodomcha	Seeds	oil	Asthma, cough, intestinal problems
	<i>Crataegus pontica</i> C. Koch.	Dolana	Flowers	ethanol extract, fresh fruits	Heart diseases, against diarrhea
	<i>Rosa canina</i> L.	It murin	Fruits	decoction	Vitamin bearing, against diarrhea, diuretic
<i>Rubiaceae</i>	<i>Rubia tinctorum</i> L.	wayranboyaw	Rhizome	extract	Against kidney stone, anemia, liver diseases
<i>Salicaceae</i>	<i>Populus ariana</i> L.	Toran`gil	Leaves		Against parasitic, fever, skin burning
<i>Scrophulariaceae</i>	<i>Verbascum songaricum</i> Schrenk	Siyirquyriq	Leaves	decoction	Boiled leaves applied to swelling and wounds
<i>Solanaceae</i>	<i>Datura stramonium</i> L.	Bangiduana	Leaves, seeds	extract	Tooth pain, seeds oil for cure hemorrhoids
	<i>Hyoscyamus niger</i> L.	Qadimgi minduwana	Leaves	extract	Plaster from leaves applied to swelling, juice for ear pain
<i>Urticaceae</i>	<i>Urtica dioica</i> L.	Qishitqish shop	Leaves	extract	Kidney, vitamin bearing
<i>Zygophyllaceae</i>	<i>Zygophyllum oxianum</i> Boriss.	Palati	Leaves	fresh	Leaves applied to wounds



The table shows that the application method of folk medicine is extract, decoction, powder, having bathing and fresh form. Water extract and decoction are generally preferred. Both of them are made just before use. For some plants like Adiraspan (*Peganum harmala* L.) the aerial part is burned and the smoke is inhaled for treatment and prophylactics of infectious diseases, such as influenza [1,8,9].

Species growing in this territory are provided here: *Glycyrrhiza glabra* L., *Spaerophysa salsula* (Pall.) DC, *Anabasis aphylla* L., *Peganum harmala* L., *Salsola richteri* (Moq.) Kar. ex Litv., *Ferula foetida* L., *Artemisia annua* L., *Artemisia leucoides* Schrenk., *Artemisia santolina* Schrenk., *Capparis herbacea* Willd., *Alhagi pseudalhagi* (Bieb.) Fisch., *Datura stramonium* L., *Hyoscyamus niger* L., *Cichorium intybus* L. have great interest from pharmaceutical industry of Uzbekistan [1,2].

According to the last edition of Red data book of Uzbekistan (2009), there are 4 species of medicinal plants, such as *Colchicum kesselringii* Regel, *Malacocarpus crithmifolius* (Retz.) C.A. Mey., *Zizyphus jujuba* Mill. and *Vitis vinifera* L. [11].

CONCLUSIONS: To sum up, medicinal Flora of the Republic of Karakalpakstan is pretty various, since in this territory grows a large number of medicinal plants, which usually have a significant stock of raw materials, which is the rational use can serve for the production of pharmaceutical products based on vegetable raw materials.

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