

# Ecological Analysis of the Dynamics of the Area and Resources of Medicinal Plants in the Southern Aral

Shaniyazov Shakhimardan Olzhabaevich<sup>1</sup>, Mambetullaeva Svetlana Mirzamuratovna<sup>2</sup>

<sup>1</sup>Applicant, Karakalpak Research Institute of Natural Sciences, Republic of Uzbekistan, Nukus, Uzbekistan

<sup>2</sup>Doctor of Biological Sciences, Professor, Karakalpak Research Institute of Natural Sciences, Republic of Uzbekistan, Nukus, Uzbekistan

**Abstract:** *The article presents the results of a study on the study of the range of certain types of medicinal plants in the southern Aral Sea region. The distribution of medicinal plants in the natural complexes of the South Aral Sea region is very uneven, since there is a difference in the ecological conditions of the natural areas and the ecological types of the plants themselves.*

**Keywords:** Southern Aral Sea region, medicinal plants, price complexes, raw materials, blanks, mapping

## 1. Introduction

In recent years, interest in medicinal plants has especially increased in connection with new methods of their use for treatment and methods of studying their exposure characteristics [3, 4]. Of interest is also the change in distribution areas in the new environmental conditions. Currently, there is a need to examine the modern resources of medicinal plant materials and their range in the Aral Sea region. In the region of the South Aral Sea region, the range of the resource potential of medicinal plants has not yet been studied. The development and propagation of new plant species in severe climatic conditions and on sandy soil is especially difficult and one of the main problems in the Central Asian region and, in particular, in the Republic of Karakalpakstan.

## 2. Results and discussion

The Republic of Karakalpakstan is located in the northwestern part of Uzbekistan, covers an area of 165.5 thousand square kilometers, it borders on the Aral Sea in the north, Kazakhstan in the east and south, Uzbekistan in the southeast of Bukhara and Khorezm regions, and in the south with Turkmenistan. The climate in Karakalpakstan is sharply continental. It is characterized by a vegetative period of 170-200 days and refers to warm and very warm thermal zones. Thermal resources provide for the cultivation of grapes, rice, wheat corn and early ripening cotton varieties [9].

The main soils of Karakalpakstan are: gray-brown unsuitable for irrigated agriculture, with low fertility, meadow with a high degree of salinity [5]. The main feature of the soils of Karakalpakstan is the presence of a thin layer of fertile surface (0.15-0.35 m) and low humus content (0.5-0.8%), high carbonate content and gypsum content, a large amount of the presence of water-soluble salts [5]. According to the Ministry of Economy and Statistics of the Republic of Karakalpakstan, the total fund of irrigated lands is mainly saline soils, including: slightly saline -26.2%, medium-saline - 37.4%, highly saline -35.2%, very saline 1.2 %.

Flora of Karakalpakstan is represented by various ecological forms of plants: trees, shrubs and shrubs, shrubs and shrubs, perennial and annual grasses, prickly shrubs, plants with lush stems and leaves, stemless, leafless plants. Medicinal, fodder, fruit, tannin, dyeing, essential oil, technical, decorative, honey plants and other plants grow here [4]. A special place is taken by medicinal plants. They usually grow in already formed types of vegetation: steppes, meadow steppes, meadows, among shrubs, in tugai floodplain forests. Observing the vegetation, it is possible to create an idea of the ecological situation by its condition, composition and appearance. A special role is played by knowledge of the state of soil and vegetation cover. In the Aral Sea region, the vegetation cover is very diverse (Fig. 1).



Figure 1: Resources of medicinal plants in the Southern Aral Sea

The relief and the modern landscape structure of the Amu Darya delta was formed under the influence of various factors, the most important of which are geology, hydrological regime, climatic conditions and anthropogenic factors.

The decrease in the Aral Sea level, the drying up of the Amudarya delta, the decrease in river runoff and the area of tugai and reed thickets led to the development of deflation in places where waterlogging processes previously prevailed. The main relief-forming process that prevails throughout the Aral Sea and the dried part of the seabed is eolian processes [8, 9]. Medicinal plants are natural complexes of various active chemicals (alkaloids, glycosides, flavonoids, essential oils, etc.) that have a complex multifaceted effect on the body. The use of herbal medicines in modern medicine not only remains stable, but also tends to increase [2].

Currently, drugs obtained from plants occupy an important place in the prevention and treatment of many diseases of the cardiovascular, nervous systems, kidneys, liver, gastrointestinal tract, and neoplasms [7]. They account for more than a third of manufactured drugs, and there is a tendency to increase demand for phytochemicals and increase their production.

According to experts, about 360 species of medicinal plants are known in the Southern Aral Sea region. As a result of research, it was found that 160 species of medicinal plants grow in the floodplain and delta of the Amu Darya. The next natural region in the number of species of medicinal plants is the Ustyurt Plateau. 85 species of medicinal plants grow on the Ustyurt plateau [3]. It can also be noted that many medicinal plants are rare, but form large arrays, and some are ubiquitous, but their stocks of raw materials are very limited.

The resources of medicinal plants growing in the territory of the South Aral Sea region are determined in two directions: 1) determination of resources in specific thickets, 2) in key areas, followed by extrapolation of the obtained data to the entire area of similar lands within the region, region or area. In practice, the need constantly arises for a prompt and reliable assessment of the availability of raw materials for new medical products under development, starting from the first stage of environmental exploration. The determination of resources on specific thickets is usually carried out during the harvesting of raw materials, when establishing stocks of rare plants and plants that do not have a clear phytocenotic confinement. The second method for determining the resources of medicinal plants in key areas is used for species with a clear confinement to certain plant divisions. It is at key sites that two indicators are established: 1) the supply of raw materials per unit area, 2) the ratio of the area occupied by the community to which the plant is associated with the total area of the "key site". The stocks of raw materials are calculated at registration sites, on model plants and projective cover.

The most complete description of the medicinal plant resources is offered to us by specially developed maps for the raw resources of medicinal plants, compiled on the basis of universal geobotanical maps that show the location of

plant communities depending on the main factors of the geographical environment and the specifics of human economic activity. Resource maps compiled on the basis of vegetation maps are divided into two categories: maps of the distribution of medicinal plants and maps of available stocks. These two categories of maps have a certain independent value, while stock maps are necessarily based on distribution maps.

*Salsola richteri* is an endemic plant in the sandy deserts of Central Asia; Chenopodiaceae is a member of the creeper family. Large shrub up to 3-5 m high with white-gray bark and thin branches. Young shoots are not hanging, which is a hallmark of *Salsola richteri*. The leaves are alternate, fleshy reaching 4-8 cm in length and 2 mm in width. The flowers are bisexual, single, very small, located in the axils of the upper leaves, regular, with a simple five-membered brown perianth [4]. *Salsola richteri* is characterized by abundant fruiting. In Karakalpakstan, Richter hodgepodge is very widespread in the Karakalpak part of Kyzylkum, from the southern and northern regions of the republic. Basically, *Salsola richteri* grows on weakly sandy sands of the southern regions of the republic and on the tuberous sands of the northern regions. For medical purposes, the fruit of the hodgepodge is harvested after ripening, with an admixture of flowers and leaves. *Salsola richteri* is harvested from the end of September until the first decade of November. After severe frosts, the content of alkaloids in the feed decreases.

According to specialists from the association with *Salsola richteri*, typical psammophytic communities of Kyzylkum that do not differ in the richness of the species composition, which can be explained by the mobility of the upper horizons of the soil substrate [2]. In the course of our research, we identified about 19 main massifs of *Salsola richteri* thickets with different areas, of which 16 massifs are suitable for industrial harvesting.

Thus, our phytocenological assessment of the main types of medicinal plants in Karakalpakstan will serve as the basis for studying their resources and making recommendations on the rational use of their raw material stocks. The distribution of medicinal plants in the natural complexes of the South Aral Sea region is very uneven, since there is a difference in the environmental conditions of natural areas and the ecological types of plants themselves [8]. The ecological range of medicinal plants growth in the Southern Aral Sea region is very wide - from water-laden plants of lake ecosystems to typical desert plants. The new results obtained on the distribution of price complexes of some types of medicinal plants in the current new ecological conditions of the Aral Sea region will help to reuse different groups of medicinal plants.

## References

- [1] Бахиев А., Бутов К.Н., Даулетмуратов С. Лекарственные растения Каракалпакии.- Ташкент.: ФАН.- 1983.- с. 11-56.
- [2] Гаммерман А.Ф., Кадаев Г.Н., Яценко-Хмельевский А.А. Лекарственные растения (Растения-целители).- М.: Высшая школа.- 1990.- 542 с.

- [3] Даулетмуратов С.Д. Ресурсы лекарственных растений Каракалпакии и их охрана.- Нукус.- Каракалпакстан.- 1991.- 135 с.
- [4] Ережепов С. Флора Каракалпакии, ее хозяйственная характеристика, использование и охрана.- Ташкент.- ФАН.- 1978.- 294 с.
- [5] Жоллыбеков Б. Изменение почвенного покрова приморской дельты Амударьи при аридизации.- Нукус.- Билим.- 1991.- с. 23-67.
- [6] Кабулов С.К. Изменение экосистем Южного Приаралья в связи с понижением Аральского моря.// Проблемы освоения пустынь.- 1990.- №2.- с. 77-84.
- [7] Логвиненко И.Е., Логвиненко Л.А. Лекарственные растения, перспективные для введения в культуру на юге Украины. //Труды Никитского ботанического сада. 2011. Том 133.- с. 104-114.
- [8] Разаков Р.М., Косназаров К.А. Эоловый вынос и природоохранные мероприятия. – Ташкент, 1992.- с. 56-72.
- [9] Толкачева Г.А. Научно-методические основы мониторинга атмосферных выпадений в Среднеазиатском регионе. Ташкент, 2000.- с. 131