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SYSTEMATIC ANALYSIS OF *Artemisia* L. SPECIES AND CONTEMPORARY ASPECTS OF THEIR USE (BASED ON REGIONAL FLORISTIC STUDIES)

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СИСТЕМАТИЧЕСКИЙ АНАЛИЗ ВИДОВ *Artemisia* L. И НАПРАВЛЕНИЯ ИХ ИСПОЛЬЗОВАНИЯ (НА ОСНОВЕ РЕГИОНАЛЬНЫХ ФЛОРИСТИЧЕСКИХ ИССЛЕДОВАНИЙ)

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Abstract. The article presents an analysis of the systematic composition, ecological characteristics, and utilization directions of species belonging to the genus *Artemisia* L. distributed in the flora of the Nakhchivan Autonomous Republic, based on regional floristic studies. As a result of literature review and field investigations, it was determined that the genus *Artemisia* L., belonging to the family Asteraceae, is represented by 15 species in the territory of the Nakhchivan Autonomous Republic, and their systematic classification has been clarified. During the study, the use of wormwood species as medicinal, essential oil-bearing, forage, food, spice, dye, and resin-producing plants was evaluated, and their multifunctional and promising nature was demonstrated. The results confirm that species of the genus *Artemisia* have significant scientific, research, and practical-economic importance in the Nakhchivan Autonomous Republic.

Аннотация. Проанализирован систематический состав, экологические особенности и направления использования видов рода *Artemisia* L., распространённых во флоре Нахичеванской Автономной Республики, на основе региональных флористических исследований. По результатам обзора литературы и полевых исследований установлено, что род *Artemisia* L. семейства Asteraceae представлен на территории Нахичеванской АР 15 видами, уточнена их систематическая классификация. В ходе исследования оценивалось использование видов полыни как лекарственных, эфиромасличных, кормовых, пищевых, пряно-ароматических, красящих и смолистых растений, показано, что эти виды являются многофункциональными и перспективными. Результаты подтверждают, что виды рода *Artemisia* L. имеют важное значение как для научно-исследовательской работы, так и для практического хозяйственного применения в Нахичеванской АР.

Keywords: Artemisia, systematic analysis, medicinal plants, essential oil plants, useful plants.

Ключевые слова: *Artemisia*, систематический анализ, лекарственные растения, эфиромасличные растения, полезные растения.

The Nakhchivan Autonomous Republic, characterized by its unique relief structure, continental climate, and arid ecological conditions, possesses a vegetation cover of particular scientific interest. One of the plant families with a rich species composition in the flora of Nakhchivan is the family Asteraceae Bercht. et J. Presl. This family is considered one of the largest and most evolutionarily

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advanced among dicotyledonous plants in terms of species diversity. Representatives of the *Asteraceae* family include annual, biennial, and perennial herbs, as well as subshrubs. Members of the family are mainly distributed in open, sunny areas, dry and semi-desert landscapes, which indicates their high ecological plasticity. One of the largest and most polymorphic genera of the family Asteraceae is the genus *Artemisia* L. Among the xerophytic and semi-xerophytic plants distributed in the region, species of the genus *Artemisia* have a wide range of distribution and high adaptive capacity. Wormwood species play a key role as major components of phytocenoses in the desert, semi-desert, and foothill landscapes of Nakhchivan. These plants are important in preventing soil erosion, conserving biodiversity, and forming natural forage areas. At the same time, *Artemisia* species serve as ecological indicator plants and are valuable for studying the history of landscape formation. The floristic richness and natural isolation of the Nakhchivan territory allow for clearer observation of the morphological and ecological variability of the genus *Artemisia*. Therefore, the distribution and utilization aspects of the genus *Artemisia* in the flora of Nakhchivan have long been the focus of scientific research. Among useful plants, species belonging to the genus *Artemisia* L. are of particular importance. Based on numerous studies and literature sources, it has been established that species of this genus are used as medicinal, food and forage, essential oil-bearing, dye, resin-producing, and spice plants. These characteristics confirm the multifunctionality of *Artemisia* species and their high economic and scientific significance in the region, especially as medicinal, essential oil-bearing, and forage plants.

Material and research methods

In the course of the study, generally accepted floristic, geobotanical, bioecological, and related methods, as well as phenological observations, were applied. As the main research material, both literature sources and empirical data obtained during field investigations were used. The research objects included various territories of the region, while the research material comprised species belonging to the genus *Artemisia* L. In the study area, data on species of the genus *Artemisia* L. have been reported in a number of literature sources [3-7, 10-13].

Identification of species and clarification of their nomenclature were carried out using fundamental floristic works such as *Flora of Azerbaijan*, *Flora of the Caucasus*, and A. M. Asgarov's *Plant World of Azerbaijan*, among others [2, 8, 9].

Recent taxonomic updates were conducted based on the World Flora Online database (https://about.worldfloraonline.org/; https://powo.science.kew.org/; https://www.ipni.org/).

Discussion and conclusions of the study

In the flora of the Nakhchivan Autonomous Republic, species belonging to the genus *Artemisia* represent one of the economically important groups of plants and play a significant role. Based on the analysis of literature data and original field research materials, 15 species of the genus *Artemisia* L., belonging to the family *Asteraceae*, have been recorded in the territory of the Nakhchivan Autonomous Republic. The systematic analysis of the species belonging to this genus is presented below.

Fam: *Asteraceae* Bercht. & J.Presl, nom. cons. (= Compositae Giseke, nom. cons.

Genus: *Artemisia* L.

Sect.1. *Artemisia*

1(1) *Artemisia vulgaris* L.

1(2) *A. abrotanum* L.

1(3) *A. chamaemelifolia* Vill.

1(4) *A. armeniaca* Lam.

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1(5) *A. splendens* Willd.
1(6) *A. austriaca* Jacq.
1(7) *A. absinthium* L.
1(8) *A. incana* Druce.
1(9) *A. nachitshevanica* Rzazade.
1(10) *A. fragrans* Willd.
1(11) *A. lercheana* Weber ex Stechm.
1(12) *A. fasciculata* Hook. et Thomson ex Hook
Sect.2. *Dracunculus* Bess.
1(13) *A. scoparia* Waldst. & Kit
Sect.3. Seriphidium Bess.
1(14) *A. araxina* Takht.
1(15)**A. dracunculus* L.

Medicinal plants distributed in the flora of the Nakhchivan Autonomous Republic are studied in a comprehensive manner by botanists, pharmacognosists, phytochemists, pharmacologists, and clinical specialists, and a scientific basis is being established for their application in medical practice. Among these plants, species of the genus *Artemisia* L. belonging to the family *Asteraceae* occupy a special place due to their medicinal significance. An analysis of the distribution of representatives of this genus within the flora of the autonomous republic shows that medically valuable species have a relatively wide range of distribution [1].

Recent scientific studies indicate that researchers, particularly Chinese scientists, have shown great interest in the investigation of the genus *Artemisia* L. and have achieved important results in this field. Notably, the pharmaceutical preparation caplarizin, used in the treatment of cardiovascular diseases, was developed based on the coumarin derivative esculetin isolated from *Artemisia* species.

The investigation of the utilization potential of *Artemisia* L. species distributed in the flora of the autonomous republic in various directions – such as spice plants, medicinal plants in traditional medicine, applications in cosmetology and light industry, pharmaceuticals, as well as dye production – along with the assessment of their natural resources, has been identified as one of the main priorities of current research. Wormwood species are characterized by high biological activity, and they contain important chemical compounds such as terpenoids, flavonoids, alkaloids, and glycosides. For this reason, the antioxidant, antiparasitic, antimicrobial, and fungicidal properties of representatives of this genus have been comprehensively investigated. The significance of wormwood species as forage plants has been noted in a number of scientific sources. *Artemisia fragrans*, widely distributed across various regions of Azerbaijan, is used as a forage plant in these areas and in some cases plays an edificator (dominant) role in the formation of plant communities (Figure 1).

In the upper mountain belt surrounding Payız village of the Kangarli District of the Nakhchivan Autonomous Republic, plants belonging to the genus *Artemisia* predominate in terms of natural reserves. The essential oils obtained from the species distributed in these areas are distinguished by their pleasant and specific aromatic characteristics. The sustainable development of the national economy and agricultural sectors necessitates the rational and targeted use of natural resources, including useful plants. For this purpose, species belonging to the genus *Artemisia* were studied individually, and it was determined that representatives of the genus can be classified into different groups according to their utilization directions. Thus, species used for medicinal purposes include *A. absinthium* L., *A. scoparia*, and *A. austriaca*; essential oil-bearing plants include *A. fragrans*, *A. armeniaca*, and *A. chamaemelifolia*; species of technical importance include *A. fragrans* and *A. arenaria*; while those used as spices include *A. absinthium*, *A. scoparia*, and *A. dracunculus* L (Figure 2).

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Figure 1. *Artemisia fragrans*

Figure 2. *Artemisia chamaemelifolia*

Species belonging to the genus *Artemisia* are distinguished both by the abundance of their natural reserves and by the richness of their chemical composition. Nevertheless, a large proportion of these species has not yet been studied in sufficient detail. Numerous studies have revealed the presence of sesquiterpene lactones, coumarins, and essential oil components in individual species of the genus, while the quantitative variability of chemical constituents under the influence of ecological factors has also been comprehensively investigated. It is well known that during the second half of the 20th century, a significant proportion of medicinal products used in medical practice in our country were derived from plant-based preparations. During that period, several species of the genus

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Artemisia L. (*A. absinthium*, *A. annua*, *A. scoparia*, and *A. vulgaris*) were included in pharmacopoeial lists as official medicinal plants [14, 15].

Among the principal active components characteristic of *Artemisia* species, sesquiterpene lactones occupy a prominent place. In addition, these plants accumulate essential oils, phenolic compounds, tannins, flavonoids, coumarins, organic acids, vitamins, and other valuable substances. Some species of the genus *Artemisia*, particularly *Artemisia dracunculus* L., are widely used in the food industry. When added to dishes, this species imparts a pleasant aroma and simultaneously contributes to prolonged shelf life of food products. In general, wormwood plants are considered valuable due to the aromatic properties of their roots, stems, leaves, flowers, and fruits. In this regard, *A. dracunculus* L. is mainly used fresh as a flavoring agent in soups, whereas in dried form it has been identified by us as a medicinal plant possessing antihelmintic activity (Table).

Table

CLASSİFİCATİON OF USEFUL TYPES OF WORMWOOD FLORA OF NAKHCHİVAN

Species name	*Resin-producing*	*Essential oil- bearing*	*Dye-producing*	*Food*	*Medicinal*	*Forage*	*Spice*
Artemisia vulgaris		+		+	+	+	+
A. abrotanum	+	+	+	+	+		+
A. chamaemelifolia		+			+	+	
A. armeniaca		+			+	+	
A. splendens	+	+			+	+	
A. austriaca		+			+	+	
A. absinthium	+	+	+	+	+	+	+
A. incana		+			+	+	
A. nachitshevanica	+	+	+		+	+	
A. fragrans	+	+	+		+	+	
A. lercheana		+			+	+	
A. fasciculata	+		+		+	+	
A. scoparia	+	+			+	+	+
A. araxina		+			+	+	
A. dracunculus	+	+	+	+	+	+	+

The analysis of the presented table indicates that species of the genus *Artemisia* distributed in the flora of the Nakhchivan Autonomous Republic possess diverse directions of use in economic activities and traditional medicine. The majority of the species are characterized as essential oil-bearing and medicinal plants, which demonstrates that wormwood species are rich in biologically active compounds and play an important role from a medical and pharmacological perspective.

As shown in the table, the essential oil-bearing property is observed in almost all species (*A. vulgaris*, *A. abrotanum*, *A. absinthium*, *A. dracunculus*, etc.). At the same time, many species are used as medicinal plants, with this characteristic being particularly pronounced in *A. absinthium*, *A. vulgaris*, *A. dracunculus*, and *A. abrotanum*. These species are well known in traditional medicine for their effects on regulating the digestive system, as well as for their anti-inflammatory and antiseptic properties.

Resin-producing characteristics are mainly typical of certain species (*A. abrotanum*, *A. splendens*, *A. absinthium*, *A. nachitshevanica*, *A. fragrans*, *A. fasciculata*, *A. scoparia*, *A. dracunculus*), indicating the potential for their use for industrial and technical purposes. The number

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of species with dye-producing properties is relatively limited and is mainly observed in *A. abrotanum*, *A. absinthium*, *A. nachitshevanica*, *A. fragrans*, and *A. dracunculus*.

Based on the data presented in the table, some species are also used as food and spice plants. In particular, *A. dracunculus* (tarragon) and *A. vulgaris* occupy an important place among food and spice plants. In addition, *A. absinthium* and *A. dracunculus* stand out as multifunctional species used for food, spice, and medicinal purposes. Forage value is mainly characteristic of certain species, and this property has been recorded for *A. vulgaris*, *A. absinthium*, *A. nachitshevanica*, *A. fragrans*, *A. fasciculata*, *A. scoparia*, and *A. dracunculus*. This indicates the importance of wormwood species as supplementary forage resources for livestock under arid and semi-desert conditions.

Overall, the analysis demonstrates that species of the genus *Artemisia* can be considered universal and promising plants in terms of their utilization potential. Their essential oil-bearing, medicinal, forage, food, and spice values confirm that these species possess significant potential for both scientific research and practical economic use in the Nakhchivan Autonomous Republic.

To more clearly illustrate the economic and scientific importance of wormwood species, the utilization directions of *Artemisia* species were summarized and analyzed based on percentage indicators. The diagram compiled for this purpose reflects the distribution of *Artemisia* species occurring in the flora of the Nakhchivan Autonomous Republic according to their use as resin-producing, essential oil-bearing, dye, food, medicinal, forage, and spice plants (Figure 3).

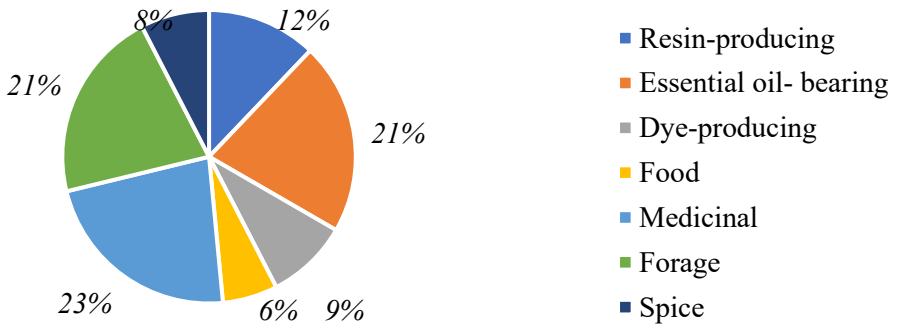

Figure 3. Percentage distribution of species of the genus *Artemisia* according to their utilization directions

Thus, the analysis of the diagram shows that species of the genus *Artemisia* are multifunctional and promising plants in terms of their utilization potential, with their most important applications being as medicinal and essential oil-bearing plants.

Conclusions

Based on a comprehensive literature review and long-term field studies, it has been determined that the flora of the Nakhchivan Autonomous Republic includes 15 species of the genus *Artemisia* L. belonging to the family *Asteraceae*. These species are classified into three sections (*Artemisia*, *Dracunculus*, and *Seriphidium*), which play a significant role in the systematic diversity of the regional flora. The analysis revealed that among the 15 *Artemisia* species distributed in the flora of the Nakhchivan Autonomous Republic, 21% are essential oil–bearing plants**,** 23% have medicinal value**,** 21% are used as fodder plants**,** 6% as food plants**,** 8% as spice plants**,** 12% as resin-producing plants**,** and 9% as dye plants**.** These results confirm that *Artemisia* species are multifunctional, biologically active, and economically promising plants, with particular importance as sources of medicinal raw materials and essential oils.

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References:

1. Alyaskarova, A. N. (2019). Vidy roda Artemisia L. flory Azerbaidzhana i ikh khemotaksonomiya. Baku. (in Azerbaijani).

2. Askerov, A. M. (2016). Flora Azerbaidzhana. Baku. (in Azerbaijani).

3. Babayeva, S. (2024). Special Protection of Nakhchivan Autonomous Republic Natural Areas. *Bulletin of Science and Practice, 10*(11), 81-88. https://doi.org/10.33619/2414-2948/108/10

4. Babayeva, S. (2024). Taxonomic Spectrum of the Species Belonging to the Potentilla L. Genus of the Rosaceae Family in the Nakhchivan Flora. *Bulletin of Science and Practice, 10*(8), 51-58. https://doi.org/10.33619/2414-2948/105/06

5. Babayeva, S. (2025). Study of the Subassociations Formed by Woody Species of the Rosaceae Family in the Forest-adjacent Shrublands of Zangezur National Park. *Bulletin of Science and Practice, 11*(9), 75-83. https://doi.org/10.33619/2414-2948/118/07

6. Babayeva, S., Guliyeva, N., Salmanova, R., Huseynov, H. & Novruzov, H. (2024). Bioecological Characteristics of Species of the Pimpinella L. Genus in Flora of the Nakhchivan Autonomous Republic. *Bulletin of Science and Practice, 10*(12), 48-54. https://doi.org/10.33619/2414-2948/109/06

7. Babayeva, S., & Jalalli, U. (2025). Floristic Analysis of the Species Belonging to the Salicaceae Mirb. Family in the Flora of the Nakhchivan Autonomous Republic. *Bulletin of Science and Practice, 11*(7), 51-59. https://doi.org/10.33619/2414-2948/116/05

8. Flora Azerbaidzhana (1954). Baku. (in Azerbaijani).

9. Flora Kavkaza (1952). Moscow, 7-140. (in Azerbaijani).

10. Ganbarov, D. (2024). Rosaceae in the Mountain-Xerophyte and Steppe Vegetation of Shahbuz District, Current Status of the Woody Species. *Bulletin of Science and Practice, 10*(11), 37-44. https://doi.org/10.33619/2414-2948/108/04

11. Ganbarov, D., & Aliyeva, S. (2014). Spreading of Astracantha and *Astragalus* species of wild vegetation in the Nakhchivan Autonomous Republic flora. *International Multidisciplinary eJournal,* 50-55.

12. Ganbarov, D., Aslanova, E., & Abbasov, N. (2023). New Location of the Species *Astragalus mollis* M. Bieb. (Fabaceae) in the Flora of Nakhchivan (Azerbaijan). *Bulletin of Science and Practice, 9*(11), 75-79. https://doi.org/10.33619/2414-2948/96/08

13. Ganbarov, D., Guliyeva, N., & Babayeva, S. (2024). Taxonomic Composition of the *Tragopogon* L. Genus in Nakhchivan and Prospects for Using Species. *Bulletin of Science and Practice, 10*(12), 71-78. https://doi.org/10.33619/2414-2948/109/09

14. Malikov, R. K. (1999). Floristicheskii sostav polynnykh soobshchestv Dzheiranchelya // Ispol'zovanie i okhrana rastitel'nosti flory Azerbaidzhana. Baku. (in Azerbaijani).

15. Mustafaeva, S. D. (2013). K izucheniyu semeistva Asteraceae Bercht. & J.Presl. *Izvestiya NANA. Seriya biologicheskikh nauk, 68*(1), 17–23. (in Azerbaijani).

Список литературы:

1. Alyaskarova A. N. Azərbaycan florasının Artemisia L. cinsinin növləri və onların kemotaksonomiyası. Bakı: Elm, 2019. 246 s.

2. Əsgərov A. M. Azərbaycan florası. Bakı: Vyaz, 2016.

3. Babayeva S. Special Protection of Nakhchivan Autonomous Republic Natural Areas // Бюллетень науки и практики. 2024. Т. 10. №11. С. 81-88. https://doi.org/10.33619/2414-2948/108/10

4. Babayeva S. Taxonomic Spectrum of the Species Belonging to the Potentilla L. Genus of the Rosaceae Family in the Nakhchivan Flora // Бюллетень науки и практики. 2024. Т. 10. №8. С. 51--58. https://doi.org/10.33619/2414-2948/105/06

5. Бабаева С. Изучение субассоциаций, сформированных древесными видами семейства Rosaceae в окололесной кустарниковой зоне Зангезурского национального парка// Бюллетень науки и практики. Т. 11. №9. s.75-83. https://doi.org/10.33619/2414-2948/118/07

6. Бабаева С., Гулиева Н., Салманова Р., Гусейнов Х., Новрузов Г. Биоэкологическая характеристика видов рода Pimpinella L. флоры Нахичеванской Автономной Республики // Бюллетень науки и практики. 2024. Т. 10. №12. С. 48-54. https://doi.org/10.33619/2414-2948/109/06

7. Babayeva S., Jalalli U. Floristic Analysis of the Species Belonging to the Salicaceae Mirb. Family in the Flora of the Nakhchivan Autonomous Republic // Бюллетень науки и практики. 2025. Т. 11. №7. С. 51-59. https://doi.org/10.33619/2414-2948/116/05

8. Флора Азербайджана: [в 8 т.]. Баку: Изд-во АН Азерб. ССР, Т. 5. 1954. 368 с.

9. Флора Кавказа: [в 5 т.] М., 1952. С. 7-140.

10. Ganbarov D. Rosaceae in the Mountain-Xerophyte and Steppe Vegetation of Shahbuz District, Current Status of the Woody Species // Бюллетень науки и практики. 2024. Т. 10. №11. С. 37-44. https://doi.org/10.33619/2414-2948/108/04

11. Ganbarov D., Aliyeva S. Spreading of Astracantha and *Astragalus* species of wild vegetation in the Nakhchivan Autonomous Republic flora // International Multidisciplinary eJournal. 2014. P. 50-55.

12. Ганбаров Д. Ш., Асланова Е. А., Аббасов Н. К. Новое местонахождение вида *Astragalus mollis* M. Bieb. (Fabaceae) во флоре Нахичевани (Азербайджан) // Бюллетень науки и практики. 2023. Т. 9. №11. P. 75-79. https://doi.org/10.33619/2414-2948/96/08

13. Ganbarov D., Guliyeva N., Babayeva S. Taxonomic Composition of the *Tragopogon* L. Genus in Nakhchivan and Prospects for Using Species // Бюллетень науки и практики. 2024. Т. 10. №12. С. 71-78. https://doi.org/10.33619/2414-2948/109/09

14. Məlikov R.K. Ceyrançölün yovşan icmalarının floristik tərkibi // Azərbaycan florasının bitki örtüyünün istifadəsi və qorunması. Bakı: Elm, 1999. 184 s.

15. Mustafayeva S.D. Asteraceae Bercht fəsiləsinin öyrənilməsi haqqında. & J.Presl // Milli Elmlər Akademiyasının Bülleteni. Bioloji elmlər seriyası. 2013. Cild 68. № 1. Səh. 17–23.

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