

**KO‘HITANG FLORASIDAGI ASTERACEAE OILASIGA MANSUB AYRIM DORIVOR
O‘SIMLIKLARNING BIOEKOLOGIK XUSUSIYATLARI.**

Ilmiy rahbar : Akram Ibragimov

**Termiz Davlat Muhandislik va Agrotexnologiyalar universiteti, dotsent, PhD
Ibragimova Shaxlo**

Termiz Davlat Muhandislik va Agrotexnologiyalar universiteti talabasi

Annotatsiya: Ushbu maqolada Ko‘hitang hududi florasida uchraydigan Asteraceae oilasiga mansub ayrim dorivor o‘simliklarning bioekologik xususiyatlari o‘rganilgan. Tadqiqot davomida ushbu o‘simliklarning tarqalish areali, ekologik omillarga moslashuvi, fenologik rivojlanish bosqichlari hamda ularning farmakologik ahamiyati tahlil qilindi. Natijalar shuni ko‘rsatadiki, Ko‘hitang hududi bioxilma-xillikka boy bo‘lib, undagi dorivor o‘simliklar xalq tabobati va zamonaviy farmatsevtikada muhim o‘rin egallaydi. Shuningdek, ushbu o‘simliklarni muhofaza qilish va oqilona foydalanish masalalari ham muhokama qilindi.

Kalit so‘zlar: Ko‘hitang, Asteraceae, dorivor o‘simliklar, bioekologiya, flora, fenologiya, ekologik omillar, bioxilma-xillik

**БИОЭКОЛОГИЧЕСКИЕ ОСОБЕННОСТИ НЕКОТОРЫХ ЛЕКАРСТВЕННЫХ
РАСТЕНИЙ СЕМЕЙСТВА ASTERACEAE ФЛОРЫ КУХИТАНГСКОГО РЕГИОНА**

**Научный руководитель: Акрам Ибрагимов, доцент, PhD, Термезский государственный
университет инженерии и агротехнологий**

Ибрагимова Шахло – студентка Термезского государственного университета инженерии и агротехнологий

Аннотация: В данной статье рассматриваются биоэкологические особенности некоторых лекарственных растений семейства Asteraceae, произрастающих во флоре Кухитанга. В ходе исследования были проанализированы ареалы распространения, адаптация к экологическим факторам, фенологические стадии развития, а также фармакологическая значимость данных растений. Результаты показывают, что регион Кухитанга отличается высоким уровнем биоразнообразия, а лекарственные растения играют важную роль как в народной медицине, так и в современной фармацевтике. Особое внимание уделено вопросам рационального использования и охраны растительных ресурсов.

Ключевые слова: Кухитанг, Asteraceae, лекарственные растения, биоэкология, флора, фенология, экологические факторы, биоразнообразии

**BIOECOLOGICAL CHARACTERISTICS OF SELECTED MEDICINAL PLANTS OF THE
ASTERACEAE FAMILY IN THE KUGITANG FLORA**

**Scientific advisor: Akram Ibragimov, Associate Professor, PhD, Termez State University of
Engineering and Agrotechnologies**

Shakhlo Ibragimova – student of Termez State University of Engineering and Agrotechnologies

Abstract: This article examines the bioecological characteristics of selected medicinal plants belonging to the Asteraceae family in the flora of the Kugitang region. The study analyzes their distribution range, adaptation to environmental factors, phenological development stages, and pharmacological significance. The findings indicate that the Kugitang region is rich in biodiversity, and its medicinal plants play an important role in both traditional medicine and modern pharmacology. Issues related to the conservation and sustainable use of these plant resources are also discussed.

Keywords: Kugitang, Asteraceae, medicinal plants, bioecology, flora, phenology, environmental factors, biodiversity

Introduction

Medicinal plants have played a significant role in human life since ancient times and remain an essential source for the development of modern pharmaceuticals. Among them, members of the Asteraceae family (Compositae) occupy a prominent place due to their wide distribution, ecological adaptability, and rich content of biologically active compounds. These plants are known to possess various pharmacological properties, including anti-inflammatory, antimicrobial, antioxidant, and analgesic effects. The Kugitang region, located in Central Asia, is characterized by unique natural and climatic conditions, including mountainous terrain, diverse soil types, and variable moisture availability. These factors contribute to the formation of a rich and diverse flora, including numerous endemic and medicinal plant species. The Asteraceae family represents a significant component of this flora and plays an important ecological and economic role. In recent years, increasing attention has been paid to the study of bioecological characteristics of medicinal plants, particularly their adaptation to environmental conditions, distribution patterns, and phenological development. Such studies are essential for understanding plant survival strategies and for ensuring their sustainable use and conservation. The aim of this study is to investigate the bioecological characteristics of selected medicinal plants of the Asteraceae family in the Kugitang flora and to evaluate their ecological adaptability and practical significance.

Materials and Methods

The research was conducted in the Kugitang region of Central Asia, characterized by mountainous terrain, diverse microclimatic conditions, and rich biodiversity. The altitude of the study area ranges from approximately 800 to 3,000 meters above sea level. The climate is predominantly continental, with hot summers, cold winters, and limited precipitation. Soils in the region vary from rocky and gravelly substrates to more developed mountain soils, providing diverse ecological niches for plant growth. Selected medicinal plant species belonging to the Asteraceae family were investigated during the study. Species selection was based on their occurrence in the region and their known or potential medicinal value. Plant samples were collected during the active vegetation period (spring–summer) from different habitats, including foothills, slopes, and mountain valleys.

Field surveys were carried out using маршрут (transect) and sample plot methods. Within each sampling site, plant species were recorded, and representative specimens were collected. The identification of plant species was conducted based on morphological characteristics using standard botanical keys and regional floristic manuals. Collected specimens were documented, labeled, and, when necessary, preserved for further analysis. Ecological parameters such as altitude, soil type,

temperature conditions, and moisture availability were recorded for each sampling location. The distribution patterns and habitat preferences of the studied species were analyzed. Bioecological characteristics were assessed by observing plant adaptation strategies, including drought resistance, tolerance to temperature fluctuations, and growth patterns. Special attention was given to plant density, population structure, and interspecies associations. Phenological studies were conducted to determine the main stages of plant development. Observations included the timing of germination, vegetative growth, flowering, fruiting, and seed dispersal. Data were recorded systematically throughout the growing season.

Results and Discussion

The results of the study revealed that the selected medicinal plant species of the Asteraceae family in the Kugitang region demonstrate high ecological adaptability and significant bioecological diversity. These species were found to be widely distributed across different habitats, including foothills, rocky slopes, and mountain valleys, indicating their ability to survive under varying environmental conditions.

Ecological Characteristics. The studied species showed clear preferences for specific ecological niches. Most species were adapted to dry and semi-arid environments, exhibiting xerophytic features such as reduced leaf surface area, thick cuticles, and well-developed root systems. These adaptations enable them to tolerate water scarcity and high temperatures typical of the region. Altitude played a significant role in species distribution. Some species were predominantly found at lower elevations (800–1,500 m), while others were more common at higher altitudes (1,500–3,000 m). Soil composition also influenced plant distribution, with certain species preferring rocky substrates and others thriving in more developed soils.

Phenological Patterns. Phenological observations indicated that the majority of species begin their vegetative growth in early spring, followed by flowering during late spring to mid-summer. Fruiting generally occurs from mid-summer to early autumn. These patterns are closely linked to climatic conditions, particularly temperature and precipitation. Species growing at higher altitudes exhibited delayed phenological phases compared to those in lower مناطق, which can be explained by lower temperatures and shorter growing seasons. Such variation reflects the adaptive strategies of plants to local environmental conditions.

Bioecological Adaptations. The investigated Asteraceae species demonstrated several adaptive strategies that contribute to their survival and reproduction. Drought resistance was one of the most prominent features, supported by morphological and physiological traits. Additionally, many species showed high reproductive efficiency through abundant seed production and effective dispersal mechanisms. Population density varied among species depending on habitat conditions. In favorable environments, some species formed dense populations, while in harsher conditions, individuals were more sparsely distributed. Interspecific interactions, including competition for resources, were also observed to influence population structure.

Pharmacological and Practical Significance. The studied species are known to contain biologically active compounds that contribute to their medicinal value. Their widespread distribution and ecological resilience make them valuable resources for traditional medicine and potential sources for pharmaceutical development. However, increasing anthropogenic pressure, including overharvesting and habitat degradation, poses a threat to these plant resources. Therefore, the implementation of

conservation strategies and sustainable utilization practices is essential to preserve their ecological and economic importance.

Conclusion

This study investigated the bioecological characteristics of selected medicinal plants of the Asteraceae family in the Kugitang region. The findings demonstrate that these species possess a high level of ecological adaptability, allowing them to thrive under diverse and often harsh environmental conditions, including arid climates, temperature fluctuations, and varying soil types. The analysis of ecological factors revealed that altitude, soil composition, and moisture availability play a crucial role in determining the distribution and growth patterns of these plants. Phenological observations showed clear seasonal development cycles, which are closely linked to climatic conditions and vary depending on altitude. In addition, the studied species exhibit important bioecological adaptations such as drought resistance, efficient reproduction, and ecological plasticity. These characteristics not only ensure their survival in natural habitats but also enhance their value as medicinal resources. However, increasing anthropogenic pressures, including overexploitation and habitat disturbance, may threaten the sustainability of these plant populations. Therefore, it is essential to develop and implement effective conservation strategies, promote sustainable use, and encourage further scientific research on these valuable plant species. Overall, the Kugitang region represents a significant reservoir of medicinal plant diversity, particularly within the Asteraceae family, and requires continued attention for both ecological and pharmacological studies.

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