GENUS LYCIUM MILL. OF THE FAMILY SOLANACEAE: BOTANICAL CHARACTERISTICS, BIOLOGICAL FEATURES AND PROSPECTS FOR UTILIZATION

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Abstract. This article presents a scientific review of the genus *Lycium* Mill., belonging to the family *Solanaceae*. The taxonomic position, morphological structure, ecological adaptability, geographical distribution, biochemical composition, and practical significance of representatives of this genus are analyzed. Particular attention is paid to medicinal properties, biologically active compounds, and prospects for introduction and cultivation in arid regions. It has been established that species of the genus *Lycium* are of considerable interest for pharmacology, food production, agriculture, and environmental restoration.

Keywords: *Solanaceae*, *Lycium*, goji, medicinal plants, antioxidants, biologically active compounds, introduction, adaptation.

Introduction: The current environmental situation requires rational use of plant resources, conservation of biodiversity, and introduction of valuable crops resistant to abiotic stress factors. Under conditions of climate change, freshwater shortage, soil salinization, and desertification, special attention is given to plant species capable of maintaining productivity under unfavorable conditions.

Among such plants, representatives of the family *Solanaceae* occupy an important place. One of the most promising genera is *Lycium*, whose species are known for ecological plasticity, nutritional value, and pharmacological potential.

Materials and Methods: The study was based on comparative analysis of domestic and foreign scientific literature in botany, plant taxonomy, pharmacognosy, and introduction of agricultural crops. Descriptive, comparative-morphological, and analytical review methods were applied.

Results and Discussion: Taxonomic Position of the Genus *Lycium*

The genus *Lycium* belongs to the family *Solanaceae*, which includes numerous herbaceous and woody plant forms. According to botanical sources, the genus comprises approximately 70–90 species of shrubs, subshrubs, and occasionally small woody forms.

The most well-known representatives are *Lycium barbarum* and *Lycium chinense*, whose fruits are commercially known as goji berries.

Morphological Characteristics

Most species of the genus are densely branched shrubs reaching 1–3 meters in height. Shoots often bear thorns serving as protective structures.

Leaves are simple, entire, lanceolate or elliptical, arranged alternately or in clusters. Flowers are solitary or grouped in leaf axils, with tubular corollas of purple, lilac, or whitish coloration.

The fruits are juicy multi-seeded berries of red, orange, or yellow color. Seeds are small and maintain high germination capacity.

Ecological Features

Representatives of the genus *Lycium* are distributed in Asia, the Mediterranean region, North and South America, and arid areas of Eurasia. Most species are characterized by:

- high drought tolerance;
- salt tolerance;
- ability to grow on poor soils;
- resistance to high summer temperatures;
- strong regenerative capacity after pruning.

These characteristics make the plants promising for cultivation in arid zones such as Uzbekistan.

Biochemical Composition

Fruits and leaves of *Lycium* species contain a wide range of valuable compounds:

- polysaccharides;
- carotenoids;
- flavonoids;
- phenolic compounds;
- organic acids;
- vitamins C, E, and B-group;
- iron, calcium, zinc, selenium;
- essential amino acids.

Polysaccharide complexes are considered particularly valuable due to their antioxidant and immunomodulatory activity.

Practical Importance

1. Food Industry

The fruits are used in dried form and for the production of juices, teas, concentrates, and functional food products.

2. Pharmacology and Medicine

Fruit extracts are included in dietary supplements and herbal preparations. Their properties are being studied in relation to metabolic disorders and oxidative stress.

3. Landscaping and Agroforestry

Shrubs are suitable for hedges, slope stabilization, and sand fixation.

4. Agriculture

The crop may be cultivated as a niche agricultural product in regions with limited water resources.

Prospects for Cultivation in Uzbekistan

The climatic conditions of many regions of Uzbekistan are favorable for the introduction of certain *Lycium* species. Cultivation on low-productivity and arid lands is especially promising.

Development of this sector may contribute to:

- expansion of export-oriented production;
- creation of raw material bases for processing industries;
- more efficient use of water-limited territories;
- introduction of new high-value crops.

Conclusion

The genus *Lycium* is a promising group of plants within the family *Solanaceae*, combining ecological resistance, nutritional value, and pharmacological significance. Representatives of the

genus may be widely used in medicine, food production, agriculture, and ecological restoration programs.

Further research should focus on breeding productive forms, studying adaptation under local conditions, and developing effective cultivation technologies.

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