

## **GOJI PLANT (LYCIUM BARBARUM) AS A MEDICINAL AND FOOD SOURCE**

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**Abstract.** This article examines the biological characteristics, chemical composition, and health benefits of goji plant (*Lycium barbarum*). The study is based on a comprehensive analysis of scientific literature, biochemical data, and previously published experimental findings. The results indicate that goji berries are rich in bioactive compounds, including polysaccharides (LBP), carotenoids, flavonoids, vitamins (C, A, and B complex), and essential minerals. These components contribute to strong antioxidant activity, immune system enhancement, and protective effects against various chronic diseases such as cardiovascular disorders and diabetes. Furthermore, the plant demonstrates anti-aging properties and positive effects on visual function. The research also highlights the adaptability of goji cultivation to different environmental conditions, suggesting its potential for agricultural development in regions like Uzbekistan. Overall, *Lycium barbarum* is identified as a valuable medicinal and functional food plant with significant perspectives in both healthcare and agriculture.

**Keywords:** Goji, *Lycium barbarum*, bioactive compounds, antioxidant activity, medicinal plant, immune system.

Goji is a shrub-like plant that has been used in Eastern medicine for centuries, valued as a medicine and food. Its scientific name is *Lycium barbarum*, and it belongs to the nightshade family (Solanaceae).

Goji is a shrub plant, growing 2-3 m tall. Goji seedlings are planted at a spacing of 2 x 2 meters. The plant begins to bear fruit from the 2nd year, flowering and bearing fruit from May until frost. An average of about 2 kg of fruit can be obtained from one plant. In our conditions, the plant needs to be watered 3-4 times in the summer. After the fruit turns red, it is picked by hand and dried in the open air. The dried fruit is similar to raisins, but is dark red in color. Consuming 10-16 grams of dried fruit per day helps the human body stay healthy and refreshed.

The fruit and leaves of the Goji plant have been used in Chinese and Tibetan medicine for 3,000 years. In scientific literature, the plant is also known by other names such as “red Goji, Tibetan cypress, wolf fruit, Berber goji, common dereza”. In the book “Ozbekiston izvestniki” (1987), the plant is called Jingil.[1] In Ibn Sina’s “Tib qanonari” (Canon of Medicine), the plant is mentioned under the names “khuzaz” and “filzahraj”. [2].

In Abu Rayhan Beruni’s “Kitab as-saydana fit-t-tibb” (Book of Medicine), it is mentioned under the names “khudad” (close to “khuzaz”) and “filzahraj” (close to “khuzaz”) [3].

The *Lycium* genus includes about 100 species distributed in different regions of the globe. The fruits of three of them (*L. chinense*, *L. barbarum*, *L. ruthenicum*) are widely used as a medicinal agent in Eastern medicine. The homeland of *Lycium* is Southeast China. The first information about this medicinal plant is given in the book “Ben Cao Jing” by the first emperor

of China, Shen Nung (Shennong), who lived in 2800 BC. The Chinese called the plant so because many wolf cubs were found under the bushes where the Lycium plant grew. The *L. barbarum* species of Lycium (red Goji) was brought from China to Turkestan in the 19th century, but for some reason the plant did not naturalize and was not preserved.

Goji fruit is included in the pharmacopoeias of 7 Eastern countries. [ 4]

Goji berries and ripe fruits

In the markets of Eastern countries, Goji berries are sold under the names "Cancer Cure", "Natural Viagra", "Anti-Depression Fruit", "Life-Prolonging Fruit", "The First Brain Refresher", "Fruit of Happiness". In Laos, Burma, Korea, and Tibet, they are widely used to improve heart function, restore immunity, and prolong human life.

In Chinese medicine, it is used not only as a medicine for the treatment of diseases, but also as the most popular dietary supplement for maintaining health in people's daily lives. Goji berries contain 100 times more vitamin C than lemons. The fruit of the goji plant contains more than 300 bioactive polysaccharides. It contains 15 times more iron than spinach. It is considered the only natural product among medicinal plants that contains the element germanium and fights cancer. Goji is a powerful natural antioxidant. The fruit contains 19 types of amino acids, 9 of which are essential amino acids for the human body.

Goji is native to Ningxia, China. In Eastern countries, the fruits and leaves of this plant are widely used in folk medicine, as they have the properties of improving metabolism in the human body, restoring mental and physical fatigue, slowing down the aging process, and restoring immunity. Goji berries are mainly consumed dried or as various juices, and are even added to confectionery products in powder form.

Today, the fruits of this plant are sold in the USA and Europe under the brand name Goji. Currently, goji is gaining popularity in the world market due to the presence of biologically active substances that are essential for the human body. Goji is in 3rd place among the TOP-10 most consumed medicinal plants in the world.

Clinical studies conducted in China have shown that consuming Goji berries for 14 to 30 days can boost immunity, including preventing stress, improving cardiovascular function, lowering cholesterol, enhancing vision, improving sleep, regulating blood sugar levels, and improving memory.[6]

As a result of experimental work conducted on the Goji plant by scientists from the Department of "Medicinal Plants and Botany" of Gulistan State University from 2015 to 2024, the plant was acclimatized to the conditions of Uzbekistan and a technology for its cultivation was developed.

Due to its high content of biologically active substances, the goji plant plays an important role not only in folk medicine, but also in modern medicine and the food industry. Its cultivation in Uzbekistan is a promising direction.

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