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## **THEORETICAL FOUNDATIONS OF THE USE OF THE GOJI PLANT IN PHARMACEUTICAL BIOTECHNOLOGY**

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**Annotation.** In recent years, the spread of Covid-19 in our country and around the world has caused a massive pandemic. As a result, the demand for drugs and biologically active substances that strengthen the immune system and prevent various diseases has increased dramatically among the population. The goji plant contains various useful minerals and substances and is considered a plant that has the ability to increase immunity. We propose to propagate this plant by the microcloning method, since using this method it is possible to grow a large number of seedlings of this plant in a short period of time.

**Key words:** in vitro, microclonal reproduction, goji, *Lycium barbarum*, dietary supplement, biotechnology.

**Introduction.** Currently, much attention is paid to in vitro propagation of medicinal plants, cell culture, reproduction by microclonal methods. Research in this direction is being carried out in many laboratories in the developed countries of the world. Also, the development of pharmaceutical production in Central Asia, the development of drug technology based on local raw materials, the implementation of these cases in production is currently considered one of the important tasks of representatives of this area. Currently, in vitro microclonal plant breeding is aimed at obtaining genetically uniform, virus-free seedlings with a high reproduction rate in a short time. This technology is used to produce millions or more somatic shoots and continuously grow seedlings in the laboratory all year round. In the last years of the last century, great success was achieved in the production of biologically active substances in this area. Another advantage of the extraction of secondary metabolites by this method is that under certain conditions, when the plant is not able to grow on its own (in regions with a cold or hot climate), its cells can be grown throughout the year.

### **Materials and methods of research.**

Among the well-known goje plant species are *Lycium barbarum* L., *L. chinense* Mill. and *L. ruthenicum* Murr., and we selected the species *Lycium barbarum* L for further research. This plant is considered rare and grows in nature only in China. As a result of research, it was found that the goji plant can be used in the field of pharmaceuticals. Taking into account the rapid development of the field

of biotechnology, micropropagation of *Lyceum barbarum* in vitro is a new research project in the field of pharmaceutical biotechnology.

As a result of phytochemical studies, the goji plant has been found to contain:

- 4 types of polysaccharides;
- 6 types of monosaccharides;
- 6 types of carotenoids;
- beta-carotene;
- B, E, C, B1, B2, B6 and other biologically active substances;
- 18 types of amino acids (of which 8 are essential amino acids);
- 21 kinds of minerals such as K, Na, Ca, Mg, Fe, Si, Mn, Zn and germanium.

### **Results and discussion.**

Due to the fact that it is rich in vitamins and minerals, it has been found that it improves the functioning of all systems of the internal organs of the human body, cleanses the body of toxins, toxins and other harmful substances. These characteristics of the plant *Lyceum barbarum* showed that it can be used as a dietary supplement that strengthens the immune system, for the prevention of diseases of the heart and blood system, diseases of the nervous system, the prevention of diabetes and cancer. In Chinese folk medicine, the plant is used as a means of increasing immunity, improving metabolism, antiparasitic, anti-inflammatory, normalizing general and blood pressure, analgesic for chronic constipation and normalizing blood sugar levels. Medical studies have shown that the death rate from this fruit of the plant was reduced by 60% in cancer patients who used it in combination with other drugs, compared with patients who did not use it. Also, tumor growth in patients in the last stage of the disease slowed down after regular use of this berry. Beta-carotene, minerals, amino acids and carotenoids contained in goji fruits fight cholesterol, and polysaccharides improve pancreatic insulin production and help maintain normal blood sugar levels. It is also known to purify the blood and rejuvenate the body. It has been found that goji fruit can be used on its own or mixed with other herbs as a cold and cough remedy.

### **Conclusion**

As we noted above, the goji plant has a number of beneficial properties for the human body. Given all these properties, it can be used in many pharmaceutical and cosmetic industries as the main natural raw material. But goji in natural conditions grows only in China. For this reason, it was decided to choose this particular plant as an object for micropropagation. In this way, we want to achieve adaptation of this species to the climate and conditions of Central Asia, which in the

future will serve as the basis for increasing the volume of medicinal raw materials in the countries of Central Asia.

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