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Research Article

PROSPECTS OF MICROCLONAL PROPAGATION OF MEDICINAL PLANT SPECIES

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ABSTRACT

Importance of in vitro microclonal propagation of ornamental, fruit and medicinal plants growing in our republic.

KEYWORDS

Micro clonal reproduction, ginkgo biloba, chakanda, flavonoids, carotene, sterols, vitamins.

INTRODUCTION

At present, great attention is being paid to in vitro reproduction of medicinal plants, cell culture, and microclonal reproduction. Research in this direction is being conducted in many laboratories of the developed countries of the world. Also, the development of pharmaceutical production in Uzbekistan, the development of the technology of drugs based on local raw materials, and the implementation of these works are currently considered one of the important tasks of representatives of this field. Currently, microclonal propagation of plants in vitro and short-term propagation of isolated tissue cells without a genetic variety of viruses are aimed at obtaining seedlings with a high coefficient. This technology is used to obtain millions and more somatic shoots and continuously grow seedlings in the laboratory year-round. In the last years of the last century, great success was achieved in this field, in the production of biologically active substances. Another advantage of the extraction of

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secondary metabolites by this method is that, under certain conditions, where the plant does not have the opportunity to grow itself (in cold or hot climate regions), its cells can be grown throughout the year.

In recent years, consistent reforms have been implemented in our republic regarding the protection of medicinal plants, rational use of natural resources, establishment of medicinal plant plantations and their processing. 750 species of more than 4.3 thousand plants belonging to the local flora are considered medicinal, 112 of them are registered for use in scientific medicine, 70 of them are actively used in the pharmaceutical industry. In 2019, 48 million USD worth of processed medicinal plant products were exported. At the same time, the analyzes show the need to protect medicinal plants, establish their plantations, and create an additional value chain through processing. Based on this, many decisions of the President of the Republic of Uzbekistan regarding medicinal plants have been adopted. In particular, the decision of April 10, 2020 "On protection of wild medicinal plants, cultivation, processing and rational use of available resources"; Decree of the President of the Republic of Uzbekistan "On measures to expand the scope of scientific research on cultivation and processing of medicinal plants, development of their seed production" 26, 2020 November decision PQ-4901; The forestry of Uzbekistan is distinguished by the abundance and variety of flora and fauna, including unique ornamental and fruit trees and medicinal plants. Decree of the President of the Republic of Uzbekistan "On the establishment of the State Committee of Forestry of the Republic of Uzbekistan" and "Organization of the State Committee of Forestry of the Republic of Uzbekistan" on" was announced. Implementation of this decree and decision: Effective and rational use of forest resources, their restoration, introduction of large-scale reproduction, protection of forests and their effective use, ornamental and fruit trees and shrubs on an industrial scale provides expansion of cultivation of plantations. Creation of modern new methods of reproduction of seedlings of ornamental trees and shrubs adapted to the climatic conditions of our republic, development of scientifically based promising technologies, creation of exportable plants, increases the efficiency of selection work. The area and the number of species of many decorative, fruit and medicinal plants growing in the territory of our republic is decreasing due to the misuse and neglect of people. In order to prevent this, many decisions are taken by our government.

But due to the small number of some promising plants and the difficulty of their natural reproduction, there are problems in the creation and reproduction of plantations. In order to overcome these problems, professors and masters of Fergana State University are conducting scientific research in the field of microclonal reproduction of several useful plants. In particular, the biological properties of ginkgo biloba and chakanda (Hippophae rhamnoides L.) from ornamental and fruit plants are being studied and preliminary work on their microclonal propagation in vitro is being carried out. Chakanda (Hippophae rhamnoides L.) - a shrub called chakanda or chirkana, belonging to the family of cycads. It reaches 3-5 meters in height. It is dioecious, thorny, sertican, and its trunk and branches are covered with hairs. The leaves are located in a row, the band is short, the length is 6-8 cm. The fruit is round, orange or lanceolate, one-seeded, 3-5 mm in diameter, juicy. It blooms and leaves in May-April. The flowering of one bush lasts 10-12 days. A special tissue is located at the base of the calyx and serves to extract nectar. Bees and other insects eat the nectar and pollen of small flowers. Like all parts of the plant, honey collected from its flowers is a medicinal and delicious food. The fruit ripens in September-

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October and remains on the plant throughout the winter. Chakanda fruit is included in the "Red Book" and is considered a nutritious source of food for rare birds. does. The largest and thickest groves are scattered in the oasis of the Zarafshan River, in the Zarafshan State Reserve, which was established in 1975.

In the Fergana valley, there are small groves in a limited area, and isolated bushes of small bushes are found above the Kampirrovot reservoir (in the Karadarya basin) and along some tributaries of Shakhimardonsoy. Its area is shrinking as a result of anthropogenic influence. The oil obtained from the fruit of Chakanda plant is mainly used in pharmaceuticals. The fruit contains vitamin C, E, B1, B2, carotene, fatty acids, folic acid and other organic acids. Chakanda fruit is very juicy, the kernel contains 16%, the fruit 9%, and the seed 12% fat. The oil is dark, orange in color, with a unique smell and taste. Chakanda oil contains 40-100 mg% carotene, 180-250 mg% carotenoids. It contains high levels of vitamin E. This vitamin participates in the body's metabolism. Chakanda fruit and seed oil is used as pain reliever, skin tissue regeneration, wound healing and scurvy treatment. They are mainly used in the treatment of various skin and gynecological diseases. It has also been found that the leaves of Chakanda contain additives, vitamin C and other active substances. Herbal sources are also used for sore throat, toothache and inflammation of the oral cavity. According to ethnobotanical data, chakanda plant is also used in the treatment of gastritis, hepatitis, and bronchitis. It is necessary to use the natural reserves of this plant sparingly, to protect its limited areas and to engage in measures to increase it. Since chakanda is a dioecious plant, it is difficult to identify male and female before planting. Often, when planted in fields, there are many male plants, and as a result, productivity decreases. In order to prevent this, target plants can be planted with microclonal propagation and high yield can be achieved. Ginkgo biloba is the oldest of all ancient plants on the planet. It belongs to the ginkgo family of the gymnosperms division and is the last surviving representative of this family. For more than 300 million years, Ginko has been fighting for survival, and now the plant is in danger of extinction. Ginkgo biloba is a dioecious tree, up to 40 m tall and up to 1 m in diameter. The seed looks like a round, grainy fruit.

Fruits and seeds are eaten. The leaves are heart-shaped, green, and turn yellow in autumn. Because of its beautiful appearance, it is often planted as an ornamental tree. It grows wild in some parts of South China. However, its leaf and wood remains were found in the Upper Permian and Triassic deposits of Central Asia. So, Ginkgo biloba grew in our region at that time, but later it disappeared. Currently, Ginkgo is cultivated as an ornamental plant in our country. However, due to the low fertility (40-50%) and unfavorable environmental conditions, reproduction is somewhat difficult. The unique feature of this plant is related to many elements included in its chemical composition. The chemical composition of plant leaves includes various flavonoids, biflavonoids, nonacosan, sterols, various amino acids, essential oils, a complex of vitamins, a complex of macro and microelements. The results of use and research show that preparations made on the basis of Ginkobiloba have a strong therapeutic effect on body systems. There are studies on the effectiveness of plant extract in inhibiting the growth of cancer cells. In addition, Ginkgo is used to improve brain activity, strengthen memory, depression, cognitive development, treat Alzheimer's disease, eye diseases, reduce pain, regulate blood flow, heart and nerve diseases, fight cancer, and in astrology. Since Ginkgo biloba does not reproduce from its vegetative organs, and its seeds have low

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germination, microclonal reproduction of this plant is very effective.

It is known that ginkgo biloba and chakanda plants grow slowly, their seed germination is low, and damage by pests and high temperature is common. Microclonal reproduction of these plants allows to shorten the growth phase and obtain disease-resistant virus-free plants. Due to the great importance of the above-mentioned plants in pharmaceuticals, in the future, if microclonal reproduction of them is started, it will be possible to prepare and export high-quality sources of raw materials for the pharmaceutical industry.

CONCLUSION

In conclusion, microclonal propagation of plants from leaves, stems, buds and other vegetative organs in vitro is of great economic importance.

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