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# BIOTECHNOLOGY OF IN-VITRO PROPAGATION OF SOME PROSPECTIVE PLANTS IN UZBEKISTAN

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## ABSTRACT

Plant biotechnology is one of the youngest sciences for Uzbekistan, and its history does not go far. A number of scientists contributed to the development of plant biotechnology. It is important to multiply plant cells in vitro, axenic or sterile conditions and use them in applied research, as well as for commercial purposes.

**Keywords.** Biotechnology, promising plants, biotechnological culture, in vitro, Plant growth regulators, callus, nutritional phytohormones, carbohydrates, gel, antibiotics, explant, meristematic tissues.

## INTRODUCTION

Although biotechnological processes have been unknowingly used since ancient times to meet the daily needs of people (making bread, yogurt, beer, wine, acetic acid, etc.), they have been developing as a fundamental science since the second half of the 20th century. Today, biotechnology leads all sciences related to the solution of the most urgent problems facing humanity (ecology, food, medicine, energy, etc.).

In our country, the study of biotechnology and the use of its achievements in scientific research and practice began to take shape in the 70s and 80s of the last century. To date, many scientific

researches and practical studies in the field of agricultural biotechnology are consistently continued by a number of scientists and specialists.

## LITERATURE ANALYSIS AND METHODOLOGY

Biotechnology entered Uzbekistan as a new science in the last century. Scientific work and research in this field began in the 90s. By recent years, scientific research institutes related to biotechnology are also being established in different parts of our country, this is certainly the result of the attention of our respected president to the field of biotechnology. Due to this, scientific literature on this field is not being created by research scientists. Plant breeding in vitro is the reason for the rapid development of the agricultural sector. "Agricultural Biotechnology" by R. Artikova,
S. Murodova is an effective guide for all researchers in this field. This book provides very good information about the importance of biotechnology in agriculture, phytohormones, regulatory substances, the composition of nutrient media and their preparation, and the method of in vitro reproduction. In addition, K. Davronov's "Fundamentals of Biotechnology" manual was considered one of the best manuals for all students of biotechnology.

Since biotechnology is considered a natural science, mainly experimental methods are used. The most widely used method in this field is the in vitro method.

One of the most urgent problems facing humanity today is the problem of quality food and medicine. Biotechnology is the best solution to this problem. This is the purpose and tasks of biotechnology science. For this purpose, in our country, promising nutritious, medicinal, spice plants, wild plants, and cultural ornamental plants are propagated using biotechnological methods in order to green the environment, especially plants that do not reproduce well in generative or vegetative methods in vitro by multiplying the method, it is possible to achieve the desired goal

In vitro (aseptic) reproduction, like other methods, consists of complex processes. When working in this method, sterility must be ensured. Because even a small thing that is neglected can cause the obtained result to not be positive

Sterilization. The rich composition of the nutrient medium in which tissues isolated from the plant (explants) are cultured is also a good substrate for the growth of microorganisms. Plant explants cultured in nutrient medium are easily damaged by microorganisms. Therefore, both the explant and the nutrient medium must be sterilized. All work with isolated tissues (transfer to culture, transfer to a new nutrient medium) is carried out in sterile rooms (laminar boxes) using sterile tools. It is necessary to maintain sterility even during the period of cultivation of isolated tissues. Cells and tissues isolated from plants are cultured in multicomponent nutrient media. It is necessary for the plant in the composition of nutrient media for culturing isolated cells and tissues. It is necessary to contain all macroelements (nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron), microelements (boron, manganese, zinc, copper, molybdenum, etc.), as well as vitamins, carbohydrates, phytohormones or their analogs. In order to obtain callus tissue, in some cases liquid endosperm of coconut (coconut milk) and chestnut are added to the nutrient medium. Phytohormones are necessary to accelerate cell dedifferentiation and cell division. Therefore, when obtaining callus tissue, the nutrient medium must contain auxins (induces cell dedifferentiation) and cytokinins (induces cell

division). During stem morphogenesis, the amount of auxin in the nutrient medium is reduced or not added at all. The factor that causes the most problems in the method of in vitro reproduction is the lack of good sterilization of the nutrient medium, that is, the fall of various harmful microorganisms and fungi. In order to prevent this, in some cases, antibiotics are added to the prepared nutrient medium.

Cultivation of plants in vitro has its own difficult aspects. Every researcher engaged in this work should complete each work in a short time and, most importantly, strictly adhere to sterility. Any work that was neglected led to changes in the composition of the nutrient environment, which, in turn, led to the underdevelopment of cultivated cultures.

## CONCLUSION

One of the main goals and tasks of this field is to create a single base of scientific research on in vitro cultivation and processing of promising plants in the republic. In this regard, it is necessary to study the advanced scientific developments of foreign countries, establish cooperation with leading scientific institutions, introduce modern technologies and scientific developments to the republic, and strengthen the effective use of existing opportunities. By in vitro breeding of promising plants, it is possible to provide the population of our country with quality food and medicine.

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