

# Tissue Culture Processes: What Are They and How Do They Work?

Abdul Alim\*

Department of Genetic Engineering, Gawharshad University, Kabul, Afghanistan

Tissue culture is gaining popularity as a viable approach for propagating new plants in artificial environments utilising tissue fragments from plant media. The type of plant media used determines the different sorts of tissue culture methods. The most frequent types of tissue culturing methods are as follows:

To produce healthy plants or seedlings, seeds are cultured *in vitro*. The apical meristem of angiosperm and gymnosperm shoots is cultivated to create disease-free and contamination-free plants. One of the most significant barriers to efficient tissue culture is contamination. As a result, meristem culture is frequently chosen, as the lack of vascular tissues limits disease contamination and transmission. This method will be used by the majority of DIY tissue culture and home tissue culture labs. Plants produced using meristem culture is less likely to spread disease when combined with high-quality PPMTM and stringent cleanliness control. *In vitro* settings are used to culture a mass of cells obtained from any section of the plant material. There is no specific part of the plant matter that is utilised [1].

Bud culture is divided into two types: single node culture (which uses the stem node) and axillary bud culture (where axillary buds are separated from the leaf axils and placed in high cytokinin concentration). Haploid creation of plant tissue culture is known as Anther culture, and it is commonly done with pollen culture. Individual cells obtained from any type of plant material are grown in Cell Suspension Culture. Instead of the typically employed gel substances, the tissues or calluses are transported into a liquid media [2].

The majority of people who have heard of tissue culture have also heard of micro propagation and are presumably asking where propagation fits in. In tissue culture, micro propagation is the

process of growing new plants. Micro propagation is an *in vitro* tissue culture technology that produces high-quality clone plants on a huge scale. Agar, a nutrient-dense gelling substance, is usually used to develop the shoot apex. This technique could be classified as Meristem cultivation because the shoot tip has undifferentiated meristematic tissue. Tissue culture is a technique for growing new plants or seedlings from cells in micropropagation. The second stage of micro propagation is to introduce them into the soil once they have established themselves.

Not only is the quantity of plants produced important, but so is the fact that all new plants have the same genetic makeup. Only a few growth methods can guarantee such high levels of precision and identical plants. The meristem is employed in micro propagation. Why does this have anything to do with disease-free plants? Well, the answer is less complicated than you may think. Most plants disseminate disease, virus, and other contaminants through their vascular tissues, whereas the meristem is rarely contaminated. Micro propagation has the ability to help with conservation as well. Multiple projects involving micro propagation and tissue culture to save rare and endangered plant species are already underway around the world. Plants that are difficult to grow or generate from seed might also benefit from micro propagation [3].

## REFERENCES

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\*Correspondence to: Abdul Alim, Department of Genetic Engineering, Gawharshad University, Afghanistan; E - mail: ab@alim.ac.af

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