

Plant Tissue Culture Media

Culture media are largely responsible for the *in vitro* growth and morphogenesis of plant tissue. The success of plant tissue culture depends on the choice of the nutrient medium. Basically, the plant tissue culture medium should contain the same nutrients as required by the whole plant. Plants growing *in vitro* are mainly heterotrophic i.e. they cannot synthesize their own food.

Composition of media:

The composition of the culture media is primarily dependent on two parameters.

- The particular species of the plant
- The type of material used for culture i.e. cells, tissue, organs, protoplasts.

The culture media may be solid (solid medium) or liquid (liquid medium) in nature. The culture media usually contain the following constituents-

1. Inorganic nutrients
2. Carbon and energy sources
3. Organic supplements
4. Growth regulators
5. Solidifying agents
6. pH of medium

Major types of media:

- **White's medium:** This is the earliest plant tissue culture media used for root culture.
- **MS medium:** The scientists **Murashige** and **Skoog** (MS) originally formulated a medium to induce organogenesis and regeneration of plants in cultured tissues. These days, MS medium is widely used many types of culture systems.
- **B5 medium:** Developed by Gamborg, B5 medium was originally formulated for cell suspension and callus cultures. At present with certain modification, this medium is used for protoplast culture.
- **N6 medium:** Chu formulated this medium and it is used for cereal anther culture, besides other tissue cultures.
- **Nitsch's medium:** This medium was developed by Nitsch and Nitsch and frequently used for anther culture.

Synthetic and natural media:

When a medium composed of chemically defined components, it is referred as a synthetic medium.

On the other hand, if a medium contains chemically undefined compounds (e.g. vegetable extract, fruit juice, plant extract), it is referred as natural medium.