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**FACULTY OF ENGINEERING &
TECHNOLOGY**

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Course: B. Tech Biotechnology
Sub Code: BBT-515

Semester: 5th
Sub Name: Plant Biotechnology

LECTURE 2

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Synthetic and natural media:

- When a medium is composed of chemically defined components, it is referred to 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 regarded as a natural medium.
- Synthetic media have almost replaced the natural media for tissue culture.

NUTRIENT MEDIA

Plant Tissue Culture refers to the **technique of growing plant cells, tissues, organs, seeds or other plant parts in a sterile environment** on a nutrient medium.

Culture media used for in vitro cultivation of plant cells are composed of following basic components:

1. Complex mixture of salts: Essential elements, or mineral ions.
2. Organic supplement: vitamins and/or amino acids.
3. Carbon source: usually sugar sucrose.
4. Gelling agents
5. Plant Growth Regulators
6. Antibiotics

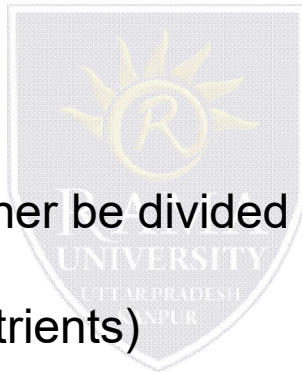


1. Complex mixture of salts:

These include essential elements or mineral ions important for plant nutrition and their physiological function.

The essential elements can further be divided into the following categories:

- a. Macroelements (or macronutrients)
- b. Microelements (or micronutrients)
- c. Iron Source



Macroelements:

Required in large amounts for plant growth and development.

For e.g.: Nitrogen, phosphorus, potassium, magnesium, calcium and sulphur

Microelements:

Required in trace amounts for plant growth and development.

For e.g.: Manganese, iodine, copper, cobalt, boron, molybdenum, iron and zinc are regarded as microelements, although other elements like aluminium and nickel are frequently found in some formulations.

Iron Source:

Iron is usually added in the medium as iron sulphate.

Ethylenediaminetetraacetic acid (EDTA) is usually used in conjunction with the iron sulphate.

2. Organic supplements:

These include vitamins and amino acids. Two vitamins, i.e., thiamine (vitamin B1) and myoinositol (a vitamin B) are essential for the culture of plant cells in vitro. The most commonly used amino acid is glycine.

3. Carbon source:

The most commonly used carbon source is sucrose. It is readily assimilated and relatively stable. Other carbohydrates like glucose, maltose, galactose and sorbitol can also be used and may prove better than sucrose in specialized circumstances.

QUIZ

