Plant tissue culture :lab.(2)
main components of culture media
(the fourth stage)

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1. Main Components of Culture Media

- 1- Inorganic components: MS salts.
- 2- Organic components: carbon source, growth regulators, vitamins, amino acids and other organic compounds.
- 3- Additional components: natural extracts and agar.

1-Inorganic: Components — MS Salts:-

- Nitrates: NH_4NO_3, KNO_3
- Sulfates: $MgSO_4 \cdot 7H_2O$, $ZnSO_4 \cdot 7H_2O$, $CuSO_4 \cdot 5H_2O$, $MnSO_4 \cdot H_2O$
- Halides group: KI, $CoCl_2 \cdot 6H_2O$, $CaCl_2 \cdot 2H_2O$
- Other salts listed: KH_2PO_4 and sodium molybdate
- Iron group: $FeSO_4 \cdot 7H_2O$ and EDTA-Na_2

2- Organic Components:-

- Carbon source: sugar
- Growth regulators: Auxins, Cytokinins, and Gibberellins
- Vitamins: thiamine and pyridoxine
- Amino acids: L-Tyrosine, L-Arginine, L-serine, and Glycine
- Other organic components: hexitols, nitrogenous bases, and organic acids

3- Additional Media Components:-

- 1- Natural extracts: coconut milk, tomato juice, and orange juice
- 2- Hardening / solidifying material: Agar-Agar
- 3- Agar is used to change the physical consistency of the medium

Adjustment of pH:-

- After preparing the medium to the required volume,
- pH is adjusted using a pH meter.
- The lecture gives pH 5.7 for the prepared medium.
- NaOH is used to raise pH.
- HCl is used to lower pH.

Types of Media by Degree of Solidification:-

- 1- Solid medium - Contains agar.
- 2- Liquid medium - No agar.
- 3- Semi-solid medium - Contains less agar.

- **1- Solid Medium**
- 1-Agar concentration stated in the lecture: 7 g/L
- 2-Best pH stated in the lecture: 5.7
- 3-In a test tube, the medium is kept at an approximately 45° slope to form a slanted surface.
- **2- Liquid Medium**
- 1-Agar is not added.
- 2-Best pH stated in the lecture: 5.5
- 3-The plant part may be placed directly in contact with the liquid medium.
- For **meristem culture**, using filter paper so nutrients can reach the meristem.
- For **callus culture**, a shaker is used for ventilation and to help the liquid medium reach the tissue.
- **3- Semi-solid Medium**
- 1-Contains less agar than solid medium.
- 2-Its consistency is intermediate: neither completely(solid nor, completely liquid).
- 3-The lecture does not provide additional details about the cultivation procedure in this medium.