Plant tissue culture.Lab:(3)

Adjusting the pH of the culture medium

(The fourth stage)

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- Cultured cells and tissues need a pH to grow.
- and when preparing media pH can be estimated and adjusted to the optimum degree of growth and purpose of the experiment.
- PH affects the degree to which cells are used for ions in media.
- Generally the optimum pH is between 5.5 - 6 before sterilization is performed.
- PH is the negative logarithm of the concentration of hydrogen ions present in the prepared solution and measured before agar addition.
- The acidity number ranges from 5.6 to 5.8 in the solid media and adjusts the pH with the solution.
- pH lower than 4.5 or higher than 7 has a bad effect on plant growth.
- PH is measured using the pH meter.

- **The effect of a pH drop of (4.5) is as follows:**
- 1- The stability of IAA, algebra, thiamine and calcium is affected by pantothenate.
- 2- Agar solidification decreases.
- 3- Ammonium ions are less useful because of low absorption.
- 4- Iron and manganese ions become mostly dissolved in large quantities that make them toxic to the plant.
- **If the pH is greater than (8), the following occurs:**
- 1- Agar solidification increases.
- 2- Deposition of salts of phosphates and iron is less useful.
- 3- The difficulty of root growth in the hard agar media.
- 4- Hormones and growth regulators are affected in the media.
- 5- Copper, iron, manganese and zinc are less readily available than plants.
- 6- Increases the degree of availability of molybdenum and becomes toxic to plants.

- ## Adjustment of pH: -
- After completing the media to the required size is adjusted pH to 5.8 pH by pH meter device
- Using drops of sodium hydroxide (NaOH) solution by 1 mm Or acid Hcl by 1 mm.
- ## Preparation of NaOH :-
- 1- Take 1 gram of NaOH (in the form of tablets).
- 2- Melted in 100 ml of sterile distilled water.
- 3-Put on Magnetic stirring a warm temperature of 30-40 degrees.
- ## Preparation of Hcl :-
- 1- Take 5 ml of strong Hcl acid while taking into account (wearing paws and pajamas) for prevention
- 2- Add sterile distilled water gradually with continuous stirring until it reaches 100 ml.

- Note :- During the measurement of PH by inserting one drop of NaoH solution or one drop of Hcl solution. Then remeasured the PH Thus, the operation is repeated until the required measurement is reached