RAMA UNIVERSITY

www.ramauniversity.ac.in

FACULTY OF ENGINEERING & TECHNOLOGY

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

Semester: 5th
Sub Name: Plant Biotechnology

LECTURE 1

Dr. NIHARIKA SINGH
Assistant Professor
Dept. of Biotechnology

EXPLANT

Plant tissue cultures are generally initiated from multicellular tissue fragments, called explants, obtained from living plants. Explants may originate from a wide range of plant tissues, such as… leaf, stem, root, petiole, hypocotyl, cotyledon, embryo, or meristem.

A plant organ or piece of tissue used to initiate a culture. Almost all parts of plant are amenable to in vitro plant regeneration (E.g. Tobacco). However, in certain plants some organs may be more regenerative than the others (e. g. in Glycine max, the hypocotyls exhibits higher potentiality for shoot formation than the root segments).

SELECTION OF EXPLANT

Explant is a technique In which whole tissues and cells are removed, or explanted from a plant and are cultured as ex vivo.

The explant is selected it is either haploid or diploid explant The plant growth can be achieved in two ways:

1. Shoots directly by appropriate media
2. By somatic embryogenesis

Type of explant—

1. single cell culture,
2. shoot and root cultures,
3. somatic embryo culture,
4. meristem culture,
5. anther culture and haploid production, protoplast culture and somatic hybridisation,
6. embryo culture,
7. ovule culture,
8. ovary culture,

Root tip culture

- Tips of the lateral roots are sterilized, excised and transferred to fresh medium.
- The lateral roots continue to grow and provide several roots.
- After 7 days that are used to initiate stock or experiment.
- Thus the root material derived from a single radical.
- Such genetically uniform root cultures are referred to as a clone of isolated roots.

Leaves Culture

- Leaves (800µm) may be detached from shoots, surface sterilized and place in healthy condition for long period.
- Growth rate in the culture depends on their stages of maturity at excision.
- Young leaves have more growth potential then the nearly mature ones.

Shoot tip culture

- The excised shoot tips (100-1000µm long) of many plant species can be cultured on relatively simple nutrient media.

- This media must contains growth hormones and will often form roots and develop into whole plants.

QUIZ