TP 4 : PARENCHYMA, COLLENCHYMA AND SCLERENCHYMA TISSUS

INTRODUCTION

1- Parenchyma is the most common tissue in ground tissue systems. It comprises most of a plant's soft primary growth. Cells are pliable, thin walled, and many sided. Its cells are metabolically active at maturity and retain the capacity to divide, as in wound healing. Various types of parenchyma participate in photosynthesis, storage, secretion, and other tasks. Mesophyll is a type of parenchyma that contains chloroplasts

2- Collenchyma cells are thickened and help strengthen the plant. Cells are specialized for support for primary tissues. The cells are elongated, with walls (especially corners) thickened with pectin. Pectin makes stems strong but pliable. Collenchyma cells are alive at maturity. The "strings" in celery are good examples of collenchyma.

3- **Sclerenchyma** supports and protects mature plant parts. It protects many seeds. Sclerenchyma cells have thick, lignified walls and are dead at maturity. Lignin is deposited in its cells where it anchors, waterproofs, and protects. There are two types of sclerenchyma, fibers and sclerids. Fibers are long, tapered cells. Sclereids are stubbier cells. Long tapered fibers flex and twist and therefore are useful in making rope.

MATERIALS USED

- Razor
- Tomato, carrots, spuds, leaves dicot, roots of the aquatic plants, cactus leaves, celery stalk or petiole the spinach leaf and the pear.
- Slide

- Water
- Microscope
- forceps

METHODS

A. Examine cells of parenchyma tissue.

1) Remove the skin from the tomato. Using the razor blade, scrape some of the pulp and transfer to a slide.

- Cut a cross section in the carrots and spuds for observation the parenchyma storage tissue
- Cut a cross section in leaves dicot for observation the 2 types of mesophyll tissue (chlorenchyma)
- Cut a cross section in the roots of the aquatic plants for observation the aero-parenchyma tissue
- cut Cross section in cactus leaves for observation the aqua-parenchyma tissue

2) Place a few drops of water on the tissue; add the coverslip.

3) observe the tissue under the microscope and sketch a few of the cells.

B. Examine cells of collenchyma tissue.

1) Using the razor blade, cut a very thin section of a celery stalk or petiole the spinach leaf.

2) Place the tissue on the slide with a few drops of water; add coverslip.

3) observe the tissue under the microscope and sketch a few of the cells.

C. Examine sclereid cells of sclerenchyma tissue.

1) Remove the skin from the pear. Using a razor blade, scrape some of the pulp.

2) Place the tissue on a slide with a few drops of water; add coverslip.

3) observe the tissue under the microscope and sketch a few of the cells.

WORK TO DO

- Observing and monitoring all types of parenchyma tissue
- Observing and monitoring collenchyma tissue
- Observing and monitoring sclerenchyma tissue
- Drawing of all observed tissues with data
- Comparison between the parenchyma, collenchyma and sclerenchyma tissues.