COLLENCHYMA

It is a type of simple tissue.

Origin : It is originating from procambium and apical meristem.

Structure and composition :

It comprises of elongated cells with thick primary non lignified cells. The cells show variation in shape and may appear round or polygonal. Generally, intercellular spaces are absent.

The cell wall is composed of cellulose, hemicellulose and pectin and shows uneven thickenings.

Cells show the presence of vacuolated protoplast with prominent nucleus and contains large amount of water.

Location

It is a typical supporting tissue of growing organs and those mature herbaceous organs which are only slightly modified by secondary growth and lack such growth completely.

It is the first supporting tissue in stems, leaves and floral parts.

It is the main supporting tissue in many dicotyledonous leaves and green stems. It is characteristically found in the hypodermis of herbaceous dicots. It may occur in homogenous layer or in patches.

In leaves, collenchyma are found on both sides of vein and along the margins. It mainly occurs in peripheral regions of stems and leaves. It is commonly found just beneath the hypodermis. In stems and petioles with ridges, collenchyma is particularly well developed in ridges.

Collenchyma are generally absent in underground stems, roots and monocot stems and leaves.

Types

On the basis of cell wall and arrangement of cells, collenchyma is classified into three types: 1. Angular (cells irregularly arranged)

The thickenings are primarily at the corners or angles of the cells and intercellular spaces are absent. Ex. Stems of *Datura*

2. Lamellar or Plate (cells lie in tangential rows)

Thickenings occur chiefly on the tangential walls than in the radial walls. As a result, cells appear as plates, bands or lamellae. Ex. Stem of *Raphanus*

3. Lacunar or Tubular (thickenings in intercellular spaces)

Thickenings restricted to the regions of bordering the air spaces. Ex. Aerial roots of Monstera

Functions

- 1.Provides support to the growing organs being effective mechanical tissue coupled with elasticity.
- 2. Provides tensile strength to the growing organs during development.
- 3.Closely packed cells with thick cell wall has the capacity in increasing the surface and thickness when the organ is still growing.
- 4.In leaves, provide support as it occurs on both sides of vascular bundles or in isolated patches. Helps to withstand wind currents.

5. Protect vascular bundles, when present as bundle sheath.

6.Facilitates in the process of photosynthesis when the cells contain chlorophyll.