

TRANSFUSION TISSUE

Transfusion tissue is naturally but empty cells with pitted and occasionally thickened walls which contain proteins. The structure is like that of Parenchyma which are commonly found in the leaves of the most of the gymnosperms lying on either side of vascular bundles of the single vein. Its function is to represent an extension of the vascular system taking the place of lateral veins.

It is found in the leaves of Cycas, Pinus, Taxus, Ginkgo, Ephedra etc.

In Cycas on the sides of the xylem and embedded in the Parenchyma are present masses of tracheids, having broad pits on their walls. Each tracheidal mass constitutes the primary transfusion tissue. This is connected with other elongated cells which run parallel with the leaf surface and extend from the bundle to the hypodermal cells above and below. These also consist of tracheids having pits on their walls and constitute the "hydrosteron" or secondary transfusion tissue serve to conduct the watery solution laterally (Lignier 1892).

This is necessary as the mid rib shows no venations and does not give any lateral branches. This unbranched condition of the mid rib is compensated by the transfusion tissue.

In Pinus the transfusion consists of several layers of compactly arranged cells which surrounds the vascular bundles and which are separated from the inner region of mesophyll by the endodermis. The transfusion tissue in Pinus consists of two principal cell types.

- 1- Transfusion tracheids which have thick lignified secondary wall with conspicuous circular bordered pits.
- 2- Transfusion parenchyma which retain their protoplasts and are another characterised by the development of tannin like substances.

The role of transfusion tissue in Pinus is generally the conduction of materials between vascular bundles and mesophyll.

In other genera of coniferales, transfusion tissue consist of tracheids and occurs in a variety of patterns. In Aracu Araucaria it forms a sheath completely surrounding the xylem lower position of the leaf.

In Cupressus - it develops two lateral wings which extend from the side of the vascular bundles.

In Ginkgo we also get transfusion tissue when we examine the long shoot leaf in T. We find that except vascular bundle and palisade cell all the area occupied by the transfusion tissue.