ANOMALOUS GROWTH IN DRACAENA STEM

There are found wide range of anatomical adaptations in angiospermic plants which depend on the habit and habitat of the plant population. There are differences in internal organization with the different stages of growth which are influenced by the environment of the plants.

Secondary growth on plants gives rise to secondary vascular or nonvascular tissues. Sometimes these secondary growth are abnormal also. Such abnormal growth is known as anomalous secondary growth.

Normally secondary growth happens in dicots and so, anomalous growth also. But, there are some monocots like Dracaena, Yucca, Agave in which anomalous growth is found. Dracaena is the typical example which has been described here.

Normal structure of Dracaena stem anatomy

Epidermal zone

It has single layered parenchymatous epidermis which is replaced by periderm with cork cells. Cork cells or phellem are thick walled and compactly arranged. Below this cork cambium or phellogen is found with few layers of thin walled rectangular cells arranged in storied manner. Somewhere lenticels are also found.

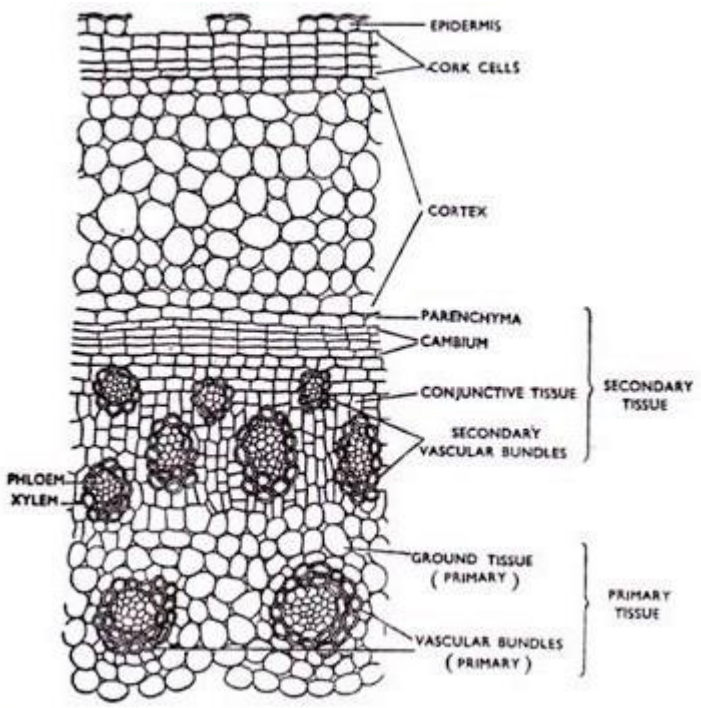
Cortical zone

The cortex is many layered with parenchymatous cells having sufficient intercellular spaces.

Ground tissue and primary stele

There is large ground tissue area made of parenchymatous tissue. Primary vascular bundles are scattered in it. Vascular bundles are oval

or round leptocentric or amphivasal and closed, in which phloem is surrounded by xylem.



T.S. Dracaena stem (a portion)

Anomalous Secondary development

The secondary meristem i.e. cambium originates in the deep layers of cortex or pericycle. The cambial cells are fusiform or rectangular in shape. The cambial cells go on dividing and producing secondary tissues on the inner side first, and later small amount of new tissues are cut off on the outer side as well. The tissues cut off by the cambial cells on the outer side are scanty in amount and are parenchymatous in nature. Those formed on the inner side differentiate into oval-shaped vascular bundles and radially arranged parenchyma cells.

The radially arranged secondary parenchyma constitutes the conjunctive tissue. The radial arrangement of the parenchyma cells of conjunctive tissue is due to their origin by tangential divisions of the cambial cells. They may be thin-walled or thick- walled.

A few derivatives of the cambium divide anticlinally, then periclinally and even haphazardly to form xylem and phloem elements of the secondary vascular bundles. The secondary bundles are mostly amphivasal, some of them may be collateral as well. The small amount of phloem consists of short sieve tubes, companion cells and parenchyma. The xylem is made of only tracheids, usually with scalariform thickening and small amount of xylem parenchyma which have lignified walls.