Shoot and shoot apex organisation

With the help of suitable sketches describe the shoot & shoot apex organisation in plants

Explanation:- Root & shoot are the two main parts which are responsible for the formation of different organs along with their positions formation. It is well known fact that any organisms start its life with a single cell & produces a plant body it has to develop organs & organ system. Each cell of organism have organisation & organisation of genes, with genes that have the differentiate organ will be done. To know such patterns we have to study that a cell decides to form tissue which later on combined to plant body with their different organ called organogenesis

Theories explaining root & shoot apex organisation There are four major theories which are explain that how tissue differentials to form a different organ (i) Apical cell theory

(ii) Histogen theory

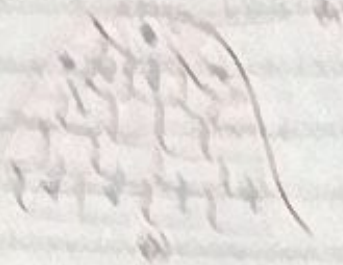
(iii) Tunica Corpus theory

(iv) Korper kappe theory

(i) It is only Apical Cell Theory which state that a single cell or apical region is responsible for tissue differentiation & formation of organ.

The remaining three theories are explain on the basis of that group of dividing cells (tissue) are present at the apical region, which will

centrically set to form tissue



tissue

(a)

Tunica Corpus theory is most accepted. They are divided on the plane of division. They are modification of Histogen theory. They are not applicable in root apex organization.

Histogen is only theory which is applicable both in root and shoot apex system. They are later modified as Tunica Corpus theory are separately applicable in root.

Another hypothesis theory is modification of Tunica Corpus but only applicable in root apex organization.

Apical cell theory is totally discarded.

(3) Apical cell theory →

This is the first theory came in to existence for tissue differentiation & organ formation.

» Theory was proposed by Strasburger, and later on discarded by Hanstein. The only exception of the theory is equisetum because they contain single dividing cell in apical region.

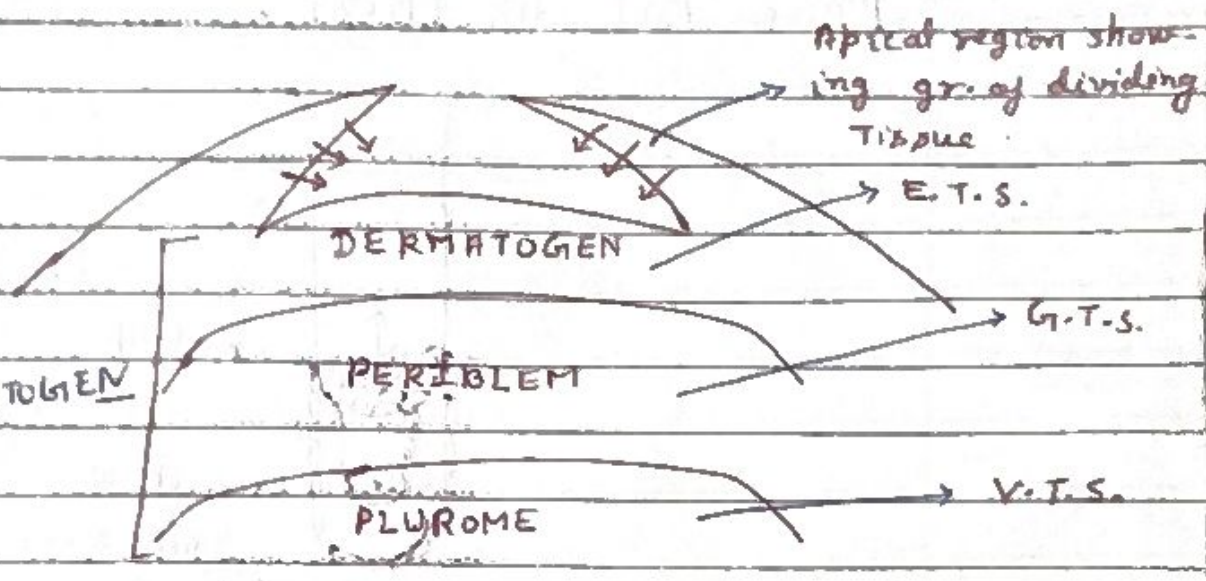
» The bases for discarding the theories in most of the Angiospermic plant group of dividing cell are present at apical region.

(2) Histogen theory →

This theory was proposed Schmidt in case of Angiosperm. The theory has got demerit that applicable both shoot &

roots.

Due to group of dividing cells, three layers are form called a) outermost layer Dermatogen b) Middle layer - Periblem c) innermost layer - Plurome.



→ The combined form of all the three is known as Histogen.

→ In root apex organisation one additional layer is form called 4th layer of Histogen named as CALYPTROGEN.

Calyptrogen forms the root cap. Dermatogen forms the E.T.S Periblem form G.T.S. Plurome form all the type of V.B. either in root & stem.

Quiescent Zone →

→ Only recorded root apex organisation.

→ Position between root tip & root cap.

→ They are occupied by some larger cells which content more amount of DNA but less synthesis of DNA.

→ Because they don't participate in division ie. why called silent zone.

→ Due to maximum storage capacity they are

refers main body

Thus, Kerphes is a position to form E.I.S & G.I.S of zeal where, Kappe can form radial vascular bundles.

Conclusion →

From the above finding one may conclude that more theory is going to explain the whole details of tissue differentiation & formation of organ. Tunica is the most accepted but they lack explanation in root shows this topic requires further research to give a clean concept regarding root & shoot apex organization. Research is going on a coming day problem will be solved.

Refference →

The Anatomy — ESAU

The Anatomy — MEDCAFE and CHALK