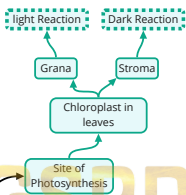


Photosynthesis as a Means of Autotrophic Nutrition



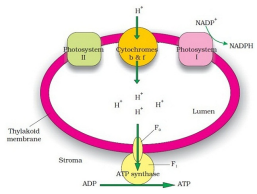
Factors Affecting Photosynthesis

- Carbon dioxide
- Temperature
- Water
- Light

- Pigment Involved in Photosynthesis
- Chl a
 - Chl b
 - Xanthophyll
 - Carotenoids

Photosynthesis in Higher Plants

Chemiosmotic Hypothesis
 Explains the mechanism of ATP synthesis in thylakoid of chloroplast



Photorespiration
 - It is the light induced respiration in green plants.
 - It is a process in which there is no formation of ATP or NADPH, but there is utilization of ATP with release of CO₂.

Light Reaction

Cyclic
 Involves only photosystem I. Only ATP is formed. Electrons move in a closed circle.

Non-cyclic
 Involves both photosystem I and II. Both ATP and NADPH are produced. Electrons do not move in a closed circle.

Biosynthetic Phase Or Dark reaction

C4 or Hatch and Slack pathway
 Occurs in mesophyll and bundle sheath cells. Enzyme RuBisCo is absent from the mesophyll cells.

C3 or Calvin cycle
 Carboxylation
 Reduction
 Regeneration
 For every CO₂ molecules, 3 molecules of ATP and 2 molecules of NADPH are required.