

# Respiration in Plants

Fundamentals of Biology for Entrance  
Tests and Competitive Exams

# Ch 9 Respiration in Plants

1. Respiration is a **catabolic process of releasing energy** from simple sugar glucose for carrying out the life process

2. During respiration Plants **undergo a chemical change** during which glucose is broken down to  
(a) glycolysis in cytoplasm and  
(b) Krebs cycle occurring in mitochondria.

3. Enzymes facilitate each breakdown, and energy is released in form of chemical energy ATP. ATP is a chemical substance that is converted to ADP by further breakdown of glucose.

4. One mole of glucose yields 38 molecules of ATP on complete oxidation.  
This energy is used for all activities of the living cell.

5. In **all living organisms** : (1) **Anabolic metabolism** is a **constructive process** that **consumes energy**.  
(2) **Catabolic metabolism** is a **destructive process** that **releases energy**.

Respiration is a **breaking down process** by which a living cell oxidises organic substances (glucose) , and releases carbon dioxide, water and energy.

# The entire plant respire

Oxygen is obtained through

**Stomata** in the leaves

**Lenticels** in the stem

**Root hairs** and general surface of the roots.

In the presence of sunlight and water, oxygen is produced during photosynthesis

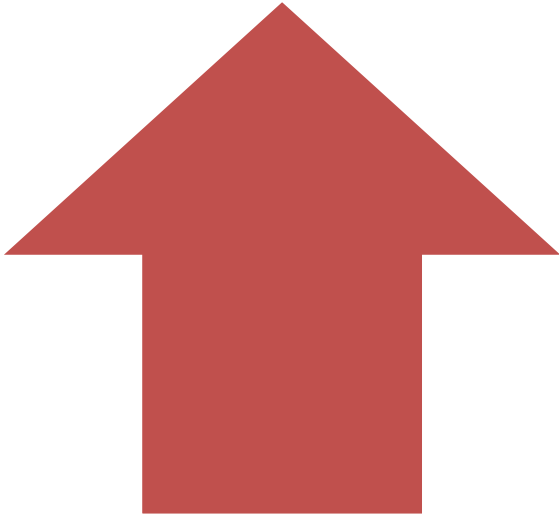
- Part of it is released back into the atmosphere
- Some oxygen is retained.
- **At night**, leaves absorb oxygen from the air and give out carbon dioxide.

Carbon dioxide produced during respiration, is used as raw material, for photosynthesis.

The two kinds of respiration processes are:

- Aerobic respiration
- Anaerobic respiration

# Aerobic and Anaerobic Respiration



1) **Aerobic Respiration** is when the process occurs only in the presence of **oxygen absorbed** from the air. Therefore, it is called aerobic or **oxy biotic** respiration.



2) **Anaerobic respiration** process occurs occasionally in plants only, **in the absence of oxygen**. This is because plants alone can break down a glucose molecule into ethanol and carbon dioxide. This releases a small amount of energy that used for the chemical change.

This form of respiration **is temporary for short durations** only and eventually , oxygen is needed for aerobic form of respiration.

**Certain bacteria** respire only in the anaerobic form.