



## Process of Photosynthesis

In this article you will learn about the process of Photosynthesis Step by step, Also know the Definition, Role of Chlorophyll, C3 And C4 Photosynthesis, Light-Depend Reaction VS Light-Independent Reaction, Formula for photosynthesis.

### Definition of photosynthesis-

It is a process where the plants use sunlight, water, and carbon dioxide to produce oxygen and energy in the form of glucose.

Photosynthesis is also a process to convert light energy into chemical energy.

Most of life on earth depends upon photosynthesis. The process is carried by plants, algae, and other types of bacteria which capture the energy of sunlight to produce oxygen and chemical energy glucose, which is used by the plants themselves for their survival and then consumed by herbivores and carnivores.

### Role of chlorophyll

chlorophyll is responsible for the green color of the plant. Every plant has small organelles present in them which are known as chloroplasts. Chloroplasts store the energy of sunlight in them. Within the thylakoid membranes of the chloroplasts is a light-absorbing pigment called chlorophyll. During the process of photosynthesis, chlorophyll takes the sunlight in the form of blue and red rays, thus reflecting back green rays so the plant could appear green.

### C3 and C4 Photosynthesis

Not all plants follow the same process of photosynthesis, therefore there are 2 major kinds of photosynthesis, C3, and C4.

**C3 photosynthesis-** C3 photosynthesis is used by the majority of plants. It involves producing a three-carbon compound called 3-phosphoglyceric acid during the Calvin Cycle, which goes on to become glucose.

**C4 photosynthesis-** C4 photosynthesis, on the other hand, produces a four-carbon intermediate compound, which splits into carbon dioxide and a three-carbon compound during the Calvin Cycle.

C4 photosynthesis is better than C3 photosynthesis because it allows plants to survive in the environment without much light or water.

### Light-Dependent Reactions VS Light-Independent Reactions



There are many processes for photosynthesis. Two of them include light-dependent and light-independent reactions.

**LIGHT-DEPENDENT REACTIONS-** this reaction takes place in thylakoid membranes in the plants. To prepare its food, it needs light. The chlorophyll absorbs energy from the light waves, which is converted into chemical energy in the form of molecules ATP and NADPH.

**LIGHT-INDEPENDENT REACTION-** The light-independent stage, also known as the Calvin cycle, takes place in the space between the thylakoid membranes and the chloroplast membranes, and does not require light, hence the name *light-independent* reaction. During this stage, energy from the ATP and NADPH molecules is used to assemble carbohydrate molecules, like glucose, from carbon dioxide.

## Process of photosynthesis

The process includes mainly three steps:

- Plants absorb light through chlorophyll, which helps them to appear green in color.
- Plants leaves which consist of stomata, absorb carbon dioxide from the atmosphere and reduce it to carbohydrates.
- The roots of the plant absorb water and minerals from the xylem vessels to transport them to plants. then The light energy (sunlight) absorbed by the plants is converted into chemical energy (glucose) which provides energy to all parts of the plant.

## Formula for photosynthesis is:



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