

Difference Between Saprotrophs and Saprophytes

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Key Difference - Saprotrophs vs Saprophytes

Different modes of nutrition are present within living organisms to serve various aspects which include growth, development, and survival. By these different modes, the organisms are able to obtain the needed nutrition and essential components for survival. Saprotrophs and saprophytes are similar in almost every aspect with regards to the mode of nutrition. Both saprophytes and saprotrophs act on dead and decaying organic matter to obtain nutrition. **Saprotrophs are more commonly referred to as fungi and Saprophytes are mainly plants which obtain nutrition in this mode of nutrition.** This is the **key difference** between Saprotrophs and saprophytes.

What are Saprotrophs?

Saprotrophs are considered as living organisms that basically acquire nutrition from dead and decaying organic matter. They are not considered as parasites since they do not live on living organisms acquiring host nutrition. Since they depend primarily on decaying organic matter, saprotrophs are considered as an important aspect in the context of soil biology. Saprotrophs act on dead organic matter and help in the process of decaying by the breakdown of decaying matter into simpler substances which are then acquired by plants and recycled. Fungi are the most prominent example that could be provided for saprotrophs along with some other bacteria. Therefore saprotrophs are very important organisms in maintaining the environmental balance.

In the context of saprotrophic nutrition, they possess a special type of digestive mechanism which is based on extracellular digestion. This digestive process involves releasing of digestive enzymes to the surrounding environment which they can act on dead and decaying organic matter to convert them into simpler formats. These components could be directly absorbed through the membranes of the organism and then get metabolized. Proteins, fats and starch components in the decaying organic matter are converted to into amino acids, glycerol, and fatty acids and to simple sugars respectively. The membranes of the organism are developed so that these components could be absorbed directly and transported into the organism for metabolism.



Figure 01: Saprotrophs

Certain conditions effectively assist the decaying rate by these saprotrophs and also for the development of the common types of saprotrophs. This includes sufficient water content in the surrounding environment, neutral or slightly acidic soil and higher oxygen concentration. If these conditions are fulfilled, saprotrophs could completely decay dead organic material within a time range of 24 hours. If the conditions are not suitable enough this time may take even up to 6 weeks.

What are Saprophytes?

With respect to its name, *Sapro* means decaying/rotten and *phyte* means plants. In the past, it was believed that non-photosynthetic plants obtained their nutrition through acting on dead and decaying organic matter by secreting different kinds of digestive enzymes which are similar to the saprotrophic mode of nutrition. Therefore, these plants were referred to as Saprophytes. But with the modern classification system, embryophytes or land plants are not considered as true saprophytes and also bacteria and fungi doesn't fall into the category of plants. Therefore the botanical aspect of the name 'saprophyte' is now considered obsolete.



Figure 02: Saprophyte – Indianpipes

With the recent development in the field of botany, it was found out that the physiology of a plant could not involve in such mode of nutrition which involves the direct breakdown of organic matter into simpler forms that could be easily absorbed into the system. It is now confirmed that such non-photosynthetic plants should acquire their nutritional needs through parasitisms which involves either myco-heterotrophy or direct parasitism of other plants that belong to different species. Two examples could be provided for myco heterotrophic genera which include *Monotropa uniflora* and *Rafflesia schadenbergiana*.

What are the Similarities Between Saprotrophs and Saprophytes?

- Both provide beneficial effects for the soil biology
- Both are involved in the maintenance of the ecological balance.
- Mode of nutrition of both types is through dead and decaying organic material.

What is the Difference Between Saprotrophs and Saprophytes?

Saprotrophs vs Saprophytes	
Saprotrophs are organisms	Saprophytes are unusual plants which

(typically fungi and some bacteria) that act on dead and decaying organic matter for nutrition.

acquire nutrition in a similar manner to saprotrophs through extracellular digestion of dead organic matter.

Summary - Saprotrophs vs Saprophytes

Different modes of nutrition are present among different species of organisms. Saprophytes are considered as living organisms that basically acquire nutrition from dead and decaying organic matter. In the past, it was believed that non-photosynthetic plants obtained their nutrition through acting on dead and decaying organic matter by secreting different kinds of digestive enzymes which is similar to the saprotrophic mode of nutrition. But with the modern classification system, embryophytes or land plants are not considered as true saprophytes and also bacteria and fungi doesn't fall into the category of plants. Therefore, the botanical aspect of the name 'saprophyte' is now considered obsolete. This can be highlighted as the difference between Saprotrophs and Saprophytes.

Reference:

1. Wilson, Andrew W. "Saprotroph." Encyclopædia Britannica, Encyclopædia Britannica, inc., 25 Jan. 2016. [Available here](#)
2. "Saprophytes - Facts About Saprotrophic Nutrition And Decomposition." Biology, Byjus Classes, 9 Nov. 2017. [Available here](#)

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