

Difference Between Hibernation and Aestivation

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Key Difference - Hibernation vs Aestivation

Animal sleeping patterns differ according to different climates and different growth stages of the animals. The sleeping patterns suggest a resting state where animals tend to follow in order to conserve their energy during harsh, extreme conditions. The two main sleeping patterns depicted by animals are Hibernation and Aestivation. Hibernation is the phenomenon where the animals spend in dormant conditions during low-temperature periods of the year or during the winter season. Therefore, it is also referred to as the winter sleep. Aestivation is the phenomenon in which animals spend under dormant conditions during high-temperature periods of the year or during the summer season. Thus, it is referred to as the summer sleep. The **key difference** between hibernation and aestivation is the period of time in which the animal undergoes sleep. **Hibernation is referred to winter sleep whereas, aestivation is referred to as the summer sleep.**

What is Hibernation?

Hibernation is the state of sleep or a state of inactivity in [endotherms](#). It is referred to as the winter sleep because hibernation in animals takes place during the low-temperature seasons. It is characterized by slow breathing and slow [heart rate](#). This results in low [metabolic rate](#). [Rodents](#) are referred to as deep hibernators. Other than rodents, [birds](#), [mammals](#), small insects and bats also undergo hibernation at one point of their life. The main purpose of animals that undergo hibernation is to conserve energy under starvation conditions during the dormant periods. Depending on the [species](#), the situation, the time span of the year and the individual animal's tolerance conditions, hibernation duration can differ. Hibernation in animals may last for few days, weeks or few months.



Figure 01: A Hibernating Chipmunk

Before the hibernation process, the animals store energy to last for the hibernation period, which is the [winter](#) season. Animals store food depending on the size of the animal. Larger the animal, more the amount of food they store. Hibernating animals store food as [fat](#), and some animals hibernate during the [gestation](#) period.

What is Aestivation?

Aestivation is the contrast of hibernation, where the animals undergo a resting period during the summer season. This is the survival strategy used by the animals during arid conditions. Aestivation takes place during the dry seasons and in times of heat. Animals, both [vertebrates and invertebrates](#) undergo aestivation in order to avoid damage from high temperatures and to reduce the risk of desiccation.



Figure 02: Aestivation

During the dormancy, the organisms appear to be light in weight because their physiological state is reversed. Similar to hibernating organisms, aestivating organisms also conserve energy to retain water in the body and to ration the use of stored energy. Animals including [reptiles and amphibians](#) commonly undergo aestivation.

What are the Similarities Between Hibernation and Aestivation?

- Both Hibernation and Aestivation phenomena represent a state of inactivity.
- Both Hibernation and Aestivation phenomena represent a state of sleep where the animals are in resting metabolic conditions.
- Both Hibernation and Aestivation phenomena depend on the type of organism, a period of time of the year, tolerance levels of the organism, external and internal conditions.

What is the Difference Between Hibernation and Aestivation?

Hibernation vs Aestivation	
Hibernation is the phenomenon where animals spend in dormant conditions during low-temperature periods of the year or during the winter season.	Aestivation is the phenomenon where animals spend under dormant conditions during high-temperature periods of the year or during the summer season.
Synonyms	
Winter sleep is a synonym for hibernation.	Summer sleep is a synonym for aestivation.
Time of the Year	
During colder climates or low-temperature conditions, hibernation is done.	During hotter climates or high-temperature conditions, aestivation is done.

Summary - Hibernation vs Aestivation

Hibernation and aestivation are two sleeping patterns depicted by animals during different climate conditions during the year. Hibernation refers to the phenomenon where animals such as rodents undergo a resting period during the cold climates, whereas aestivation is the phenomenon of resting during the hot climates. The main reason as to why animals undergo this dormant period is to conserve energy during the extreme weather conditions and to maintain [homeostasis](#) during the conditions. This is the difference between hibernation and aestivation.

Reference:

- 1.Andrews, M T. “Advances in molecular biology of hibernation in mammals.” BioEssays : news and reviews in molecular, cellular and developmental biology., U.S. National Library of Medicine, May 2007. [Available here](#)
- 2.Storey, K B, and J M Storey. “Aestivation: signaling and hypometabolism.” The Journal of experimental biology., U.S. National Library of Medicine, 1 May 2012. [Available here](#)

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