

Difference Between Interferon Beta-1A and 1B

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Key Difference - Interferon Beta-1A vs 1B

In the context of modern pharmaceuticals, various types of drugs are synthesized using different technologies in order to develop effective therapeutics against different disease conditions. In the treatment of multiple sclerosis which is a demyelinating disease, Interferon Beta-1A and Interferon Beta-1B are widely used. Both the therapeutics are not a cure for the disease instead they effectively reduce the progression of the disease condition. **Interferon Beta-1A is utilized during the early stage of the disease condition for effective results, and Interferon Beta-1B is used during the second progressive stage of the disease condition.** This is the **key difference** between Interferon Beta-1A and Interferon Beta-1B.

What is Interferon Beta-1A?

In the treatment of multiple sclerosis, Interferon Beta 1A is used. Multiple sclerosis is a disease condition which occurs in the nervous system. Nerve cells are insulated by a covering known as Myelin sheath. The myelin sheath is produced by Schwann cells which increase the speed of transmission of nerve impulses. Multiple sclerosis is a demyelinating disease which disrupts the myelin tissue. Multiple sclerosis causes different physical and mental disorders.

Interferon Beta 1A is a drug which belongs to the family of interferons. It is a cytokine and is produced by mammalian cells. Interferon Beta 1A is not a drug that will cure multiple sclerosis disease condition. The drug will effectively act in order to slow down the rapid progress of the disease condition if it is identified at early stages. Interferon Beta 1A is administered in injectable forms. Once it is injected, the skin area of injection is highly susceptible to the development of skin reactions which includes cutaneous necrosis.

The occurrence of skin reactions is more prevalent in females within the first month of treatment. If the skin reactions are at mild conditions, the drug is provided continuously. But if conditions like cutaneous necrosis occur, the treatment procedures are discontinued. With time, due to the destruction of fat tissue, the site of injection could be dented. This is a rare condition during the treatment of Interferon Beta 1A. In order to prevent the occurrence of infections at the site of injection, the site of injection is rotated in patients and aseptic techniques are utilized.

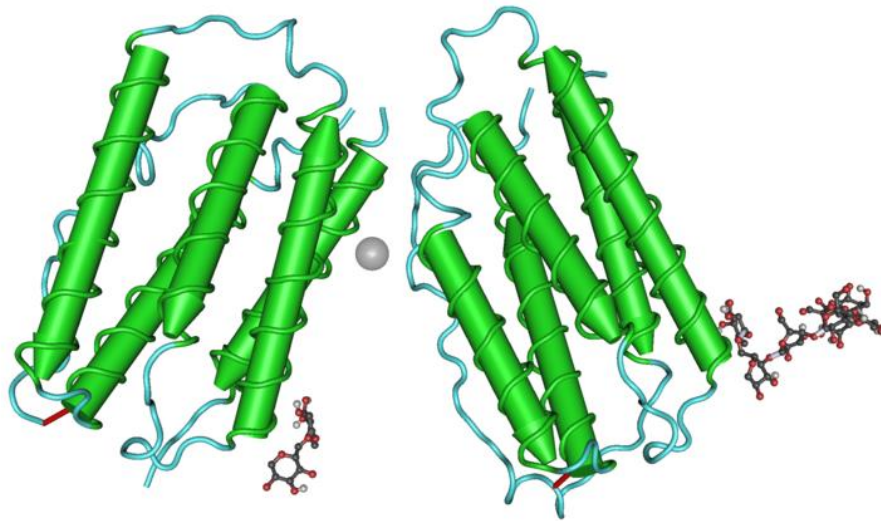


Figure 01: Interferon Beta 1A

The drug Interferon Beta 1A involves in balancing the pro-inflammatory and anti-inflammatory agents present in the brain. Also, it acts to reduce the number of inflammatory cells that cross the blood-brain barrier. Interferon Beta 1A treatment cause the reduction of inflammation of neurons and improves the survival rate of neurons by the increment of production of the nerve growth factor.

What is Interferon Beta-1B?

Interferon Beta-1B is another type of cytokine which belongs to the family, interferons. This is synthesized in modified *Escherichia coli*. This drug is effectively used during the treatment of the second stage of multiple sclerosis. The first stage of multiple sclerosis is treated with Interferon Beta-1A, and it was found out that the same drug is not effective for the second progressive stage of the disease condition. Therefore, Interferon Beta-1B is administered as a therapeutic for the second progressive stage of multiple sclerosis. The drug doesn't act as a cure for the disease rather it will reduce the rapid progression of the disease.

Unlike Interferon Beta-1A, the effects of Interferon Beta-1B are still under investigation. The drug is administered as a subcutaneous injection. The drug is only available in the form of injection. Since it is provided to the subcutaneous layer of the skin, the site of injection is highly susceptible to the occurrence of infections. This is more prevalent in females than males. The occurrence of skin infections directly affects the treatment procedures. If the infections are at mild conditions, the drug is administered continuously. But if conditions like cutaneous necrosis occur the provision of the drug is discontinued. The occurrence of infections could be minimized with the practice of aseptic techniques.

Similar to Interferon Beta-1A, Interferon Beta-1B involves in balancing the pro-inflammatory and anti-inflammatory agents present in the brain. The therapeutic

involves the reduction of neuron inflammation and prevents the excess transfer of inflammatory cells across the blood-brain barrier. The neuronal survival is uplifted by Interferon Beta-1B by the production of nerve growth factor.

What are the Similarities Between Interferon Beta-1A and 1B?

- Interferon Beta-1A and 1B share same side effects such as skin infections which may lead up to cutaneous necrosis.
- Both drugs don't act as a cure but reduce the progression of the disease to some extent.
- Both drugs balance the pro-inflammatory and anti-inflammatory agents present in the brain.
- Both drugs prevent the excess transfer of inflammatory cells across the blood-brain
- Both drugs increase the rate of neuronal survival by the production of nerve growth factor.

What is the Difference Between Interferon Beta-1A and 1B?

Interferon Beta-1A vs Interferon Beta-1B	
Interferon Beta – 1A is a drug which is utilized during the early stage of the disease condition for effective results.	Interferon Beta – 1B is another type of cytokine which belongs to the family, interferons.
Effective Conditions	
Interferon Beta – 1A is used as an effective therapeutic during the primary stage of multiple sclerosis.	Interferon Beta – 1B is effectively utilized for the treatment of second progressive stage of the disease.
Synthesis	
In mammalian cells.	In modified <i>Escherichia coli</i> .

Summary - Interferon Beta-1A vs 1B

Interferon Beta-1A and Interferon Beta-1B are two types of therapeutics which are used during the treatment of multiple. Both drugs don't act as a cure for the disease but effectively reduce the progression of the disease. Interferon Beta-1A is provided during initial stages of the disease whilst Interferon Beta-1B is provided during the second progressive stage. Both the therapeutics possesses similar side effects which are skin infections. The infections could lead to fatal levels such as cutaneous necrosis. Both drugs prevent the excess transfer of inflammatory cells across the blood-brain barrier and increase the rate of neuronal survival by the production of nerve growth factor. This can be identified as the difference between Interferon Beta-1A and Interferon Beta-1B.

Reference:

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1. '1AU1 Human Interferon-Beta01' By Nevit Dilmen ([CC BY-SA 3.0](#)) via [Commons Wikimedia](#)

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