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Commentary

A note on interferon and its types

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DESCRIPTION

Interferons (IFNs) are a group of signaling proteins that are made and released by cells that participate in responding to the presence of several viruses. Under normal circumstances, a virus-infected cell will release interferons that cause nearby cells to increase their immune defenses. Interferons are part of a large group of proteins known as cytokines, molecules used to interact between cells to activate the body's immune system to help fight infections. Interferons are named for their ability to "disrupt" viral replication by protecting cells from infection. However, genetically engineered genes have the potential to counteract the Interferons response that contributes to viral pathogenesis and viral infections. Interferons have a variety of other functions activating immune cells, such as natural killer cells and macrophages, and increasing the immune system by regulating antigen presentation by increasing the expression of histocompatibility complex antigens. Certain symptoms of the disease, such as fever, muscle aches and "flu-like symptoms", are also caused by the production of interferons and other cytokines.

Types

More than twenty different interferons genes and proteins are found in animals, including humans. They are usually divided into three classes: Type Interferons, Type II Interferons, and Type III Interferons. Interferons in all three classes are important in fighting infections and controlling the immune system. All interferons share several common side effects. They are antiviral agents and regulate immune activity. Type Management interferons has been shown in experiments to prevent tumor growth in animals, but beneficial action in human tumors has not been extensively documented. An infected cell releases infected particles into nearby cells. However, an infected cell can protect neighboring cells from a possible viral infection by releasing interferons. In response to interferon, cells produce a large amount of an enzyme known as Protein kinase R (PKR). This enzyme phosphorylates a protein known as in response to new viral infections phosphorylated forms an inactive complex with another protein, to reduce the formation of proteins within a cell. Another cellular enzyme is also responsible for the action of interferon-destroying within cells to further reduce protein binding to both viral and host genes. The formation of blocked proteins impairs both the replication of viruses and their host cells. Additionally, interferons produce the production of hundreds of other proteins known collectively as Interferon-Stimulating Genes (ISGs) that play a role in the fight against viruses and other interferon-producing actions. They also reduce the spread of the virus by increasing the activity of which kills infected cells by promoting apoptosis. The effect of interferons is also linked to its role in protection against certain cancers. Another function of interferons is to elevate-regulate the major molecules of the histocompatibility complex, and increase immunoproteasome activity. All interferons significantly improve the delivery of antigens. Interferon gamma (IFN-gamma) also strongly stimulates dependent presentation of antigens. High expression promotes the release of abnormal peptides from cancer cells to cytotoxic T cells, while the immunoproteasome processes these peptides to be loaded into the molecule, thereby increasing the recognition and killing of cells. It is not dangerous. High expression increases the release of these peptides into helper T cells, these cells release cytokines such as extra interferons and interleukins, among others that signify and regulate the activity of other immune cells. Interferon can also suppress angiogenesis by reducing the regulation of angiogenic stimuli emanating from tumor cells. They also suppress endothelial cell proliferation. Such stress causes a decrease in tumor angiogenesis, a decrease in its vascularization and inhibits subsequent growth. Interferon, like interferon gamma, directly stimulates other immune cells, such as macrophages and natural killer cells.

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