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Rapid Communication

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A Brief Note on Virus Infections and Interferons

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Introduction

Interferon is a term that refers to a group of proteins released by the body's cells in response to viruses. They play a significant role in immune response modulation. Interferon was named because of its ability to prevent viral replication. Interferon, in its various forms, is the body's most rapidly developed and important virus protection. Interferons may also fight bacterial and parasitic infections, stop cell division, and help or hinder cell differentiation. Both vertebrate animals and probably some invertebrates develop them.

Interferons are cytokines, which are small proteins that play a role in intercellular communication. Interferon is a protein secreted by cells in reaction to a virus or other foreign material, although it does not prevent the virus from multiplying. Instead, it causes infected cells and those adjacent to create proteins that prevent the virus from replicating.

Interferon is divided into three types: alpha, beta, and gamma. The alpha, beta, and gamma forms of interferons are classified as type I, whereas the gamma form is classified as type II. This classification is based on the type of cell that generates interferon and the protein's functional characteristics. Interferons of type I can be formed by almost any cell.

lick Isaacs, a British bacteriologist, and Jean Lindenmann, a Swiss microbiologist, discovered interferons in 1957. These compounds were discovered in the 1970s to be capable of not only preventing viral infection but also suppressing cancer growth in laboratory animals. Interferon was hailed as a miracle drug capable of curing a wide range of diseases, but it failed to live up to expectations.

Cellular metabolism

The conversion of nutrients to energy for all cellular processes, as well as the delivery of building blocks for the biosynthesis of proteins, lipids, nucleic acids, and some carbohydrates, is the primary goal of metabolism. Viruses are unable to metabolise on their own and depend exclusively on the metabolism of their hosts [1]. Their life cycle necessitates an energy-intensive synthesis process.

Energy metabolism

Carbohydrates, amino acids, and fatty acids (FAs) are the main nutrients that eukaryotic cells use to produce energy in the form of ATP

Non-proliferating cells pick up the carbohydrate glucose in the presence of oxygen and metabolise it in the cytoplasm to pyruvate through a mechanism known as glycolysis . There is a net production of two ATPs and a loss of two nicotinamides as a result of this.The electron transport chain uses the NADH and FADH2 molecules generated up to this point as inputs. They're used to create a proton gradient at the inner mitochondrial membrane, which leads to the production of ATP from adenosine diphosphate in a process known as oxidative phosphorylation [2]. In conclusion, one molecule of glucose will potentially yield 36 equivalents of ATP.

Effect of Interferons on Energy Metabolism

Although it has long been understood that viral infections and IFNs interfere with lipid metabolism, including FA and cholesterol synthesis recent research has revealed that IFNs have a broader impact on cell energy metabolism.In general, type I IFNs appear to facilitate glycolysis[3]. IFN, for example, induces glucose uptake in m cells that is PI3K/AKT dependent. This Warburg effect is dependent on the expression of hypoxia-inducible factor 1 (Hif1), which is needed to efficiently prime CD8+ and CD4+ T cells in viv0. TYK2 and IFNAR1 are also necessary for increased glycolysis-mediated lactate development in macrophages. IRF5 stimulates glycolysis in macrophages.

References.

1. Samuel CE (2001) Antiviral actions of interferons. Clinical Microbiol Rev 14: 778–809.
2. McNab F, Mayer-Barber K, Sher A, Wack A, O'Garra A, et al. (2015) Type I interferons in infectious disease. Nat Rev Immunol 15:87–103.
3. Fensterl V, Sen GC (2009) Interferons and viral infections. Biofactors 35:14–20.

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