

Role of IgE Antibodies: The Key to Allergic Reactions

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DESCRIPTION

IgE antibodies, also known as immunoglobulin E, are a type of antibody produced by the immune system in response to an allergen or parasite. These antibodies play an important role in the body's immune response, but they can also contribute to the development of allergies and asthma. The structure of IgE antibodies is similar to that of other immunoglobulins, with four polypeptide chains held together by disulfide bonds. The heavy chains are of the epsilon class, giving rise to the designation IgE. IgE antibodies are typically found in low levels in the blood, but they can reach very high levels in individuals with allergic conditions.

The function of IgE antibodies is to recognize and bind to specific allergens, such as pollen, dust mites, and certain foods. When an allergen enters the body, it binds to IgE antibodies on the surface of mast cells and basophils, triggering the release of histamine and other inflammatory molecules. This leads to the symptoms of an allergic reaction, such as itching, swelling, and respiratory distress.

In addition to their role in allergies, IgE antibodies also play a role in immunity against parasitic infections. When a parasite enters the body, it can be recognized by the immune system as foreign and potentially harmful. IgE antibodies are produced in response to specific antigens on the surface of the parasite, and they can trigger the release of inflammatory molecules that help to eliminate the parasite.

While IgE antibodies are important for immune defense, they can also contribute to the development of allergic diseases. Allergic reactions occur when the immune system overreacts to harmless substances, such as pollen or food proteins. In individuals with allergies, the immune system produces large amounts of IgE antibodies in response to these substances, leading to the symptoms of an allergic reaction.

The development of allergies is a complex process that involves

both genetic and environmental factors. Certain genes have been identified that are associated with an increased risk of allergic diseases, and exposure to certain allergens during childhood can also increase the risk of developing allergies later in life. In addition, factors such as pollution, diet, and stress can also influence the development of allergies.

Treatment of allergic diseases typically involves avoiding the allergen whenever possible and using medications such as antihistamines or corticosteroids to control symptoms. In some cases, immunotherapy may be recommended, which involves exposing the individual to gradually increasing amounts of the allergen in order to desensitize the immune system. IgE antibodies, also known as immunoglobulin E antibodies, play an important role in the immune system's response to allergens and parasitic infections. When an allergen enters the body, such as pollen or dust mites, it can trigger the production of IgE antibodies by immune cells called B cells. The IgE antibodies then bind to mast cells and basophils, which are other immune cells, and sensitizes them to the allergen.

The next time the allergen enters the body, it binds to the IgE antibodies on the mast cells and basophils, causing these cells to release histamine and other chemicals that cause allergic symptoms such as itching, swelling, and inflammation. In the case of parasitic infections, IgE antibodies also play a crucial role in the immune response. IgE antibodies can bind to parasites, leading to their destruction by other immune cells such as eosinophils. Overall, IgE antibodies are important in protecting the body against allergens and parasitic infections, but can also lead to allergic reactions when triggered by certain substances.

In conclusion, IgE antibodies play an important role in the body's immune response, but they can also contribute to the development of allergic diseases. Understanding the function of IgE antibodies and the factors that contribute to the development of allergies is essential for the development of effective treatments and strategies for prevention.

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