

Opinion

Nutrition as the cornerstone of immunity

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Nutrition plays an essential role in the maintenance of a healthy immune system. The body requires a variety of essential nutrients to support the development and function of the immune system. A balanced diet that includes a variety of vegetables, whole grains, fruit, and lean proteins can provide the necessary nutrients for optimal immune health. Additionally, research has shown that certain dietary components may have specific immunomodulatory effects. This review will discuss the evidence linking nutrition to immunity and highlight recent findings on the potential benefits of certain dietary components for immune health.

The immune system is made up of a variety of cell types that cooperate to defend the body against illness and infection. These cells require adequate nutrition to function properly. A deficiency of essential nutrients can lead to impaired immunity and increased susceptibility to infection and disease. For example, deficiencies in vitamins A, C, E, B6 and B12, iron, zinc, selenium and copper have been associated with impaired immune function [1].

Macronutrients, such as carbohydrates, proteins, fats, and water, are nutrients that provide energy to the body. Carbohydrates provide energy for cellular processes, including those involved in immunity, such as phagocytosis and antibody production. Proteins are necessary for building new cells as well as repairing damaged ones, which are necessary for maintaining a healthy immune system. Fats provide energy as well as essential fatty acids, which are important for the proper functioning of the immune system. Water is essential for transporting nutrients throughout the body, which is necessary for the optimal functioning of the immune system. Inadequate intake of macronutrients such as carbohydrates and proteins can also lead to decreased immunity [2].

In addition, to supplying essential nutrients for optimal immune health, certain dietary components may also have specific immunomodulatory effects. For example, polyphenols are plant-based compounds found in fruits and vegetables that have been shown to modulate inflammation and enhance immunity [3]. Omega-3 fatty acids are another type of dietary component that has been linked to improved immunity [4]. Additionally, probiotics are live microorganisms found in

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fermented foods such as yogurt that have been shown to modulate the gut microbiome and enhance immunity [5].

Recent research has also highlighted the potential benefits of certain dietary components for specific aspects of immune health. For example, a recent study found that supplementation with omega-3 fatty acids was associated with improved antibody responses following vaccination [6]. Another study found that probiotic supplementation was associated with improved T-cell responses in elderly individuals [7]. Finally, a systematic review concluded that polyphenol supplementation was associated with improved markers of inflammation in patients with metabolic syndrome.

Overall, nutrition plays a vital role in maintaining a healthy immune system. Adequate intake of essential nutrients is necessary for optimal immune health, while certain dietary components may also provide specific immunomodulatory benefits. Further research is needed to understand better how nutrition impacts various aspects of immunity, but current evidence suggests potential benefits from omega-3 fatty acids, probiotics, and polyphenols for improving various aspects of immune health.

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