of ascorbic acid will not survive. Numerous studies have shown that supplementation with ascorbic acid markedly

strongly as ascorbic acid. In fact, some researchers theorize that during a flu pandemic, those with insufficient levels

efficiently. And although vitamins and other essential nutrients can enhance immunity, none appear to do so as

faster and phagocytes (another type of white blood cell) ingest and destroy microorganisms and foreign material more

result of stress, thus reducing the body’s resistance to certain pathogens (disease-causing organisms). The level of

intracellular ascorbic acid is actually known as a “universal limiting factor” because it determines the rate and intensity

of cell-mediated immunity, phagocytosis (a process that stimulates the immune response against viral infection), and natural killer

(NK) cell activity. Various studies have confirmed the benefits of zinc supplementation on infectious diseases such as

acute lower respiratory tract infection, pneumonia, tuberculosis, and the common cold. For example, zinc has been shown to inhibit the replication of several viruses, including human rhinovirus (the leading cause of the common cold) by preventing the formation of viral capsid proteins. Zinc also alters the virus’ ability to enter the host cell and stimulates the body's natural immune responses. In addition, zinc has been shown to inhibit the DNA fragmentation and subsequent apoptosis (cell death) of influenza A-infected cells in vitro, thus inhibiting influenza virus replication. Furthermore, randomized controlled trials have found that adequate intakes of zinc and vitamin C can reduce the symptoms and shorten the duration of the common cold.5-12

Zinc - The importance of zinc in resistance to infections by bacteria and viruses is crucial because of its pivotal role in the efficient functioning of the entire immune system. Zinc is essential for thymus gland function and the production of thymic hormones that regulate the body's defense mechanisms. Zinc is also crucial for maintaining cell-mediated immunity, phagocytosis (a process that stimulates the immune response against viral infection), and natural killer (NK) cell activity. Various studies have confirmed the benefits of zinc supplementation on infectious diseases such as acute lower respiratory tract infection, pneumonia, tuberculosis, and the common cold. For example, zinc has been shown to inhibit the replication of several viruses, including human rhinovirus (the leading cause of the common cold) by preventing the formation of viral capsid proteins. Zinc also alters the virus’ ability to enter the host cell and stimulates the body's natural immune responses. In addition, zinc has been shown to inhibit the DNA fragmentation and subsequent apoptosis (cell death) of influenza A-infected cells in vitro, thus inhibiting influenza virus replication. Furthermore, randomized controlled trials have found that adequate intakes of zinc and vitamin C can reduce the symptoms and shorten the duration of the common cold.5-12

Ascorbic acid (Vitamin C) is essential for stimulating the immune system, as research shows that levels of ascorbic acid in plasma and leukocytes (the scientific term for white blood cells) quickly decrease during infections and as a result of stress, thus reducing the body’s resistance to certain pathogens (disease-causing organisms). The level of intracellular ascorbic acid is actually known as a "universal limiting factor" because it determines the rate and intensity of cell-mediated immunity. When intracellular ascorbic acid is high, lymphocytes (a type of white blood cell) multiply faster and phagocytes (another type of white blood cell) ingest and destroy microorganisms and foreign material more efficiently. And although vitamins and other essential nutrients can enhance immunity, none appear to do so as strongly as ascorbic acid. In fact, some researchers theorize that during a flu pandemic, those with insufficient levels of ascorbic acid will not survive. Numerous studies have shown that supplementation with ascorbic acid markedly enhances immune system function, including antimicrobial and NK cell activity and the proliferation of lymphocytes. Research also indicates that ascorbic acid inhibits the multiplication of viruses, including influenza. Furthermore, a review of 29 controlled trials found that vitamin C does appear to shorten the duration and reduce the severity of the common cold.5,6,13-17

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