Understanding Immunity is Vitally Important to Overall Health

Chris D. Meletis, ND (with permission from cpmedical.net, access pin: 587556)

The immune system is best compared to a well-trained army that utilizes both defensive and offensive mechanisms. Immune system chemicals such as interferon, antibodies, cytokines, etc. represent the marching orders, bullets and other devices the body uses to destroy microbes and tumors. It is the well-orchestrated synergy and function of each component that allows for the proper defense of the body against pathological invaders.

Proper immune function literally allows the human organism to survive in the milieu of pathogens and mutagenic cells that continuously bombard the harmonious existence of the 50 trillion cells that comprise homosapiens.

To ensure proper functioning for the immune system, sufficient and optimal nourishment and stimulation is essential. Sufficient hydration, adequate sleep, consuming a variety of fresh produce are all foundational. Yet in today's world of excess stress, environmental pollutants and super-bugs, enhancement of immune function is crucial. Nurturing healthy immune systems proactively opposed to reactively is a must for those serious about maintaining wellness and healthy aging.

Understanding the immune system is vitally important to understanding which nutritional supplements can have the greatest effect on its function. In this article, I will address three important aspects of immunity: secretory IgA immunoglobulins, natural killer cells and the CD4/CD8 ratio.

sIgA Immunoglobulins

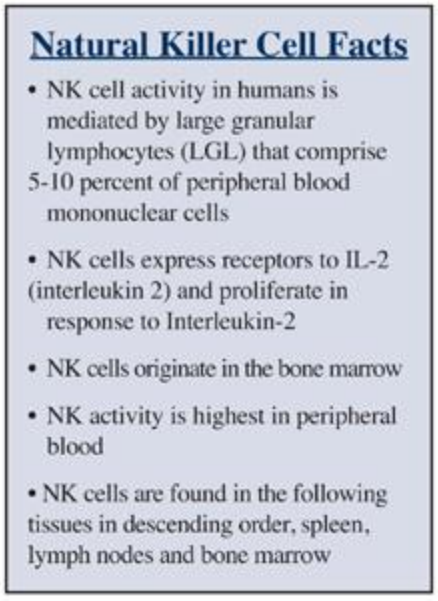
IgA is primarily secreted via the mucous membranes of eyes, noses, throat and gastrointestinal tract. Secretory IgA functions like the body's very own ScotchGuard™, coating the surfaces of the mucous membranes, enveloping them and creating a highly impervious barrier to help prevent microbes from binding to epithelial cells in the respiratory and digestive tracts.

Ensuring that sIgA is present in sufficient quantity is critical to help fight pathogens that come in contact with vulnerable body surfaces via ingestion or inhalation. Body fluids rich in sIgA include colostrum, mother's milk, saliva and tears. Among the unique qualities of sIgA include its rich cysteine content, a physiological significant sulfur containing amino acid. This might help explain why n-acetyl-cysteine (NAC), which works so well to break up thick nasal, sinus and respiratory mucus, also helps accelerate innate healing processes.

Low levels of IgA contribute to susceptibility to infection, asthma, autoimmune conditions, Celiac disease, chronic infections, intestinal disease, candidiasis, food intolerances, allergies, autism and ADD/ADHD. The concept of more is better does not apply to immune function – this is illustrated by the observation that very high levels of sIgA also can be found in people who have chronic infections and immune system hypersensitivity. Therefore, supplements such as EpiCor™ that establish balanced sIgA levels will help fortify the body's defenses by strengthening the barrier against pathogen invasion.

Natural Killer Cells

NK cells are important players in immunity. They are like soldiers who enter directly into battle. In this case, these immunological soldiers kill pathogen-infected cells and cells that have mutated into tumors. This is why they are described as cytotoxic (the same term used to describe many chemotherapy drugs), which means cell-destroying. NK cells are lymphocytes (white blood cells) that powerfully contribute to immune defense and offense. In order to achieve full killing potential, NK cells do not require much new protein synthesis and remodeling. Thus, this rapid killing activity justifies their name as "natural killers."



In their cytoplasm, NK cells contain small granules of special proteins called perforin and proteases, which are known as granzymes. These "zymes" function as enzymes. On release in close proximity of a cell to be killed, perforin forms pores in the cell membrane of the target cell through which the granzymes and associated molecules can enter and induce apoptosis (programmed cell death). By killing cells via apoptosis, the release of pathogens is contained in the surrounding tissue rather than allowing for a systemic spread.

When a viral invader enters the system or a cell becomes mutagenic, NK cells are activated in one of two ways. By triggering the production of antigens on the infected cells, interferons create a "red flag" that helps the NK cells more easily find the infected cells. Antigens are like name tags on the cells they let NK cells and other immune factors know whether a cell is self (i.e. normal) or non-self (i.e. invaded by a pathogen or cancerous). The other way NK cells are activated is through macrophage derived cytokines. Cytokines, proteins produced by white blood cells, send NK cells a signal that an immunological response is needed. Whichever way NK cells are activated, they stop viral infections by causing the immune response to generate cytotoxic T cells. These cytotoxic T cells are like soldiers who each have been assigned a specific enemy to destroy; in other words, specific antigens that have given each T-cell an assignment to kill one type of foreign microbe.

Antigens help NK cells create a built in safety mechanism that allows for "self" to be differentiated by "non-self." The end result is that NK cells only attack cells infected by microbes but not uninfected healthy cells. In this way, collateral damage during the battle is intentionally minimized.

CD4/CD8 (Helper/Suppressor Cells)

A healthy immune system is defined by the balance that it presents. Too great an immune response can contribute to progressive autoimmunity, inflammation and generalized hyperreactivity. In contrast, an immunosuppressed immune system significantly increases the prevalence of infection, progression of HIV and cancer. The HIV epidemic has helped further the research into the fine balance between suppression and stimulation

T helper cells (aka CD4) are a type of white blood cell (lymphocytes) that contribute to maximizing the capabilities of immune function. CD4 cells can be compared to generals on the battle field; they are not equipped for personal combat. Consequently, unlike natural killer cells, they possess no cytotoxic nor phagocytic activity. Thus they cannot kill an infected host cell; rather they help mobilize the other white blood cells and immune constituents and direct the fight for survival.

T helper cells are of paramount importance in determining B cell production. B cells are the body's very own biological weapons. They activate and promote the growth of cytotoxic cells, and optimize the bacterial killing activity of phagocytes such as macrophages. It is this diversity in function and their role in influencing other cells that give helper T cells their namesake.

Noteworthy, as an HIV infection progresses, the performance and number of CD4 cells diminish, contributing to the symptoms complex known as AIDS. It is the drop in number of CD4 count that is used to stage the severity of HIV infection and the timing of treatment regimens.

In contrast, the CD8 cells known as suppressor T cells suppress activation of the immune system and thereby maintain immune system balance. Under normal circumstances CD8 cells serve a life-sustaining function – they prevent hyper-vigilant immune activity. In short, they allow cells to survive, because without their presence out of control self attack would occur continuously. Without CD8 cells, the immune system would be like an 18 wheel diesel truck running out of control down a steep hill, and the damage throughout the body would be catastrophic and fatal.

EpiCor is one nutritional supplement shown to upregulate and increase CD4 (helper cells) while decreasing CD8 (suppressor cells), which improves the balance between the two. The clinical implications of this ability are astounding, not only due to their HIV application, but also because it is this immunological balancing act that is the key to all successful immune defenses.

Summary

Controlling stress, getting sufficient sleep, performing mild to moderate exercise, ensuring proper hydration and practicing a health-promoting diet and lifestyle are all pivotal for those seeking to enjoy true wellness and a healthy aging process. Nutritional supplements also can build immunity by increasing levels of secretory IgA (which builds a barrier against pathogens), increasing the killing efficiency of natural killer cells and improving the CD4/CD8 ratio. As the saying goes, the best defense is a good offense.