

Who Needs a Boost in Immune Function?

There are people who are fit, happy, strong and seem to never be ill or even catch a cold. They have “heroic” immune systems. But even heroes have bad days. Depressed immune function typically comes with age and confounding factors. Things like a poor diet, extreme diets, chronic stress, obesity and underlying disease all contribute to immune dysfunction. In this immune depressed state, disease occurs, and chronic infection and inflammation extract a huge toll in suffering and cost. The

Most frightening chronic disease, cancer, remains largely untreatable with conventional therapies. The hope is that advances in immunology will provide the tools to reengage the immune system to do the job it does so well.

Our understanding of transfer factors improves constantly and we stand on the threshold of amazing possibility. Transfer factors and the other immune modulators are making a difference; the world and medical science are following the lead.

FEATURED ARTICLE



New Breakthrough Advances Our Knowledge of Immunity

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At a time when science is just beginning to understand how transfer factors work in the vastly complex communications of the immune system, people throughout the world are reaping the benefits of improved health and immune-system function from these amazing molecules.

The work of many researchers demonstrates that transfer factors educate and enhance immunological functions. Highlights of this work include the documentation that natural killer (NK) cell lymphocyte activity significantly increases after a single pulse of transfer factors.

Transfer factors are fundamentally the information molecule of the immune system. In a small portion of the transfer factors peptide (a string of amino acids), the molecular identity of a virus, a bacteria or other pathogen is encoded. At the molecular level, this is analogous to casting a footprint in wet sand; that impression is transfer factor.

When the immune system sees these “footprints,” it grabs them, processes them and hands them off to uncommitted or immature immune cells that do not have a footprint of their own. In the process of grabbing and passing off this information, many cytokines are secreted into the immediate area. In particular, the cytokines interleukin 12 (IL-12) and interleukin 2 (IL-2) provide general excitement and enhancement of all immune cells and the NK cell in particular.

Transfer factors for commercial use were first obtained from the colostrum of dairy cattle. With the subsequent discovery of transfer factors in the yolk of hen’s eggs, science took a big step in the development of transfer factors targeted for specific organs. As hens lay an egg a day, they have become a significant source of transfer factors.

The idea to blend bovine (cow) colostrum transfer factors and avian (chicken) transfer factors came from the notion that the two sources of transfer factors from different species may provide a broader array of microbial identities encoded in the transfer factors to educate the immune system in a synergistic fashion.

To test the idea that a blend of transfer factors may further enhance immune function, scientists used the NK cell assay. The NK cell assay is the best test currently available to evaluate immune function. The NK assay uses living lymphocytes in an *in vitro*, or lab, setting. Using this assay, researchers were able to determine the specific blend of bovine and avian transfer factors that outperformed all the others. The study results exceeded the researchers’ expectations and provided important insights, primarily that it does appear that the blend works synergistically.

What Natural Killer Cells Do

Before discussing the test, it is important to understand the function of NK cells in the immune system. Scientists and physicians the world over, are just now recognizing the power of the NK cell to control viral infections and tumors. They use some of the natural immune modulators to attempt to enhance immune function. A great number of studies show very clearly that the NK cell can and does control and help contain many types of cancer and virally-infected cells.

The NK cell is a unique type of lymphocyte as it needs no priming or education to function as the T- and B-lymphocytes do. Rather the NK cell has the ability to recognize foreignness. A tissue transplanted surgically is often rejected by the NK cell unless the tissue “match” is very good and certain immune-suppressing drugs are given. A cell that has transformed into a tumor or a cell that has become infected with a virus may lose its native character and appear foreign to the NK cell.

The NK cells patrol all the cells of the body and make physical contact with the “NK kiss.” If the kiss reveals that the cell is okay and not foreign, the cell is given grace. If the kiss reveals that the cells are a tumor or virally-infected, the kiss is the kiss of death and two types of toxins elaborated by the NK cell destroy the cell.

The NK cell used to be thought of as a primitive form of immunity. It is now very clear that the NK cell is the “king pin” of the immune system and has great influence over many immune functions. Thus, high functioning NK cells have many important roles in maintaining optimal immune function and balance.

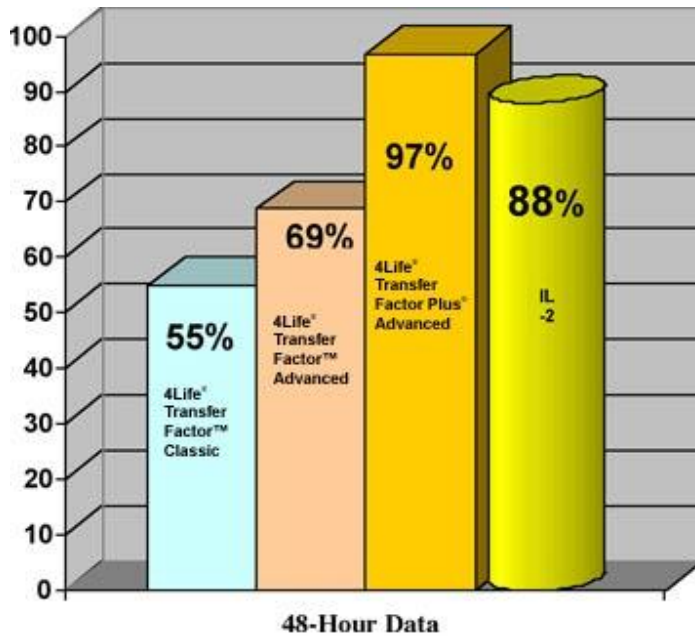
Measuring NK Cell Activity

White blood cells from healthy donors provided a source of lymphocytes for the assay. Unmarked samples containing several different combinations of transfer factors sourced from cow colostrum and chicken egg yolks were incubated with the NK cells for various time periods of up to 48 hours in order to identify the most potent blend ratio. Known quantities of NK cells are added to small wells containing living cancer cells. These cancer cells are the targets for the NK cells. A dye that can be measured electronically is used to indicate when a cancer cell is lysed, or killed. This allows for objective measurement of the NK cell actions. The test then determines the number of the target cancer cells destroyed by the NK cells. The percent cell lysis (CL) is the important measure.

The Results: 4Life Transfer Factor and 4Life Transfer Factor Plus Advanced Formulas

The NK cell tests for the avian/bovine 4Life Transfer Factor blends and 4Life Transfer Factor Plus blends revealed the optimal blends that induced the NK cells to kill 69 and 97% of the cancer cells, respectively (Figure 1). This represents a 283 and 437% increase over baseline, or control NK cell function, where no Transfer Factor was added. To further validate the test, the lab used a positive control. In this case, the positive control was the potent physiological immune mediator called interleukin 2 or IL-2. Interleukin 2 very specifically stimulates NK cell actions and, when used in drug form, is known as a standard for some types of cancer research. In the NK cell assay, IL-2 gave an 88% increase in cell lysis. Amazingly, 4Life Transfer Factor Plus Advanced Formula outperformed the positive control and was dubbed by the researchers as the “golden interleukin.”

Figure 1: Cell Lysis (% of cells killed)



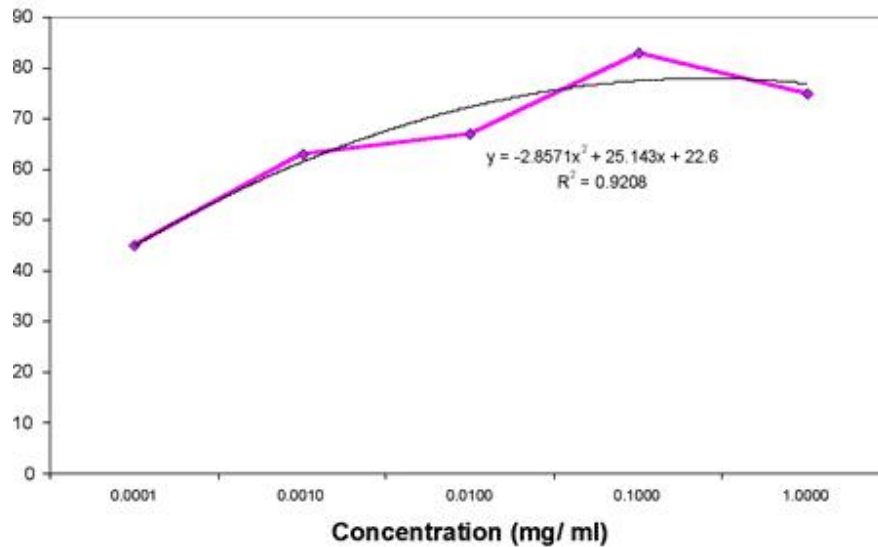
Interleukin 2 is used in medicine for certain cancer patients. It is used in the hope that it will increase NK cell function and improve outcomes. Unfortunately, IL-2 is experimental, very expensive and can have rather toxic side effects when administered to patients. Both laboratory studies and human experience show that 4Life Transfer Factor and 4Life Transfer Factor Plus are non-toxic and well tolerated by animals and people alike. More than likely, these two products work to stimulate a natural release of immune modulators like the interleukins.

In the laboratory test, the highest-performing blend also revealed some new important information. The 4Life Transfer Factor blend followed a classic dose-response curve. Simply put, this means there is a dose of the blend in this assay that provides the optimum response. A smaller dose provides a lesser response and conversely a higher dose provides no additional benefit. Most nutritional supplements as well as prescription drugs function in the classic dose-response fashion.

Shown in Figure 2 is the actual data from the highest-performing blend. This somewhat complex piece of information gives scientists confidence in the NK cell assay and describes the dose-response character of 4Life Transfer Factor blend.

Figure 2: NK Cell Lysis of Target Cells; 48-Hour Incubation

NK Cell Lysis of Target Cells; 48 hr Incubation



4Life Transfer Factor Plus Advanced Formula

4Life Transfer Factor Plus Advanced Formula increased NK cell lysis 437%, that's nearly 450%, the maximum that this particular assay can measure. Just how this combination of ingredients works is not clear, yet the components are the subject of active research by molecular immunologists.

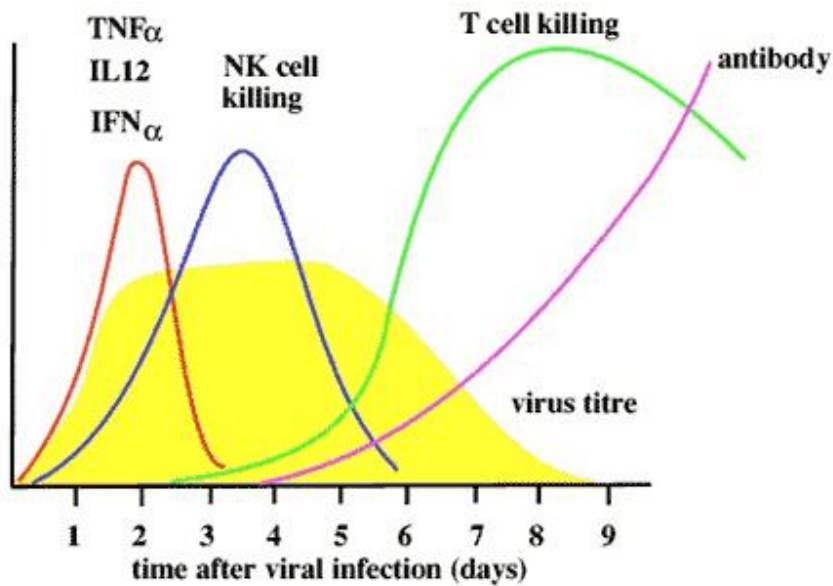
The additional components of 4Life Transfer Factor Plus Advanced Formula may account for the greater response over IL-2. The plant-based complex polysaccharides, like mannins and glucans, have the ability to interact with special receptors on other immune system cells. The macrophage and antigen processing cells (APC) activate in the presence of these plant materials. They appear to these cells as if they are products of bacteria or yeast. The interaction causes further release of stimulating cytokines. Thus, the two sources of stimulation synergize to give the high NK cell functions.

This type of immune stimulation is desirable, as it now appears from recent studies that a stimulated immune system is a high-functioning and balanced immune system. The concept of balance has great implication for regulation of immune functions that have gone astray.

Figure 3 is a stylized time line of immune responses to a viral infection. In a matter of one day after a new viral infection, the cytokines are in action and soon thereafter, the NK cell activity increases and peaks. At this peak, the total viral load plateaus. This plateau is due to the action of the NK cells killing virally-infected cells and stopping replication of the virus.

It is now clear that early and effective NK cell function is critical and determines the outcome and duration of an illness.

Figure 3: Time Line of Immune Response



Source: Nick Holmes, Ph.D., Immunology Division, Department of Pathology, University of Cambridge

Health Implications

Supplementing immune function and vigilance is now possible at a level unknown less than a decade ago. The paradigm shifts, as we have the ability to move the NK cell peak activity from hours to days earlier. The amazing implication is that with improved NK function, infection without illness is possible as is tumor recognition and destruction before the tumor becomes recognized as disease.

The opportunity to prevent illness has been rather illusive, except for the application of a few vaccines. The ability to safely and inexpensively improve immune function makes this hope no longer illusive. Prevention is indeed the key and available to everyone through transfer factor.

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