

## Immune System Strength

# A Healthy Immune System Prevents The Little Virus From Making Big Problems

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### INTRODUCTION

Everyone has heard of the smallest microbe, the virus, yet few really appreciate just how small and just how insidious they can be. We have a difficult time understanding things we cannot see or otherwise readily detect. Virus particles are so small that hundreds if not thousands can fit inside the space of a small bacterium. Bacteria cannot be seen with the unaided eye. Yet with a fairly simple microscope at 1000 times magnification, bacteria appear as little balls or rods. Virus cannot be visualized without the aid of very elaborate microscopes called the electron microscope.

With their very small size, coupled with the bare minimum of the machinery of life, many scientists have some difficulty referring to these agents of disease as alive. Whether they are alive or not is somewhat a mute point, for we all know that virus infections are at best unpleasant and can be life altering and life threatening. Like the great virus epidemics of the past, the virus epidemics of today, Influenza, the dreaded HIV and lethal Ebola viruses, challenge the best of medical science and send a wave of fear through everyone in their path.

Control of virus infections is best achieved by the healthy and vigilant immune system. To date there are only a few antiviral drugs. The biology of the virus renders them virtually unaffected by all of the antibiotics used against bacterial infections. Several virus diseases that have plagued people are almost eliminated from the planet as a result of effective vaccines. Diseases like Small Pox and Polio are now virtually non-existent. Other viral diseases, like Human Herpes, the Cancer viruses and the insidious Human Immunodeficiency Virus, continue to evade the prospect of effective vaccines. They are more complex and clever. Clever in the sense that they have developed the means to hide from the immune system. The viruses that have the ability to invade our bodies and evoke less than a fully effective immune response are responsible for a host of human diseases that take their toll over a long period of time. The difference between those that are ill for only a short period of time and those that suffer for months and years, just may be in the nature and effectiveness of our immune system.

**CASE HISTORY:** College student, Jim, was a young active and very healthy athlete. College for Jim, like many other college students is busy and hard working time. The college day is one of many working hours, too little sleep and a diet that masquerades for barely adequate, for the fast foods and empty calories. In the beginning of his junior year, with a full load of classes, part time job and varsity sports, Jim's tiredness and general mild influenza like symptoms just seemed like another bout of the "college student flu". Yet after several weeks of increasing tiredness, unimproved by a conscious effort to get more sleep, the symptoms of joint and muscle pain and increasing soreness, combined with a new and severe sore throat. Jim was seen by the student health center and treated with antibiotics for "Strep Throat". The antibiotic treatment had no effect. On seeking a second medical opinion, Jim was diagnosed with Infectious Mononucleosis. Medical treatment included a strict regimen of bed rest, nutritious diet, vitamin supplements and the expectation of 6 to 8 weeks of recuperating.

The Epstein Bar Virus commonly associated with Mononucleosis is a good example of a virus infection that attempts to hide from the immune system. This Herpes virus "hides" per se by actually infecting the cells of the immune system, thus rendering them unable to respond effectively. Young people are the most commonly affected and pick up the virus from the saliva of others that have the disease. Virus carriers are often those that have recovered from the illness yet may still shed the virus in the secretions of the throat.

For most individuals, especially the young, the infection is controlled by the immune system and few if any long term effects befall the patient. In some portion of older patients, perhaps those that escaped the disease as adolescents, may experience a different and long lasting disease. Many have suggested that

Chronic Fatigue Syndrome is in part due to infections of the Epstein Bar virus.

#### IMMUNITY TO VIRUS INFECTIONS.

The defensive response to viral infections has two general components: Non specific and Specific. There are chemical messengers, *Interferons* that are released by viral infected cells. One type of interferon helps other cells resist viral infection. The Natural Killer cells of the immune system have the ability to recognize when a cell of the body is infected with a virus and destroy it. Both of these non specific mechanisms are important in the early phase of infection and before the body can mount an effective specific immune response.

**Antibodies:** Antiviral antibodies are produced much later in the course of infection and hence have a small role in the initial defense. They do have a large role in resistance to reinfection. Neutralizing antibodies bind to virus and render it less able to attach and penetrate a cell, thus protecting it.

**Killer T Cells:** The critical defensive arm of the immune system for viral infections is the stimulation of specific lymphoid cells, called the Killer T Cells or specifically the CD8+ cells. These cells seek and destroy cells of the body that are infected with the virus and thus greatly limit the reproduction of new virus by the cells. In order to "clear" viruses from the body a healthy armada of Killer T Cells is critical.

**Transfer Factor:** Transfer factor is a chemical found in nature's colostrum that has the unique ability pre-educate the immune system before the body is attacked by a virus. Transfer factor is likely a number of factors that in the newborn stimulate and activate the cells of the immune system. For a number of viral diseases, this creates a large number of T Cells that are specific for a given virus and they circulate, "on patrol" to seek and destroy those cells that have been infected with virus. Transfer factor also works to educate the Helper T Cell that assists the Antibody producing B Cell Lymphocytes to manufacture neutralizing antibody. The EB virus and others attempt to slow the immune response by infecting the immune cells themselves. Sick immune cells are not able to respond. Transfer factor supplementation in acute viral infections may well hasten the development of an effective immune response by mobilizing cells to attack the virus before the virus can attack them.

In persons with long term or chronic EBV infections, the immune system is damaged by the viral infection and does not respond well to that virus and others that come along. Transfer factor has the unique potential of educating the remaining healthy lymphoid cells and just possibility rearming those cells that have been damaged by the virus. This may explain why transfer factor therapy is shown to improve the health of those with chronic viral infections like EBV.

The viral pathogens will always be part of the human ecology. They have shown themselves to be highly specific and adaptable. The greatest hope for our defense is to keep our immune systems at peak vigilance and healthy. Because they are smaller than small and unseen our only defense is our ability to produce effective vaccines and maintain top immunological health.

#### COMPARE THE BIOLOGY



### Compare the biology of Transfer Factor™ and ingested antibodies and it's easy to see how Transfer Factor can make a difference

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The immune system has two fundamental responses. One to produce active long lived cellular based immunity; the other to make a special short-lived protein called antibodies. Both are important and need to work together. For good health and longevity antibody production is simply not enough.

Ingestion of Transfer Factor or antibody preparations for immune enhancement will have very different outcomes.

Characteristic	Transfer Factor	Ingested Antibodies
Immunity	<b>Active:</b> Living cells take the transfer factor information and carry out many functions on a ongoing basis through cell replication	<b>Passive:</b> Once antibodies react with their target they are spent and can not reproduce themselves
Size of Molecule	Very small linear protein, about 4400 molecular weight	Very large complex structure protein, about 150,000 molecular weight
Term of Activity	Long lived, especially in the case of the education function of Transfer Factor	Circulating antibody reduced to 50% by 23 days; 1 to 2 days in the GI tract
Absorption	Well absorbed in the GI tract	Less than 15% absorbed in the GI tract
Digestion	Not acted on by digestive enzymes	Much of the antibody degraded by proteolytic enzymes
Allergenic Potential	Too small to be allergenic	Milk and egg antibody allergy is common and absorbed antibody will produce human antibodies to the ingested foreign antibodies
Location of Immune functions	Broad activities throughout the immune system	Ingested antibody good for binding toxins and intestinal pathogens in the interior of the GI tract.
Immune specificity	Wide array of agents with cross reactivity	Finite antibodies to a limited number of agents