

Immune Enhancing Effects of Aloe

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Galactomannans are a class of long chain sugars derived from plants, which have been shown in laboratory and clinical studies to have a wide variety of immune stimulating and protective effects within the body. In studying the different sources of this polymer, it has been discovered that the Aloe barbadensis plant contains the greatest concentration of acetylated mannan which is also the most active form of mannans. This “acemannan” has been shown to have many effects in the body, mostly impacting on the gastrointestinal and immune systems, which are intricately related. Before elaborating on acemannan’s beneficial effects, it is appropriate to discuss the type of pathology often present in individuals experiencing immune system depression.

The most striking commonality found in individuals suffering with immuno-depressive conditions (Epstein-Barr virus, Chronic Fatigue Syndrome, systemic candidiasis, HIV infection and others) is their high incidence of digestive dysfunction and maldigestion. This has several effects that contribute to stress on the immune system and therefore its weakening. Maldigestion means that the consumed food is not properly broken down into the elemental building blocks needed for the body to rebuild itself and to generate energy for metabolism. This results in a type of starvation at the cellular level, with all tissue suffering malnourishment and therefore decreased effectiveness of all internal chemical processes. These processes include breakdown and transport of toxins out of the cell, movement of nutrients into the cell, and energy production for cell functioning. This affects all cells in the body, including those of the immune system such as white blood cells, (macrophages, monocytes, and lymphocytes) and red blood cells which carry oxygen. Not only do we lack enough fuel but we’re low on oxygen too.

However, it is not this cellular starvation alone that causes the immune depression. Maldigestion also results in partially digested food remnants which can be involved in several pathological reactions. First, these remnants become irritants and cause inflammation of the mucosal wall of the intestines. Many powerful enzymes and damaging chemicals are released, injuring the intestinal wall causing increased intestinal mucosal permeability. The foreign proteins of the digested food can then leak across the mucosa into the lymphatic channels of the intestinal wall and from there gain access to the circulation. Here, these absorbed proteins are recognized as foreign and attacked by cells of the immune system. Antibodies bind to the protein, then call in macrophages and monocytes. T-cells arrive later, releasing enzymes and using oxygen to drive the metabolic breakdown of the foreign protein. The total result is that the immune system is constantly turned off and draining down like a battery. As these allergic reactions to food breakdown products continue, the cells of the immune system wear out faster, run out of fuel and aren’t reproduced in sufficient numbers.

In addition to this chronic hyperimmune state, undigested food remnants provide fuel for the overgrowth of fermentative fungal organisms such as Candida albicans as well as several types of parasites. Overgrowth of Candida in the intestine has significant effects throughout the body due to the absorption of toxic by-products of its metabolism. This can result in worsening of food

allergies, hypoglycemia, digestive disturbances, excessive mucus, bloating, flatulence, skin rashes, and extreme fatigue. This chronic infection further drains the immune system and complicates the picture.

Further damage is inflicted on all cell membranes from the effects of the generalized inflammation occurring as a result of maldigestion. These metabolic reactions utilize large amounts of oxygen and produce oxidative free radicals as waste by-products. These negatively charged oxygen molecules are desperately trying to balance their electrical charge and immediately begin to chop holes in cell membranes as they grab positive charges. The result here is further damage to the intestinal mucosa and ever worsening of the increased permeability.

All these processes work together in a vicious sequence of events leading to progressive weakening of the immune system. It is clear that many mechanisms are at play in orchestrating these processes. Without definitive therapy directed at each component of immune system pathology, this is a downward spiral to death. Fortunately, a thorough multidimensional treatment protocol addressing each component has been shown to reverse these processes. Also, Aloe appears to play a key role on many different levels in boosting immune function.

As the biologic activities of Aloe derived acemannan have been elucidated, it has been shown to have a remarkable ability to normalize all of these damaging processes and therefore contribute significantly to the enhancement of immune system function. At the intestinal level, acemannan acts as a potent anti-inflammatory agent, neutralizing many of the enzymes responsible for damaging the mucosal wall; in effect, quenching the fire. This results in decreased leakiness of the intestinal wall and less absorption of allergic stimulating foreign protein. Acemannan has direct virucidal, bactericidal, and fungicidal properties which can help control Candida overgrowth so that normal gastrointestinal bacterial flora can be restored. Acemannan also stimulates intestinal motility, helping to move allergenic proteins from the small intestine into the colon. All these processes help to normalize gastrointestinal wall structure and function and therefore stop the vicious cycle of immune system damage.

Acemannan also has direct effects on the cells of the immune system, activating and stimulating macrophages, monocytes, antibodies and T-cells. It has been shown in laboratory studies to act as a bridge between foreign proteins (such as virus particles) and macrophages, facilitating phagocytosis (ingestion of the protein by the macrophage). This receptor site activation is a key component in boosting cell-mediated immunity which is deficient in HIV infection. It increases the number and intensity of action of macrophages, killer T-cells, and monocytes, as well as increasing the number of antibody forming B-cells in the spleen. Acemannan also protects the bone marrow from damage by toxic chemicals and drugs such as AZT.

These various effects while seemingly widespread and unrelated, are in fact due to one simple process at the cell membrane level. Acemannan, a mucopolysaccharide, is a long chain sugar which

interjects itself into ALL cell membranes. This results in an increase in the fluidity and permeability of the membrane allowing toxins to flow out of the cell more easily and nutrients to enter the cell. This results in improved cellular metabolism throughout the body and an overall boost in energy production. The vicious cycle of maldigestion and cellular starvation is finally broken as the acemannan normalizes absorption of nutrients and increases tolerance for allergenic foods. The immune system is now stronger, under control, and better prepared for any new threat.

As humans living in the late twentieth century, our bodies' metabolic and detoxification systems are under ever-increasing stress from foreign chemicals, nutrient depleted food, and immune damaging infectious agents. In order to control and prevent the inevitable progression of immune system destruction that these stresses cause, therapy must be multifactorial involving all levels of health, diet, and lifestyle. These different areas consist of destruction of pathogenic organisms, metabolic detoxification, intestinal cleansing, increasing cellular metabolism, antioxidant agents to combat free radicals, and direct stimulation of immune system cells. Acemannan, the active ingredient in cold-processed, whole-leaf Aloe has been demonstrated in laboratory testing and clinical use to be effective on all levels of this therapeutic program.

It is because of these versatile and comprehensive characteristics that concentrated Aloe vera juice is strongly recommended in the treatment of immune deficiency disorders. It plays a prominent role along with other therapies, nutritional supplements, and medications in the multidimensional treatment of these illnesses. The healing powers of Aloe have been known for centuries, but now we have the scientific foundation that allows appreciation of this amazing plant and its important role in restoring and maintaining our health.

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