



Immune Support

Your body wants to be healthy. It fights daily to keep infections and germs under control. However, poor nutrition, stress, smoking, dieting, travel, disease, medical therapies, strenuous exercise and growing older all make it harder for our bodies to fight illness. Under distress, your body actually releases fewer immune boosting antigens, as it is required to use its resources elsewhere. We get sick more easily. We take longer to bounce back.

Immune Support is designed to nourish the body's immune system, reducing the body's demand for naturally produced antibodies. Since the body's resources are finite, replenishing immune resources allows more resources to be available wherever they may be needed.

Immune Support contains:

Immunoglobulin – an all-natural and lactose-free purified protein isolate derived from bovine serum. It contains a minimum of 45% IgG, and is also rich in the immunoglobulins IgM and IgA. It also contains transferrin, endotoxin-binding proteins and other acute phase proteins that can provide additional immune support benefits.

The primary way our bodies' immune systems defend against infection and illness is by releasing immunoglobulin (antibodies). Many germs enter our bodies through ingestion. They end up in the 400 sq. feet of GI tract surface area. The basic functions of immunoglobulins are the neutralization and opsonization of these bacteria, viruses, and other environmental pathogens.



Supplement Facts		
Serving Size: 2 Capsules		
Servings Per Container: 45		
Elemental Amount Per Dose		% DV
Total Protein	205 mg	<1%
Immunoglobulin G	77 mg	*
Vitamin C (from Acerola Cherry Extract)	10 mg	17%
Zinc Amino Acid Chelate	10 mg	66%
Calcium (from Calcium Citrate Tetrahydrate)	4 mg	<1%
Folic Acid	400 mcg	100%
Vitamin B-12 (from Methylcobalamin)	20 mcg	333%
Colostrum (contains 1% Lactoferrin)	300 mg	*
Lactoferrin (from Colostrum)	3 mg	*
Oat Powder (contains 15% Beta Glucan 1,3 1,6)**	200 mg	*
Beta Glucan 1,3 1,6 (from Oat Powder)	30 mg	*
L-Cysteine HCL	150 mg	*
Flax Seed Powder	80 mg	*
Acerola Cherry Powder Extract	60 mg	*
L-Glutamine	50 mg	*

*Daily Value not established

Other Ingredients: Gelatin, rice bran and magnesium stearate (vegetable source)

**Contains Nurture 1500® a registered trademark of Nurture Inc.

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Neutralization means that the antibodies have bound to an antigen which prevents the antigen from finding its target. For example, if the antigen bound by an antibody is a protein comprising part of a bacterium or virus, the antibody can prevent the attachment of the bacteria or virus to the host. Likewise, binding of an antibody to a toxin prevents the uptake of the toxin by the body. In both examples, the antibody has effectively neutralized the bacteria, virus and/or toxin.

Opsonization describes the coating of an antigen with antibodies so that it can be recognized as foreign, ingested by specialized white blood cells, destroyed and presented on the surface of the white blood cells for recognition by the other cells of the immune system.

Unlike antibiotics, antibodies also allow the immune system to specifically recognize pathogens while ignoring good bacteria that are a part of the body's normal microflora. The proven neutralization and opsonization functions of antibodies are why they are considered to be a viable anti-infective strategy.

In addition, immunoglobulin is naturally rich in mitogenic growth factors such as IGF-1 and the immunomodulating cytokine, TGF-B. Both have been found to assist the body in recovery. It is also rich in transferrin, an iron-binding protein that can inhibit bacterial growth.

Supplemental immunoglobulins first act in the intestinal tract to eliminate or inhibit the proliferation of disease-causing organisms and toxins. It is this action against invading antigens in the bowel that creates the link between the gut and the rest of the body. The inhibition of the growth of opportunistic organisms or the absorption

of toxins by the bowel reduces the stimulation of the immune system. Thus, the body's resources, particularly amino acids, which would normally be directed toward those challenges, can be conserved, or redirected to other "battles" in other parts of the body.

Colostrum is produced by mother cows during the first days after giving birth. Colostrum provides a rich source of antibodies, growth factors and nutrients for the newborn during those early days when the immune system is vulnerable to infection in the gastrointestinal tract.

Colostrum contains 3 to 4 times more protein than regular cow's milk. The greatest portion of the protein consists of whey proteins and Immunoglobulin (mainly IgG). The immunoglobulin makes up about 75% of the whey proteins. Bovine Colostrum contains other immunostimulatory substances, including lactoferrin. Lactoferrin has many documented anti-viral, anti-microbial, antioxidant and immunomodulatory effects. Specific receptors for lactoferrin are found on many key immune cells such as lymphocytes, monocytes and macrophages, and are known to be directly involved in the upregulation of natural killer (NK) cell activity. Most research points to lactoferrin as being more of an immune modulator rather than a simple immune stimulant.

Colostrum also contains colostrin also known as proline-rich polypeptide (PRP), another possible immunomodulatory substance. The combination of specific, as well as nonspecific, IgGs and such immunomodulatory factors as lactoferrin and PRP may afford general antimicrobial protection of the gastrointestinal tract.

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Other substances found in bovine colostrum include casein, alpha-lactalbumin, beta-lactoglobulin and growth factors - insulin-like growth factor-1 (IGF-1), insulin-like growth factor-2 (IGF-2), transforming growth factor beta (TGFbeta) and epidermal growth factor (EGF). Colostrum's reputed exercise-performance-enhancement is mainly attributed to such growth factors as IGF-1. Colostrum also contains vitamins, mineral, lipids and lactose.

Supplemented bovine Colostrum is thought to enhance the immune system against microbes in the intestinal tract. A few small human studies have suggested that some components of bovine colostrum have significant antimicrobial activity.

Beta-glucans - Beta-glucans comprise a class of non-digestible polysaccharides widely found in nature in such sources as oats, barley, yeast, bacteria, algae, and mushrooms. In oats they are located primarily in the endosperm cell wall.

There are *in vitro* studies and animal studies demonstrating that oat beta-glucan has favorable immunomodulatory activities. It appears to activate macrophages to release certain cytokines. Such activity, in mice has been found to be protective against bacterial infection. Oat beta-glucan has been found to have immunomodulatory activity in tissue culture and in mice. Administration of oat beta-glucan has enhanced a non-specific resistance to bacterial challenge in mice. Survival times have been improved in mice pre-treated with oat beta-glucan and then challenged with *Staphylococcus aureus*. Similarly, resistance to *Eimeria vermiformis* has been significantly increased in immunosuppressed mice given oat beta-

glucan. It is thought that this activity also occurs in humans.

Oat beta-glucan has demonstrated immune-enhancing effects and may be helpful in some humans with diabetes; it may have glucose regulating activity. The regulatory mechanism by oat beta-glucan of glucose is not well understood. Oat beta-glucan may delay gastric emptying time and consequently affect the rate of uptake of D-glucose from the small intestine. The other possibility is that the high viscosity of the oat beta-glucan may delay absorption of glucose.

Evidence that oat beta-glucan can reduce cholesterol levels was sufficient to induce the FDA to allow health claims on whole oat products. The clinical evidence clearly supports the thesis that modest daily intake of oat beta-glucan leads to significant reduction of serum total cholesterol.

Furthermore, these studies show there is a commensurate reduction in LDL cholesterol. There is also mounting evidence that beta-glucan may alleviate hypertension.

Flax Seed Powder contains fatty acids linolenic acid, linoleic acid and oleic acid along with proteins and lignans (secoisolaricresinol-diglucoside). In *Indian medicine*, flax is used for its immune enhancing abilities. It is used for coughs, bronchial conditions, urethritis, diarrhea, and externally for skin infections. Flax may have benefits for irritable colon, diverticulitis and as mucilage for gastritis and enteritis.

Flax seed powder has a laxative effect in the colon. In animal experiments a reduction of cholesterol levels in the liver was observed (due to the unsaturated fatty acids). A blood sugar lowering effect was

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also proven. An antitumoral benefit is also attributed to the lignans in flax powder (lignans are antimycotic, anti-oxidative and anti-estrogenic).

Calcium is an essential mineral with a wide range of biological roles. Calcium is the principal building block of the body. It is a critical part of bones and teeth, and is essential for muscle contraction, nerve conduction, the beating of the heart, blood coagulation, glandular secretion, the production of energy and the maintenance of immune function, among other things.

Calcium is critical in reducing and preventing osteoporosis. Studies have indicated that calcium may have benefits for reducing the incidence of colorectal cancer. Calcium supplementation has been found to reduce colonic mucosal proliferation. It has also been found to have a modest effect on the reduction of systolic blood pressure in those with hypertension.

Some studies have indicated that calcium may lower serum cholesterol levels. This may occur because calcium ions bind with bile acids to form insoluble soaps, thus removing cholesterol entering the gut via the enterohepatic circulation.

Folate (Folic Acid) is a member of the B-vitamin family. Folate participates in several key biological functions including the synthesis of DNA, RNA and proteins. It is necessary for DNA replication and repair, maintaining the integrity of the genome, and is involved in the regulation of gene expression, among other things. Folate deficiency leads to anemia which is very similar to that caused by vitamin B12

deficiency. However, Folate deficiency does not result in the neurological symptoms and signs that occur with vitamin B12 deficiency.

Folic acid is such a critical vitamin that the FDA mandated that it be added to all enriched cereal grains. Folic acid lowers the risk of neural tube defects and possibly other types of birth defects. It may also have antiatherogenic, anticarcinogenic, neuroprotective and antidepressant actions.

Vitamin B12 (cobalamin) works closely with Folate in the synthesis of the building blocks for DNA and RNA as well as the synthesis of molecules important for maintaining the integrity of the genome. It is also important for maintaining the integrity of the nervous system and for the synthesis of molecules that are involved in fatty acid biosynthesis and the production of energy.

Deficiency of Vitamin B12 results in hematological, neurological and gastrointestinal effects. The neurological effects of vitamin B12 deficiency may occur even in the absence of anemia. Vitamin B12 deficiency principally affects the peripheral nerves, and in later stages the spinal cord. The symptoms and signs of the neurological effects of B12 deficiency include tingling and numbness in the extremities (particularly the lower extremities), loss of vibratory and position sense, abnormalities of gait, spasticity, Babinski's responses, irritability, depression and cognitive changes (loss of concentration, memory loss, dementia). Visual disturbances have been noted with B12 deficiency. Pernicious anemia is the most common cause of clinical B12 deficiency in temperate regions of the world.





Zinc is an essential element in human nutrition with a wide range of biological roles. Zinc plays a catalytic, structural or regulatory role in the more than 200 zinc metalloenzymes that have been identified in biological systems. These enzymes are involved in nucleic acid and protein metabolism and among other things, the production of energy. Zinc may have immunomodulatory activity. It may also have antioxidant activity. Zinc has putative anti-viral, fertility enhancing and retinoprotective activities. Zinc is required for a number of immune functions, including T-lymphocyte activity. Zinc deficiency results in thymic involution, depressed delayed hypersensitivity, decreased peripheral T-lymphocyte count, decreased proliferative T-lymphocyte response to phytohemagglutinin (PHA), decreased cytotoxic T-lymphocyte activity, depressed T helper lymphocyte function, depressed natural killer cell activity, depressed macrophage function (phagocytosis), depressed neutrophil functions (respiratory burst, chemotaxis) and depressed antibody production. Zinc supplementation can restore impaired immune function in those with zinc deficiency, as found in malabsorption syndromes and aerodermatitis enteropathica.

Vitamin C from **Acerola Cherry** – Acerola is one of the richest sources of Vitamin C in the world. In addition to natural vitamin C, Acerola contains flavonoids, and polyphenols which are powerful antioxidants. Antioxidants are nutrients that disarm harmful molecules called free radicals. Free radical damaged cells are the undesirable by-products of various metabolic functions. Flavonoids are potent antioxidants that prevent the formation of

free radicals, offer protection to the vast network of capillaries and blood vessels in the system, and have antimicrobial properties.

Vitamin C has antiatherogenic, anticarcinogenic, antihypertensive, antiviral, antihistaminic, immunomodulatory, ophthalmoprotective and airway-protective actions. Vitamin C may aid in the detoxification of some heavy metals, such as lead and other toxic chemicals.

L-cysteine is a sulfur amino acid naturally present in the proteins of life forms. Although most cysteine is found in proteins, small amounts of free cysteine are found in body fluids and in plants. L-Cysteine is considered to be a nonessential amino acid, meaning that, under normal physiological conditions, sufficient amounts of this amino acid are formed from the dietary essential amino acid L-methionine and the nonessential amino acid L-serine via a transsulfuration reaction.

L-cysteine serves as a precursor for synthesis of proteins, taurine, coenzyme A and inorganic sulfate. One of the most important functions of L-cysteine in the body is to serve as a precursor for synthesis of glutathione. Glutathione itself has a number of biochemical functions, including maintenance of normal cellular redox state.

L-glutamine is the most abundant amino acid in the body, and plasma glutamine levels are the highest of any amino acid. It has come to be regarded as one of the most important of the amino acids when the body is subjected to such metabolic stress situations as trauma (including

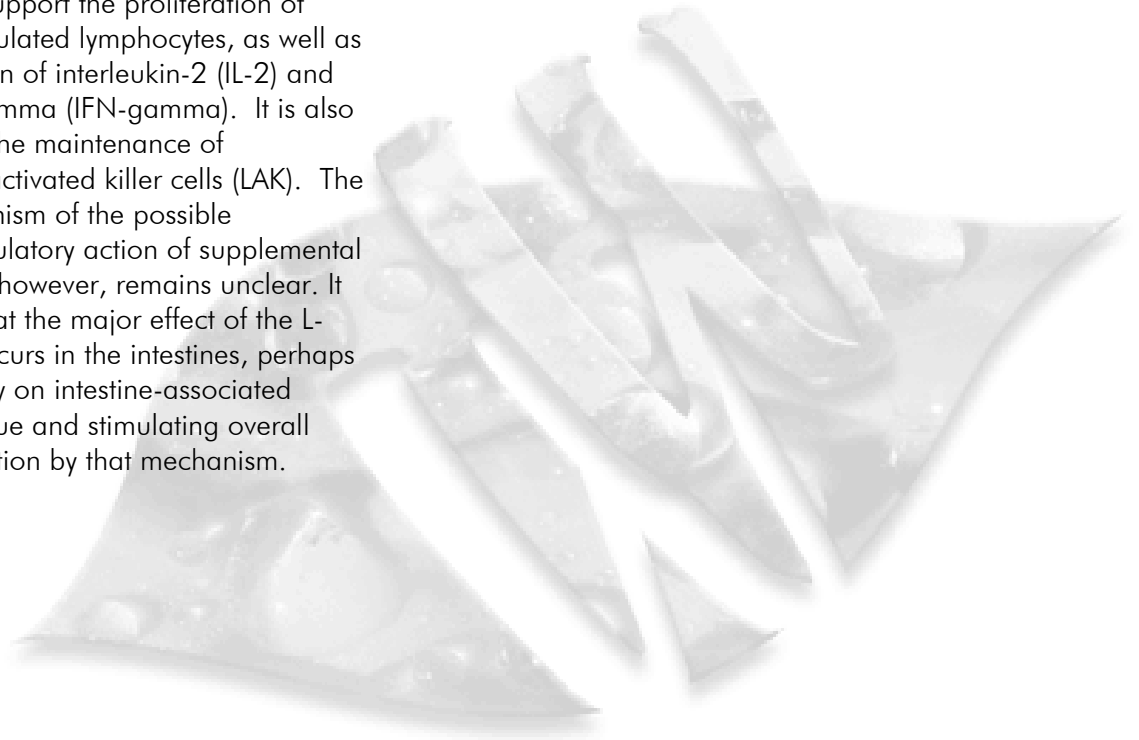
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surgical trauma), cancer, sepsis and burns. Under such conditions L-glutamine is considered an essential amino acid, and it is therefore important to ensure adequate intake in order to meet the increased physiological demand.

Supplemental L-glutamine may have immunomodulatory, anticatabolic/anabolic and gastrointestinal mucosal-protective actions. It may also have antioxidant activity. Supplemental L-glutamine's possible immunomodulatory role may be accounted for in a number of ways. L-glutamine appears to play a major role in protecting the integrity of the gastrointestinal tract and, in particular, the large intestine. L-glutamine appears to be required to support the proliferation of mitogen-stimulated lymphocytes, as well as the production of interleukin-2 (IL-2) and interferon-gamma (IFN-gamma). It is also required for the maintenance of lymphokine-activated killer cells (LAK). The exact mechanism of the possible immunomodulatory action of supplemental L-glutamine, however, remains unclear. It is possible that the major effect of the L-glutamine occurs in the intestines, perhaps acting directly on intestine-associated lymphoid tissue and stimulating overall immune function by that mechanism.





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