

TOTAL MULTIMUNE

Ingredients: One tablet includes: Vitamin A (as FLO) 750 i.u, Vitamin C 50 mg, Vitamin B-6 10 mg, Calcium (as chelate) 34 mg, Magnesium (as chelate) 20 mg, Zinc (as chelate) 8 mg, Manganese (as chelate) 2 mg, IP6 (Inositol Hexaphosphate) 40 mg, Lycopene 2.5 mg, Colostrum 200mg, Lymph 10 mg, Spleen 10 mg, Thymus 10 mg, Parotid 10 mg, Maitake Mushroom 30 mg, Green Tea Extract 20 mg, Astragalus 40 mg, Pomegranate (root) (with Ellagic Acid) 10 mg.

Supportive Function: Provides support for the immune system with many well-known powerful nutritional ingredients.

When is immune support helpful? When susceptibility to infection by bacteria, virus, and pathogens. Also, depressed immune system, cellular breakdown, and autoimmune disease.

Clinical Applications/Research: **Vitamin A** is necessary for the maintenance and repair of the skin and mucous membranes that make up the body's first line of defense, vitamin A protects against colds, flu's, and infections of mucous membranes. Without adequate levels of vitamin A, bacteria and viruses can penetrate the skin, lungs, intestinal lining, and other mucous tissues.

Calcium is essential for cellular metabolism. When the metabolism is revved up during an infection, and when an enormous amount of energy is being used just to produce antibodies for viral invaders, calcium is in high demand for metabolic processes. One of the theories of the purpose of fever is that the increased body temperature draws calcium from the bones out into the system, where it is needed for biochemical reactions and clearing of infection.

Magnesium like calcium, is an essential co-factor for biochemical reactions. It helps to maintain the body's pH and help produce the energy needed for antibody production and immune defenses, along with aiding in the production of DNA and RNA for protein synthesis. Both magnesium and calcium bind to heavy metals, which can be part of the problem of a lowered immune system.

Zinc enhances immune function and increases white blood cell activity. Zinc is a powerful antioxidant that can protect against the metal poisoning that lowers immune function. When a sore throat is involved, zinc lozenges bathe epithelial cells in the throat and provide increased protection.

Manganese is an important mineral for activating enzymes in the many processes of infection fighting. It helps to maintain cellular integrity, and is essential for utilization of vitamin C.

Lycopene is a carotenoid that has gotten a lot of press lately as one of the newly discovered potent antioxidants. Found in tomatoes in high concentration, lycopene is such a strong immune nutrient that it has been found to have protective qualities against cancer, most notably prostate cancer. One study, which looked at the correlation of tomato consumption and decreased risk for prostate cancer suggested that even pizza could lower the risk because of its tomato content. Some people took this as a green light to have massive amounts of pizza, which is high in refined carbohydrates and saturated

fat (similar to justifying chocolate when we heard it contains flavonoids!) One doesn't want to raise the risk for other diseases (such as heart disease) while lowering risk for prostate cancer. Which means that the lycopene in tomatoes may be making a difference, but that organic tomatoes consumed without the "junk food" would foster an even healthier scenario.

Astragalus is a Chinese herb that has been shown to restore T-cell counts to relatively normal ranges. It contains a wide variety of phytochemicals to support antiviral functions. The results of one study even suggest that astragalus increased natural killer cell activity, and exerted an anticarcinogenic effect in carcinogen-treated mice (*Cancer Invest* 1999; 17(1): 30-5.) Astragalus contains triterpene glycoside compounds, nineteen of which have shown immunostimulatory effects (*Biol Pharm Bull* 2000 Jul; 23(7): 834-7).

Maitake mushroom is full of phytonutrients that stimulate white blood cells and trigger an enhanced immune response. It has been mostly researched for its role in maintaining healthy blood pressure, and has also been researched in cancer studies. It has been used for a long time in Chinese medicine as an adaptogen (nutrient which brings systems back into homeostasis). Maitake has complex polysaccharides in its structure, one of the primary ones being beta-D-glucan. Beta glucan is currently being studied for its immune properties, specifically the prevention and treatment of cancer, and support for HIV infection (*Chemotherapy* 1990; 38:790; Nanba, H. Immunostimulant activity in vivo and anti-HIV activity in vitro of 3 branched b 1-6 glucans extracted from maitake mushrooms. VIII International Conference on Aids, Amsterdam, 1992). Animal studies have indicated that maitake may lower blood lipids and blood pressure (*Biol Pharm Bull* 1997; 20:781-785; *Chem Pharm Bull* 1998; 36:1000-06).

Glandular extracts can be an important part of any immune protocol. They target immune glands (such as thymus, lymph, spleen, etc.) and help repair tissues by supplying amino acids that are essential building blocks. They are believed to repair damaged or deteriorated glands, and help restore them to normal function (homeostasis). The thymus is the organ that produces T-cells; the lymph supports white blood cells and toxin removal, and the spleen produces and stores antibodies and phagocytes, and filters toxins from the blood.

IP6 (Inositol hexaphosphate) has been touted lately as a strong immune nutrient, offering particular support for natural killer cells. IP6 is a naturally occurring plant fiber, otherwise known as phytate. It is present in legumes and whole grains, especially wheat bran. As with some other plant fibers, IP-6 appears to have a beneficial effect on blood sugar control. It seems to possess several beneficial health properties, including antioxidant (*Free Rad Biol Med* 1990; 8:61-9) and anticancer (*Life Sci* 1997; 61:343-54) properties, showing particular results in the event of colon cancer (animal study; *Nutr Canc* 1993; 19:11-19) and breast cancer (animal/pilot study, *Canc Lett* 1993; 75:95-102). In the animal/pilot study conducted on pure IP-6, significant results were obtained, however these results were not obtained when IP-6 was given in the form of wheat bran (*Nutr Canc* 1997; 28(1): 7-13). IP-6 injected into mice with cancerous tumors has resulted in partial regression of the tumors (*Anticancer Res* 1998; 18:4091-96). IP-6 has also been used in the protocol for kidney stones. Phytate is a substance associated with reported reduced mineral absorption, iron in particular (*Am J Clin Nutr* 1999; 70:240-46), and as such is recommended to be taken at least an hour away from meals.

Colostrum is breast milk, and as such confers immunity onto offspring by the transfer of antibodies and other immune factors. Bovine colostrum has been used as a nutritional supplement to confer these factors of immunity onto humans. Unlike bovine milk, which

may contain allergens, the bovine colostrum is a different substance, which is thought to have immunomodulatory activity. One study notes that colostrum, “contains factors that are protective for the neonate and may be a source of immunomodulatory molecules that positively influence the immune status of the neonate (Vet Immunol Immunopathol 2000 Oct 31; 76(3-4): 183-190).

Pomegranate is a fruit containing ellagic acid, the same compound found in wine that has been identified as a strong antioxidant with healthful properties. Some studies have shown pomegranate to be strong enough to protect against cell mutation.

Green tea extract contains catechins, one of the most widely investigated flavonoids. It has been in the news lately for its reported ability to boost immune function. For example, a recent review in Sept. 2000 reports that, “Catechin and its gallate are major ingredients in green tea and their antioxidant and cancer preventive effects have been widely investigated. A Phase I study of green tea extract has been conducted in adult patients with solid tumors” (Wang HK. The therapeutic potential of flavonoids. Expert Opin Investig Drugs 2000 Sep; 9(9): 2103-19.)

A report in Epidemiology stated that the antioxidant compounds found in tea, wine, fruits and vegetables may lower the risk of having a non-fatal heart attack for some men (Epidemiology January, 2000). Antioxidants combat the effects of free radicals, which are naturally-occurring particles that can contribute to chronic disease and aging when they are produced in excess.

Vitamin C has always been heralded as one of the best vitamins to boost the immune system; a deficiency of this vitamin has been highly correlated to a greater susceptibility to infection. Vitamin C elevates antiviral activity and supports the manufacturing of the immune cells necessary to fight infection. Vitamin C is carried to the site of infection by the white blood cells, and vitamin C helps the mobility and power of those white blood cells.

Additionally, vitamin C indirectly helps fight cold and flu infection by addressing some of the other main causes for a depressed immune system: it promotes thymic hormone secretion, acts as an antioxidant to eliminate by-products of infection, stimulates adrenal function, aids in thyroid hormone production, detoxifies certain metals and drugs, recycles other antioxidants such as vitamin E, and aids in phagocytosis (digestion of damaged, dead or foreign cells) that can cause inflammation.

In a study where dockworkers took 100 mg of vitamin C for 10 months, they caught influenza 28% less than controls that took no supplemental C. The average duration of illness in those who took the supplemental C was 10% less than controls (Deutsche Gesundheitswesen 1954; 9:702-06). Other studies have shown rapid improvement in symptoms when vitamin C was taken in high amounts (2 grams every hour for 12 hours) (South Med Surg 1949; 111:210-14; Pauling, L. Vitamin C, the common cold, and the flu. San Francisco, WH Freeman & Co. 1976 [review]), however high dosing should be supervised. Caution exists for iron overload disease, kidney-stone formers, and those with gout. Some people have a bowel tolerance to vitamin C around a gram, and experience diarrhea past that amount.

Testimonials/Nutrient Tidbits: A doctor reports... I had a patient with Ankylosing Spondylitis who responded wonderfully to a protocol of Total Multimune, Total GHR, and Liga-PN – (Dr. Sigh, Loveland, CO.)

Many doctors report . . . This is a great product for immune system problems.

Suggested Dosage: 1-2 tablets 3 times daily or as directed

Size: 90 tablets

Vegetarian: No

Contraindications: Caution exists for high levels of vitamin C and iron overload disease, kidney-stone formers, and those with gout. Some people have a bowel tolerance to vitamin C around a gram, and experience diarrhea past that amount. However, only a small amount of vitamin C is utilized in this synergistic formula.