



IMMUNE SYSTEM FACTORS™

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THE IMMUNE SYSTEM

Perhaps the most incredible system in the human body is the immune system. It has the task of keeping the body healthy by fighting pathogens, disease-producing microorganisms, or neutralizing their toxins. The immune system employs the abilities of the skin, the mucous membranes, hair, cilia, saliva, urine, and other natural means of waste disposal in its function of keeping the body free of pathogens. Should bacteria enter the body, the immune system employs cells in the body to fight invading bacteria and to prevent its spread.

Lymphocytes are white blood cells that carry out the body's immune responses. There are two major groups of lymphocytes, T-cells and B-cells, and both develop in stem cells of bone marrow. B-cells complete their development in the marrow, while T-cells migrate to the thymus, where they complete their development in a few days. The mature T-cells develop *immunocompetence*, which is defined as the ability to carry out immune response if properly stimulated.

BASIC IMMUNOLOGY

The immune system reacts to invasion by foreign matter in several ways. One method is for the T-cells to directly attack the foreign matter. This is usually an attack directed at intracellular pathogens, viruses and tissue transplants.¹ Another mode of attack involves the B-cells. In this scenario, they are transformed into plasma cells, which manufacture and deploy antibodies. Antibodies bind together and inactivate extracellular pathogens, such as bacteria and antigens dissolved into the body's fluids.²

By circulating both B and T cells throughout the body, intruders and other abnormal cells are destroyed or neutralized and thereby eliminated from the body.³ These lymphocyte cells are the basis of the body's two closely allied immune responses, both triggered by antigens.⁴ Cell-mediated immune responses involve the T-cells, while antibody-mediated immune responses involve the B-cells.⁵ To some extent, each type of immune response specializes in dealing with certain invaders.⁶ Often, however, a pathogen, like bacteria, can evoke both types of immune responses.⁷

Macrophages also play a major role in acquired cell-mediated immunity. These phagocytic cells are activated and mobilized by T-cells to the site of infection where they kill invading microorganisms.⁸ Macrophages can also function in processing and presenting antigens to lymphocytes to neutralize.⁹

IMMUNE SYSTEM MEMORY

Amazingly, certain T-cells are specifically targeted for certain types of pathogens and are termed memory cells, which remember former attacks of specific pathogens.¹⁰ The memory cells group together to propel a second response to a recurring pathogen, reacting quicker and stronger than the T-cells of the primary response— even decades later! This second response is usually so fast that the pathogens are destroyed before any outward signs of disease occur.¹¹ The immune system also has the amazing ability to distinguish between harmful matter and beneficial elements, such as nutrients, which are helpful to the body.

IMMUNE SYSTEM HOMEOSTASIS

While the immune system works constantly to keep the body free from infection, there are periods of time when the body experiences a good deal of stress. Physical stress can cause the consumption of many nutrients— nutrients that may directly affect immunocompetence. That is one of the reasons it is important that it remain well-nourished and in homeostasis.

Homeostasis (*homeo*=same; *stasis*= standing still) is defined as balance and harmony within the body. It is the condition created when the body functions in an internal environment which remains within certain physiological limits. This condition is not a static state; rather it is through continuous physiological adjustments that the body is able to retain this stability.

Homeostasis can be achieved when: (1) the body has the proper amount of gases, nutrients, ions, and water; (2) maintains the optimal internal temperature; (3) has an optimal fluid volume for the health of cells. When homeostasis is disturbed, it may affect health.¹²

NUTRITIONAL SUPPORT

For the complex operation of keeping the body free of toxins and invasion of microbes, the immune system requires a constant source of nutrients. Nutrients are essential for the proper growth of T-cells and B-cells, as well as the proper manufacturing of plasma and antibodies.

Fortunately, the immune system has some help in its toilings. The lymphatic system contains several important structures and organs, as well as bone marrow, the site of lymphocyte (both T and B cell) production. Both the lymphatic and immune systems are involved in the body's war on foreign invaders. Since these systems are a complex interplay of many cell types and chemical functions, it is not surprising that poor nutrition can influence immune response.¹³

Some of the essential nutrients for proper functioning of the immune system include:

VITAMIN A is a fat-soluble nutrient which plays an important role in the immune system and for the healthy formation of mucous membranes, part of the body's outer protection against foreign toxins.

The membranes release mucus in the linings of the mouth and nose, the digestive tube, and the breathing passages. Mucus is composed of water, cast off tissue cells, mucin, and white blood cells—the leukocytes. Leukocytes function as the catalyst for the B-cells and T-cells in the immune response process.

BETA CAROTENE is the preferred source of vitamin A because it is non-toxic, being converted to vitamin A only as the body needs it. Beta Carotene is one of the antioxidant nutrients, much like vitamin C, vitamin E and Selenium.

VITAMIN C has many uses in the body. It is essential for the immune system, playing a role in the absorption of iron, and in the production of collagen.

The **B COMPLEX** vitamins play a role in the nourishment of the immune system.

VITAMIN B-2 is an important nutrient for the immune system because it aids in the formation of red blood cells and antibodies.

PANTOTHENIC ACID serves as a part of the coenzyme A, which is essential for the production of energy, for the production of antibodies, and the healthy maintenance of the central nervous system.

VITAMIN B-6 is necessary for the maintenance of healthy skin, as well as the production of antibodies.

FOLIC ACID is necessary for growth of all types of cells in the body, including white blood cells. It also takes part in the process of cell division and the healthy growth of glands, including the thymus.

VITAMIN E protects fat soluble vitamins and red blood cells. It is essential for the proper functioning of hair and the mucous membranes, both of which protect the body's openings.¹⁴

ZINC is a component of zinc metalloenzymes, which are necessary for cell growth and the proper functioning of the immune system.

ECHINACEA is an herb that contains naturally-occurring small amounts of ascorbic acid, betaine, beta carotene, magnesium, niacin, selenium, zinc, polysaccharides, and flavanoids, all of which are important in the functioning of the immune system.¹⁵

L-CYSTEINE is essential for the proper utilization of vitamin B-6 and serves as part of the body's heavy metal detoxification system.¹⁶

HOW TO OBTAIN NUTRITIONAL SUPPORT

For the immune system's standard operating mode, **MICHAEL'S® IMMUNE SYSTEM FACTORS™** employs all these nutrients, including the B Complex vitamins, to nourish the immune system and aid in maintaining its homeostasis. In addition, **MICHAEL'S® IMMUNE SYSTEM FACTORS™** contains an extended assortment of Chinese herbs that, for centuries, have been traditionally used for health benefits.

A QUICK RESPONSE

In the early stage of an invasion by foreign matter such as microbes, the immune system mobilizes, much like an army poised to defend its sovereign territory. It works to localize the invader and prevent its spread through the bloodstream. Depending on the strength of the attacking microbes and the status of the body's immune system, undesirable effects can be avoided or controlled at this stage.

Nutrition plays a critical part in the functioning of the immune system. Vitamin A, vitamin C, and zinc are all known to be essential for proper immune system function. Zinc is a component of zinc metalloenzymes, which are necessary for the proper functioning of the immune system.

MICHAEL'S® QUICK RESPONSE™ contains vitamins A, C, and zinc, as well as pantothenic acid. These nutrients are complemented with the herbs garlic, goldenseal and echinacea, all known for their healthful attributes. Michael's Naturopathic Programs combine natural ingredients that complement each other, producing a synergistically complete supplement. **MICHAEL'S® QUICK RESPONSE™**—it contains the nutrients necessary for the immune system when it needs to mobilize its troops.

About MICHAEL'S® Products

Seasoned health food shoppers already know that a combination of nutrients is always more effective than taking single nutrients one at a time. Add in the cost savings of taking combinations, with herbs included, and the math proves to be more efficient, too. Combinations increase assimilation and reduce the amount of binders and fillers. That's why **MICHAEL'S®** created the **FACTORS OF LIFE®** programs. Your life is busy enough as it is. Why worry when synergistically complete nutrition is conveniently at hand?

MICHAEL'S® products include an expiration date to ensure freshness. He personally guarantees purity and specified content. Each product is hypo-allergenic with no artificial colors or flavors. The formulas contain cold-pressed or organically grown (when available) herbs to ensure the highest quality. Additionally there is no sugar, wheat, corn, gluten, sodium, or anything artificial in any of our supplements. These high-potency, all-natural products are even manufactured with food-grade fillers, binders and enteric coatings. Most are suitable for vegetarians and tell you so right on the front label. Every product is double safety sealed with an outer shrink wrap and inner bottle freshness seal. As is normal in all-natural products, some color and texture variations may occur, but do not affect product purity, potency or assimilation.

Above all else, all **MICHAEL'S® NATUROPATHIC PROGRAMS** are designed to produce physical results you can feel, due to the innovative nutritional supplementation with specific, targeted **FACTORS OF LIFE®** programs. As always, the newest developments, the finest ingredients and the most effective formulations for your total healthcare from **MICHAEL'S® NATUROPATHIC PROGRAMS**.

Sources Cited:

^{1,2,3,4,5,6,7,10,11,12}Tortora, Gerard & Grabowski, Sandra. *Principles of Anatomy and Physiology*, 7th ed. Harper Collins: New York, pp. 698 - 712, 699, 10, 683.

^{8,9,13}Myrvik, Quentinn. "Nutrition and Immunology" in *Modern Nutrition in Health and Disease* (7th ed). Philadelphia: Lea and Febiger, 1988, p. 586, 588.

¹⁴Mervyn, Leonard B. *The Dictionary of Vitamins*. Thorsons Publishers Ltd.: Wellingborough, p.80.

¹⁵Duke, James A. *Phytochemical Constituents of GRAS Herbs and Other Economic Plants*. CRC Press; Boca Raton, Florida, pp. 237-239.

¹⁶Chaitow, Leon. *Amino Acids in Therapy*. Thorsons Publishers; New York, p.82.



Amount Per Serving		% Daily Value
Vitamin A (as Beta Carotene)	5,000 IU	300%
Vitamin C (as ESTER-C™)	20 mg	33%
Vitamin E (as d-alpha Tocopheryl Succinate)	15 IU	50%
Thiamin	18 mg	119%
Riboflavin	18 mg	1058%
Vitamin B-6 (as Pyridoxine)	25 mg	1250%
Pantothenic Acid (as Calcium Pantothenate)	25 mg	250%
Magnesium (as Magnesium Amino Acid Chelate)	8 mg	2%
Zinc (as amzinc™)	5 mg	33%
Selenium (as L-Selenomethionine)	50 mcg	71%
Folic Acid (as Folicin)	400 mcg	100%
Astragalus Root (Astragalus membranaceus)	100 mg	*
Echinacea Root (Echinacea angustifolia)	100 mg	*
Cysteine (as L-Cysteine)	100 mg	*
Suma Root (Pfaffia paniculata)	100 mg	*
Codonopsis Root (Codonopsis pilosula)	75 mg	*
Rei-shi Mushroom (Ganoderma lucidum)	75 mg	*
Privet Berry (Ligustrum vulgare)	50 mg	*
Schizandra Fruit (Schizandra chinensis)	50 mg	*
Shiitake Mushroom (Lentinus edodes)	50 mg	*
Atractylus Root (Atractylodes alba)	50 mg	*
Watercress Herb (Nasturtium officinale)	50 mg	*
Juniper Berry (Juniperus communis)	25 mg	*
Inositol	15 mg	*
Choline Bitartrate	8 mg	*

*Daily Value not established.

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OTHER INGREDIENTS: Dicalcium Phosphate, Maltodextrin, Magnesium Stearate, and Stearic Acid.

Amount Per Serving		% Daily Value
Vitamin A (as Beta Carotene)	10,000 IU	200%
Vitamin C (as ESTER-C™)	250 mg	417%
Pantothenic Acid (as Calcium Pantothenate)	15 mg	150%
Zinc (as amzinc™)	7 mg	47%
Echinacea Root (as Echinacea angustifolia)	200 mg	*
Garlic Clove (Powder Concentrate) (Allium sativum)	200 mg	*
Golden Seal Root (Hydrastis canadensis)	200 mg	*

*Daily Value not established.

**A Trademark of Inter-Cal Corp.

***A Trademark of InterHealth Co.

CAUTION: Not to be taken by pregnant or lactating women. Keep out of reach of children.

OTHER INGREDIENTS: Dicalcium Phosphate, Magnesium Stearate and Stearic Acid.

