

CHOLESTEROL METABOLISM FACTORS™

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CHOLESTEROL IS A FAT

Fats, medically and nutritionally referred to as lipids, are essential for good health. They are an important organic compound for the body, performing many different functions. Triglycerides, also known as neutral fats, act as a source of insulation, protection, source of energy, and major energy storage molecules in the body. Phospholipids, fats that contain phosphorus, are the major lipid component of cell membranes and are found in high amounts in the brain and nerve tissues. There are other lipids, such as steroids, which include cholesterol, bile salts, sex hormones, and vitamin D. Lipoproteins work at carrying lipids to the liver, cholesterol to cells, and help remove excess cholesterol from the blood. Lipids also carry certain vitamins, like A, E, and K.

METABOLISM

The healthy metabolism of fats, carbohydrates and proteins is one of the most important aspects of good health. Metabolism is the term used to describe the sum of all chemical processes that take place in the body. There are two main types of metabolism; building up, known as anabolism and breaking down, known as catabolism.

In anabolism, smaller molecules such as amino acids, are converted into larger molecules, such as proteins. In catabolism the opposite is true. Larger molecules, such as glycogen, are broken down to smaller molecules, such as glucose.

METABOLISM OF FATS AND CHOLESTEROL

It is important that lipids, such as cholesterol for example, are metabolized on a continual basis. Cholesterol, a steroid lipid, serves different functions in the body. First, it is a component of cell membranes and a starting material for synthesizing other steroids. The adrenals use cholesterol as a precursor for steroid hormone production. In

fact, all steroid hormones in the human body are derived from cholesterol. It is accomplished through the oxidation of fatty acids with acetyl-CoA, which includes the vitamin pantothenic acid and riboflavin, also known as vitamin B-2. Cholesterol is also a precursor of vitamin D.

Most of the cholesterol synthesis in vertebrates takes place in the liver. Biosynthesis is regulated by the hormones **glucagon** and **insulin**. Some cholesterol is retained for hepatocytes, liver cells, but most is exported as bile salts and cholesteryl esters. All growing animals, people included, need cholesterol because of the role it plays in basic nutritional well-being of the body. Of course, excess is not beneficial. It could upset the homeostasis of the body.

HOMEOSTASIS

Like everything else in the body, homeostasis must be maintained in order to insure good health. Homeostasis (*homeo*=same; *stasis*=standing still) is defined as balance and harmony within the body. It is the condition created when each cell in the body functions in an environment which is within certain physiological limits. Homeostasis is achieved when: (1)the body has the proper amounts of gases, nutrients, ions, and water; (2)maintains the optimal internal temperature and; (3)has an optimal volume for the health of the cells. When homeostasis is disturbed, health may be affected.¹

NUTRITIONAL SUPPORT

The following information is provided to help you better understand the role that certain nutrients play in the metabolism of cholesterol and the overall health of the body. Those nutrients are:

CHOLINE is important to the metabolism and transport of fats and cholesterol. This B complex factor is involved in lecithin formation.

LECITHIN is referred to as phosphatidylcholine in medical circles. This is because lecithin is about 95% phosphatidylcholine. Phosphatidylcholine is mainly responsible for the hydrophilic properties of the surface coat of chylomicrons and VLDL (very-low-density lipoprotein).

CHYLOMICRONS are very small drops of fats that measure less than 0.5 microns.

VLDL is one of three different types of density lipoprotein found in the blood. VLDL, (very-low-density lipoprotein) is a blood protein that is made mainly of triglycerides with small amounts of cholesterol, phospholipid, and protein.

LDL (low-density lipoprotein) is another blood substance containing large amounts of cholesterol and triglycerides.

HDL (high-density lipoprotein) is a protein in blood plasma involved in carrying cholesterol and other fats from the blood to the tissues.

INOSITOL is used in the metabolism of fats and cholesterol and in the formation of lecithin.

VITAMIN B-6 is necessary for the metabolism of fats- carbohydrates-proteins.

UNSATURATED FATTY ACIDS are essential for growth, but can not be synthesized by the body. Of the essential fatty acids, only linoleic acid must be included in the diet. The others, linolenic and arachidonic, can be synthesized in the body from linoleic acid.

NIACIN is another nutrient necessary for the metabolism of fats, carbohydrates and proteins.

IODINE is an essential part of the hormones thyroxine and triiodothyronine. These hormones are required for normal growth and development and for maintenance of a normal metabolic state.

MAGNESIUM is essential for the normal metabolism of potassium and calcium.

CHROMIUM is essential for the production of insulin, used by the body to regulate cholesterol production.

HOW TO OBTAIN NUTRITIONAL SUPPORT

MICHAEL'S® CHOLESTEROL METABOLISM FACTORS™ and **MICHAEL'S® FAT METABOLISM FACTORS™** are the ideal synergistically-complete formulas for providing nutritional support to the process of metabolizing foods.

These products contain the nutrients and other dietary factors mentioned above and are complemented by a variety of herbs, each known for their healthful attributes.

Like every MICHAEL'S® nutritional supplement, these are manufactured with all natural fillers, binders and coating. In addition, all of MICHAEL'S® products are free of yeast, sugar, and starch. Some products are dairy, soy, and wheat free too.

COMPLEMENTARY COMBINATIONS

There are many different ways to complement CHOLESTEROL METABOLISM FACTORS™, MICHAEL'S® JUST ONE™; FOR WOMEN; and FOR MEN are a few examples.

FAT METABOLISM FACTORS™ may be complemented with MICHAEL'S® WATER BALANCE FACTORS™.

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, 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:

¹Tortora, Gerard J. and Grabowski, Sandra R. *Principles of Anatomy and Physiology* (7th ed.) New York: HarperCollins College Publishers, 1993. p. 9.



HealthCare Solutions Since 1984

Fat Metabolism Factors™

Supplement Facts
Serving Size: Three (3) Tablets

Amount Per Serving	% Daily Value
Vitamin B-6 (as Pyridoxine)	100 mg 5,000%
Iodine (from Kelp)	225 mcg 150%
Chromium (as Chromium Polynicotinate**)	200 mcg 167%
Potassium (as Potassium Amino Acid Complex)	210 mg 6%
Lecithin (from Soy)	1000 mg
Choline (as Choline Bitartrate)	300 mg
Inositol	300 mg
Chickweed Leaf (Stellaria media)	300 mg
Sea Wrack Leaf (Fucus vesiculosus)	150 mg
Guggul Gum** (from Commiphora mukul)	100 mg
2.5% Guggulsterones, 2.5 mg
Methionine (as L-Methionine Hydrochloride)	100 mg
Phenylalanine (as L-Phenylalanine)	100 mg
White Ash Bark (Fraxinus americana)	75 mg
Bitter Orange Fruit (Citrus aurantium)	50 mg

* Daily Value not established

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

CAUTION: Contains phenylalanine and should be avoided by phenylketonurics and women who are pregnant or lactating.

**Gugulipid® A Trademark of Sabinsa Corp.

**ChromiumLife® A Trademark of InterHealth Nutraceuticals Inc.

Cholesterol Metabolism Factors™

Supplement Facts
Serving Size: Six (6) Tablets

Amount Per Serving	% Daily Value
Vitamin D (as Calciferol)	600 IU 150%
Vitamin B-6 (as Pyridoxine)	100 mg 5000%
Niacin (as Niacinamide)	200 mg 1000%
Magnesium (as Magnesium Amino Acid Chelate)	200 mg 50%
Chromium (as Chromium Polynicotinate**)	200 mcg 167%
Lecithin (from Soy)	600 mg
Choline (as Choline Bitartrate)	500 mg
Inositol	500 mg
Flaxseed Oil (Linum usitatissimum) (Providing 25% alpha-Linolenic Acid [125 mg])	500 mg
Hawthorne Berry (Crataegus oxyacantha)	400 mg
Apple Pectin	360 mg
TMG (Trimethylglycine)	350 mg
Guggul Gum** (Commiphora mukul) (2.5% Guggulsterones, 7.5 mg)	300 mg
Cayenne Fruit (Capsicum annum)	200 mg
Ginger Root (Zingiber officinale)	200 mg
Pantethine	120 mg
Betaine Hydrochloride	100 mg
Butcher's Broom Root (Ruscus aculeatus)	100 mg

*Daily Value not established.

OTHER INGREDIENTS: Dicalcium Phosphate, Microcrystalline Cellulose, Stearic Acid, Magnesium Stearate and Silicon Dioxide.

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**ChromiumLife® A Trademark of InterHealth Nutraceuticals Inc.

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

