

Testosterone Facts

A Message From Michael

Aging supposedly causes males to lose testosterone. I don't completely agree with that belief.

I think the reason people seem to diminish physically with age is due to lifestyle and poor nutrition. Dietary changes and lifestyle adjustments can help to ease many symptoms of aging that are considered "typical" characteristics of aging.

Just consider the usual American diet and the amount of stress an individual is generally under, and you can probably see how compromised nutrition would be possible. High quality nutritional supplements, supplied with a lot of vitamins and minerals can go a long way to improve on the diet and can help to ease the effects of stress.

Stress is not helped by a junk food diet. You may be getting calories from these foods, but your body will still be missing essentials and "cry out" for more food. Vicious cycles of poor food choice can lead to obesity and worse.

When there aren't enough nutrients for your body to complete the manufacturing processes of enzymes and hormones you may have compromised biochemical reactions. This may be true of testosterone or estrogen, and even Vitamin D.

Cholesterol along with nutrients are necessary to make those hormones in the body (yes, Vitamin D is also a hormone).

Not having an adequate amount of cholesterol could set the body up for compromise. Michael's Testosterone Factors provides the nutrients the body requires to build testosterone. If you give the body what it needs, its own innate intelligence will help it balance itself.

Be Well,

Michael Schwartz

ABOUT TESTOSTERONE

Hormones. We all have them, but how many of us truly know the role they play in our lives, in helping to shape who we are, and the vital importance they hold in maintaining our health, mind and body?

What does testosterone do, and is it the "stuff" that make men act like "men"? Women also produce and utilize their share of this sex hormone, although in lesser amounts.

BY DEFINITION

Testosterone is an androgen [a substance producing or stimulating the development of male characteristics (masculinization)¹] isolated from the testes of a number of animals including man and considered to be the principal testicular hormone produced in men.² Testosterone is a steroid produced by the interstitial cells of Leydig of the testicles. The androgens (testosterone) and the estrogens (such as estradiol) are synthesized in the testes and ovaries, respectively and are referred to as sex hormones. These hormones are normally produced by the adrenal cortex of both human males and females.³ They affect sexual development, sexual behavior, and have a variety of other reproductive and nonreproductive functions.⁴

Testosterone stimulates metabolism, increases muscular strength, and influences the development of secondary sex characteristics.⁵ It accelerates growth in tissues upon which it acts, and stimulates blood flow. It is essential for normal sexual behavior and the occurrence of erections. It is also essential for normal growth and development of male accessory sexual organs.⁶ Aside from that, it affects many other metabolic activities.⁷

CHOLESTEROL

All steroid hormones in humans are derived from cholesterol.⁸ A key intermediate in the biosynthesis of a number of important steroids, including hormones (estrogen, testosterone and progesterone), cholesterol is found in high concentrations in the adrenal glands.⁹ Maintaining proper levels of cholesterol is essential to maintaining proper homeostasis. It also becomes very important in the proper production of steroid hormones: in this case, testosterone.

All hormones act through specific receptors present in hormone-sensitive target cells, to which hormones bind with high specificity and high affinity.¹⁰ Hormones normally occur in very low concentrations in the blood. For this reason, hormones have been very difficult to isolate, identify and measure accurately.¹¹ When a given hormone is secreted, its concentration in the blood rises, and when secretion stops, the hormone concentration quickly returns to the resting level.¹²

Hormones usually only stay in the bloodstream for a short time, and once they are no longer needed, they quickly become inactivated enzymatically.¹³



Hormones function in a complex hierarchy. Testosterone, for example, is a steroid hormone, yet it relies on other hormones to activate its production.¹⁴

As mentioned above, testosterone is a hormone secreted by two of several glands that comprise the endocrine system:¹⁵ specifically, the adrenal gland and the gonads. The hypothalamus is the gland responsible for producing the releasing hormones that exert an effect on the production of other hormones,¹⁶ like testosterone.

The coordination center of the endocrine system, the hypothalamus produces a number of regulatory hormones, which pass to the anterior pituitary gland which then secretes hormones into the blood to be carried to the next rank of endocrine glands, including the adrenal cortex and testes, among others. These glands, in turn, are stimulated to secrete their specific hormones.¹⁷

As we can see, testosterone production relies on the efficiency of the endocrine system to do its job and maintain homeostasis.

Cholesterol metabolism must also be in a state of homeostasis to ensure proper production of testosterone.

It becomes important to nourish and provide these essential systems with the necessary nutrients to maintain a proper state of internal balance. When all the systems have the proper nourishment to work together efficiently, homeostasis is achieved.

NUTRITIONAL SUPPORT

Following is a list of the nutrients which play a role in the various functions and activities of testosterone and the systems and/or organs involved in the production thereof. Some of those nutrients are:

Vitamin C: Humans are one of only a few species known to require a dietary source of ascorbic acid. Ascorbic acid is rapidly absorbed from the gastrointestinal tract and distributed to the various tissues of the body.¹⁹ Vitamin C functions as an antioxidant in numerous reactions in the body, and as a co-enzyme. It serves many metabolic roles. Vitamin C has a coenzymatic function in the metabolism of amino acids and the biosynthesis of steroid hormones, such as testosterone.²⁰ The adrenal gland contains an especially high concentration of Vitamin C.²¹ It should be noted that the concentration is decreased under stress when adrenal cortical hormone activity is high.²² Reports have indicated that natural and supplemental Vitamin C are equally bioavailable. Increased intakes of Vitamin C are required to maintain normal plasma levels under acute environmental stress such as trauma, fever, infection or elevated environmental temperatures.²³

Pantothenic Acid: The primary role of pantothenic acid is as a constituent of coenzyme A, and as such, it is essential to many areas of cellular metabolism. CoA is involved as an acceptor acetate group for amino acids, vitamins and sulfonamides, and also plays a role in the synthesis of cholesterol, phospholipids, steroid hormones and choline.²⁴

Low levels of pantothenic acid notably affect the adrenal cortex.²⁵ The metabolically active adrenals contain high concentrations of CoA. If pantothenic acid is low, low levels of CoA will then result. This, in turn, could affect the synthesis of cholesterol, the precursor to testosterone, a steroid hormone.

Niacin: Niacin is a generic term for two similar compounds: nicotinic acid, and nicotinamide. A B-vitamin that is intimately involved in metabolic reactions throughout the entire body, niacin participates in the breakdown of glucose for energy and in the synthesis of fat and cholesterol.²⁶

Cholesterol is the raw material used for testosterone production.

Vitamin B6: The active form of B6 is pyridoxal phosphate which is involved in a variety of reactions important to amino acid metabolism, including the conversion of tryptophan to niacinamide.²⁷

Arginine: Arginine is an essential amino acid.²⁸ Its fundamental use is as a building block for body proteins such as enzymes, hormones, vitamins and structural proteins,²⁹ and as a detoxifying agent.³⁰ Eighty percent of the male seminal fluid is made up of arginine.

B-Alanine: This is an amino acid that is necessary for the synthesis of pantothenic acid.³¹

SUPPLEMENTAL SUPPORT

The ideal formula for providing nutritional support for the proper production of testosterone is **MICHAEL'S® TESTOSTERONE FACTORS™**. We've also taken into consideration the organs and systems involved in the production of testosterone and recommend the following products to maintain the nutritional support of these vital systems: **MICHAEL'S® CHOLESTEROL METABOLISM FACTORS™**, **ADRENAL FACTORS STRESS SUPPORT™** AND **ADRENAL XTRA ENERGY SUPPORT™**.

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Supplement Facts

Serving Size: One (1) Tablet		
Amount Per Serving	% Daily Value	
Vitamin C (as Calcium Ascorbate)	100 mg	111%
Vitamin D3 (as Cholecalciferol†)	2.5 mcg	13%
Niacin (as Niacinamide)	50 mg	313%
Vitamin B6 (as Pyridoxine Hydrochloride)	25 mg	1471%
Pantothenic Acid (as d-Calcium Pantothenate)	100 mg	2000%
Proprietary Blend	510 mg	*
Gamma Oryzanol (from Rice), Phytosterol Blend (from Pine Tree) (70% Beta Sitosterol, 15% Campesterol, 2% Stigmasterol), Wild Yam Root (<i>Dioscorea opposita</i>), Asian Ginseng Root (<i>Panax ginseng</i>), L-Arginine and L-Alanine		
*Daily Value not established.		

OTHER INGREDIENTS: Microcrystalline Cellulose, Dicalcium Phosphate, Stearic Acid, Modified Cellulose Gum, Vegetable Magnesium Stearate, Silicon Dioxide and Pharmaceutical Glaze (Shellac, Povidone).

†From Lanolin.

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