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COVER STORY

Improve Your Sex Life And Protect Against Heart Attack

By J. Phillip Vogel

Did you know that testosterone deficiency predisposes men to heart disease, depression and a host of other ailments associated with normal aging?

The problem is that most doctors are ignorant of the fact that cells throughout the body require testosterone to properly function. Insufficient testosterone causes males to lose strength, virility, cognitive function and their youthful health. The long-term consequence of testosterone deficiency is possible death from a wide range of diseases.

Testosterone remains a misunderstood hormone to all but the most dedicated health enthusiasts. The general public is afraid of testosterone because some young athletes have abused it. Others think it causes prostate cancer. Scientific studies, on the other hand, clearly show that lack of testosterone is an underlying culprit behind many age-related disorders.



Today's physicians practice medicine as if low testosterone has no impact on an aging man's health. For example, if a male patient is depressed, anti-depressant drugs are prescribed that often fail to correct the underlying problem. Anti-depressant drugs have many unpleasant side effects including impotence, which can make a man feel even more depressed. Published studies document that testosterone replacement is an effective anti-depressant in many men.

Men who complain of impotence are routinely prescribed Viagra®, a drug with both unpleasant and potentially lethal side effects. Testosterone can be far more effective than Viagra because it stimulates sexual receptor sites in the genitalia and the brain¹ (where it enhances desire).

When testosterone levels are low, the body tries to compensate by making more cholesterol, a precursor to adrenal testosterone production. Many men prescribed statin drugs can obtain the same cholesterol-lowering effect by restoring their testosterone level to a more youthful range.²

The most profound effect that testosterone has in the body may be its ability to prevent atherosclerosis and heart attack. A series of new studies reveal that testosterone is a critical missing link that cardiologists are failing to account for in treating those with coronary artery disease and congestive heart failure.³ This article discusses the beneficial functions of testosterone and describes methods for safely restoring levels to healthy ranges.

In youth, testosterone levels are at their peak. Vitality, assertiveness, and libido all thrive in their hormone-induced glory. As we age, however, the endogenous level of this essential androgen begins to drop drastically. By the time a man is 30 years old, he will have already started down the path of testosterone deficiency, losing as much as 2% every year for the rest of his life.⁴ This means that by the time he reaches 60 years of age, he will be functioning with about 60% less testosterone than he had in his twenties.

It is now estimated that as many as 40 million men in the U.S. suffer from inadequate levels of testosterone-and most of them don't even know it.⁵ They only know that they are depressed, or that their sex drive is not what it used to be. But a lowered sex drive is not the biggest problem associated with testosterone deficiency.

Recent research has revealed that testosterone, long thought to be a causative factor in heart disease, actually prevents many forms of this killer.⁶ In fact, at youthful levels testosterone can keep diseases such as atherosclerosis at bay almost indefinitely.⁷ With this revelation comes a whole new problem: How do you re-establish youthful levels of testosterone?

Testosterone: What is it?

Historically speaking, testosterone has been the subject of much speculation and scrutiny. Long before scientists knew what

testosterone was as where it came from, ancient cultures were carving statues depicting testicles as the symbols of fertility and virility. As of 1400 AD, the Chinese were regularly processing urine from young men and mixing it with ground bull testicles to produce an extract used for treating impotence, prostate enlargement and infertility.⁸

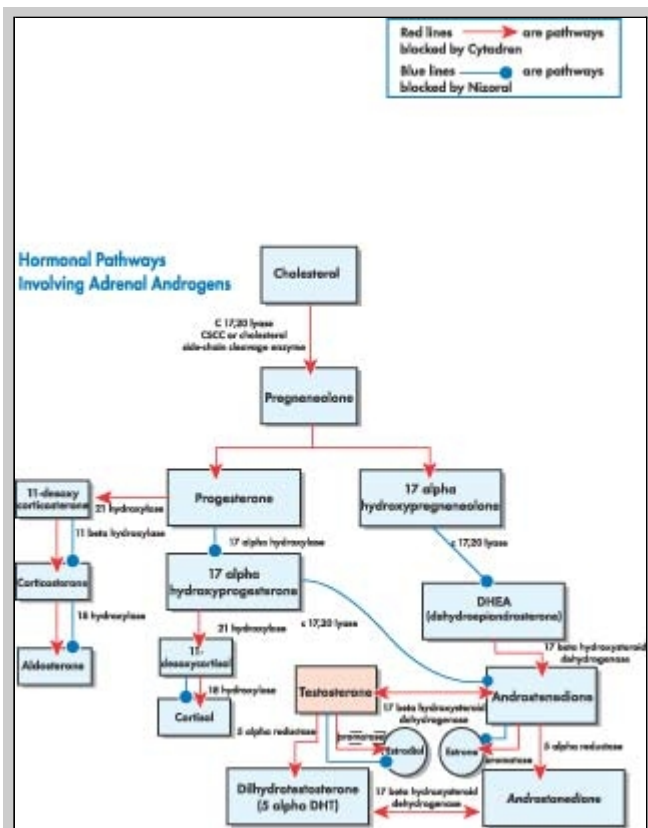


Figure 1. Metabolic Pathways Involved with Testosterone. Testosterone is synthesized from cholesterol by means of a number of enzymatic reactions. The immediate precursors of testosterone are androstenedione and DHEA-Sulfate (DHEA-S). Both testosterone and androstenedione can undergo metabolic conversion to estrogens (estradiol and estrone) via the aromatase enzyme.

Today, we have a much greater understanding of the production and purpose of testosterone. We now know, for example, that testosterone is the major androgen hormone produced in males; that it is created predominantly by the Leydig cells in the testes in response to the release of luteinizing hormone (LH) by the pituitary gland. We also know that it is carried by the bloodstream and binds to specific target cells where it exerts tissue-dependent effects, such as masculinization, anabolism (tissue building) and sexual arousal. Testosterone is a major growth hormone that stimulates the production of red blood cells within the bone marrow.⁹ Testosterone also inhibits cells called osteoclasts that enhance bone breakdown. When testosterone deficiency occurs, as with aging and in other conditions, a lack of inhibition of these very same cells stimulates bone loss that leads ultimately to osteoporosis.¹⁰

But despite our seemingly vast knowledge on the subject, much of the value of testosterone has yet to be elucidated. Researchers are just now discovering that not only does testosterone affect us sexually, but that it is also responsible for numerous biological actions including protein synthesis, oxygen uptake, cholesterol regulation and immune surveillance.¹¹

Of these new discoveries, one of the most controversial-and potentially life saving-is testosterone's beneficial effect on the cardiovascular system.

The myth of testosterone

Diseases of the heart and blood vessels have become a nationwide epidemic, killing more than half a million men in the U.S. every year.¹² While it's commonly known that the chances of developing heart disease grows proportionally with age, the fact that the increased risk may be tied to the progressive reduction of available testosterone has not yet been universally accepted by conventional medicine.

Owing to early studies that showed men to be twice as likely to die from coronary heart disease than women, it has long been believed that physiologically high levels of testosterone has a deleterious effect on

the cardiovascular system. This theory has further been supported by cases of sudden cardiac death and other cardiovascular disorders that have been induced by the abuse of anabolic steroid drugs such as methyltestosterone.¹³ Another complication was that for many years, endocrinologists failed to believe that testosterone levels dropped in relation to age. Older patients with heart disease were tested and their testosterone levels found to be within the youthful range. Unfortunately, scientists were looking for the wrong type of testosterone measuring the total amount of testosterone rather than focusing on the free testosterone.

We now know that much of an aging man's testosterone is "tied up" or bound to a protein called sex hormone-binding globulin (SHBG). Once bound to SHBG, testosterone is no longer available for use by the rest of the body, becoming in effect biologically inert. As a result, the typical male has only a small amount of bio-available or "free" testosterone accessible-roughly about four percent of the total testosterone. Furthermore, research has shown that this free testosterone becomes increasingly bound with age, leaving available levels of testosterone low while total levels appear normal.¹⁴

But despite having to overcome the hurdles of medical dogma that erroneously devalued testosterone for decades, researchers have finally established an indisputable link between its youthful levels and a healthy cardiovascular system.

To lay the groundwork for our examination of these cardiovascular benefits, we'll begin with

THE DANGERS OF ANABOLIC STEROIDS

Most of the hesitation to use natural testosterone supplements or creams to prevent cardiovascular disease stems from the popular misconception that all testosterone is the same. It isn't.

Whereas most studies on natural testosterone have shown positive

a brief discussion of the cardiac disease most often induced by low levels of testosterone: atherosclerosis.

The foundation of heart disease

Atherosclerosis is the most common form of cardiovascular disease. It is the accumulation of fatty plaque deposits in the arteries, resulting in stenosis-a narrowing of the arterial diameter, which restricts blood flow to vital organs.¹⁵

Depending on the location of the stenosis, atherosclerosis can manifest itself in several different ways. Should the blockage occur in one or more of the arteries that supply the heart, coronary artery disease (CAD) results. The most common clinical manifestation of CAD is angina pectoris (chest pain). This occurs when the oxygen needs of the heart muscle are inadequate. In essence, the heart muscle is crying out for more oxygen. Angina, therefore, is symptomatic of narrowed coronary arteries and their inability to allow proper blood flow to suit the heart's need during physical exertion or emotional stress. If blockage of coronary flow is complete, it will result in a heart attack (myocardial infarction or MI).¹⁶

If the blockage appears in the arteries supplying the brain, the result is called a cerebrovascular accident or stroke.¹⁷ Restricted blood flow to the legs-known as claudication-interferes with the ability to walk, resulting in pain and disability due to a lack of oxygen caused by the impaired blood flow. When such stenosis becomes severe, infection and gangrene may follow, often leading to amputation of the afflicted limb.¹⁸

To treat these disorders, common medical practice relies on various techniques such as angioplasty and coronary artery bypass grafts.¹⁹ Angina is most often treated with medication such as nitroglycerin which rapidly dilates the coronary arteries allowing more blood to flow to the malnourished heart.²⁰ The effects of nitroglycerin do not last long.

Although these procedures are often effective at temporarily keeping the disease manageable, preventing atherosclerosis in the first place is by far the best solution. To do this, you need testosterone.

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physiological effects, anabolic steroid drugs are another matter entirely. While synthetic testosterone steroids may resemble the natural testosterone molecule, they are in fact chemically different and do not provide the same healthful benefits. On the contrary, anabolic steroids such as methyltestosterone have numerous serious side effects that actually lay the foundation for heart attack and stroke-such as increased LDL cholesterol*and blood clotting-the very problems that natural testosterone combat.**

* Zitzmann M, et al. Contraceptive steroids influence the hemostatic activation state in healthy men. *J Androl* 2002 Jul-Aug;23(4):503-11.

** Mottram DR, et al. Anabolic steroids. *Baillieres Best Pract Res Clin Endocrinol Metab* 2000 Mar;14(1):55-69.



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The testosterone effect

While it was only recently that the relationship between cardiovascular fitness and testosterone was firmly established, evidence for the beneficial effect of testosterone has been scientifically suggested for almost 100 years. During World War I, for example, a Danish surgeon named Thorkild Rovsing removed the intact testicles of a recently killed soldier and transplanted them into the body of an old man suffering from gangrene. Inexplicably to physicians of the day, the gangrene healed.²¹

Decades later, leading testosterone researcher Maurice Lesser, M.D., of the Boston University School of Medicine published the results of 100 consecutive angina pectoris patients who were treated with testosterone for at least four months. Prior to their treatment, Lesser reported that each patient had a clearly defined diagnosis of angina based on their medical history. The results showed that 91% of the patients reported either marked or moderate improvement in the number of angina attacks as compared with the pre-treatment rate.²²



Following the Lesser studies, research into the cardiovascular benefit of testosterone erupted. Numerous researchers reported that cardiac function in elderly men with heart disease improved dramatically when treated with testosterone. Other studies found that testosterone effectively reduced blood pressure and improved vascular circulation.²³ As late as 1993, however, the reason for these effects remained unclear.

Finally, however, in 1994 Dr. Gerald B. Phillips at Columbia University College of Physicians and Surgeons discovered the answer while conducting a cross-sectional study of 55 men who were undergoing coronary angiography. At the time of the angiography, none of these men had ever had a heart attack or stroke. When serum testosterone levels from these men were analyzed, they revealed that as testosterone levels decreased, the degree of arterial occlusion increased. Phillips observed that low testosterone levels were associated with several risk factors for heart attack such as high insulin levels, abnormal glucose metabolism, low levels of HDL cholesterol and high blood pressure. Moreover, he further proposed that the converse was also true: testosterone protects against heart disease in men.²⁴

<p>TESTOSTERONE AND HEART DISEASE RISK</p> <p>Men with low testosterone levels tend to have these heart disease risk factors:</p> <ul style="list-style-type: none"> High blood glucose High blood cholesterol High blood triglycerides High blood pressure High body mass index (obesity) Abdominal obesity High levels of blood clotting factors Low levels of blood clotting inhibitors

The research continues

Since Dr. Phillips published his findings, an enormous body of research has gone on to confirm the cardiovascular benefits of testosterone.

In one of the most comprehensive studies, researchers in the Netherlands evaluated the effect of low levels of testosterone in elderly men. Known as the Rotterdam Study, this population-based investigation examined the relationship between total and bio-available testosterone with aortic atherosclerosis among 1,032 nonsmoking men and women aged 55 years and over. For six years, baseline data on the subjects was collected and evaluated and upon final examination, researchers concluded that men with the lowest levels of total and bio-available testosterone had the highest risk for severe aortic atherosclerosis. Conversely, men with the highest levels of both total and bio-available testosterone were protected against atherosclerosis.²⁵ These results confirmed Dr. Phillips' finding that low serum testosterone is correlated with increased heart disease.

With a clear link between atherosclerosis and low levels of testosterone established, researchers have expanded their scope to examine the other cardiovascular benefits of this hormone. For example, recent studies have revealed that testosterone improves insulin sensitivity in healthy men, suggesting a role in preventing Type II diabetes.²⁶ Other studies have found that in men with angina, supplemental testosterone therapy not only clinically improves symptoms but also reduces objective measurements of ischemia (impaired blood flow).²⁷ Still more research has determined that testosterone induces vasodilatation and may be helpful in cases of chronic congestive heart failure,²⁸ is responsible for maintaining heart muscle protein synthesis,²⁹ and reduces the levels

The other benefits of testosterone

While the relationship between youthful levels of testosterone and a healthy cardiovascular system cannot be denied, it is far from the end of the story. Research has slowly started to uncover many of the hidden benefits of testosterone, such as its effect on bone growth and stability, depression, obesity and libido.

Osteoporosis

Osteoporosis is a metabolic bone disease characterized by the serious loss of bone mass and microdisintegration resulting in an increased risk of fracture. Although more commonly associated with post-menopausal women, osteoporosis affects more than five million men in the United States each year.

Without a doubt, low testosterone is one of the major causes of osteoporosis in aging men. Researchers in Germany have recently published a report estimating that 50% of all bone fractures in males over 60 years old is a result of osteoporosis induced by low testosterone levels.³¹ Complementing that report, researchers in France studying the relationship between testosterone and male osteoporosis have found that by age 80, as much as 20% of the bone mass density of males was lost in part due to the lower levels of testosterone.³²

The mechanism behind testosterone's effect on bone mass and stability was the recent topic of study for a group of Canadian researchers. According to their report, low levels of testosterone indirectly diminished bone mass by extending the longevity, generation and activity of bone-destroying osteoclast cells. The explanation for this is simply that testosterone is an inhibitor of osteoclast function. Lowering the testosterone level removes this inhibitory effect and allows osteoclasts to resorb (breakdown) bone. This study suggests that by maintaining youthful levels of testosterone, osteoclast (bone degrading) activity and the subsequent loss of bone mass can be reduced. This effect of testosterone on osteoclast activity is also of vital importance in men receiving androgen deprivation therapy for prostate cancer. Such patients have biochemical evidence of immediate bone loss. The severity of this problem has led to the use of drugs that inactivate the osteoclast; these are called bisphosphonates. Common examples of oral bisphosphonates are Fosamax and Actonel, and of intravenous bisphosphonates are Aredia and Zometa.³³ When bisphosphonates are given, osteoclast activity is inhibited and bone formation is favored. It is important that such patients receive bone supplements such as Bone Assure to allow for healthy bone formation. This focus on testosterone and its effect on bone integrity is discussed and described in depth on the LEF internet site at www.lef.org and also at www.lefprostate.org.

Depression

A consistent finding in the scientific literature is that depression is frequently associated with low levels of testosterone.³⁴ However, because practicing physicians often have only a basic understanding of testosterone deficiency, many patients suffering from its effects are misdiagnosed. Furthermore, because of the misplaced stigma associated with testosterone, psychiatrists rarely consider testosterone replacement therapy as a viable course of treatment.

Unfortunately for the patient, a common side effect of prescription antidepressants is a suppressed libido. Those suffering from depression must then choose between this drug-induced reaction and a normal sex life. If more psychiatrists tested their patients' blood for free testosterone and prescribed natural testosterone therapies when appropriate, the need for antidepressant drugs could potentially be avoided.

SYMPTOMS OF LOW TESTOSTERONE

Inability to concentrate

Moodiness and emotionality

Irritability

Timidity

Feeling weak

Anxiety

At Harvard University, researchers recently conducted a study to compare levels of testosterone among HIV-positive men who had HIV-related weight loss. The researchers also gave some subjects injections of testosterone to find out if supplements of this hormone had an impact on feelings of depression. The researchers found that men who had low levels of testosterone were more likely to be depressed than men who had normal levels of this hormone. Moreover, when the depressed men received regular injections of testosterone their mood significantly improved.³⁵

Researchers at Columbia University also found evidence supporting a relationship between advanced age, low testosterone and depression. In their study, depressed men over 75 years-old were found to have on average 35 percent lower free testosterone levels than younger men. In addition, 25 percent of those tested were determined to be severely testosterone deficient. Treatment with supplemental testosterone resulted in a reduction of depressive symptoms, further demonstrating the antidepressant effects of testosterone.³⁶

Testosterone and obesity

Memory failure
Reduced intellectual
agility
Passive attitude
General tiredness
Reduced interest in
surroundings
Hypochondria
Diminished sex drive

Obesity is a vicious cycle. Fat cells are known to be a source of aromatase, the enzyme responsible for converting testosterone into estrogen.³⁷ Low testosterone results in the formation of abdominal fat, which in turn causes more aromatase enzyme formation and thus even lower levels of testosterone. The result is one of the most common findings of researchers studying the relationship between testosterone and obesity: obese men have low levels of testosterone and extraordinarily high levels of estrogen.³⁸

This fact was again confirmed in a study recently published in *Aging Male* which stated that increased estradiol levels due to free testosterone aromatization is highly significant and positively related to body fat mass and more specifically to subcutaneous abdominal fat. Even more intriguing, the study found that obese men not only had a significantly lower testosterone level and higher levels of estradiol, but that their estrogen levels were greater than the average post-menopausal woman.³⁹

Since research has shown that boosting the testosterone decreases the abdominal fat mass, reverses glucose intolerance and reduces lipoprotein abnormalities in the serum, it is especially important for overweight men to consider some form of testosterone therapy.

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Libido

Sexual stimulation and erection begin in the brain where neuronal testosterone-receptor sites are prompted to ignite a cascade of biochemical events that involve testosterone-receptor sites in the nerves, blood vessels, and muscles. Free testosterone promotes sexual desire and then facilitates performance, sensation and the ultimate degree of fulfillment. Without adequate levels of free testosterone, the quality of the male sex life is adversely affected. Studies have found that men with low testosterone routinely suffer from a decreased sex drive, genital atrophy, and impotence.⁴⁰ Upon re-establishing youthful levels, subjects commonly report increased feelings of vitality, a higher sex drive, better sexual performance and even penile enlargement and increased genital sensitivity. Low testosterone levels achieved in men on androgen deprivation therapy are associated with decrease in size of the testicles and penis. These findings are reversible and men on the off-cycle of androgen deprivation therapy who have testosterone recovery note a return towards normal in the size of their genitalia.⁴¹

Recently, researchers in Taiwan examined the relationship between low testosterone levels and the male libido. In that study, the serum total testosterone levels of 53 symptomatic men older than 50 years were measured and compared to a control group of 40 young, asymptomatic men. The results showed that men with a diminished libido had a significant decrease in testosterone levels (mean 268 ng/dl) as compared with the control group (553 ng/dl). Furthermore, 89 percent of the subjects suffering from low testosterone reported a lack of energy; 79 percent reported erectile dysfunction; 70 percent reported a loss of pubic hair; and 66 percent reported a decrease in sexual endurance. From this data, the researchers concluded that low levels of testosterone are directly related to both advanced age and diminished sex drive.⁴²

Why do testosterone levels fall?

Aging in males involves a torrent of hormonal, biochemical and physiological changes that accompany the down-regulation of the brain's ability to initiate testosterone production.

In some men, the testes lose their ability to produce testosterone, regardless of how much luteinizing hormone (LH) is being produced. In such cases, the pituitary gland is signaling the testes (via LH secretion) to produce testosterone. But since the testes have lost their functional ability, no testosterone is forthcoming. The pituitary gland, however, continues to secrete LH because there is not enough testosterone in the blood to provide a feedback mechanism to shut down LH production.⁴³ In other cases, it's the pituitary gland that malfunctions and fails to produce sufficient amounts of LH, thus preventing healthy testes from secreting testosterone.⁴⁴ In either case, blood tests can determine the levels of free testosterone and estradiol to help determine the appropriate therapeutic approach.

Other causes of low testosterone result not from faulty feedback mechanisms, but rather because of the aromatization (conversion) of testosterone to estrogen (see Figure 1). Studies have found that in many aging males, the already diminished levels of free testosterone are further compromised by being converted to estradiol—a high potency form of estrogen—via the action of the aromatase. One recent report even found that the estrogen levels of the average 54-year-old man are higher than the average 59-year-old woman.⁴⁵ While estrogen is a necessary hormone for men, at high levels it has been associated with an increased risk of heart attack or stroke.⁴⁶ Furthermore, high serum levels of estrogen trick the brain into thinking that enough testosterone is being produced, thereby reducing the natural production and availability of testosterone even more. This happens because at high levels, estrogen saturates testosterone receptors in the hypothalamus, which subsequently stops sending hormone signals to the pituitary gland. Another consequence of estrogen production is stimulation of sex hormone-binding globulin (SHBG) by estrogen. An increase in SHBG further binds testosterone and lowers the free testosterone level.

Optimal Reference ranges for testosterone and estradiol

Because the methods to test levels of testosterone and estradiol vary with the laboratory, it is always important to understand the reference ranges from your selected company. Below are the normal and optimal ranges of testosterone and estradiol for two major laboratories: LabCorp and Quest Laboratories.

Reference ranges used by LabCorp

Hormone	Conventional/normal	Optimal
Free Testosterone	9.3-26.5 pg/ml	18-26.5 pg/ml
Estradiol	3-70 pg/ml	10-30 pg/ml
Total Testosterone	241-827 ng/dL	500-827 ng/dL

Reference ranges used by Quest Laboratories

Hormone	Conventional/normal	Optimal
Free Testosterone	50-210 pg/ml	150-210 pg/ml
Estradiol	0-60 pg/ml	15-30 pg/ml
Total Testosterone	260-1000 ng/dl	500-1000 ng/dl

A word about prostate cancer

Men with existing prostate cancer should follow the opposite approach as it relates to testosterone. Prostate cancer patients are normally prescribed testosterone ablation therapy (using a drug that blocks the pituitary's release of LH and another drug that blocks the testosterone-receptor sites on the cells).⁴⁷ Early-stage prostate cancer cells can often be controlled by totally suppressing testosterone in the body. Late-stage prostate cancer patients are sometimes put on drugs that produce estrogenic effects to suppress prostate cancer cells that no longer depend on testosterone for growth.

Regrettably, prostate cancer patients on ablation therapy often temporarily suffer many of the unpleasant effects of low testosterone--called Androgen Deprivation Syndrome.⁴⁸ Before initializing a therapy that boosts the free testosterone level, a blood PSA (prostate specific antigen) test and digital rectal exam are recommended for men over 40 or for those 35 years of age or older with a family history of prostate cancer. While restoring free testosterone to healthy physiological levels has not been shown to cause prostate cancer, it can induce existing cancer cells to proliferate faster.

Natural sources of testosterone

Considering the ramifications of low levels of testosterone in aging males, finding convenient, safe, and effective sources for returning those levels to youthful concentrations is paramount. While there are natural testosterone creams and injections available by prescription, research into herbal supplements has uncovered numerous examples of plant extracts that overcome testosterone deficiency by inhibiting aromatization and increasing production naturally.

Chrysin

One of the most promising herbal extracts for overcoming testosterone deficiency is the bioflavonoid chrysin. Extracted from several types of plants, chrysin has consistently shown an uncanny ability to inhibit the aromatization of testosterone.

In a study funded by the Life Extension Foundation, 22 male subjects were given 750 mg of chrysin and 10 mg of bioperine (a pepper extract known to increase absorption rates of chrysin) twice daily for 30 days. When compared with their baseline testosterone and estradiol levels, free testosterone levels rose by 40%, and estradiol levels decreased by as much as 40%. These results offer conclusive evidence that herbal extracts such as chrysin can effectively and quickly inhibit testosterone's aromatization to estrogen.⁴⁹

Complementing Life Extension's efforts, researchers in India recently released the results of their examination on the effect of chrysin on age-related testosterone deficiency. In that study, aging rats were administered 1 mg/kg of chrysin per day for 30 days. Upon concluding these treatments, there was a significant improvement in overall sexual functions in the rats given chrysin, compared with control rats. The rats receiving chrysin exhibited increased libido when allowed to interact with non-estrous female rats, had increased sperm count, greater fertilization potential and greater litter size when they were allowed to interact with proven pro-estrous female rats. These results strongly suggest that bioflavonoids such as chrysin are an effective method of countering the deleterious effects of aging on male sexuality.⁵⁰

Nettle



Stinging Nettle

Another herbal extract known for its beneficial effect on free testosterone levels is *Urtica dioica*, commonly called nettle root. Traditionally used to treat hypertension throughout much of Europe, nettle has recently been the focus of several *in vivo* pharmacological studies designed to determine the nature and extent of its beneficial effects.

As previously discussed, globulins like SHBG actively inhibit the level of free testosterone by binding to it, thereby rendering it biologically inactive. Research has found, however, that nettle extract has a greater affinity for SHBG than does testosterone.⁵¹ As a result, SHBG more readily binds to the constituents of the nettle extract, successfully counteracting its effect and thereby increasing the level of free testosterone.

This "nettle effect" has some stunning biological ramifications. For example, researchers in Italy have just completed a series of *in vivo* studies that has determined that nettle has a direct positive effect on cardiac action. In their study, they found that when pre-contracted endothelial tissue is injected with nettle extract it elicits vasodilatation—the relaxation of the blood vessel walls. The researchers concluded that nettle can produce hypotensive responses through a vasorelaxing effect. This suggests that nettle can improve the symptoms of angina and reduce objective measures of myocardial ischemia in men with coronary artery disease.⁵²

The prostate gland may also benefit from the effects of nettle root. In Germany, nettle has been used for decades in the treatment of benign prostatic hyperplasia—enlargement of the prostate gland. A metabolite of testosterone called dihydrotestosterone (DHT) is known to stimulate prostate growth. Much the same as its effect on testosterone's binding to SHBG, nettle inhibits the binding of DHT to its receptor sites on the prostate membrane.⁵³

Muirapuama

Muirapuama is a South American folk medicine derived from a shrub, *Ptychopetalum olacoides*, which grows in the Amazon region of Brazil. Also called marapuama and "potency wood" it is considered to be an aphrodisiac and an effective treatment for impotence. Because of its purported libido-enhancing properties, Muirapuama has been the subject of two published clinical studies conducted by Dr. Jacques Waynberg, an eminent medical sexologist and author of ten books on the subject.

The first study, conducted at the Institute of Sexology in Paris under Waynberg's supervision, consisted of an examination of the effect of muirapuama on 262 men complaining of lack of sexual desire or inability to attain or maintain erection. After receiving 1.5 g/day of muirapuama for two weeks, 62% of the patients with loss of libido rated the treatment as having a dynamic effect, and 52% of patients with erectile dysfunction rated the treatment as beneficial.⁵⁴

Dr. Waynberg's second study, entitled "Male Sexual Asthenia," focused on sexual difficulties associated with asthenia, a deficiency state characterized by fatigue and loss of strength, both symptoms of a testosterone deficiency. The study population consisted of 100 men over 18 years of age who complained of impotence or loss of libido or both. A total of 94 men completed the study and were evaluated. Muirapuama treatment led to significantly increased frequency of intercourse for 66% of couples. Of the 46 men who complained of loss of desire, 70% reported intensification of libido. The stability of erection during intercourse was restored in 55% of patients and 66% of men reported a reduction in fatigue. Other reported beneficial effects included improvement in sleep and morning erections.⁵⁵

New Super Miraforte™

The findings from numerous published studies indicate that testosterone deficiency and estrogen overload may be some of the most serious metabolic complications that aging males face. It has long been known that low testosterone interferes with a man's emotional state and sex life. Startling new findings, however, reveal that testosterone deficiency predisposes aging males to lethal cardiovascular diseases.



Because of their documented libido-enhancing and testosterone increasing effects, chrysin, nettle, and muira puama are among the most crucial dietary supplements for sufferers of testosterone deficiency. Moreover, studies indicate that these extracts are particularly effective at alleviating the major symptoms of low testosterone including depression, fatigue, low sex drive, timidity and anxiety.

Super MiraForte™ is a pharmaceutical-grade combination of these plant extracts designed to increase free testosterone and suppress excess estrogen in aging men. Super MiraForte™ naturally and effectively helps to restore the proper balance between these powerful and crucial hormones.

The new Super MiraForte™ has 50% more chrysin than the previous version. When combined with Bioperin® to enhance absorption into the bloodstream, chrysin may be the most effective natural aromatase-inhibiting dietary supplement.

Males over age 30 seeking to increase their free testosterone levels, while reducing excess estradiol, may consider taking four Super MiraForte™ capsules a day. If blood tests and/or symptoms of testosterone deficiency do not improve after 60 days, consideration should be given to obtaining a prescription for topical testosterone cream and the aromatase-inhibiting drug Arimidex® (if estradiol levels are high). Those with existing androgen dependent prostate cancer should not use any kind of testosterone enhancing therapy. Women should not use Super MiraForte™ because its aromatase-inhibiting effects could cause estrogen deficiency and the development of menopausal symptoms. Aging males, on the other hand, often have too much estrogen and not enough free testosterone.

For information about prescription testosterone boosting drugs, refer to the Male Hormone Modulation Protocol.

What you should have learned from this article

Aging men suffer from a variety of ailments that directly relate to low levels of bioavailable testosterone. Mainstream doctors don't even consider a man's testosterone status when treating disease. Yet as you have just learned, insufficient testosterone can cause or contribute to the most common disorders and discomforts that aging men face.

While men clamor for drugs like Viagra®, their doctors overlook the fact that testosterone deficiency is a major reason for loss of sexual desire and ability to perform. Men who properly boost their levels of free testosterone while suppressing excess estrogen can enjoy a much more fulfilling sex life.

The lethal dangers of a testosterone deficiency are now documented in numerous published studies. Low testosterone results in increased coronary atherosclerosis and osteoporosis. These two diseases are not unrelated in as much as calcium depleted from the bone is often deposited into the arterial wall. Pathological breakdown of bone can increase cancer risk by releasing growth factors such as transforming growth factor beta 1 (TGF-B1) into the blood where they stimulate cancer cells to proliferate.

Obesity and Type II diabetes are at epidemic levels in the United States. Men who suffer from abdominal obesity (pot belly) are the most likely to suffer cardiovascular and other diseases. Low testosterone results in increased deposition of fat in the abdomen and decreased insulin sensitivity, resulting in higher than desired levels of insulin in the blood. Men seeking to lose weight and prevent Type II diabetes and its complications should restore free testosterone levels to youthful ranges.

Aging men often complain they don't "feel as young" as they used to. Some are clinically depressed. When testosterone levels are restored in depressed men with low testosterone, depression scores improve and men report enhanced feeling of emotional well being.

There are several ways to increase free testosterone and reduce excess estrogen (estradiol). A convenient and cost effective method of accomplishing this is to take four capsules a day of a dietary supplement called Super MiraForte™. A study of 22 male showed that the ingredients in Super MiraForte™ caused free testosterone levels to increase by an average of 65%, while estradiol levels decreased by as much as 40% after 30 days.

Not every man will achieve youthful free testosterone and estradiol levels by taking Super MiraForte™. Some men may have to ask their doctors to prescribe natural testosterone cream or gel along with an aromatase-inhibitor drug (such as Arimidex®). The testosterone cream directly boosts blood levels of testosterone while Arimidex blocks the conversion of testosterone to estrogen thus preventing a build-up of excess estrogen. Not all men need Arimidex. Doctors will not prescribe these drugs without the

patient's blood being tested for free testosterone, estradiol and PSA (prostate specific antigen).

Those with androgen-dependent prostate cancer should not use any kind of testosterone-enhancing therapy especially if blood tests reveal a severe state of testosterone deficiency.

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