



Physicians Guide to Prostate Health

A peer review report on the effects of vitamins, minerals, essential fatty acids, bee pollen and herbs on the prostate gland.

Presented by:

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NOTICE: Before undertaking a nutritional support program, it is important that you seek the advice of a qualified health care professional. This medical report is intended for the use of that person

The purpose of this report is to acquaint you with the most recent information regarding the ingredients included in the **Nature's Aide Vitamins®** “**Prostacare18**” prostate support formula and the quantities of each.



The prostate is a walnut sized gland situated right under the bladder and is wrapped around the urethra and if it should grow or swell up due to age, infection or other problems it strangles the flow of urine. When that happens, inflammation, pain, fever, an excessive urge to urinate, frequent trips to the bathroom, trouble starting your stream or weak stream will occur.

Prostate enlargement, called benign prostatic hypertrophy, or BPH for short, is an unwanted but non-cancerous enlargement of the prostate. Although men in their twenties can suffer from BPH, it usually surfaces later in life. It's estimated that half of all men have BPH by the age of 60, and 90% will suffer from it by age 85. As a precaution it is advisable to ask your physician to have a simple blood test performed. That test is the PSA (which stands for “prostate-specific antigen”) test. This test is very important to alert you to potentially deadly disease that might otherwise go undetected.

It's important to know that the prostate is a particularly vulnerable organ. It is situated in an area that doesn't get proper blood circulation and requires added nutritional support to remain healthy. Many things can cause an unhealthy prostate, including poor diet, emotional distress, muscular pressure, stress, family history, exposure to various toxins, environmental factors, radiation, sex life, general lifestyle, and even the clothing you wear. Without life-giving oxygen and the proper nutritional support in the blood, prostate cells are bound to go bad.

Like every other part of the body, the prostate needs a steady supply of vitamins, minerals, amino acids, carbohydrates, and essential fatty acids, as well as enzymes, phytochemicals and other substances found in food.

Prostacare18 was developed to provide the proper balance and quantity of nutrients needed for optimum support. The name Prostacare 18 itself was derived from the 18 ingredients that make up this formula.

This report will acquaint you with the most recent information regarding the ingredients in Nature's Aide Vitamins Prostacare18 formula.

Saw Palmetto Berry (Serenoa Repens) (320mg)

Saw Palmetto Extract 20-25% fatty acids (Serenoa Repens) (100mg)

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A standardized liposterolic (fat-soluble) saw palmetto berry extract has demonstrated numerous pharmacologic effects relating to its primary clinical application in the treatment of the common disorder of the prostate gland, benign prostatic hyperplasia (BPH). BPH is a complex disease process in which testosterone the prostate (primarily when converted to the more potent dihydrotestosterone [DHT]) plays a permissive role, but other factors are critical in its pathogenesis.

The primary therapeutic action of saw palmetto extract in the treatment of BPH has been thought to be inhibition both of the intraprostatic conversion of testosterone to DHT and of its intracellular binding and transport. However, later research suggested additional mechanisms of action, including antiestrogenic and receptor site-binding effects

Estrogen may contribute to BPH because it inhibits the hydroxylation

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and subsequent elimination of DHT. *Serenoa* appears to inhibit the activity of estrogen in the prostate. For example, in a double-blind study of 35 men with BPH, 18 were given the saw palmetto extract at 160 mg twice daily, and 17 were given placebo. At the end of the 90-day study, androgen, estrogen, and progesterone receptors from prostate tissue samples were evaluated with two different techniques. The men receiving the saw palmetto extract had significantly lower cytosol and receptor values for estrogen and progesterone than the placebo group. Because the progesterone receptor content is linked to estrogenic activity, the results of the evaluation imply that at least part of the efficacy of the saw palmetto extract is through its antiestrogenic effect.

3 The results of the androgen receptor analysis were quite interesting: There was no change in the number of cytosol androgen receptors, but the number of nuclear androgen receptors was significantly lower in the saw palmetto group (60% of the placebo group tested positive for the nuclear receptor, compared with 10% of the saw palmetto group). These results indicate that the saw palmetto extract probably competitively blocks the translocation of the cytosol androgen receptor to the nucleus.

The overall results of the study show that the standardized extract of saw palmetto exerts both antiandrogenic and antiestrogenic activities. Preliminary analysis of the extract demonstrates that separate fractions are responsible for these effects. Researchers in this study concluded, "It cannot be excluded, however, that the primary effect is antiestrogenic and that the inactivation of androgen receptors and progesterone receptors and of the 5-alpha-reductase activity is secondary to the estrogen receptor blockade."

Serenoa standardized extracts do not affect systemic levels of androgens, follicle-stimulating hormone, or luteinizing hormone in men with BPH. This may help explain the relatively low incidence of adverse effects of this substance in clinical trials. These findings do not, however, rule out localized effects of saw palmetto on androgen or estrogen effects in other tissues of the body.

Endocrinologic factors in addition androgens and estrogen play a role in the pathogenesis of BPH. Various locally produced growth factors are important, and liposterolic extracts of *Serenoa* block the ability of one of them, basic fibroblast growth factor, to induce prostatic hyperplasia in vitro. High prolactin levels may also stimulate prostate hyperplasia; *Serenoa* extracts interfere with this process in rats but the drug finasteride does not.

Saw palmetto extracts exert antispasmodic effects on smooth muscle. Rat smooth muscle was originally shown to be inhibited by two *Serenoa* extracts owing to inhibition of calcium ion influx. A later study found that *Serenoa* extract, but not pumpkin seed extract, stinging nettle root extract, or beta-sitosterol, consistently inhibited human alpha1-adrenergic receptors in vitro. Whether this effect is relevant clinically is still unknown.

The standardized extract has demonstrated antiedematous effects, and the polysaccharide components have been shown to have immunostimulatory effects. *Serenoa* extract and myristoleic acid induced apoptosis and necrosis in an androgen-sensitive human prostate cancer cell line in vitro.

The lipidosterolic extract of *Serenoa repens* (SR) has been shown to promote apoptosis (programmed cell death) within the prostate gland. To determine the effect, researchers examined the Bax to Bcl-2 expression ratio and caspase-3 activity in prostatic tissue from men with symptomatic benign prostatic hyperplasia (BPH) treated for 3 months before surgery. The Bcl-2 family of apoptosis-associated proteins consists of members that inhibit apoptosis (Bcl-2, Bcl-x1, Mcl-1, A1, etc.) and others that induce apoptosis (Bax, Bak, Bad, Bcl-xs, Bik, etc.), and the balance between pro-apoptotic and anti-apoptotic members determines the fate of the cells in many tissues, including the prostate. The Bcl-2 family regulates apoptosis, for example, by controlling the activity of caspases, the executioners of apoptosis. To examine the effects of the extract of SR on apoptosis, men with BPH were randomized to be followed for 3 weeks without any treatment before surgery (control group) or to receive 160 mg of

the liposterolic extract of SR orally twice daily for 3 months preceding the same surgery. Surgery was ultimately performed in 17 controls and 12 patients by transurethral prostate resection or retropubic adenomectomy. Results indicated that the Bax to Bcl-2 ratio, which is used as an apoptotic index, was significantly increased in the prostatic tissue of treated patients. The level of the intact 116 kDa poly (adenosine diphosphate-ribose) polymerase form, an enzyme involved in the cell death apoptotic pathway, was also found to be decreased in prostatic tissue from the patients, suggesting increased caspase-3 activity in the prostate. Researchers concluded that this mechanism of apoptosis promotion could have clinical relevance as a result of the improvement in symptoms produced by treatment with the SR extract.

Vitamin A (Beta-carotene) (2,500 I.U.)

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Beta-carotene is a known source of vitamin A, because it is the most nutritionally active vitamin A precursor among the carotenes. Of the nearly 600 carotenoids, a family of natural pigments found in plants and animals, less than 50 are vitamin A precursors like beta-carotene.

Animal studies have shown that beta-carotene is not mutagenic, teratogenic, embryotoxic, or carcinogenic, nor does it cause hypervitaminosis A (vitamin A toxicity). No signs of organ toxicity have been found in subacute, subchronic, or chronic oral toxicity studies in experimental animals receiving doses of up to 1000 mg/day beta-carotene per kilogram of body weight via the diet. Even synthetic beta-carotene has not been shown to exert any carcinogenic effect in rodents or in CD1 mice in particular. Two studies have reported an enhanced risk of lung cancer in human intervention studies.

"Although dose and timing of exposure, smoking status, and imbalance of antioxidant defense have been recognized as potential factors accounting for the outcome of these studies,"no conclusive explanation has not yet been promulgated to explain these findings. However, examination of the design of these studies, particularly the use of a single carotenoid (beta-carotene) at a low supplemental dose,

may explain the anomaly, especially given the lack of any evidence from animal toxicology studies that synthetic beta-carotene is carcinogenic at even exceptionally high intake levels. More likely the administration of beta-carotene may have been administered too late in the carcinogenic process to be of any benefit for smokers. That human studies found a slightly increased risk of lung cancer in long-term smokers may discourage smokers from maintaining optimal levels of carotene, including beta-carotene. This possibility is worrisome, in that epidemiology studies have found an inverse correlation between high dietary beta-carotene intake and cardiovascular disease, particularly angina pectoris and myocardial infarction, conditions associated with smoking.

Beta-carotene and its related carotenoids have been shown to protect against various cancers and to enhance cancer resistance directly as an antimutagen and anticarcinogen or indirectly as an antioxidant by reducing cell damage. In particular, increased beta-carotene levels seem to reduce the risk of development of lung cancer, important information for cigarette smokers and people regularly exposed to sidestream smoke. Individuals with low intakes of beta-carotene have a 30% to 220% higher risk of lung cancer than those with a high intake of this nutrient. A 12-year study of almost 3000 men living in Switzerland found an association between low blood levels of vitamin A and beta-carotene and higher risk of lung cancer and death from all cancers. Men with low carotene levels had nearly twice the risk of lung cancer compared with men who had normal levels, and nearly 3.5 times the risk of stomach cancer.

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Vitamin E (d, l-alpha-tocopheryl acetate) (15 I.U.)

Vitamin E is a well-known stabilizer of membranes and therefore facilitates a suitable environment for the synthesis and activity of membrane-associated enzymes that protect against toxin damage. In addition, it has antioxidant properties. Although CCl₄ does not cause liver damage via lipid peroxidation, Vitamin E partially prevents CCl₄

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hepatotoxicity. Pretreatment of animals and humans with Vitamin E before ozone and nitrous oxide exposure has been shown to provide partial protection against the toxicity of these agents.

Although clinical studies have shown inconsistent effects, it is clear that Vitamin E does play a role in the protection against oxidation of LDL cholesterol because of its ability to be easily incorporated into the LDL molecule. Furthermore, there is a clear-cut dosage effect (i.e., the higher the dosage of Vitamin E, the greater the degree of protection against oxidative damage to LDL cholesterol). Although dosages as low as 25 mg were originally shown to offer some protection, it appears that doses of greater than 400 IU are required to produce clinically significant effects.

Improvements have also been noted in insulin sensitivity and plasma lipids in non-insulin-dependent diabetics.

Several large population studies have demonstrated that Vitamin E levels may be more predictive of developing a heart attack or stroke than total cholesterol levels. Although the consumption of red wine has been suggested as the reason behind the "French paradox,"
7 described earlier, higher Vitamin E levels provide at least as good an explanation.

Vitamin E may offer additional benefit in protecting against heart disease and strokes by its ability to do the following:

- ▲ Reduce LDL cholesterol peroxidation and increase plasma LDL breakdown
- ▲ Inhibit excessive platelet aggregation
- ▲ Increase HDL cholesterol levels
- ▲ Increase fibrinolytic activity
- ▲ Reduce CRP levels
- ▲ Improve endothelial cell function
- ▲ Improve insulin sensitivity

Two early large-scale studies with relatively low dosages of Vitamin E supplements demonstrated a significant reduction in the risk of dying

of a heart attack or a stroke. The Nurses Health Study of 87,245 nurses concluded that those who took 100 IU of Vitamin E daily for more than 2 years had a 41% lower risk of heart disease compared with nonusers of Vitamin E supplements. The Physicians Health Study of 39,910 male health care professionals found similar results: a 37% lower risk of heart disease with the intake of more than 30 IU of supplemental Vitamin E daily. Subsequent studies have been equivocal.

Large-scale studies examining the impact of Vitamin E supplementation in patients with existing CAD have also shown somewhat conflicting results. Some of the disappointing results may have been the choice of synthetic Vitamin E (D,L-alpha tocopherol) in one of the large studies versus the more active natural form (D-alpha tocopherol). There is also the problem with interference by statin drugs of Vitamin E and CoQ10 metabolism, thereby increasing the needs for both compounds.

Vitamin E and CoQ10 work synergistically, and each is required for the regeneration of the other. For example, CoQ10 is present in the blood in both oxidized (inactive) and reduced (active) form. During times of increased oxidative stress or low Vitamin E levels, more CoQ10 will be converted to its oxidized (inactive form). Thus by providing higher levels of Vitamin E, the biologic activity and function of CoQ10 is enhanced and vice versa. Several studies in humans and animals have shown that the combination of Vitamin E and CoQ10 work better than either alone. For example, in a study in baboons, while supplementation with Vitamin E alone reduced CRP levels, cosupplementation with CoQ, however, significantly enhanced this effect of Vitamin E. Similar results have been seen in other animal studies on other aspects associated with atherosclerosis including LDL oxidation and lipid peroxide content within the aorta.

In addition to CoQ10, Vitamin E also requires adequate selenium status for optimal antioxidant effects. Selenium functions primarily as a component of the antioxidant enzyme glutathione peroxidase. This enzyme works closely with Vitamin E to prevent free radical damage to cell membranes. Studies looking only at Vitamin E's ability to reduce cancer and heart disease are often faulty because they fail to factor in the critical partnership between selenium and Vitamin E, not to mention the interrelationship between Vitamin E and CoQ10. Several

studies have clearly demonstrated that low selenium status is significantly associated with CAD. Failure to cosupplement with selenium, as well as Vitamin C and CoQ10, may be a major reason for the inconsistent results in intervention trials with Vitamin E supplementation alone.

Vitamin B-6 (50 mg) (as pyridoxine HCl)

Vitamin B-6 is a water-soluble vitamin comprising the group of nitrogen-containing compounds (pyridoxine, pyridoxal, pyridoxal-5'-phosphate, pyridoxamine, and corresponding phosphorylated forms) that occur naturally in the following three primary forms: pyridoxine, pyridoxal, and pyridoxamine. Vitamin B-6 is required for growth and maintenance of almost every bodily function, amino acid metabolism, and production of neurotransmitters derived from amino acids. It also plays a role in glycogen breakdown, fatty acid metabolism, hormone metabolism, heme biosynthesis, and purine biosynthesis.

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Various studies have found the prevalence of Vitamin B-6 deficiency to vary from 9% in preschool children to 68% in low-income pregnant women. The average prevalence of Vitamin B-6 deficiency is 25% in adults.

Studies in humans indicate that the bioavailability of Vitamin B-6 from natural sources is limited. For example, the Vitamin B-6 in whole wheat bread and peanut butter is 75% and 63%, respectively, as available as the Vitamin B-6 from tuna.

Supplementation of Vitamin B-6 has been used in the treatment of premenstrual syndrome, cardiovascular disorders, and diabetic neuropathy. The vitamin has also been demonstrated to treat carpal tunnel syndrome. Elderly people may have a greater requirement for Vitamin B-6 to maintain health, particularly for their immune systems. In one study, healthy elderly people were given either 50 mg/day of Vitamin B-6 or placebo. Those receiving the supplement had

significant improvement in immunocompetence, especially lymphocytic activity.

There is some emerging evidence that inadequate Vitamin B-6 status may contribute to the development of coronary heart disease through a rise in plasma homocysteine. Homocysteine has been found to be highly atherogenic in animals and may contribute to atherosclerosis and myocardial infarction in humans. Added evidence that Vitamin B-6 might be important in preventing cardiovascular diseases comes from experimental studies in animals. When animals are given Vitamin B-6 deficient diets they demonstrate atherosclerotic lesions similar to those found in human atherosclerosis.

Many women taking oral contraceptives have been shown in various studies to have low levels of Vitamin B-6. Levels of this vitamin have also been found to be low in cigarette smokers. Some evidence has been reported suggesting that inadequate Vitamin B-6 levels may raise the risk of some cancers.

Although there is growing evidence for a role of Vitamin B-6 supplementation in preventing some kinds of cardiovascular diseases, and for enhancing immunity, levels in healthy individuals need not exceed 12 to 15 times the RDA, even in the elderly. Supplementation of Vitamin B-6 up to 200 mg/day is safe for most individuals.

Very high doses of Vitamin B-6 have been associated with sensory and motor impairment. Daily intakes up to 500 mg/day, which is 250 times the RDA, for up to 6 months appear to be safe. Supplements of pyridoxal-5'-phosphate may be preferred over pyridoxine hydrochloric acid supplements in individuals wishing to avoid any reversible side effects from Vitamin B-6 supplementation.

The mean intakes of Vitamin B-6 in the United States, based on the NHANES for 1999-2000, were 2 mg and 1.6 mg for males and females of all ages, respectively.

Zinc

(15 mg) (as zinc citrate)

Zinc serves as the mineral cofactor in more than 70 metalloenzymes. Severe zinc deficiency is manifested by bullous-pustular dermatitis, diarrhea, alopecia, and recurrent infections. A growing body of evidence implicates a derangement of zinc homeostasis in mood disorders. Interestingly, it has been shown that depressed patients who have low baseline levels of zinc experience increases in these concentrations in the hippocampus and other brain regions after being given prescription antidepressant therapies. It has been postulated that zinc may act as an antagonist of the N-methyl-D-aspartate glutamate receptor.

11 One small, placebo-controlled, double-blind pilot study of zinc supplementation in antidepressant therapy was conducted in patients who were diagnosed with major (unipolar) depression. Six patients received 25 mg of zinc supplementation per day, while eight patients took a placebo. These patients were also treated with standard antidepressant therapy such as tricyclic antidepressants and selective serotonin reuptake inhibitors (SRIs). Using standard Hamilton Depression and Beck Depression Inventory Scales to assess efficacy of these antidepressant therapies, zinc supplementation significantly reduced scores in both measures after 6- and 12-week supplementation when compared with placebo treatment. Although this was a small trial, it seems reasonable to use zinc as part of a multinutrient supplementation regimen for depressed patients. Long-term supplementation should be properly balanced with copper.

Zinc deficiency, a well-known complication of Crohn's disease, occurs in approximately 45% of patients with the disorder. Low serum zinc concentrations, low hair zinc levels, malabsorption of zinc, altered urinary excretion of zinc, and impaired taste acuity are commonly found in patients with Crohn's disease. The deficiency of zinc is due to low dietary intake, poor absorption, and excess fecal losses. Zinc deficiency may be the direct cause of the complications of Crohn's disease.

Copper

(2 mg) (as copper gluconate) –

Copper is an essential element in the human body. About 95% of copper is found in serum as part of ceruloplasmin. Copper is needed by all tissues but is present in highest levels in the liver, where it contributes to energy and detoxification mechanisms. The element is also required to absorb, utilize, and synthesize hemoglobin, maintain the integrity of the outer covering of nerves (myelin), metabolize vitamin C, and oxidize fatty acids. Both excess and deficiency of copper can result in problems such as bone/joint and connective tissue disturbances, cardiovascular degeneration, abnormal electrocardiogram, accelerated aging, depigmentation and dermatitis, anemia, and neurologic impairments. Proper balance of copper with zinc (and other trace elements) is necessary for good health.

Korean Ginseng Root

(100 mg) (4% ginsenosides)

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Ginseng Root – Increases physical and mental endurance, helps the body adjust to stressful situations, normalizes body functions, reduces cholesterol, increases energy, may help reduce discomfort caused by menopause, may inhibit growth of cancerous tumors and may enhance sexual desire.

Essential Fatty Acids

(50 mg) (from soybeans)

Soybeans are especially rich in phytosterols, especially beta-sitosterol. The cholesterol-lowering effects of phytosterols are well documented. Phytosterols have also been shown to improve BPH. The latest double-blind study consisted of 200 men receiving beta-sitosterol (20 mg) or placebo three times daily. The beta-sitosterol produced an increase in

maximum urine flow rate from a baseline of 9.9 ml/s to 15.2 ml/s and a decrease in mean residual urinary volume of 30.4 ml from 65.8 ml. No changes were observed in the placebo group. A 3.5-oz serving of soybeans, tofu, or other soyfood provides approximately 90 mg of beta-sitosterol.

An increased consumption of soy and soyfoods is associated with a decrease in the risk of prostate cancer. Much of this protection is due to the isoflavonoids genistein and daidzein, the so-called phytoestrogens of soy. And in addition to acting on estrogen receptors, isoflavones have been shown to inhibit 5-alpha-reductase. Currently, foods like soy and the botanical *Trifolium pratense* (red clover), which contain these phytotherapeutic isoflavones, are recommended in men with BPH, especially those in the "watchful-waiting" stage of the condition.

Tomato concentrate (100 mg) (500 ppm lycopene)

Lycopene

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In one of the more detailed studies of lycopene protection against cancer, Harvard researchers discovered that men who consumed the highest levels of lycopene (6.5 mg per day) in their diet showed a 21% decreased risk of prostate cancer compared with those eating the lowest levels. Men who ate two or more servings of tomato sauce each week were 23% less likely to develop prostate cancer during the 22 years of the study than men who ate less than one serving of tomato sauce each month. In addition to a protective effect, lycopene may exert a therapeutic effect as well. In a study of patients with existing prostate cancer, lycopene supplementation (15 mg daily) was shown to slow tumor growth, shrink the tumor, and lower the level of prostate specific antigen (PSA), a marker of cancer activity, by 18%.

In another study, the efficacy of lycopene (4 mg daily) plus orchidectomy was compared with orchidectomy alone in the management of advanced prostate cancer. Fifty-four patients with histologically

confirmed meta-static prostatic cancer and a performance status of 0 to 2 (World Health Organization) were entered into the trial. At 6 months there was a significant reduction in PSA level in both treatments, but it was more marked in the lycopene group (mean 9.1 and 26.4 ng/ml). After 2 years these changes were more consistent in the lycopene group (mean 3.01 and 9.02 ng/ml). Eleven (40%) patients in the orchidectomy-alone group and 21 (78%) in the lycopene group had a complete PSA response, with a partial response in 9 (33%) and 4 (15%) and progression in 7 (25%) and 2 (7%), respectively. Bone scans showed that in the orchidectomy arm only 4 (15%) patients had a complete response, versus 8 (30%) in the lycopene group, with a partial response in 19 (70%) and 17 (63%) and progression in 4 (15%) and 2 (7%), respectively. Of the 54 patients who entered the trial, 19 (35%) died, 12 (22%) in the orchidectomy group and 7 (13%) in the lycopene group. Researchers concluded that adding lycopene to orchidectomy produced a more reliable and consistent decrease in serum PSA level; it not only shrinks the primary tumor but also diminishes the secondary tumors, providing better relief from bone pain and lower urinary tract symptoms and improving survival compared with orchidectomy alone.

Bee Pollen (50 mg)

Little research has been done on bee pollen, probably because financial rewards to justify such an investment are lacking. The research that does exist is limited but impressive. For example, studies in animals show that pollen can promote growth and development; protect against free radical and oxidative damage; and protect against the effects of harmful radiation, as well as toxic exposure to chemical solvents. A pollen extract has also been shown to produce significant improvement in menopausal symptoms (headache, urinary incontinence, dry vagina, decreasing vitality) in double-blind studies. The improvements were achieved even though the pollen extract produces no estrogenic effect, an important consideration for women who cannot take estrogens of any kind.

L-alanine (40 mg)

Alanine plays a key role in glucose-alanine cycle between tissues and liver. In muscle and other tissues that degrade amino acids for fuel, amino groups are collected in the form of glutamate by transamination. Glutamate can then transfer its amino group through the action of alanine aminotransferase to pyruvate, a product of muscle glycolysis, forming alanine and alpha-ketoglutarate. The alanine formed is passed into the blood and transported to the liver. A reverse of the alanine aminotransferase reaction takes place in liver. Pyruvate regenerated forms glucose through gluconeogenesis, which returns to muscle through the circulation system. Glutamate in the liver enters mitochondria and degrades into ammonium ion through the action of glutamate, which in turn participate in the urea cycle to form urea.

Glucose-alanine cycle enables pyruvate and glutamate to be removed from muscle and find their ways to liver. Glucose is able to be regenerated from pyruvate and returned muscle. The energetic burden of gluconeogenesis is thus imposed on the liver instead of the muscle. All available ATP in muscle is devoted to muscle contraction.

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L-glutamic acid (40 mg)

L- Glutamic Acid cleanses the central nervous system and improves overall brain health, attitude and mental performance. L-Glutamic acid is highly useful in the treatment of childhood behavioral disorders. L-Glutamic acid is a neurotransmitter that increases the firing of neurons in the central nervous system. It is a major excitatory neurotransmitter in the brain and spinal cord and is a precursor to GABA. It metabolizes sugar and fats and aids in the transportation of potassium across the blood-brain barrier. The brain uses L-Glutamic acid as fuel. It can also help to correct personality disorders.

Amino acids promote the production of various neurotransmitters and enzymes critically needed in brain metabolism. Amino acids allow smooth, balanced cognition and fluid transition from thought to disciplined action. Aid in the reduction of stress, frustration and cognitive overload.

Amino acids are the building blocks of protein in the body, they are essential for the synthesis of structural protein, enzymes and some hormones and neurotransmitters. Amino acids also affect exercise metabolisms.

There are 20 different amino acids that are needed by the body to create the various proteins needed for body growth and repair. Of these 20, 11 are created by the body and the remaining nine, which are called “essential amino acids,” cannot be produced by the body. The nine essential amino acids therefore must come from diet. Histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine are essential amino acids. The nonessential amino acids are arginine, alanine, asparagine, aspartic acid, carnitine, cysteine, glutamine, glutamic acid, glycine, proline, serine, and tyrosine. All 20 amino acids are necessary for health.

Below are some of the major functions amino acids are involved in;

- ▲ They empower vitamins and minerals to do their specific jobs correctly.
- ▲ Some amino acids can pass through the blood-brain barrier which exists to maintain the health of the brain, the brain's chemistry and its processes.
- ▲ Act as neurotransmitters or precursors; some are needed to send and receive messages.
- ▲ Aid in communication with nerve cells in other parts of the body.

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Glycine (40 mg)

Because homocysteine is a critical intermediate in both methyl and sulfur group metabolism, elevated levels could indicate nutrient deficiencies that might compromise function in virtually all of the hepatic phase 2 detoxification reactions.

Amino acid conjugation reactions require either glycine, glutamine, or

taurine. Glycine functions in the conjugation of aromatic acids (e.g., benzoic acid to hippuric acid). Elevated levels of homocysteine might indicate reduced nutritional levels of betaine and subsequently its down-line metabolite glycine. Taurine functions in acylations (e.g., bile conjugation). As discussed, optimal taurine synthesis requires proper movement of homocysteine into its degradation pathway. There are no known interactions between glutamine and homocysteine.

Cholestatin™ **(100 mg) (50% beta-sitosterol)**

Beta sitosterol is a plant-derived sterol, also known as a phytosterol. Plant sterols or phytosterols are common components of plant foods, especially plant oils, seeds and nuts, cereals and legumes. The most common phytosterols are beta sitosterol, campesterol, and stigmasterol. Beta sitosterol is found in high amounts in nuts and amaranth.

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Phytosterols are natural components of many vegetables and grains. Preliminary scientific evidence suggests that plant phytosterols may help to maintain cholesterol levels already within the normal range when consumed as part of a low cholesterol dietary program. The three main phytosterols in phytosterol complex are beta-sitosterol, campesterol, and stigmasterol.

Pygeum bark **(125 mg) (4:1 extract)**

One of the most beneficial groups of plant flavonoids are the proanthocyanidins (also referred to as *procyanidins*). The most potent proanthocyanidins are those bound to other proanthocyanidins. Collectively, mixtures of proanthocyanidin dimers, trimers, tetramers, and larger molecules are referred to as *procyanidolic oligomers* (PCOs). Although PCOs exist in many plants, as well as in red wine, commercially available sources of PCO include extracts from grape seeds and the bark of the maritime (Landes) pine.

The primary uses of PCO extracts are in the treatment of venous and capillary disorders including venous insufficiency, varicose veins, capillary fragility, and disorders of the retina (e.g., diabetic retinopathy, macular degeneration). Good clinical studies have shown positive results in the treatment of these conditions.

Because PCO has a greater antioxidant effect compared with vitamins C and E, it is only natural to assume it could offer greater protective effects than these antioxidant vitamins. In addition to preventing damage to cholesterol and the lining of the artery, PCO extracts have been shown in animal studies to lower blood cholesterol levels and shrink the size of cholesterol deposits in the artery. Additional mechanisms of PCO useful in preventing atherosclerosis include inhibition of platelet aggregation and inhibition of vascular constriction. Presumably PCO extracts may exert similar benefits in humans.

Silica (16.67 mg)

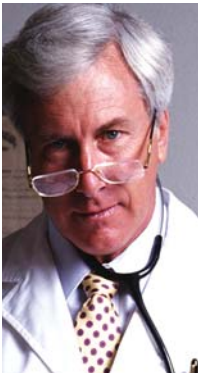
Silica is in human connective tissues, bones, teeth, skin, eyes, glands and organs. It is a major constituent of collagen which helps keep our skin elastic, and it helps calcium in maintaining bone strength. Silica dust in mines have caused silicosis or a lung disease in miners. Wetting the area being mined and application of good ventilation has reduced the danger of lung disease. Some organisms like sponges and some plants use silicon to create structural support.

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As you have undoubtedly noticed saw palmetto, minerals and other herbs form the backbone of the formula. This is due mainly because a growing evidence of science indicates that these ingredients operate synergistically...that it is to say that they support each other and multiply the positive effects.

Respectfully Submitted,

Andrew J. Thompson
Director of Research



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