While hundreds of herbs and supplements have been purported to help you lose weight, many of them have not been studied well enough to support those claims and are not regulated by the FDA. Safety can be an issue—as was the case with ephedra, which helped people lose weight through adrenaline-like action, but put people at risk of heart attacks. Here are some common herbal remedies and why they may not be all they're supposed to be, which is why you shouldn't put your weight-loss faith in any of them:

1. Calcium: It's been touted as an ingredient that speeds weight loss. Studies have shown that those with low calcium are more likely to gain weight and be overweight. But the people who lost weight with increased calcium were also on short-term, calorie-restricted diets, so the weight loss was more predictable than an Oscar winner’s speech.

2. Bitter orange: It's been shown to decrease weight, but has the same side effects as ephedra, such as increasing heart rate and blood pressure.

3. Chitosan: It's extracted from the shells of shellfish, and the theory is that it works a little like some weight-loss drugs, by blocking fat absorption in your body. But studies show that it doesn't lead to weight loss.

**Acetyl-L-carnitine**

is the biologically active form of the amino acid L-carnitine and has been shown to protect cells throughout the body against age-related degeneration. Most clinical research has focused on the brain, where improved mood, memory and cognition has been observed in response to acetyl-L-carnitine administration. By facilitating the youthful transport of fatty acids into the cell's mitochondria, acetyl-L-carnitine better enables dietary fats to be converted to energy and muscle.

Carnitine is approved as a drug in the United States to protect against muscle wasting diseases, including heart muscle weakness and low energy levels. Despite FDA-approval, few conventional doctors prescribe carnitine to support those with cardiomyopathy, congestive heart failure, chronic fatigue, etc. The failure of doctors to prescribe this natural amino acid correlates directly with the lack of drug company advertising for the product. There is little economic motivation for drug companies to promote the benefits of carnitine to doctors when their patients can choose from hundreds of lower cost carnitine supplements available over the counter. In addition to its "FDA-approved" indications, acetyl-L-carnitine has been shown to maintain immune competence1 and reduce the formation of a cell-clogging pigment called lipofuscin2.

The most important anti-aging effect of acetyl-L-carnitine, however, is to work with coenzyme Q10 and alpha lipoic acid to maintain the function of the mitochondria3. When the mitochondria function dwindles, degenerative disease becomes an inevitable consequence. Foundation members use acetyl-L-carnitine as a multi-purpose anti-aging supplement. Newly published research shows this amino acid may be even more effective than previously shown.
**L Carnitine Promote Cardiovascular Health**

The effects of aging were dramatically demonstrated when scientists measured cell energy activity and respiration rates in the heart mitochondria of rats. Both cellular energy and respiration was depressed around 40% in the older rats. When acetyl-L-carnitine was administered, their heart rates became almost completely restored to the metabolic function level of young control rats. This study showed that the heart mitochondrial content of cardiolipin, a key agent necessary for mitochondrial substrate transport, was markedly reduced in aged rats. Treatment of aged rats with acetyl-L-carnitine reversed the age-associated decline in cardiolipin content. This newly identified mechanism helps explain why acetyl-L-carnitine is so beneficial in treating congestive heart failure in humans.

**L Carnitine Brain Protection**

Aging causes alterations in brain cell metabolism. Acetyl-L-carnitine has been shown to counteract several mechanisms of brain cell damage. A new study shows that acetyl-l-carnitine protects against temporary cerebral ischemia (no blood flow) by maintaining the cell’s energy cycle. Other recent studies show that acetyl-L-carnitine protects brain cells against glutamate-induced and ammonia-induced toxicity. As people grow older, circulation to the brain diminishes, which sets off a cascade of pathological events that results in neurological impairment. Acetyl-L-carnitine appears to protect against some of the known negative effects that aging induces in the brain.

**Acetyl-L-carnitine & Stroke**

In animal stroke models, an 11-point neurologic deficit scoring system evaluated the treatment progression of acetyl-L-carnitine against a control vehicle. Acetyl-L-carnitine was shown to protect brain cells against ischemic injury and to improve neurological outcome with the treated animals being significantly improved over the controls. This study suggests that acetyl-L-carnitine might someday be used in hospital emergency rooms and stroke recovery centers to improve the prognosis of patients (with thrombotic or embolic stroke) who are often given little hope of full recovery.

**Acetyl L Carnitine Facilitate Nerves Regeneration**

Acetyl-L-carnitine may facilitate nerve regeneration after nerve injury. Scientists surgically severed nerves and observed the typical motor-neuron degeneration that occurred at the site of the injury. Acetyl-L-carnitine was shown to have significant neuro-protective effect against the degeneration of traumatized motor-neurons. These observations prompted the scientists to postulate a better hypotheses concerning motor-neuron regeneration and even the possibility of inducing neuronal proliferation. These findings have practical applications in those who have suffered from loss of nerve function.

Another study showed that acetyl-L-carnitine prevented ethanol-induced brain cell alterations indicative of human fetal alcohol syndrome. The scientists who conducted this rat study stated that acetyl-L-carnitine might have an indirect anti-depressant benefit by protecting brain cells against the known neuro-toxicity effects of alcohol.

It is well known that many anti-viral HIV-drugs contribute to peripheral neuropathy. Doctors in London noted that treatment with acetyl-L-carnitine may assist in the treatment of drug-induced peripheral neuropathy.

In two related studies of diabetic nerve degeneration and neuropathy, acetyl-L-carnitine was shown to accelerate nerve regeneration after experimental injury. In the first study, doctors at the Hines VA Hospital in Illinois showed that diabetic rats treated with acetyl-L-carnitine
maintained near normal nerve conduction velocity without any adverse effects on glucose, insulin or free fatty acid levels. These observations led the scientists to summarize that acetyl-L-carnitine can accelerate nerve regeneration after experimental injury. In another study, doctors at the Nagoya University School of Medicine in Japan showed that carnitine deficiency was closely related to the pathogenesis of diabetic neuropathy. The doctors concluded acetyl-L-carnitine has great potential for the treatment of this type of neuropathy.13

Traditionally, some diabetics have suffered with peripheral neuropathy at various times throughout the course of their illness. Scientists now know that several mechanisms may produce this neuropathy in diabetics. In 1997, French doctors published a study stating that some of the most promising treatments for diabetic neuropathy may be gamma linolenic acid (GLA), antioxidants, aminoguanidine and, once again, acetyl-L-carnitine.14 It seems a particular enzyme in diabetics, which limits the availability of gamma linoleic acid, also decreases the endothelial synthesis of nitric oxide and of L-carnitine. The authors felt, though experimental, these treatments were a promising solution for diabetics.

Reports on acetyl-L-carnitine for the treatment of Alzheimer's disease have been contradictory. Some studies show encouraging degrees of efficacy, while other studies show no benefit. A placebo-controlled study at Stanford University School of Medicine in California showed that Alzheimer's disease patients under age 62 benefitted more from acetyl-L-carnitine than older patients.15 The doctors concluded that acetyl-L-carnitine slows the progression of Alzheimer's disease in younger subjects. Though this is an important study, Alzheimer's patients over 61 may want to still consider ALC for its other known neurological benefits, which were not evaluated in this study.

Acetyl-L-carnitine enhances energy production in every cell of the body. Two recent studies illustrate the unique ability of acetyl-L-carnitine to increase cellular respiration in aging models. A study from Berkeley examined liver parenchymal cells in old mice after feeding them a 1.5% solution of acetyl-L-carnitine for one month. The results show that acetyl-L-carnitine supplementation significantly reverses the age-associated decline of mitochondrial membrane function.16 A similar second study, also from Berkeley, again concluded the ability of acetyl-L-carnitine to reverse age-related mitochondrial decay.

**L Carnitine for Cataract Prevention**

Glycosylation and glycation are terms used to describe the binding of sugars to proteins that form non-functioning structures (crosslinks) in the body. Glycation-induced protein cross linking is most notable in the lense of the eye (cataract), the brain (senility) and the collagen of the skin. Protein glycation has been implicated in the development of cataracts. Scientists recently evaluated the effects of L-carnitine and acetyl-L-carnitine on the glycation of lens proteins. The results show that acetyl-L-carnitine suppresses glycation by 42%, but that L-carnitine has no effect.7 Additional evaluation shows that acetyl-L-carnitine produces a 70% reduction in one measurement of Advanced Glycation End products (AGEs). It is the formation of AGEs that makes cataract irreversible. This in-vitro study shows, for the first time, that acetyl-L-carnitine (but not L-carnitine) may prevent cataract by preventing glycation-mediated protein damage in the eye lense.

**Acetyl L Carnitine Suggested dosage**

The optimal dose range of acetyl-L-carnitine for healthy people is 1000 mg to 2000 mg day. Those with neurological deficit should consider 3000 mg a day. Synergistic nutrients that could be taken with acetyl-L-carnitine include coenzyme Q10 (100-300 mg/day) and alpha lipoic acid (250-500 mg/day).
Research on Acetyl-L Carnitine

(1) Acetylcarnitine induces heme oxygenase in rat astrocytes and protects against oxidative stress: involvement of the transcription factor Nrf2.

Calabrese V, Ravagna A, Colombrita C, Scapagnini G, Guagliano E, Calvani M, Butterfield DA, Giuffrida Stella AM. Department of Chemistry, Biochemistry and Molecular Biology Section, Faculty of Medicine, University of Catania, Catania, Italy. calabres@mbox.unict.it J Neurosci Res. 2005 Feb 15;79(4):509-21.

Efficient functioning of maintenance and repair processes seem to be crucial for both survival and physical quality of life. This is accomplished by a complex network of the so-called longevity assurance processes, under control of several genes termed vitagenes. These include members of the heat shock protein system, and there is now evidence that the heat shock response contributes to establishing a cytoprotective state in a wide variety of human conditions, including inflammation, neurodegenerative disorders, and aging. Among the various heat shock proteins, heme oxygenase-1 has received considerable attention; it has been recently demonstrated that heme oxygenase-1 induction, by generating the vasoactive molecule carbon monoxide and the potent antioxidant bilirubin, could represent a protective system potentially active against brain oxidative injury. Acetyl-L-carnitine is proposed as a therapeutic agent for several neurodegenerative disorders. Accordingly, we report here that treatment of astrocytes with acetyl-L-carnitine induces heme oxygenase-1 in a dose- and time-dependent manner and that this effect was associated with up-regulation of heat shock protein 60 as well as high expression of the redox-sensitive transcription factor Nrf2 in the nuclear fraction of treated cells. In addition, we show that addition of acetyl-L-carnitine to astrocytes, prior to proinflammatory lipopolysaccharide- and interferon-gamma-induced nitrosative stress, prevents changes in mitochondrial respiratory chain activity, protein nitrosation and antioxidant status induced by inflammatory cytokine insult. Given the broad cytoprotective properties of the heat shock response, molecules inducing this defense mechanism appear to be possible candidates for novel cytoprotective strategies. Particularly, manipulation of endogenous cellular defense mechanisms via acetyl-L-carnitine may represent an innovative approach to therapeutic intervention in diseases causing tissue damage, such as neurodegeneration. We hypothesize that maintenance or recovery of the activity of vitagenes may delay the aging process and decrease the risk of age-related diseases.

(2) Acetylcarnitine and cellular stress response: roles in nutritional redox homeostasis and regulation of longevity genes.

Calabrese V, Giuffrida Stella AM, Calvani M, Butterfield DA. Department of Chemistry, Biochemistry and Molecular Biology Section, Faculty of Medicine, University of Catania, 95100 Catania, Italy. calabres@mbox.unict.it J Nutr Biochem. 2006 Feb;17(2):73-88. Epub 2005 Oct 18.

Aging is associated with a reduced ability to cope with physiological challenges. Although the mechanisms underlying age-related alterations in stress tolerance are not well defined, many studies support the validity of the oxidative stress hypothesis, which suggests that lowered functional capacity in aged organisms is the result of an increased generation of reactive oxygen and nitrogen species. Increased production of oxidants in vivo can cause damage to intracellular macromolecules, which can translate into oxidative injury, impaired function and cell death in vulnerable tissues such as the brain. To survive different types of injuries, brain cells have evolved networks of responses, which detect and control diverse forms of stress. This is accomplished by a complex network of the so-called longevity assurance processes, which are composed of several genes termed vitagenes. Among these, heat shock proteins form a highly conserved system responsible for the preservation and repair of the correct protein conformation. The heat shock response contributes to establishing a cytoprotective state in a wide variety of
human diseases, including inflammation, cancer, aging and neurodegenerative disorders. Given the broad cytoprotective properties of the heat shock response, there is now a strong interest in discovering and developing pharmacological agents capable of inducing the heat shock response. Acetylcarnitine is proposed as a therapeutic agent for several neurodegenerative disorders, and there is now evidence that it may play a critical role as modulator of cellular stress response in health and disease states. In the present review, we first discuss the role of nutrition in carnitine metabolism, followed by a discussion of carnitine and acetyl-l-carnitine in mitochondrial dysfunction, in aging, and in age-related disorders. We then review the evidence for the role of acetylcarnitine in modulating redox-dependent mechanisms leading to up-regulation of vitagenes in brain, and we also discuss new approaches for investigating the mechanisms of lifetime survival and longevity.

Griffonia simplicifolia

5-HTP is a derivative of the amino acid tryptophan. Our body produces its own supply of 5-HTP from tryptophan, an amino acid found in high-protein foods such as chicken, fish, beef, and dairy products. 5 HTP is a mood-enhancing chemical that may induce sleep, regulates mood, and control appetite. Unlike many other supplements (and drugs) that have molecules too large to pass from the bloodstream into the brain, molecules of 5-HTP are small enough to do so. Once in the brain, they're converted into serotonin.L-5-Hydroxytryptophan (5-HTP) is a precursor to Serotonin, that may increase serotonin levels to promote healthy sleep pattern, regulate mood, and control appetite. Europeans have been taking 5-HTP for decades to treat insomnia and depression.

Benefits of 5-HTP include:

• Elevate mood in cases of depression, anxiety, and panic attacks
• Treat insomnia
• Promote weight loss
• Ease migraine pain
• Increase tolerance to the pain of fibromyalgia

Dosage Information

• Depression, anxiety, and panic attacks: Take 50 to 100 mg twice a day.
• Insomnia: Take 50-100 mg 30 minutes before going to bed.
• ADHD: Take 50 mg in the morning, 50-100 mg 30 minutes before bedtime.
• Weight control: Take 50-100 mg three times a day, 20 to 30 minutes before meals.
• Migraine prevention: Work gradually up to a dosage that controls migraine pain, starting with 50 mg three times a day. Consider taking in conjunction with PARACTIN for reducing minor pain.
• Fibromyalgia and other chronic pain: Take 100 mg three times a day. If drowsiness occurs, reduce the dose to 50 mg three times a day. Consider taking PARACTIN effective for reducing cytokines commonly found in patients with fibromyalgia ---Interleukin and Tumor necrosis factor(TNF-a).
• Tobacco Dependence: 50mg 3 times a day.

Drug Interaction

• Do not combine 5-HTP with conventional antidepressants (Prozac, Wellbutrin, or Effexor, Buspirone, lithium). May cause anxiety, confusion, increased heart rate, excessive perspiration, and diarrhea or other serious side effects.
• Don’t take 5-HTP within four weeks of using a MAO inhibitor.
• Avoid taking 5-HTP with sedating antihistamines or St John’s Wort; the combination can lead to drowsiness.
• Do not take 5-HTP with OTC cold remedies or any medications containing ephedrine or pseudoephedrine, because anxiety, confusion, or other serious side effects may develop.
• Muscle relaxants could cause excessive drowsiness when combined with 5-HTP.
• Drowsiness may develop if 5-HTP is taken with a narcotic pain reliever such as codeine or morphine.
• Do not combine 5-HTP with levodopa or Mucuna Pruriens. May cause anxiety, confusion, or other adverse reactions.

Possible Side Effects

• Side effects are typically mild but may include nausea, constipation, gas, drowsiness, or a decreased sex drive.
• Nausea, should it occur, commonly disappears after a few days.
Cat's Claw

Cat's Claw (Uncaria tomentosa) is a high-climbing vine most often found in the Amazonian highlands of Peru. It is named for its thorns which look much like a cat's claw. The bark from the Uncaria tomentosa, where several of its highly active elements are found, is stripped without killing the vine, thereby protecting the fragile ecosystem of the Amazon. Extensive research has shown that certain components extracted from this herb can enhance the body's own immune system, (which helps to keep that system in balance in spite of continual exposure to environmental stressors), and can support intestinal health. Research continues in an effort to identify specifically which components of the vine enable these beneficial activities.

Some of the compounds identified to date are:

- Oxindole alkaloids which strongly affect human physiology
- Quinovic acid glycosides that seem to have high free radical scavenging potential
- Polyphenols, triterpenes and plant steroids which are being studied closely because of their resemblance in structure and behavior to cholesterol. Betasitosterol so closely resembles cholesterol that it prevents cholesterol absorption.

The presence of these additional compounds may provide some explanation for the protective and rejuvenating characteristics of this powerful herb.

Anti-inflammatory effects of Cats Claw

Cat's Claw appears to inhibit TNF-alpha production and serve as an antioxidant.1 It contains a number of proanthocyanidins and phenolic acids, suggesting an antioxidant mechanism underlies its anti-inflammatory activity.2 A study from Universidad Nacional Mayor de San Marcos, Lima, Peru, evaluated the efficacy of cat's claw extract in controlling pain among patients with knee OA (n=45).3 Pain associated with activity was significantly reduced in patients taking cat's claw, with benefits occurring with the first week of therapy; it also inhibited TNF-alpha and PGE2 production.

Reference:

Research:


Devils Claw

What is Devil's Claw?

Devil's claw (Harpagophytum procumbens) is a plant native to southern Africa. Its name comes from the small hooks on the plant's fruit. The active ingredients in devil's claw are believed to be iridoid glycosides called harpagosides, which are found in the secondary root.

Traditional Uses of Devil's Claw

Devil's claw has been used for thousands of years in Africa for fever, rheumatoid arthritis, skin conditions, and conditions involving the gallbladder, pancreas, stomach and kidneys. In the early 1900's, devil's claw was brought to Europe. It is used to improve digestion, as the bitter taste of devil's claw tea is thought to stimulate digestive juices.

However, the primary use of devil's claw today is for conditions that cause inflammation and pain.

Devil’s Claw Research on Pain Relieve

A German study examined the use of devil's claw for slight to moderate back, neck, and shoulder muscle tension and pain. In the 4-week study, 31 people took 480 mg twice a day and 32 people took a placebo. The results showed there was a significant reduction in pain in the people taking devil's claw compared to the placebo group.

Another study published in the journal Rheumatology compared a devil's claw extract providing 60 mg harpagosides a day and and 12.5 mg a day of the anti-inflammatory Vioxx (now off the market) for 6 weeks in 79 patients with an acute exacerbation of low back pain. Devil's claw was as effective as Vioxx in reducing pain.
Devil’s Claw Research on Osteoarthritis

A study published in the journal Joint Bone Spine compared six 435 mg capsules of powdered devil’s claw extract a day (which provides about 60 mg per day of harpagosides) with 100 mg a day of a European osteoarthritis drug called diacerein in 122 patients with osteoarthritis of the knee or hip. After four months, devil’s claw was as effective as the diacerein at relieving pain, improving mobility, and reducing the need for back-up medication (such as anti-inflammatory and analgesic drugs).

Devils Claw Research on Arthritis

Devils Claw may also serve as an effective general therapy for rheumatic disorders, working to serve as an anti-inflammatory and analgesic to help treat acute and subacute inflammation.1 In vitro studies have shown devil’s claw can inhibit the expression of COX-2 and iNOS by suppressing NF-kappaB activation;2 it may also decrease production of MMPs.3 An open clinical study conducted by Consulting Herbal Medicinal Products, Rheda-Wiedenbrueck, Germany, assessed the efficacy of devil’s claw on patients with hip or knee OA, finding the extract could reduce pain and improve mobility.4 Another open study performed in the United Kingdom assessed the efficacy of devil’s claw on 259 patients with arthritis and other rheumatic conditions, reporting there were statistically significant improvements in assessment of global pain, stiffness and function, with improvements in quality of life measurements.5

Reference

Botanical Name: Boswellia Serrata

Boswellia is an Ayurvedic plant that contains anti-inflammatory triterpenoids called boswellic acids. Boswellic acid and its derivatives have anti-carcinogenic, anti-tumor, and blood lipid lowering activities. Dried extracts of the resin of the Boswellia serrata tree have been used since antiquity in India to treat inflammatory conditions. Boswellia reduces inflammation. It inhibits proinflammatory 5-lipoxygenase chemicals and blocks leukotriene synthesis. By doing so, boswellia may be helpful in medical conditions involved in inflammation.

Anti-inflammatory action of Boswellia
Boswellia acts as a spiritual symbol and an effective medicinal herb; it seems to function as both an analgesic and an anti-inflammatory. Reports and personal claims indicate that the Boswellia herb may be used in connection with joint mobility, pain, and stiffness, and may be a useful remedy for a variety of inflammatory diseases, including bursitis, osteoarthritis, and rheumatoid arthritis.

Boswellic acids may contain an anti-inflammatory action - much like the conventional non-steroidal anti-inflammatory drugs used for inflammatory conditions. Boswellia inhibits the body’s pro-inflammatory mediators such as leukotrienes. Long-term boswellia use does not appear to cause stomach ulceration or irritation.

**Traditional Uses of Boswellia**

- sores
- wounds
- fevers
- coughs
- colds
- stress
- bronchitis
- laryngitis
- nervous conditions
- tension
- carminative
- tones the uterus
- scanty periods
- infections of the urinary tract
- antiseptic
- relieves asthma
- anti-inflammatory
- used for anxiety
- apprehension
- and nervous tension
- As a calming mist:
  - 10 drops frankincense
  - 4 drops sweet orange
  - 4 drops lavender
  - 1 oz. water in a mister
- For meditation:
  - 10 drops frankincense
  - 1/4 c water in a candle lamp diffuser.

**Boswellia Osteoarthritis research:**

An Ayurvedic herbal combination of ashwagandha, boswellia serrata, and curcumin was evaluated in a randomized, double-blind, placebo controlled, cross-over study in patients with osteoarthritis. Treatment with this formulation produced a significant drop in severity of pain.

**Efficacy and tolerability of Boswellia serrata extract in treatment of osteoarthritis of knee--a randomized double blind placebo controlled trial.**


Osteoarthritis is a common, chronic, progressive, skeletal, degenerative disorder, which commonly affects the knee joint. Boswellia serrata tree is commonly found in India. The therapeutic value of its gum has been known. It possesses good anti-inflammatory, anti-arthritic and analgesic activity. A randomized double blind placebo controlled crossover study was conducted to assess the efficacy, safety and tolerability of Boswellia serrata extract in 30 patients of osteoarthritis of knee, 15 each receiving active drug or placebo for eight weeks. After the first intervention, washout was given and then the groups were crossed over to receive the opposite intervention for eight weeks. All patients receiving boswellia reported decrease in knee pain, increased knee flexion and increased walking distance. The frequency of swelling in the knee joint was decreased. Radiologically there was no change. The observed differences between drug treated and placebo being statistically significant, are clinically relevant. Boswellia serrata extract was well tolerated by the subjects except for minor gastrointestinal symptoms. Boswellia serrata extract is recommended in the patients of osteoarthritis of the knee with possible therapeutic use in other arthritis.

**Boswellia & Asthma**

There is a scientific basis for boswellia working as an anti-asthmatic drug. And this evidence, combined with the available research in humans, suggests that when boswellia is used chronically, it may reduce the number of asthma attacks. It is not clear what dose is safe or effective or how boswellia may interact with other asthma treatments. Asthma attacks can be serious, and because
there are other well-studied therapies for asthma, the choice of therapy should be discussed with a health care provider.

**Research:**

**Anti-inflammatory properties of BHUx, a polyherbal formulation to prevent atherosclerosis.**, Tripathi YB, Reddy MM, Pandey RS, Subhashini J, Tiwari OP, Singh BK, Reddanna P. Department of Medicinal Chemistry, Institute of Medical Sciences, Banaras Hindu University, India Feb 2004.  
**Immunomodulatory triterpenoids from the oleogum resin of Boswellia carterii Birdwood**, Badria FA, Mikhaeil BR, Maatooq GT, Amer MM. Department of Pharmacognosy, Faculty of Pharmacy, Mansoura University, Mansoura, Egypt, Jul-Aug 2003.  
**Chemistry and immunomodulatory activity of frankincense oil**, Mikhaeil BR, Maatooq GT, Badria FA, Amer MM. Department of Pharmacognosy, Faculty of Pharmacy, Mansoura University, Mansoura, Egypt, Mar-Apr 2003.

**Article Links:**

Boswellia, Good for Your Joints: Chris Kilham, www.medicinehunter.com

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**Cayenne**

Cultivated for thousands of years in the tropical Americas, Africa and India, cayenne, (capsicum annuum), is used as a catalyst in many herbal combinations because it promotes their absorption and effectiveness by influencing the flow of digestive secretions from salivary, gastric and intestinal glands. Cayenne also increases the body's ability to produce HCL which enhances the body's ability to digest anything that is in the stomach.  
The capsicum found in cayenne improves the ratio of HDL cholesterol which has a protective effect on
LDL cholesterol, thus reducing the risk of heart disease. Capsicum also increases the liver enzymes responsible for fat metabolism resulting in a thermogenic effect on weight gain. Cayenne also contains capsaicin, the source of the heat in hot peppers. Capsaicin and substances that contain it are among the most studied substances in medical, pharmaceutical, and nutritional research. Although many of the benefits attributed to cayenne have not yet been substantiated by scientific research, it has been used with great success for hundreds of years for many of the complaints listed below.

Capsaicin:

- Improves digestion by stimulating stomach secretions
- Lowers triglycerides
- Has a laxative effect
- Triggers the release of the body's natural painkillers, the endorphins
- Unclogs stuffy noses by irritating mucus membranes
- May reduce high blood pressure
- May protect against some forms of cancer.

CoQ10

Levels of CoQ10 decline with age. Most people at age 40 have only 64 percent of the CoQ10 levels they had at age 20, and by age 80, levels usually decline to 36 percent of a 20-yearolds coQ10 status. There are other factors that can cause deficiencies. Among these are statin drugs prescribed to lower serum cholesterol; conversely, people with high cholesterol levels often have low levels of CoQ10. Other prescription drugs including beta blockers, may lower CoQ10 status, and there can be an antagonistic relationship between CoQ10 status and warfarin, a prescription anticoagulant. Although CoQ10 occurs naturally in the body, several other nutrients are necessary to produce it, including vitamin C and several of the B vitamin complex. In foods, the best source of CoQ10 are wheat germ, soy, spinach, broccoli, meats, fish vegetable oils, and rice bran. Additionally, exercise raises heart levels of CoQ10 in the heart and other muscles.

CoQ10, ATP, and Energy Production

CoQ10 is an important component in the mitochondrial electron transport system, and therefore in the making of adenosine triphosphate, or ATP. ATP serves as the major energy source for the cells; in fact, the cells would cease to function without it. It follows therefore that CoQ10 is most heavily concentrated in muscles and organs that produce a great deal of energy, such as the heart, liver kidney and pancreas.

CoQ10, Antioxidants

A fat-soluble antioxidant, CoQ10 can also regenerate other antioxidants. Deficiencies of coQ10 have been observed in several disease states. Many of them are related to the function of the heart, such as congestive heart failure (CHF), cardiomyopathy,
hypertension, and chronic obstructive pulmonary disease. CoQ10 has also been shown to be deficient in people suffering from AIDS, periodontal disease, and cancer.

**CoQ10 and Cardio Health**

Coenzyme Q10 (CoQ10) serves as an energy transporter in the mitochondria and also as an antioxidant. In *Power Aging*, Gary Null wrote, “I believe if every American took between 100 and 300 mg of (CoQ10) a day, and if people with cardiovascular disease took between 330 to 500mg of this wonder-nutrient daily, we could be saving hundreds of thousands of lives a year.” Null also called CoQ10 “a superstar in protecting the heart.” In his book, *The Total Guide to a Healthy Heart*, cardiologist Dr. Seth J. Baum wrote that CoQ10 can help lower blood pressure and can help treat congestive heart failure.

A six-year study by scientists at the University of Texas found that people being treated for congestive heart failure who took CoQ10 in addition to conventional therapy had a 75 percent chance of survival after three years. Patients who underwent therapy alone had only a 25 percent survival rate.

At the Lancisi Heart Institute in Italy, researchers sought to determine whether oral coQ10 supplementation may improve cardiocirculatory efficiency and endothelial function in patients with congestive heart failure (CHF). They studied 23 patients with a mean age of 59, using a double-blind, placebo-controlled cross over design.

Patients were assigned to each the following treatments: oral CoQ10 10 (100mg tid), CoQ10 plus supervised exercise training (ET) (60 percent of Peak VO2, five times a week), placebo, and placebo plus ET. Each phase lasted four weeks. Both peak VO2 and endothelium dependent dilation of the brachial artery (EDDBA) improved significantly after CoQ10 and after ET as compared with placebo. They concluded that CoQ10 supplementation improves functional capacity, endothelial function, and left ventricle contractility in CHF without any side effects. The combination of CoQ10 and ET resulted in higher plasma CoQ10 levels and more pronounced effects on all these parameters. [Berardinelli R Mucaj A, Lacalaprice F Solenghi M, Seddaui G, Principi F, Tiano L Littarru GP. Coenzyme Q10 and exercise training in chronic heart failure. Eur Heart J. 2006Aug 1; [Epub ahead of print]

The same researchers in 2005 published a study investigating whether oral CoQ10 supplementation could improve cardiocirculatory efficiency in patients with CHF. They studied 21 patients in New York Heart Association (NYHA class II and III with stable CHF secondary to ischemic heart disease (ejection fraction 37 +/- 7%), using a double-blind, placebo controlled crossover design. Patients were assigned to either 100 mg daily of oral CoQ10 or placebo for four weeks. In the group receiving coQ10, the systolic wall thickening score index was improved both at rest and peak dobutamine stress echo, while left ventricular ejection fraction improved significantly. [Berardinelli R Mucaj A, Lacalaprice F Solenghi M, Seddaui G, Principi F, Tiano L Littarru GP. Coenzyme Q-10 improves contractility of dysfunctional myocardium in chronic heart failure. Biofactors. 2005; 25 (1-4) : 137-45.]
Researchers at the University of Connecticut School of Pharmacy conducted a meta-analysis of trials conducted between 1966 and 2005, studying CoQ10 in heart failure to evaluate the impact of CoQ10 therapy on ejection fraction and cardiac output. Of the 11 trials identified, 10 evaluated cardiac output. Doses ranged from 60 to 200 mg/day with treatment periods ranging from 6 months. There was a 3.7 percent net improvement in ejection fraction, with a more profound effect among patients not receiving angiotensin-converting enzyme inhibitors. Cardiac output increased an average of 0.28 L/minute. “CoQ10 enhances systolic function in chronic heart failure, but its effectiveness may be reduced with concomitant use of current standard therapies,” the researchers concluded. [Sander S, Coleman Cl, Patel AA, Kluger J, White CM. The Impact of coenzyme Q10 on systolic function in patients with chronic heart failure. J. Card Fail. 2006 Aug; 12 (6): 464-72]

After being maintained for three months on a baseline diet (low in fat and cholesterol), 21 baboons were given a high fat, high cholesterol (HFHC) diet for seven weeks. Their serum C-reactive protein (CRP) concentrations did not change. Subsequent supplementation of HFHC diet with antioxidant vitamin E (250, 500, or 1000 IU/kg diet) for two weeks reduced serum CRP concentrations from 0.91± 0.02 to 0.43± 0.06 mg/dL. Additional supplementation with CoQ10 reduces circulating markers of inflammation in baboons. Am J Clin Nutr. 2004 September; 80(3): 649-655.]

With earlier clinical trials suggesting that CoQ10 supplementation might afford myocardial protection during cardiac surgery, researchers at Baker Heart Research Institute in Melbourne, Australia sought to measure the effect of CoQ10 on mitochondrial function; to test the effect of CoQ10 in protecting cardiac myocardium against a standard reoxygenation stress in vitro; and to determine whether CoQ10 therapy improves recovery of the heart after cardiac surgery. Patients undergoing elective cardiac surgery were randomized to receive oral CoQ10 (300 mg/day) or placebo for two weeks prior to surgery.


Researchers at the Heart Failure Institute of the Advocate Christ Medical Center in Oak Lawn, IL. Evaluated left ventricular diastolic function with Doppler echocardiography before and after statin therapy. Statin therapy worsened diastolic parameters in most patients, while CoQ10 supplementation in patients with worsening diastolic function with statin therapy improved parameters of diastolic function. [Silver MA, Langston PH,
Sabot S, Patel H, Salinger A. Effect of atorvastatin on left ventricular diastolic function and ability of coenzyme Q10 to reverse that dysfunction. Am J Cardiol. 2004 Nov 15; 94(10):1306-10

**CoQ10 and Brain Health**

A study from the national Academy of Sciences showed that short-term supplementation with moderate amounts of CoQ10 “produced profound anti-aging effects on the brain,” In a study, CoQ10 levels in Parkinson’s patients were 35 percent lower than a control group of the same age. According to the University of Maryland Medical Center, “studies of women with breast cancer suggest that CoQ10 supplements (in addition to conventional treatment a nutritional regimen including other antioxidants and essential fatty acids) may shrink tumors, reduce pain associated with the condition, and cause partial remission in some individuals.”

Researchers at the University of North Dakota School of Medicine looked at regional distribution of CoQ10 and mitochondrial complex-1 activity in the brains control-(C57BL/6), metallothionein knock out-metallothionein transgenic, and homozygous weaver mutant mice; and human dopaminergic (SK-N-SH) cells to determine the neuroprotective potential of CoQ10 in Parkinson’s disease. Complex-1 activity as well as CoQ10 were significantly higher in the cerebral cortex as compared to the stadium in all the genotypes examined. Complex-1 activity and coenzyme Q10 were significantly reduced in weaver mutant mice and metallothionein knock out mice, but were significantly increased in metallothionein transgenic mice.

Administration of coenzyme Q10 increased complex-1 activity, and partially improved motoric performance, in weaver mutant mice. Direct exposure of rotenone also reduced coenzyme Q10,complex-1 activity was attenuated by CoQ10 treatment, suggesting that complex-1 may be down-regulated due to depletion of CoQ10 in the brain. The researchers concluded, “Metallothionein-included CoQ10 synthesis may provide neuroprotection by augmenting mitochondrial complex-1 activity in Parkinson’s disease.” [Sharma SK, El Rafaey H, Ebadi M. Complex-1 activity and 18F-DOPA uptake in genetically engineered mouse model of Parkinson’s disease and the neuroprotective role of coenzyme Q10. Brain Res Bull. 2006 Jun 15; 70(1):22-32.]

Earlier, the team had determined the neuroprotective role of CoQ10 in apoptosis in cultured human dopaminergic (SKN-SH) neurons, in metallothionein gene-manipulated mice, and in alpha-synuclein knockout (alpha-synko) mice, to determine a possible therapeutic and anti-inflammatory potential for CoQ10 in Parkinson’s. They concluded that glutathione and metallothionein synthesis might be included as an attempt to combat iron-induced oxidative stress, while exogenous administration of CoQ10 mediated neuroprotection in PD.[Kooncumchoo P, Sharma S, Porter J, Govitraapong P, Ebadi M. Coenzyme Q(10) provides neuroprotection in iron-induced apoptosis in dopaminergic neurons. J Mol Neurosci. 2006;28(2):125:-41]

In the department of neurology at the University Hospitals of Leicester in the U.K., researchers began with two premises proven in clinical trials: that therapeutic
Hypothermia can improve survival after cardiopulmonary resuscitation (CPR), and that CoQ10 has shown a protective effect in neurodegenerative disorders. They investigated whether combining hypothermia with CoQ10 after out-of-hospital cardiac arrest provided additional benefit. Forty-nine patients were randomly assigned to either hypothermia plus CoQ10 or hypothermia plus placebo after CPR. Hypothermia with a core temperature of 35 degrees C was instituted for 24 hours. Liquid CoQ10 or placebo was administered through a nasogastric tube for five days. Age, sex, premorbidity, cause of arrest, conditions of CPR, and degree of hypoxia were similar in both groups; no side effects of CoQ10 were identified.

Three month survival in the CoQ10 group was 68 percent, while it was 29 percent, in the placebo group. Nine CoQ10 patients' versus five placebo patients survived with a Glasgow Outcome Scale of 4 or 5. Mean serum S100 protein—a marker of cerebral damage—24 hours after CPR was significantly lower in the CoQ10 group. The authors concluded that combining CoQ10 with mild hypothermia immediately after CPR appears to improve survival and may improve neurological outcome in survivors. [Damian MS, Ellenberg D, Gildemeister R, Lauermann J, Simonis G, Sauter W, Georgi C. Coenzyme Q10 combined with mild hypothermia after cardiac arrest: a preliminary study. Circulation. 2004 Nov 9; 110(19):3011-6.]

In a family with ataxia (an inability to control voluntary muscle movements and CoQ10 deficiency, analysis of genome-wide microsatellite markers suggested linkage of the disease to chromosome 9p13 and led to identification of an aprataxin gene (APTX) mutation that causes ataxia oculomotor apraxia (AOA1[MIM606350]). The authors suggested that CoQ10 deficiency may contribute to the pathogenesis of AOA1. [Quinzii CM, Kattah AG, Naini A, Akman HO, Moothat VK, DiMauro S, Hirano M. Coenzyme Q deficiency and cerebellar ataxia associated with an aprataxin mutation. Neurology. 2005 Feb 8; 64(3): 539-41.]

CoQ10 supplementation has also been studied for its possible role in a variety of other health concerns ranging from diabetes to liver disease, complications from drug addiction, and irritable bowel syndrome.

**Black Elderberry**

Elderberry is the berry of the black elder tree (Sambucus nigra). Elderberry is an excellent source of vitamins A, B, and C. Its constituents may also strengthen the body's immune system. Elderberries contain bioflavonoids and anthocyanins, which positively influence cell function. The black elderberry contains nearly five times the level of anthocyanins (natural antioxidants) of the blueberry, and twice the overall antioxidant capability of the cranberry.

Traditional cold weather protection
For centuries Europeans have relied on the health-supporting properties of elderberry to prepare for the hardships of winter. When given to patients, scientists have found the black elderberry extract, has the ability to ward off flu infections quickly and has a more potent antiviral effect than Echinacea.

A Multi-faceted Health Resource

The elderberry is the berry of the black elder tree (Sambucus nigra) which originated in Europe. Elderberry has been honored for centuries in folk tradition because of its numerous health benefits. Renowned for its overall influence on the body’s well-being, it has been used in teas, gargles, ointments, lotions and homeopathic remedies.

Every part of the elder is useful. The leaves can be mixed with linseed oil to make an external emollient application called green oil of elder. The distilled water of the flowers is known as Aqua sambuci, an astringent used in eyewashes and skin lotions.

The flowers are used in a variety of pharmaceuticals. The berries have for centuries been made into a port wine. They also make excellent jams, especially when mixed with apples, and are used as a cosmetic wash to rejuvenate the skin.

Historically, elderberry's most common use has been as a tea or cordial, simmered in boiling water and then sipped for its health promoting benefits during the cold weather season.

Bioflavonoids: Potent Antioxidants

Elderberry is a rich source of nutrients, especially bioflavonoids and anthocyanins – plant compounds that give color to berries, fruits and vegetables. Bioflavonoids occur as pigments in plants, where they usually are found in close association with vitamin C. Bioflavonoids provide antioxidant protection to plants, helping them withstand harsh environmental conditions. They are also important to our optimal health, but can't be manufactured by our bodies.

**Anthocyanins** are a unique class of bioflavonoids that give certain plants their colors. In the case of elderberries, anthocyanins are the pigments that give color to the elder plant's black berries and yellow flowers. They are powerful antioxidants which can protect our cells from free radical damage. Research has shown that anthocyanins in black elderberry boost the production of cytokines, the proteins that act as messengers within our immune system, and thereby serve to enhance the body’s immune response. The black elderberry contains nearly five times the level of anthocyanins (natural antioxidants) of the blueberry.

The phytonutrients in elderberry positively influence cell function and protection in the human body. One of their primary benefits is helping maintain the walls of small blood vessels. Besides strengthening the body’s natural defenses, elderberry’s constituents influence many enzyme systems. Elderberry may inhibit the enzyme neuraminidase, which can be harmful to the integrity of our cell membranes.

Elderberry also is an excellent sudorific (sweat inducer) and diuretic, and a significant source of vitamins A, B and C.

Elderberry Research Update


Elderberry has been used in folk medicine for centuries to treat influenza, colds and sinusitis, and has been reported to have antiviral activity against influenza and herpes simplex. We investigated the efficacy and safety of oral elderberry syrup for treating influenza A and B infections. Sixty patients (aged 18-54 years) suffering from influenza-like symptoms for 48 h or less were enrolled in this
randomized, double-blind, placebo-controlled study during the influenza season of 1999-2000 in Norway. Patients received 15 ml of elderberry or placebo syrup four times a day for 5 days, and recorded their symptoms using a visual analogue scale. Symptoms were relieved on average 4 days earlier and use of rescue medication was significantly less in those receiving elderberry extract compared with placebo. Elderberry extract seems to offer an efficient, safe and cost-effective treatment for influenza. These findings need to be confirmed in a larger study.

Bioavailability of anthocyanidin-3-glycosides following consumption of elderberry extract and blackcurrant juice.


Pharmacokinetic parameters and the bioavailability of several dietary anthocyanins following consumption of blackcurrant juice and elderberry extract were compared exploratorily in 6 healthy volunteers. They were given a single oral dose of either 137 ml of blackcurrant juice (144.8 mg total anthocyanins) or 30 ml of elderberry extract (147.3 mg total anthocyanins). Within 7 hours, the urinary excretion of total anthocyanins (i.e. the sum of all assayed anthocyanidin glycosides) was 0.04% and 0.37% of the administered dose following blackcurrant juice and elderberry extract ingestion, respectively. Pharmacokinetic parameters based on non-compartmental methods for plasma and urine concentrations exhibited higher variability in urinary excretion after ingestion of elderberry extract. Anthocyanin absorption was significantly greater following the intake of elderberry extract than after the intake of blackcurrant juice. The geometric means of t(1/2) were not significantly different following elderberry extract and blackcurrant juice ingestion. The urinary excretion rate of intact anthocyanins was fast, appeared to be monoexponential for both blackcurrant juice and elderberry extract. However, in order to evaluate the contribution of anthocyanins to the health-protecting effects of blackcurrant juice and elderberry extract it will be necessary to perform further studies on the unchanged glycosides and their in vivo metabolites in human plasma and urine.

Effects of elderberry juice on fasting and postprandial serum lipids and low-density lipoprotein oxidation in healthy volunteers: a randomized, double-blind, placebo-controlled study.


In a recent pilot study, the intake of elderberry juice resulted in a significant decrease in serum cholesterol concentrations and an increase in low-density lipoprotein (LDL) stability. This study was designed to verify the preliminary results. We investigated the impact of elderberry juice on cholesterol and triglyceride concentrations as well as antioxidant status in a cohort of young volunteers. DESIGN: Study A: The randomized, placebo-controlled trial for studying the effect of anthocyanes on lipid and antioxidant status, 34 subjects took capsules with 400 mg spray-dried powder containing 10% anthocyanes t.i.d. equivalent to 5 ml elderberry juice for 2 weeks. A subgroup of 14 subjects continued for an additional week to test for resistance to oxidation of LDL. Study B: To investigate the short-term effects on serum lipid concentrations, six subjects took a single dose of 50 ml of elderberry juice (equivalent to 10 capsules) along with a high-fat breakfast. RESULTS: In the placebo-controlled study, there was only a small, statistically not significant change in cholesterol concentrations in the elderberry group (from 199 to 190 mg/dl) compared to the placebo group (from 192 to 196 mg/dl). The resistance to copper-induced oxidation of LDL did not change within 3 weeks. In the single-dose experiment increases in postprandial triglyceride concentrations were not significantly different when the six subjects were investigated with and without elderberry juice. CONCLUSIONS: Elderberry spray-dried extract at a low dose exerts a minor effect on serum lipids and antioxidative capacity. Higher, but nutritionally relevant doses might significantly reduce postprandial serum lipids.

Effects of dietary anthocyanins on tocopherols and lipids in rats.


The effects of dietary cyanidin-3-O-glucoside (C3G) and concentrates from blackcurrant [Ribes nigrum] (BC) and elderberry [Sambucus nigra] (EC) on plasma and tissue concentrations of alpha-
(alpha-T) and gamma-tocopherol (gamma-T) and cholesterol, as well as the fatty acid composition of the liver lipids were investigated in growing, male rats of the Sprague-Dawley strain. Animals were fed semisynthetic diets supplemented with 2 g/kg C3G, BC, or EC for 4 weeks. Dietary anthocyanins did not affect feed intake, body weight, and organ weights. C3G elevated the concentrations of tocopherols in the liver and lungs (P < 0.05). Cholesterol levels in plasma and liver were not affected by any of the regimens. C3G and BC reduced the relative amount of saturated fatty acids in the liver (P < 0.05). BC also lowered the percentage of 22:6 + 24:0 and EC the ratio of 20:3/20:4 n-6 (P < 0.05). In conclusion, dietary C3G, BC, and EC appear to have little effect on cholesterol levels and the fatty acid pattern in the liver but seem to be capable of sparing vitamin E in healthy, growing rats.

Absorption and metabolism of anthocyanins in elderly women after consumption of elderberry or blueberry.  

The absorption and metabolism of anthocyanins (ACN) in humans was studied in four elderly women given 12 g elderberry extract (EBX) (720 mg total ACN), and six elderly women given 189 g lowbush blueberry (BB) (690 mg total ACN). The two major ACN in EBX, cyanidin-3-glucoside and cyanidin-3-sambubioside, as well as four metabolites: 1) peonidin 3-glucoside, 2) peonidin 3-sambubioside, 3) peonidin monoglucuronide, and 4) cyanidin-3-glucoside monoglucuronide were identified in urine within 4 h of consumption using HPLC-MS/MS with diode-array detector detection and retention time. Total EBX ACN excretion was 554 +/- 90 microg (mean +/- SD, n = 4) (0.077% of intake/4 h, wt/wt). In 5 of 6 women fed BB, urine samples contained ACN, which were identified as the original forms based upon comparisons to the BB food sample, which contained 24 ACN, 22 of which were identified by HPLC-MS/MS. Reasonable correlations between BB and urine proportions of the different ACN were obtained except for ACN arabinosides. Total urinary excretion during the first 6 h was 23.2 +/- 10.9 microg (mean +/- SD, n = 5) (0.004% of intake/6 h, wt/wt). Plasma ACN levels were below detection limits using 2 mL plasma in women that consumed BB. This study demonstrates for the first time that in vivo methylation of cyanidin to peonidin and glucuronide conjugate formation occurs after people consume ACN and demonstrates the low absorption and excretion of ACN compared with other flavonoids.

Bioavailability of elderberry anthocyanins.  

Considerable epidemiological evidence suggests a link between the consumption of diets rich in fruits and vegetables and a decreased risk of cardiovascular disease and cancers. Anthocyanins have received attention as important dietary constituents that may provide health benefits and contribute antioxidant capacity beyond that provided by essential micronutrients such as ascorbate, tocopherols, and selenium. The emergence of renewed interest by industrial countries in traditional herbal medicines and the development of 'functional foods' are stimulating the need for more information regarding the bioavailability and efficacy of plant polyphenols. Flavonoids represent a numerous group of secondary plant metabolites based on the structure of a pyran ring flanked by two or more phenyl rings and varying subtly in the degree of unsaturation and the pattern of hydroxylation or methylation. Flavonoids also vary in the type of sugar attached or the degree of polymerization. Anthocyanins, potent flavonoid antioxidants widely distributed in fruits, vegetables and red wines, normally occur in nature as glycosides, a form not usually considered as bioavailable. We have examined the bioavailability and pharmacokinetics of anthocyanins in humans. Anthocyanins were detected as glycosides in both plasma and urine samples. The elimination of plasma anthocyanins appeared to follow first-order kinetics and most anthocyanin compounds were excreted in urine within 4 h after feeding. The current findings appear to refute assumptions that anthocyanins are not absorbed in their unchanged glycosylated forms in humans.
The effect of Sambucol, a black elderberry-based, natural product, on the production of human cytokines: I. Inflammatory cytokines.

_Eur Cytokine Netw. 2001 Apr-Jun;12(2):290-6._

Sambucus nigra L. products - Sambucol - are based on a standardized black elderberry extract. They are natural remedies with antiviral properties, especially against different strains of influenza virus. Sambucol was shown to be effective in vitro against 10 strains of influenza virus. In a double-blind, placebo-controlled, randomized study, Sambucol reduced the duration of flu symptoms to 3-4 days. Convalescent phase serum showed a higher antibody level to influenza virus in the Sambucol group, than in the control group. The present study aimed to assess the effect of Sambucol products on the healthy immune system - namely, its effect on cytokine production. The production of inflammatory cytokines was tested using blood - derived monocytes from 12 healthy human donors. Adherent monocytes were separated from PBL and incubated with different Sambucol preparations i.e., Sambucol Elderberry Extract, Sambucol Black Elderberry Syrup, Sambucol Immune System and Sambucol for Kids. Production of inflammatory cytokines (IL-1 beta, TNF-alpha, IL-6, IL-8) was significantly increased, mostly by the Sambucol Black Elderberry Extract (2-45 fold), as compared to LPS, a known monocyte activator (3.6-10.7 fold). The most striking increase was noted in TNF-alpha production (44.9 fold). We conclude from this study that, in addition to its antiviral properties, Sambucol Elderberry Extract and its formulations activate the healthy immune system by increasing inflammatory cytokine production. Sambucol might therefore be beneficial to the immune system activation and in the inflammatory process in healthy individuals or in patients with various diseases. Sambucol could also have an immunoprotective or immunostimulatory effect when administered to cancer or AIDS patients, in conjunction with chemotherapeutic or other treatments. In view of the increasing popularity of botanical supplements, such studies and investigations in vitro, in vivo and in clinical trials need to be developed.

Incorporation of the elderberry anthocyanins by endothelial cells increases protection against oxidative stress.


The objective of this study was to investigate the ability of endothelial cells (EC) to incorporate anthocyanins and to examine their potential benefits against various oxidative stressors. Endothelial dysfunction has been proposed to play an important role in the initiation and development of vascular disease, with studies having shown that administration of antioxidants improves endothelial function. Elderberry extract contains 4 anthocyanins, which where incorporated into the plasma membrane and cytosol of EC following 4 h incubation at 1 mg.ml(-1). However, incorporation within the cytosol was considerably less than that in the membrane. Uptake within both regions appeared to be structure dependent, with monoglycoside concentrations higher than that of the diglucosides in both compartments. The enrichment of EC with elderberry anthocyanins conferred significant protective effects in EC against the following oxidative stressors: hydrogen peroxide (H(2)O(2)); 2, 2'-azobis(2-amidinopropane) dihydrochloride (AAPH); and FeSO(4)/ascorbic acid (AA). These results show for the first time that vascular EC can incorporate anthocyanins into the membrane and cytosol, conferring significant protective effects against oxidative insult. These findings may have important implications on preserving EC function and preventing the initiation of EC changes associated with vascular diseases.

Inhibition of several strains of influenza virus in vitro and reduction of symptoms by an elderberry extract (Sambucus nigra L.) during an outbreak of influenza B Panama.


A standardized elderberry extract, Sambucol, reduced hemagglutination and inhibited replication of human influenza viruses type A/Shangdong 9/93 (H3N2), A/Beijing 32/92 (H3N2), A/Texas 36/91 (H1N1), A/Singapore 6/86 (H1N1), type B/Panama 45/90, B/Yamagata 16/88, B/Ann Arbor 1/86, and of animal strains from Northern European swine and turkeys, A/Sw/Ger 2/81, A/Tur/Ger 3/91, and
A/Sw/Ger 8533/91 in Madin-Darby canine kidney cells. A placebo-controlled, double blind study was carried out on a group of individuals living in an agricultural community (kibbutz) during an outbreak of influenza B/Panama in 1993. Fever, feeling of improvement, and complete cure were recorded during 6 days. Sera obtained in the acute and convalescent phases were tested for the presence of antibodies to influenza A, B, respiratory syncytial, and adenoviruses. Convalescent phase serologies showed higher mean and mean geometric hemagglutination inhibition (HI) titers to influenza B in the group treated with Sambucol than in the control group. A significant improvement of the symptoms, including fever, was seen in 93.3% of the cases in the SAM-treated group within 2 days, whereas in the control group 91.7% of the patients showed an improvement within 6 days. A complete cure was achieved within 2 to 3 days in nearly 90% of the SAM-treated group and within at least 6 days in the placebo group. No satisfactory medication to cure influenza type A and B is available. Considering the efficacy of the extract in vitro on all strains of influenza virus tested, the clinical results, its low cost, and absence of side-effects, this preparation could offer a possibility for safe treatment for influenza A and B. Research elderberry.

Flaxseed Oil and Brain Health

Omega-3 fatty acids found in flaxseed and fish is good for maintaining brain health as about 60 percent of the brain consists of lipids (fats) which make up the lining, or cell membrane, of every brain cell. The types of fats present in the brain influence its structure and function. How well your mind works depends, in the long run, on what you eat.

Flaxseed Oil, Heart health, and Blood Pressure

Flaxseed has recently gained attention in the area of cardiovascular disease primarily because it is the richest known source of both alpha-linolenic acid (ALA) and the phytoestrogen, lignans, as well as being a good source of soluble fiber. Human studies have shown that flaxseed can modestly reduce serum total and low-density lipoprotein cholesterol concentrations, reduce postprandial glucose absorption, decrease some markers of inflammation, and raise serum levels of the omega-3 fatty acids, ALA and eicosapentaenoic acid. In a human clinical conducted at Harokopio University, Athens, Greece, supplementation with flaxseed oil resulted in significantly lower systolic and diastolic blood pressure levels compared with linoleic acid.

Flaxseed Oil and Prostate Health

Flaxseed may slow growth of prostate tumors. Including flaxseed as part of a low-fat diet may slow the growth of tumors in men with prostate cancer. According to a study published in the journal Urology, 25 men with prostate cancer supplemented with 3 tablespoons of ground flaxseed daily for an average of one month had a greater rate of prostate tumor cell death than men who did not follow this diet.

Flaxseed Oil and Estrogen Metabolism

Phytoestrogens, which are abundant in flaxseed and soy, have chemical structures resembling those of endogenous estrogens and have been shown to exert hormonal effects. According to a research published on American Journal of Nutrition, supplementation with flaxseed modifies urinary estrogen metabolite excretion to a greater extent than does supplementation with an equal amount of soy. This modification by flaxseed is associated with an increase in urinary lignan excretion. Despite the shift in estrogen metabolism to favor the less biologically active estrogens, a negative effect on bone cell metabolism was not observed.
Flaxseed oil and Skin Care

Flaxseed Oil is incredibly rich in the essential fatty acids known as Omega-3, (alpha linolenic acid), and Omega-6 (linoleic acid). Flaxseed oil helps nourish the skin membranes by supplying our skin with natural Omega-3 and Omega-6 fatty acids. Omega-3 fatty acids in Flaxseed oil in also essential for the production of prostaglandins in the skin to help reduce inflammation and promote healing of the skin. Flaxseed oil, when used topically, can be immensely soothing to a variety of conditions including sunburn. Flaxseed oil can also help seal moisture into the skin, making it a great ingredient to have in lotions.

Flaxseed Oil Reduces Skin Inflammation

Skin disorders such as psoriasis have been shown to improve by supplementation with omega-3 fatty acids. In the skin of persons with psoriasis the amount of compounds causing inflammation is many times greater than normal. Omega-3 fatty acids inhibits the production of these inflammatory compounds. Clinical trails have shown that omega-3 fats can be successful in the treatment of eczema. Epidermal cells can be very active in the conversion of essential fatty acids into prostaglandin hormones, which determine the smoothness and moistness of the skin, and can influence skin conditions such as eczema. The omega-3 fatty acids provide skin cells with the precursors from which they synthesize PG-series 3, derived from gamma-linolenic acid. Gamma-linolenic acid is converted to dihomo-gamma-linolenic acid by epidermal cells, then to anti-inflammatory prostaglandin hormone (PG-1), which also improves skin texture and has been used successfully to treat eczema and provide proper skin care treatments.

Flaxseed Oil Nourises Skin

Our skin membranes are made of compounds comprised from Omega-3 and Omega-6 fatty acids. The health of our skin cells is dependent upon the membranes working properly, and if we are deficient in EFAs, nutrients do not flow into the cells as easily as they should and waste products do not come back out as readily. For years, a deficiency in EFAs has been linked to skin that is dry, cracked, red, or covered with a skin condition like psoriasis, or eczema.

Flaxseed Oil Skin Care Research

Numerous studies have shown the link between flaxseed oil and healthy skin. One such research project was conducted by Donald Rudin, M.D., from the Department of Molecular Biology at the Eastern Pennsylvania Psychiatric Institute in Philadelphia. Dr. Rudin gave flaxseed oil to 44 patients, 39 of whom had at least one type of skin condition. In his book, Omega-3 Oils, A Practical Guide, Dr. Rudin wrote, "Chronic skin disorders, such as scaling, cracking, and persistent infections of the hair follicles, healed only after the volunteers began taking flaxseed oil, an oil high in Omega-3. The general color and elasticity of the volunteer's skin also improved greatly."

Dr. Rudin also found that the patients who took flaxseed oil had smoother hands in as little as a week. After six weeks, there was a huge improvement in dandruff, as well as in dryness, flakiness, and redness. Within one to four months on flaxseed oil the subjects' skin was more firm and elastic, with improved texture and tone. Over the years, many other studies have duplicated these results.

Flaxseed oil as Cosmetic Ingredient

European have been using flaxseed oil and applied to the skin to soothe a variety of conditions including sunburn. Flaxseed oil can also help seal moisture into the skin, making it a great ingredient to have in lotions.
Glucosamine

Glucosamine is a glucose derivative that naturally occurs in connective and cartilage tissues. It is a precursor of antioxidant-like glycosaminoglycan (GAG) and proteoglycans found in the body. Studies have shown glucosamine may affect subchondral bone turnover, structure and mineralization;1 inhibit COX-2 and inducible nitric oxide synthase (iNOS) activity;2,3 and decrease collagen degradation by inhibiting advanced lipoxidation reactions, thereby protecting the chondrocyte matrix.4 Such effects, coupled with clinical trials, have led researchers to conclude glucosamine may have positive effects on OA symptoms and disease progression.5

National Institutes of Health (NIH) sponsored a $12.5 million, multicenter clinical trial involving Glucosamine/Chondroitin Arthritis Intervention Trial (GAIT). 6 In the double blind GAIT study, 1,583 patients were divided into five treatment groups and given either: glucosamine alone, chondroitin sulfate alone, the two supplements in combination, celecoxib, a prescription drug to treat OA pain, or placebo. The patients were monitored over 24 weeks and were separated into two pain subgroups—those with mild pain (78 percent) and those with moderate-to-severe pain (22 percent). The study's primary outcome was defined as at least a 20-percent reduction in pain at 24 weeks.

At the study's end, the study concluded glucosamine and chondroitin taken alone or in combination did not effectively reduce knee pain in OA patients with mild pain. However, the researchers, led by Daniel O. Clegg, M.D., from the University of Utah, Salt Lake City, did find a significantly higher response rate to the nutrient combination in patients with moderate-to-severe pain at baseline, aiding almost 80 percent of study participants; the abstract further noted all treatments were well tolerated.

The GAIT trial was also the primary piece of evidence considered by reviewers from the U.S. Agency for Healthcare Research and Quality (AHRQ), which concluded there is no demonstrable clinical benefit to the use of oral glucosamine/chondroitin for knee OA.7 They did note six study-level meta-analyses found statistically significant differences between treatment and placebo, but suggested more trials are necessary.
Such trials are underway, and have their own positive findings to build on. The Europeansponsored Glucosamine Unum In Die Efficacy (GUIDE) trial compared the effect of 1,500 mg/d glucosamine sulfate, 3,000 mg/d acetaminophen and placebo on various osteoarthritis pain and mobility indices in 318 OA patients (88 percent women) over 24 weeks. Ibuprofen (400 mg/d) was permitted as a rescue medication. Glucosamine sulfate was efficacious in reducing scores on various OA symptom indices. There were no differences in safety among treatments. The researchers concluded 1,500 mg/d glucosamine sulfate might be the preferred symptomatic medication in knee OA. Similarly, researchers out of Poland reported 12 weeks of supplementation with glucosamine sulfate (500 mg tid) improved functional status and pain in patients with knee or hip OA.

Glucosamine is often paired with chondroitin, the most prevalent GAG found in joint cartilage, and research has shown the supplement might have long-term benefit to the symptoms and progression of OA. Studies suggest it may reduce the activity and production of matrix metalloproteinases (MMPs), which play a key role in degradation of cartilage matrix.

References:
3. Rafi MM, Yadav PN, Rossi AO. “Glucosamine inhibits LPS-induced COX-2 and iNOS expression in mouse macrophage cells (RAW 264.7) by inhibition of p38-MAP kinase and transcription factor NF-kappaB.” Mol Nutr Food Res. 2007 May;51(5):587-93.

Adaptogenic Herb
Latin Name: **Gynostemma pentaphyllum**

**Common Name:** **Jiao Gu Lan**

Gynostemma is a powerful adaptogenic herb used by the Chinese for centuries as a “cure-all” herb. Belonging to the cucumber family, this anti aging herb and more is also referred to as "southern ginseng" where it is grown traditionally in the mountainous region of South Central China. Gynostemma is widely used in China as an anti aging herb, or a tonic to treat bronchitis, strengthen the body, reduce fatigue, improve sexual vigor, and reinforce overall health.

Gynostemma contains many amino acids, vitamins and minerals that are healthful to the human body, including selenium, magnesium, zinc, calcium, iron, potassium, manganese, phosphorus, and more. Order this wonder herb today!

**Gypenosides-The Active Ingredients**

Gynostemma contains a 82 saponins known as gypenosides. The structure of the gypenosides is very similar to ginsenosides found in ginseng. There are 3-4 times as many saponins in jiaogulan as there are in ginseng. Some of those saponins are turn into Ginsenosides when taken into the body. This greater number of gypenosides may be why Gynostemma is more powerful than panax Ginseng as an adaptogen.

Environmental pollution, poor nutrient, and stress can all lead to liver deficiency where the body is not able to convert food into energy, and instead convert them to triglycerides and stored as fat. Gynostemmat may help regulate fat metabolism, maintain normal cholesterol levels and maintain a healthy blood pressure.

**Benefits of Gynostemma:**

- **Anti-aging:** Gynostemma provide antioxidant protection for cells and membranes, and may help slow the aging process. Gynostemma has been shown in several studies to increase the production of superoxide dismutase (SOD) or glutathione peroxidase, lowering levels of oxidized lipids, decreasing free radical damage and proliferation, and inhibits the effects of UV radiation damage. A 1993 study from Loma Linda University found that Saponins from Jiaogulan decreased the production of free radicals in immune cells, protected biomembranes from oxidative injury, and improved the functioning of vascular cells.

- **Potent Immunomodulator:** Research has shown Gypenosides isolated from Gynostemma pentaphyllum as a potent immunomodulator and may help maintaining healthy immune and system and other stress-related symptoms. In a research conducted by University of Sydney, Gypenosides derived from Gynostemma pentaphyllum suppress Nitric Oxide synthesis by inhibiting iNOS enzymatic activity. Inhibition of iNOS protein expression appears to be at the transcriptional level, since gypenosides decreased the NF-kappaB activity in a dose-dependent manner.

- **Maintain normal cholesterol and triglyceride levels:** Scientific studies have show jiaogulan's ability to lower serum cholesterol, triglycerides, and LDL (bad cholesterol), while increasing HDL (good cholesterol). Crude Gypenosides were tested for their effect on lipid metabolism in rats fed with high-sugar, high-fat diets. It was found that Gypenosides reduced levels of serum triglycerides (as important a marker as cholesterol), total cholesterol, phospholipids and lipid peroxidation.
- **Maintain healthy blood pressure and cardiovascular health**: Gynostemma has been widely reported to be effective in maintaining healthy blood pressure. Research has indicated that the Gypenosides-treated animals had significantly lowered blood pressure; markedly decreased vascular resistance; and increased coronary blood flow throughout the body. Studies have shown that Gynostemma improves cardiovascular health by releasing nitric oxide in the body, which helps to relax the coronary blood vessels. Gynostemma also improve HDL level which may metabolized cholesterol more effectively, thereby maintaining good cardiovascular health.

- **Adaptogen**: Gynostemma is a powerful adaptogen. This regulatory effect on bodily functions can help bring balance to the body under a wide range of stressful circumstances. enhance physiological functions, aiding the body to recover from illness, stress and fatigue, restore homeostasis to the body's various systems, which includes the cardiovascular, digestive, nervous, immune and reproductive systems.

- **Maintain healthy digestion and regulate weight**: By improving and strengthening digestion, Gynostemma may regulate weight by effectively metabolize the food into energy and block the conversion of sugar into stored fat. Gynostemma may also help reduce weight in overweight people by accelerating the body's metabolism, allows an underweight person to increase absorption of nutrients and gain weight in the form of lean muscle mass.

- **Improve Energy and Sports Performance**: The saponins in Gymostemma increase strength, endurance, and may help gain lean muscle mass.

- **Radioactive protectant**: An research published in American Journal of Chinese Medicine has found that Gynostemma pentaphyllum helped preserve immune function in rats receiving gamma-ray bombardment, suggesting that the herb may help cancer patients who are undergoing radiation therapy.

- **Sexual Enhancement**: Gynostemma's ability to stimulate nitric oxide release, which elicits vasodilation maybe useful in sexual enhancement.

- **Maintain healthy brain function**: Studies have indicated that Gynostemma has a double-direction, regulating, adaptogenic influence on the central nervous system. It is calming when one is overexcited and stimulating when one is depressed. Gynostemma maybe useful in simple depression, anxiety and schizophrenia.

### Recomended Dosage for Gynostemma:

For lowering Cholesterol, take 10mg to 20mg of 100% Gypnosides, 3 times a day. For maintainance of health take between 30mg to 150mg per day, depending on individual needs. Gynostemma appear to be safe even at large quantity. However, no scientific documentation is available to confirm a maximum dosage.

### Risk and Side Effects of Gynostemma:

Not recomended for pregnant women, small children and breast-feeding women since so little is known about its possible long-term effects. Possible minor side effect is nausea.

Avoid taking Gynostemma if you taking taking blood thining medications or drugs to prevent organ transplant rejection.
L Arginine Alpha Ketoglutarate

Arginine Alpha-Ketoglutarate provides far superior uptake and retention as compared with regular L-Arginine. The unique combination of ingredients in this product make it the strongest nitric oxide supplement on the market.

**L-Arginine—dilates blood vessels, normalize blood pressure, replicates the activity of nitroglycerine, and is needed to produce nitric oxide**

L-arginine, along with a properly planned exercise program, assists in amending abnormalities occurring in blood vessels. Individuals with congestive heart failure often have blood vessels that fail to dilate in response to certain drugs, a sign that the inner blood vessel wall, or endothelium, is compromised.

A study reported in the American College of Cardiology concluded that treatment with L-arginine produced a fourfold increase in blood vessel dilation from 2.2-8.8% (Hambrecht et al. 2000). Regular forearm exercises increased the dilation response by the same amount, but the combination of L-arginine and exercise training resulted in an improvement from 2.9-12%. Doses of 5.6-12.6 grams of arginine increased blood flow to the extremities 29%; the distance walked on a treadmill in 6 minutes increased 8% (Rector et al. 1996).

Much of L-arginine's effectiveness comes by way of increasing nitric oxide, a blood vessel dilator and clot buster produced in endothelial cells by the enzyme nitric oxide synthase (Brunini et al. 2002). Nitric oxide counteracts the vasoconstriction and platelet-aggregating effects of the stress hormone adrenaline (epinephrine) and assists in maintaining vascular elasticity. Nitric oxide (the endothelial relaxing factor) is needed for expansion and contraction of the arterial system (Rohdewald 1999). L-arginine increases nitric oxide, but hypertension, hyperhomocysteinemia, diabetes, and smoking decrease it.

Because of arginine's vasodilating properties, it is frequently used as a treatment for angina pain and hypertension. Researchers at the University of Southern California (Los Angeles) speculate that a defect in nitric oxide production may be a possible mechanism of hypertensive disease (Campese et al. 1997). Some cardiologists, in fact, recommend L-arginine over nitroglycerine, since the two substances appear to replicate a similar vascular function: the ability to relax smooth muscles and dilate blood vessels.

**L Arginine & Nitric Oxide Synthesis**

Nitric oxide is a soluble free gas naturally produced in the body (from the amino acid arginine) by endothelial cells, macrophages, and specific neurons in the brain. Nitric oxide plays several key roles in the body, including:

- Nitric oxide relaxes vascular smooth muscle, which causes vasodilation.
- Nitric oxide reduces platelet aggregation and adhesion.
- Nitric oxide produced by macrophages is cytotoxic to certain microbes and tumor cells.

Nitric oxide has been identified as having a key role in blood pressure regulation. Nitric oxide lowers blood pressure by stimulating the release of calcium from vascular smooth muscle cells, thereby causing the blood vessels to relax and dilate. There is now evidence that nitric oxide deficiency can cause hypertension and may also be involved in the pathogenesis of atherosclerosis. Nitric oxide donors (such as nitroglycerine and arginine) lower blood pressure and increase cerebral blood flow in patients with acute ischemic stroke.
**L Arginine Modulating Nitric Oxide**

The best naturally occurring source of nitric oxide is the amino acid arginine. A study examined the use of L-arginine to prevent experimental ischemic stroke in rats. L-arginine was administered at the time of ischemia and at 6 and 24 hours later. The areas of neuronal necrosis were reduced by 99%, 96%, and 89%, respectively. The study also examined L-arginine in combination with a calcium antagonist (TMB-8) and found that the combination of TMB-8 and L-arginine is more effective in treating ischemic stroke by simultaneously reducing calcium-activated proteolysis and improving cerebral blood flow than using TMB-8 or L-arginine alone (Hong et al. 2000).

However, to avoid the potentially harmful free-radical damage that can result from excessive nitric oxide, one of the vitamin E fractions, gamma tocopherol, has been found to function as the best antioxidant for nitric oxide. Therefore, for best stroke, heart disease, and hypertension protection, consider arginine, 2700 mg 3 times per a day with plenty of B complex as cofactors and 400 IU of gamma tocopherol for optimal protection.

**Precautions when supplementing with arginine:**

- Diabetics and borderline diabetics should use arginine with care because it may worsen diabetes.
- Children, teenagers, and pregnant or lactating women should not use arginine (or growth hormone stimulators) except under the care of a knowledgeable physician.
- Arginine sometimes reactivates latent herpes virus infections. Those with ocular or brain herpes should avoid it. Persons with herpes benefit from lysine which competes with arginine in amino acid metabolism. If you have herpes and use arginine at all, use lysine at a separate time of day on an empty stomach to avoid lysine depletion and herpes exacerbations.
- Arginine should be used with care in those with psychosis because they may experience a worsening of symptoms.
- Arginine should always be taken with antioxidants.

L Arginine is an essential amino acid. It causes the secretion of growth hormone. In fact, a 15 to 30 gram intravenous infusion of arginine is used as a standard endocrinological test to provoke the pituitary into releasing growth-hormone.

**L Arginine Stimulate HGH**

A study at the University of Turin, Italy, showed that even though people in their seventies had lower response than either children or young adults to arginine, the nutrient still boosted their blood levels of HGH to triple the average for their age group. Arginine appears to stimulate HGH by blocking the secretion of the growth-hormone inhibitor somatostatin. It also greatly enhances the effect of growth hormone-releasing hormone when they are given together.

Positive claims for arginine include increasing fat burning and building muscle tissue probably through the stimulation of growth-hormone, increasing the weight and activity of the thymus gland, boosting immunity, fighting cancer, promoting healing of burns and other wounds, protecting the liver and detoxifying harmful substances, and enhancing male fertility. It also restores sexual function in impotent men. In a 1994 study by Drs. A.W. Zorgniotti and E.E Lizza of the department of urology/surgery at New York University School of Medicine, six of fifteen men who took 2,800 milligrams of arginine a day for two weeks had renewed sexual performance, specifically improved erection, yet none of the men on the placebo did. The researchers believe that arginine worked because it is a precursor of nitric oxide, which plays a key role in initiating and maintaining an erection.
Family: *Fabaceae*
Genus: *Glycyrrhiza*
Species: *Glabra*
Common Names: *Licorice, Gan Cao, Iriqsus, Kan T'Sao, Kan Ts'Ao, Liquirita, Madhuka, Meyankoku, Mi Ts'Ao, Regaliz, Sus Maikik*
Part Used: *Root, Whole herb*

The medicinal use of licorice in both Western and Eastern cultures dates back several thousand years. It was used primarily as a demulcent, expectorant, antitussive, and mild laxative. Its traditional use include the treatment of peptic ulcers, asthma, pharyngitis, malaria, abdominal pain, insomnia and infections. Licorice is known to exhibit many pharmacological actions, including estrogenic, aldosterone-like; anti-inflammatory (cortisol-like); antiallergic; antibacterial, antiviral; anticancer; and expectorant. Although much of the pharmacology focuses on glycyrrhizin and glycyrrhetic acid, other components such as flavonoids may have significant pharmacological effect.

Licorice contains glycyrrhizic acid which is fifty times sweeter than sugar. It helps support the adrenal glands and stimulate the excretion of hormones from the adrenal cortex. It has also been shown to have estrogen activity in animal studies and may be used to stabilize the menstrual cycle. It is excellent for the lungs and spleen. It has been used for coughs, sore throat, asthma, stomach and duodenal ulcers, hepatitis, hysteria and food poisoning. The root can help heal gastric ulceration and is also a potent expectorant. Actions: Anti-inflammatory, anti-arthritis, tonic stimulant for adrenal cortex, lowers blood cholesterol, soothes gastric mucous membranes, possibly anti-allergenic, cooling, expectorant."

Licorice have a marked effect upon the endocrine system. The glycosides present have a structure that is similar to the natural steroids of the body. They explain the beneficial action that licorice has in the treatment of adrenal gland problems such as Addison's disease.
Historical or traditional use: Licorice has been one of the most important herbs used in traditional Chinese medicine, primarily as a demulcent (soothing, coating agent) in the digestive and urinary tracts, to help with coughs, to soothe sore throats, and as a flavoring. It is less commonly used to treat other complaints ranging from diabetes to tuberculosis to hot flashes. Licorice flavonoids, as well as the closely related chalcones, help digestive tract cells heal. They are also potent antioxidants and work to protect the cells of the liver.

Research

**Licochalcone-A, a novel flavonoid isolated from licorice root (Glycyrrhiza glabra), causes G2 and late-G1 arrests in androgen-independent PC-3 prostate cancer cells.**

**Complementary and alternative therapies in the treatment of chronic hepatitis C: a systematic review.**
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Articles

**Licorice: A Digestive Friend**
Chris Kilham
www.medicinehunter.com

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**Maqui Berry**

In distant Patagonia located in Southern Chile, there is a deeply purpled berry like no other berry before. It thrives in a harsh climate where few would survive. Power packed with anthocyanins and polyphenols... powerful antioxidants protect this berry from UV sun radiation, disease, and biological enemies. This sacred berry has been used by the native Mapuche warrior to give them their legendary strength and stamina. Maqui Superberry™ has undergone a proprietary ultra filtration process to offer
our customers one of the purest and highest antioxidant superfruit in the world. Our berries are hand picked by the Mapuche Indians from their native forests. Certified organic by CERES.

This unique, revolutionary organic superfruit supplement will protect your vital immune system from stress, environmental stress, help fight free radicals, and increase stamina and strength.

Maqui Superberry™ is a deeply purpled berry collected from the distant Patagonia region, traditionally used by the Mapuche Indians for supporting stamina, increasing strength, and promoting healthy immune response. Maqui Superberry™ has undergone a proprietary ultra filtration process to offer our customers one of the purest and highest antioxidant superfruit in the world.

**Breakthrough, Patent Pending Maqui Superberry™**

Maqui Superberry™ is breakthrough functional beverage and dietary supplement featuring a patent pending Maqui Superberry™ fruit & seed extract that delivers the highest antioxidant potency to help neutralize free radicals and leading you to healthy living.†

**Traditional Use of Maqui Berry**

The Mapuche Indians is the only unconquered Native American Indians in the entire America continent. They have resisted the Inca and Spaniards’ attempt to conquer them. The warriors’ legendary strength and stamina are largely contributed by drinking a fermented maqui drinks several times daily.

Maqui is revered as a symbol of health, strength, and believed to have profound and mystical healing powers by the Mapuche Indians. Besides increasing warmth during the winter month and increase strength and stamina, maqui berries has been traditionally used by the Mapuche Indian for a variety of ailments such as sore throat, diarrhea, ulcers, hemorrhoids, birth delivery, fever, tumors and other ailments. The maqui leaves has been used to treat diabetes, exhibit anti-inflammatory, analgesic and antimicrobial effects.

**Health Benefits of Maqui**

- Highest Antioxidant value of any known Fruit
- Contains high level of polyphenols and anthocyanins
- Support Healthy Aging†
- Protect cells from oxidative stress‡
- Neutralizes Free Radicals†
- Support Healthy Inflammatory Function†
- Support Healthy Immune System†
- Support Cardiovascular health†
- Excellent source of Vitamin C, Iron, and Potassium
- Organic & Naturally Pure

**The Importance of Antioxidant**

Antioxidants are health-giving molecules found in abundance in many fruits and vegetables.
Throughout the ages, cultures from around the world have been consuming red wine and deep colored berries as they have been recognized as sources of longevity and healthy living.

Emerging science suggests that unstable molecules called free radicals may be linked to health imbalances, and is a leading cause of aging and poor health. Antioxidants contain an extra oxygen molecule and are able to neutralize the free radical before it does any harm. The normal aging process and the various environmental and life-style stressors we face every day create more free radicals than our bodies can naturally fight off.

The USDA, American Heart Association, American Cancer Society, National Academy of Sciences and American Diabetes Association recommend 5 to 15 servings of fruits and vegetables per day. The average American gets less than 1 servings of dark, leafy greens per day and is not getting the recommended antioxidant intake.

The patent pending Maqui Superberry™ is jam-packed with antioxidant, delivers highest potency of anthocyanins and polyphenols to help prevent free radicals from doing their damage, and leading you to healthy living with the breakthrough antioxidants!

**Highest Anthocyanins & Polyphenols**

200% to 300% The Anthocyanins & 130% The Polyphenols Compared to Red Wine

Anthocyanins and polyphenols are shown in scientific studies to be powerful antioxidants, benefiting the whole body by protecting the cells from free radicals, preventing oxidative stress, promoting healthy response to inflammation, and supporting bodily functions for optimal aging health.†

Polyphenols protect the plants from potentially harmful elements in our environment, like ultraviolet radiation and pests. Emerging science further suggests fruits and vegetables that are high in polyphenols, may help protect our whole health just as they help protect plants. Researchers now believe that it is the polyphenols that are present in red wine that maybe contributing to the French Paradox. These phenols compounds inhibit the oxidation of LDL cholesterol and may contribute to good heart health.

Maqui Superberry™ has incredibly high levels of naturally occurring polyphenol antioxidants, and is truly the antioxidant superfruit for supporting optimal health.

**Neutralizes Free Radicals, Protect Against Oxidative Stress**

Free radicals are atoms or molecules in your body with an unpaired electron. These unstable molecule collide with other molecules in an attempt to steal an electron, starting a chain reaction and damaging your DNA and cells. Free radicals is a by product from our everyday bodily function that involves oxygen, such as digesting and breathing. Our body produces natural antioxidants enzymes to help fight off these free radicals. However, the aging process, our toxic environmental, stressful life-style, all contributed more free radicals than our bodies can naturally fight off. Emerging science suggests high level of free radical damage may be linked to many health problems.

Antioxidants are free radical scavengers. Antioxidants work by donating an electron and binding with the free radicals before they can do their damage. The antioxidants in Maqui Superberry function as potent free radical scavengers and protect our body from oxidative stress.

**Nature's Herbal COX-2 Inhibitor**

New research have tied inflammation to overexpression of a protein molecule called nuclear factor-kappa B (NF-kappaB). NF-kappaB acts like a switch to turn on genes that produce the body's
inflammatory responses. Because NF-kappaB's expression increases in aging adults and excess inflammation plays a role in many long-term health imbalances, scientists have sought ways to modulate NF-kappaB and its effects in the body. Maqui Superberry helps maintain healthy inflammatory response by naturally inhibits the NF-kappaB activation.

Recent scientific studies suggest that by inhibiting NF-kappaB, an enzyme known as cyclooxygenase-2 (COX-2) can be reduced. COX-2 inhibition may serve an important function in promoting healthy joint function, normal cell growth in the colon, pancreas breast tissue, and other organ systems. Maqui Superberry is a natural COX 2 inhibitor that that works immediately without side effects or stomach discomforts.

![Image of a thistle flower](image_url)

**Botanical name:** *Silybum marianum*  
**Common name:** *Milk Thistle, Marian Thistle, St Mary’s Thistle*  
**Part (s) used:** *Seed (dried fruit)*

**Common Usage of Milk Thistle**

- Supports normal liver function
- Helps reverse liver damage caused by alcohol, drug, dietary abuse, and exposure to chemicals that threaten normal liver function
- Increases breast milk production in nursing mothers
- Helps repair skin conditions, (jaundice, varicose veins), related to poor liver function
- Alleviates allergies associated with liver damage

Milk thistle is native to the Mediterranean and also grows wild throughout North America, Australia, and Europe, where it has been used for thousands of years as a remedy for liver problems. Milk thistle is toxic to livestock, and it forms dense stands in pastures and rangelands. The leaves are very distinctive, with white marbling on the shiny green leaves.

The dried fruit of milk thistle contains a flavonoid complex known as silymarin which is made up of
silibinin, silidianin, and silicristin. Silibinin is the most active component and is considered to be the constituent responsible for the benefits attributed to silymarin. Both the active bioflavonoid complex, silymarin and it's sub-component silibinin, are powerful antioxidants which exert a protective effect against substances that may be potentially harmful to the liver. Milk thistle extract is most commonly recommended to counteract the harmful actions of alcohol on the liver. Double-blind clinical studies show that it helps the liver return to a healthy state once a person stops drinking. Some trials suggest it may improve quality of life and even life expectancy in people with liver cirrhosis. However, another trial found no effect in cirrhosis patients.

**Dosage**

For liver disease and/or diminished liver function, research results indicate the use of 420–600 mg of silymarin per day from an herbal extract of milk thistle standardized to 80% silymarin content. Results should become noticeable in about eight to twelve weeks. Milk thistle extract may be considered for long-term therapy for people with chronic liver disease.

**Research**


- Silymarin retards the progression of alcohol-induced hepatic fibrosis in baboons. Lieber CS, Leo MA, Cao Q, Ren C, DeCarli LM. Oct 2003


**Articles**

Muira Puama

Native tribes in the basins of Brazil's Amazon River and Venezuela's Orinoco River have used muira puama for various functions, including one that is much-sought-after and seldom found, and inspires widespread attention from around the world: aphrodisia. Also known as potency wood, muira puama is derived from two species of small, shrubby trees in the olive family. Muira puama is a bush / small tree up to 5 meters in height and produces pungent flowers with a jasmine like fragrance. South American Indians make use of it either by chewing the bark or brewing a beverage from the bark, stems, or roots. The bark and root are used to make herbal supplements.

The indigenous tribes in Brazil have used the roots and bark internally in a tea as an aphrodisiac, for treating sexual debility and erectile dysfunction, nervous system disorders, neuralgia, baldness, impotency, gastrointestinal disorders, neuromuscular problems and rheumatism. Women have traditionally used it to alleviate menstrual cramps and discomforts of menopause. Muira puama also has a mildly stimulating effect on some users. It may also be helpful for: stress and anxiety, nervous exhaustion, and mild depression. Murapuama has been used as a herb in Europe for some time and is listed in the British Herbal Pharmacopoeia, a source on herbal medicine from the British Herbal Medicine Association, and is recommended for the treatment of dysentery and impotence.

Although many people are skeptical about sexual stimulants or "herbal viagra" as such, the muira puama herb has been shown by Dr. Jacques Waynberg, a world authority on sexual functioning, of the Institute of Sexology in Paris, France, that it is effective in assisting in increasing sexual desire as well as attaining and maintaining an erection. The action of the muira puama herb is not fully understood but it seems to assist with both the psychological as well as the physical aspect of sexual function.

The active constituents in Muira puama are free long-chain fatty acids, sterols, coumarin, alkaloids and essential oils. Chemically, it contains .05% muirapuamine, .4% fat, .5% alkaloids, .6% pholbaphene, .6% alpha-resinic acid, .7% beta resinic acid, .5% of a mixture of esters including behenic acid, lupeol and beta-sitosterol, as well as tannin, volatile oils and fatty acids.

Muira puama is considered a safe herb.

Pueraria Mirifica
Thai herb shown to prevent osteoporosis

A herb native only to Thailand and Burma has prevented osteoporosis in laboratory tests, according to study results revealed by Ubon Ratchathani University.

Animal-science lecturer and biology-doctorate candidate Nontakorn Urasopon told a research presentation that pueraria mirifica - also known as kwao krua in Thai, - prevents the painful, debilitating disease.

The Thai Research Fund presentation at Pattaya City yesterday heard that the disease, most common in the elderly and women, greatly reduces bone-mineral density. This makes bones more likely to fracture. Breaks are most common to wrists, hips and the spine.

In post-menopausal women the disease results from declining oestrogen levels. It affects three in 10 women aged 60 or older. It affects just one in 10 men.

According to the National Statistical Office, Thailand has 5.7 million people aged over 60 - or 9.4 per cent of the population. This group will double in the next 20 years.

Nontakorn said patients usually discovered the disease only after it became severe. He added that current prevention and treatment was to take oestrogen supplements to halt bone-mineral-density reduction.

However, oestrogen can increase the risk of breast and cervical cancers and increase tumor sizes in cancer patients, he said.

Nontakorn said kwao krua contains phytoestrogens that function like oestrogen but with fewer side effects. The research team tested kwao krua on seven-month-old mice - the age at which rodent bones are fully developed. There were six test groups - one a control and the others with their reproductive organs removed to induce the reduction of bone-mineral density.

The second group was treated with oestrogen, the third with distilled water, while groups four, five and six were treated with kwao krua in doses of 10 milligrams, 100 milligrams and 1,000 milligrams per kilogram of weight. The treatment lasted three months. The groups underwent bone-mineral-density testing in Japan, where "peripheral quantitative computed tomography" was employed.

In the 100-milligram and 1,000-milligram kwao krua trials, success rates were 85 per cent and 100 per cent respectively.

Osteoporosis occurred in the oestrogen group at a rate of just 20 per cent. The 10-milligram kwao krua group developed it in 80 per cent of subjects.

The herb curbed bone-mineral-density decline as well as and better than oestrogen, he said. Phytoestrogens in kwao krua help reduce cholesterol and the symptoms of menopause, too, he said.

He believed a drug produced from kwao krua would eliminate the need for expensive imported drugs and provide another cash crop for local growers.

Botanical Name: Rhodiola Rosea
English Name: Goldenroot, Roseroot
Plant Part Used: Root
History of Rhodiola

Rhodiola rosea is a legendary adaptogenic tonifier that comes from the polar Arctic regions of Eastern Siberia. Also known as Golden root or Rosea, Rhodiola was highly valued by traditional Arctic tribes as a strengthening tonic to increase physical and mental stamina. Widely used by Russian athletes especially, Rhodiola supports the nervous system and helps to boost mental function by increasing blood-supply to the brain.

Rhodiola - A Powerful Adaptogen

Rhodiola is an adaptogen, it increases energy, is cardio-protective, and helps to normalize heart rate after intense exertion. Rhodiola rosea has been categorized as an adaptogen by Russian researchers due to its observed ability to increase resistance to a variety of chemical, biological, and physical stressors. Its claimed benefits include mood enhancing, maintain healthy cardiovascular function, enhance memory and maintain healthy brain function. Research also indicates Rhodiola as useful in improving work performance, improve sleep, improve appetite, reduce irritability, reduce occasional headaches and fatigue.

In research study, rhodiola resea extract was examined for its effects on the pattern of stress-induced cardiac damage, as measured by an accumulation of certain enzymes in the heart. Rhodiola rosea helped to prevent stress-induced cardiac damage. Specifically, the extract helped to prevent stress-induced release of proteins, and inhibited higher enzyme levels, both of which can damage heart tissue. These findings demonstrate stress-inhibiting and cardioprotective benefits of Rhodiola rosea.

Rhodiola Improve Mental Performance and Reduce Stress

In a human clinical research conducted at the Department of Neurology, Armenian State Medical University, Yerevan, the effect of repeated low-dose treatment of Rhodiola extract on fatigue during night duty among a group of 56 young, healthy physicians was studied. Total mental performance was evaluated measuring overall level of mental fatigue, complex perceptive and cognitive cerebral functions, such as associative thinking, short-term memory, calculation and ability of concentration, and speed of audio-visual perception. During a period of three weeks, volunteers taking Rhodiola extract is showing significant improvement in these test compared to placebo group. These results suggest that Rhodiola can reduce general fatigue under certain stressful conditions.

Rhodiola and Weight Loss

As you may know, body fat gets stored in adipose tissue. Once fat is stored in this tissue, it is hard to get rid of. That's why some people just can't seem to get rid of certain fatty spots, including "love handles" or a fatty "tire" around the abdomen. The body does possess and enzyme called hormone-sensitive lipase that is capable of breaking down fat stored in adipose tissue. But this enzyme is not especially active. This is where rhodiola rosea comes in. Extracts of rhodiola rosea have the capacity to activate hormone-sensitive lipase, thus increasing the breakdown of fat stored in adipose tissue. Rosavin specifically contributes to fat breakdown by activating hormone-sensitive lipase, thus increasing the breakdown of fat stored in adipose tissue.

Rhodiola Improves Sport Performance

According to a double blind placebo-controlled randomized study conducted in Belgium involving 24 volunteers, published on Int J Sport Nutr Exerc Metab, patients were administered with either Rhodiola rosea intake 200-mg Rhodiola rosea extract containing 3% rosavin + 1% salidroside plus 500 mg starch or placebo (700 mg starch). Over a 4 week period, volunteers taking Rhodiola is showing improvement in physical capacity, muscle strength, speed of limb movement, reaction time, and attention, compared to placebo group.
In human clinical studies, administration of rhodiola rosea extract, in combination with moderate exercise, produced significant weight loss.

**Articles**


**Research**


**Effects of alcohol aqueous extract from Rhodiola rosea L. roots on learning and memory.**

Petkov VD, Yonkov D, Mosharoff A, Kambourova T, Alov L, Petkov VV, Todorov I.

The effect of alcohol-aqueous extract (1:1) from Rhodiola rosea L. roots on the processes of learning and memory is studied on rats. Several methods of active avoidance with negative and positive reinforcements are used, as well as of passive avoidance. Using the maze-method with negative (punitive) reinforcement, it has been found that Rhodiola extract in a single dose of 0.10 ml per rat essentially improves learning and retention after 24 hours. Significant improvement of the long-term memory is also established in memory tests after 10-day treatment with the same dose of the extract. In the other two doses tested (0.02 and 1.0 ml per rat) the extract has no substantial effect on learning and memory. In a dose of 0.10 ml per rat the Rhodiola extract had a favorable effect on the training process using the "staircase" method with positive (food) reinforcement as well. With the other methods used (active avoidance method with negative reinforcement "shuttle-box" and passive avoidance methods "step down" and "step through") Rhodiola extract in the dose used (0.10 ml per rat) had no substantial effect on learning and memory (a certain deterioration of the training process was even observed using the "shuttle-box" method, while the "step-down" method resulted in deterioration of the memory). The great significance of the method used for studying the effects of the pharmacological agents on learning and memory for the results obtained is evident.


**Rhodiola rosea: a possible plant adaptogen.**

Kelly GS.

Rhodiola rosea is a popular plant in traditional medical systems in Eastern Europe and Asia with a reputation for stimulating the nervous system, decreasing depression, enhancing work performance, elimination fatigue, and preventing high altitude sickness. Rhodiola rosea has been categorized as an adaptogen by Russian researchers due to its observed ability to increase resistance to a variety of chemical, biological, and physical stressors. Its claimed benefits include antidepressant, anticancer, cardio protective, and central nervous system enhancement. Research also indicates great utility in aesthetic conditions (decline in work performance, sleep difficulties, poor appetite, irritability, hypertension, headaches, and fatigue) developing subsequent to intense physical or intellectual strain. The adaptogenic, cardiopulmonary protective, and central nervous system activities of Rhodiola rosea have been attributed primarily to its ability to influence levels and activity of monoamines and opioid peptides such as betaendorphins.


**Acute Rhodiola rosea intake can improve endurance exercise performance.**

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PURPOSE: The purpose of this study was to investigate the effect of acute and 4-week Rhodiola rosea intake on physical capacity, muscle strength, speed of limb movement, reaction time, and
METHODS: PHASE I: A double blind placebo-controlled randomized study (n=24) was performed, consisting of 2 sessions (2 days per session). Day 1: One hour after acute Rhodiola rosea intake (R 200-mg Rhodiola rosea extract containing 3% rosavin + 1% salidroside plus 500mg starch) or placebo (P, 700 mg starch) speed of limb movement (plate tapping test), aural and visual reaction time, and the ability to sustain attention (Fepsy Vigilance test) were assessed. Day 2: Following the same intake procedure as on day 1, maximal isometric knee-extension torque and endurance exercise capacity were tested. Following a 5-day washout period, the experimental procedure was repeated, with the treatment regimens being switched between groups (session 2). PHASE II: A double blind placebo-controlled study (n=12) was performed. Subjects underwent sessions 3 and 4, identical to Phase I, separated by a 4-week R/P intake, during which subjects ingested 200 mg R/P per day.

RESULTS: PHASE I: Compared with P, acute R intake in Phase I increased (p<.05) time to exhaustion from 16.8 +/- 0.7 min to 17.2 +/- 0.8 min. Accordingly, VO2peak (p<.05) and VCO2peak (p<.05) increased during R compared to P from 50.9 +/- 1.8 ml x min(-1) x kg(-1) to 52.9 +/- 2.7 ml x min(-10) x kg(-1) (VO2peak) and from 60.0 +/- 2.3 ml x min(-1) x kg(-1) to 63.5 +/- 2.7 ml x min(-1) x kg(-1) (VCO2peak). Pulmonary ventilation (p=.07) tended to increase more during R than during P (P: 115.9 +/- 7.7 L/min; R: 124.8 +/- 7.7 L/min). All other parameters remained unchanged. PHASE II: Four -week R intake did not alter any of the variables measured. CONCLUSION: Acute Rhodiola rosea intake can improve endurance exercise capacity in young healthy volunteers. This response was not altered by prior daily 4-week Rhodiola intake.


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Turmeric
Botanical Name: Curcuma longa

Curcumin is found in the spice turmeric root. Turmeric contains curcuminoids (including curcumin, demethoxycurcumin and bisdemethoxy-curcumin) which are powerful antioxidants. Curcumin is a major component of turmeric (Curcuma longa) and extensive scientific research on curcumin has demonstrated its potent antioxidant properties. Through its antioxidant mechanisms, turmeric supports colon health, exerts neuroprotective activity and helps maintain a healthy cardiovascular system.

Traditional Use of Turmeric

In the Ayurvedic medicine, turmeric is thought to have many medicinal properties and many in India use it as a readily available antiseptic for cuts and burns. Whenever there is a cut or a bruise, the
home remedy is to reach for turmeric powder. It is also used as an antibacterial agent. Ayurvedic practitioners believe that it is a cleanser for all parts of the body. Thus, apart from using in cooking, turmeric is also used as a form of digestive aids, in treating infection, arthritis, jaundice and fever.

It is taken in some Asian countries as a dietary supplement, which allegedly helps with stomach problems and other ailments. It is popular as a tea in Okinawa, Japan. It is currently being investigated for possible benefits in Alzheimer’s disease, cancer and liver disorders.

Turmeric Alzheimer Research

U.S. National Institutes of Health has four clinical trials underway to study curcumin treatment for pancreatic cancer, multiple myeloma, Alzheimer’s, and colorectal cancer. A 2004 UCLA-Veterans Affairs study involving genetically altered mice suggests that curcumin, the active ingredient in turmeric, might inhibit the accumulation of destructive beta amyloids in the brains of Alzheimer’s disease patients and also break up existing plaques. “Curcumin has been used for thousands of years as a safe anti-inflammatory in a variety of ailments as part of Indian traditional medicine,” Gregory Cole, Professor of medicine and neurology at the David Geffen School of Medicine at UCLA said.

Turmeric for pain relieve and joint health

Curcumin is thought to be a powerful antinociceptive (pain-relieving) agent. In the November 2006 issue of Arthritis & Rheumatism, a study was published that showed the effectiveness of turmeric in the reduction of joint inflammation, and recommended clinical trials as a possible treatment for the alleviation of arthritis symptoms. It is thought to work as a natural inhibitor of the cox-2 enzyme, and has been shown effective in animal models for neuropathic pain secondary to diabetes, among others.


Scientific evidence is lacking for the antiarthritic efficacy of turmeric dietary supplements that are being promoted for arthritis treatment. Therefore, we undertook studies to determine the antiarthritic efficacy and mechanism of action of a well-characterized turmeric extract using an animal model of rheumatoid arthritis (RA). The composition of commercial turmeric dietary supplements was determined by high-performance liquid chromatography. A curcuminoid-containing turmeric extract similar in composition to these supplements was isolated and administered intraperitoneally to female Lewis rats prior to or after the onset of streptococcal cell wall-induced arthritis. RESULTS: A turmeric fraction depleted of essential oils profoundly inhibited joint inflammation and periarticular joint destruction in a dose-dependent manner. In vivo treatment prevented local activation of NF-kappaB and the subsequent expression of NF-kappaB-regulated genes mediating joint inflammation and destruction, including chemokines, cyclooxygenase 2, and RANKL. Consistent with these findings, inflammatory cell influx, joint levels of prostaglandin E(2), and periarticular osteoclast formation were inhibited by turmeric extract treatment. CONCLUSION: These translational studies demonstrate in vivo efficacy and identify a mechanism of action for a well-characterized turmeric extract that supports further clinical evaluation of turmeric dietary supplements in the treatment of RA.
Turmeric extracts containing curcuminoids prevent experimental rheumatoid arthritis.

*J Nat Prod. 2006 Mar;69(3):351-5.* Funk JL, Oyarzo JN, et al. Arizona Center for Phytomedicine Research, Department of Medicine, Department of Cell Biology and Anatomy, University of Arizona, Tucson, 85724, USA.

Turmeric has been used for centuries in Ayurvedic medicine as a treatment for inflammatory disorders including arthritis. On the basis of this traditional usage, dietary supplements containing turmeric rhizome and turmeric extracts are also being used in the western world for arthritis treatment and prevention. The studies described here were undertaken to determine the in vivo efficacy of well-characterized curcuminoid-containing turmeric extracts in the prevention or treatment of arthritis using streptococcal cell wall (SCW)-induced arthritis, a well-described animal model of rheumatoid arthritis. An essential oil-depleted turmeric fraction containing 41% of the three major curcuminoids was efficacious in preventing joint inflammation when treatment was started before, but not after, the onset of joint inflammation. A commercial sample containing 94% of the three major curcuminoids was more potent in preventing arthritis than the essential oil-depleted turmeric fraction when compared by total curcuminoid dose per body weight.

**Turmeric Natural COX 2 Inhibitor**


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Turmeric (Curcuma longa) is extensively used as a household remedy for various diseases. For the last few decades, work has been done to establish the biological activities and pharmacological actions of curcumin, the principle constituent of turmeric. Curcumin has proven to be beneficial in the prevention and treatment of a number of inflammatory diseases due to its anti-inflammatory activity. Arachidonic acid-derived lipid mediators that are intimately involved in inflammation are biosynthesized by pathways dependent on cyclooxygenase (COX) and lipoxygenase (LOX) enzymes. The role of LOX and COX isoforms, particularly COX-2, in the inflammation has been well established. At cellular and molecular levels, curcumin has been shown to regulate a number of signaling pathways, including the eicosanoid pathway involving COX and LOX. A number of studies have been conducted that support curcumin-mediated regulation of COX and LOX pathways, which is an important mechanism by which curcumin prevents a number of disease processes, including the cancer. The specific regulation of 5-LOX and COX-2 by curcumin is not fully established; however, existing evidence indicates that curcumin regulates LOX and COX-2 predominately at the transcriptional level and, to a certain extent, the posttranslational level. Thus, the curcumin-selective transcriptional regulatory action of COX-2, and dual COX/LOX inhibitory potential of this naturally occurring agent provides distinctive advantages over synthetic COX/LOX inhibitors, such as nonsteroidal anti-inflammatory drugs. In this review, we discuss evidence that supports the regulation of COX and LOX enzymes by curcumin as the key mechanism for its beneficial effects in preventing various inflammatory diseases.

**Turmeric for digestive health**

Studies among animals prescribed with it suggest that turmeric acts as digestive stimulant and encourages the release of digestive enzymes that breaks down carbohydrates and fats. Thus, if you always have stomach upset, turmeric tea may be a good idea.
Andrographis Paniculata

*Andrographis paniculata*, (AP), also known commonly as "King of Bitters," is a member of the plant family *Acanthaceae*, and has been used for centuries in Asia to treat GI tract and upper respiratory infections, fever, herpes, sore throat, and a variety of other chronic and infectious diseases. It is found in the *Indian Pharmacopoeia* and is the prominent in at least 26 Ayurvedic formulas; whereas in Traditional Chinese Medicine (TCM), Andrographis is an important "cold property" herb: it is used to rid the body of heat, as in fevers, and to dispel toxins from the body. In Scandinavian countries, it is commonly used to prevent and treat common colds. Research conducted in the '80's and '90's has confirmed that *Andrographis*, properly administered, has a surprisingly broad range of pharmacological effects, some of them extremely beneficial.

What Is the Scientific Evidence for Andrographis?

Reducing Cold Symptoms

A meta-analysis (statistically rigorous review of studies) published in 2004 found seven reasonable quality double-blind, controlled trials, enrolling a total of 896 participants, evaluating the use of a proprietary andrographis extract for the treatment of acute respiratory infections.11,12,13,26 The combined results indicate that this andrographis extract is more effective than placebo for reducing symptoms.

For example, a 4-day, double-blind, placebo-controlled study of 158 adults with colds found that treatment with this andrographis significantly reduced cold symptoms. Participants were given either placebo or 1,200 mg daily of an andrographis extract standardized to contain 5% andrographolide. The results showed that by day 2 of treatment, and even more by day 4, individuals who were given the actual treatment experienced significant improvements in symptoms compared to participants in the placebo group. The greatest response was seen in earache, sleeplessness, nasal drainage, and sore throat, but other cold symptoms improved as well.

Three other double-blind, placebo-controlled studies, enrolling a total of about 400 people, evaluated a related proprietary herbal combination treatment containing both andrographis and (Somewhat confusingly, this proprietary combination is sold under the same name, “Kan Jang,” as the pure andrographis product noted above; the manufacturer regards this combination as more effective than andrographis alone, and the combination version of the product has now superceded the previous single-herb version.) Another study found this combination more effective than echinacea for colds in children.

A different formulation of andrographis has been compared to acetaminophen (Tylenol). In a double-blind study of 152 adults with sore throat and fever, participants received andrographis (in doses of 3 g per day or 6 g per day, for 7 days) or acetaminophen.16 The higher dose of andrographis (6 g) decreased symptoms of fever and throat pain to about the same extent as acetaminophen, but the lower dose of andrographis (3 g) was not as effective. There were no significant side effects in either group.

A Russian study of questionable quality apparently found andrographis extract approximately as effective as the drug amanditine for influenza infections.

Preventing Colds

According to one double-blind, placebo-controlled study, andrographis may increase resistance to colds.17 A total of 107 students, all 18 years old, participated in this 3-month-long trial that used the same proprietary extract of andrographis mentioned above. Fifty-four of the participants took two 100-mg tablets standardized to 5.6% andrographolide daily—considerably less than the 1,200 to 6,000 mg per day that has been used in studies on treatment of colds. The other 53 students were given placebo
tablets with a coating identical to the treatment. Then, once a week throughout the study, a clinician evaluated all the participants for cold symptoms.

By the end of the trial, only 16 people in the group using andrographis had experienced colds, compared to 33 of the placebo-group participants. This difference was statistically significant, indicating that andrographis reduces the risk of catching a cold by a factor of two as compared to placebo.

Avena Sativa from Herbal Powers

Avena sativa, commonly known as oats or wild oats, is an annual grass which is cultivated for its edible grain. It grows 2 to 4 feet tall with pale green, narrow, flat leaves. The grooved grain is somewhat hairy and narrow with almost parallel sides. The parts that are typically used are the seeds and stems.

Traditional Uses of Avena Sativa

Avena have been traditionally used as antispasmodic, nervine, and stimulant. It has long been used by breeders to help male animals to increase fertility. Avena Sativa is one of the best remedies to feed the nervous system when under stress and strengthen it to handle the situation. It is suggested that Avena Sativa works to calm down performance anxiety. The extract and tincture are used as nerve and uterine tonics. A tea made from the straw part of the plant has been recommended in the past for chest problems.

In Europe, the straw are used for various bath to support a number of health problems. A full bath can be used for rheumatic problems, lumbago, paralysis, liver ailments and gout, kidney, and gravel problems. It will also soften the skin and help eczema and neuralgia. A foot bath can help with tired and chronically cold feet. Avena sativa is highly nutritive and supportive of the nervous system. Avena can also be used topically for various skin diseases, flaky skin, frostbite, chilblains, wounds, and eye problems. It is great for building healthy bones, skin, hair and nails.

Avena Sativa is rich in body-building nutrients including silicon, manganese, zinc, calcium, phosphorus and Vitamins A, B1, B2 and E. In cases of sexual problems related to stress and anxiety, Avena Sativa and its compounds work as nervine relaxants to ease tension and strengthen and support the nervous system and as a tonic to promote energy to handle the stress. It is great for healthy bones, skin, hair and nails. It can also be helpful in relieving exhaustion and depression. Avena is not an aphrodisiac but will help reduce over-excitability and prolong sexual performance.

Benefits of Avena Sativa

- Increases fertility
- Improves sexual performance
- Reduces anxiety
- Increases energy level
- Reduces nicotine craving
- Detoxification
- Maintain Uterine Health
- Helpful for digestion
Traditional Use of Cinnamon

Cinnamon been used as an herbal medicine for over a thousand years. Made from the bark of a small Southeast Asian evergreen tree, it comes in oils, a powder or in rolls called quills. It's claimed to have beneficial effects for indigestion, colic, anorexia, the common cold and the flu. The Chinese have used it for thousands of years for stomach, liver conditions, diarrhea, and influenza.

Cinnamon, Insulin, and Type 2 Diabetes

Cinnamon appears to fight inflammation and help insulin, a hormone that controls blood sugar. According to Richard Anderson, PhD, CNS, of the U.S. Department of Agriculture's Beltsville Human Nutrition Research Center in Beltsville, Md, "Cinnamon has insulin-like activity and also can potentiate the activity of insulin. The latter could be quite important in treating those with type 2 diabetes. Cinnamon has a bio-active component that we believe has the potential to prevent or overcome diabetes."

Type 2 diabetes, the most common form, is when your body can't produce enough (or cannot use) insulin. It's insulin (produced in the pancreas) that takes sugar from blood to cells where it's a source of energy. Excess sugar is stored in your liver. Too little insulin? Too much sugar in your blood!

Cinnamon Actives: Proanthocyanidin

Anderson and colleagues presented two papers on cinnamon at the Experimental Biology 2006 meeting, held in San Francisco. One of Anderson's studies focused on cinnamon's insulin-like effects. In lab tests, Anderson's team found that cinnamon contains antioxidants called polyphenols that boost levels of three key proteins. Those proteins are important in insulin signaling, glucose (blood sugar) transport, and inflammatory response, the researchers write. The second study found a natural compound in cinnamon that may have insulin-like properties, call proanthocyanidin, which is a type of polyphenol. Proanthocyanidin, worms its way inside cells, where it activates the insulin receptor. Once this receptor is activated, whether by insulin or cinnamon, chemical reactions occur allowing the cell to use energy from sugar.

Cinnamon Research for Type 2 Diabetes & Lowering Cholesterol

Previously, the US Department of Agricultural also tested cinnamon on people with type 2 diabetes. 30 diabetes patients took varying daily doses (1 to 6g) of cinnamon for 40 days. The patients' insulin sensitivity improved during the study and had a significant decrease in blood glucose, triglycerides, LDL, and cholesterol. No differences were seen among the three doses of cinnamon.

Twenty days after the patients stopped taking cinnamon, those effects were fading but were still significant, meaning that they didn't seem to be due to chance, according to the study. Although the research isn't conclusive (yet), it suggests that cinnamon escorts blood sugar into the cells, making them more sensitive to the insulin that's available. Those findings were presented at the fourth International Congress Dietary Antioxidants and Trace Elements, held in Monastir, Tunisia, in April 2005.

Cinnamon and Weight Loss

Cinnamon is a potent thermogenic agent. This means it can be used as a healthy adjunct to a weight loss program that includes dietary modification and proper exercise. The
excessive consumption of simple sugars in conjunction with poor diet and sedentary lifestyles can cause unhealthy blood sugar patterns that can lead to overeating and resistance to insulin. Anything that helps support healthy blood sugar levels while providing thermogenic support can have long-lasting health benefits.

Cordyceps is one of the most unique, rare, and treasured plants used in herbal medicine. In its natural form, Cordyceps can be found only at elevations above 3500 meters in isolated areas of southwestern China. This herb is actually a type of fungus which grows on the backs of caterpillars indigenous to China, Nepal, and Tibet. Due to its rarity, Cordyceps harvested in the wild is very expensive, costing about $1000 for 100 grams. Wild cordyceps from Tibet is supposed to be the best in the world. Scientific research has proven that wild cordyceps is richer in certain components, and also that the proportions of its ingredients are different from the cultivated herb, and this might make some differences in the activity. Nevertheless, the laboratory versions of Cordyceps are still a premium and valuable tonic herb.

Used for nearly 1500 years in traditional Chinese medicine, the Cordyceps fungus has been found to be very effective in treating circulatory, respiratory, and immune system problems in addition to its most popular usage as a powerful aphrodisiac. Recent studies performed at Beijing Medical University of China and in Japan have shown a 64% success rate among men suffering from impotence vs. 24% in the placebo group.

In ancient China, Cordyceps was highly recommended as one of the most effective medicines for all illness. Due to its anti-aging and cure-all properties, it can be compared to ginseng, reishi and deer velvet. In general, cordyceps is a tonic that helps build strength, improve organic functioning, strengthen the immune system and contributes to longevity.

**Cordyceps Benefits**

Cordyceps is a powerful tonic and can help restore normal function of the body, stimulate immune response, increase energy, vitality, and longevity. Recent research has shown that cordyceps can improve sport performance and muscle-building capability. In TCM, Cordyceps has been used to help regulate blood pressure, strengthen cardiovascular system, and improving sexual energy and desire. Clinical tests performed at Hunan Medical University have shown that cordyceps is effective in relaxing the smooth muscles tissue of the penis, increasing blood flow, resulting in harder erections. A few animal studies have shown cordyceps feeding to increase the ratio of adenosine triphosphate (ATP) to inorganic phosphate (Pi) in the liver by 45-55% - an effect that may be viewed as beneficial in terms of energy state and potential for performance enhancement. Furthermore, mice fed cordyceps and subjected to an extreme low oxygen environment, were able to utilize oxygen more efficiently (30-50% increase), better tolerate acidosis and hypoxia (lack of oxygen) and live 2-3 times longer than a control group. A number of Chinese clinical studies, primarily in elderly patients with fatique, cordyceps-treated patients reported significant improvements in their level of fatigue, ability to tolerate cold temperatures, memory and cognitive capacity and sex drive.

**Cordyceps Research**
Cordyceps Helps Maintain Healthy Cholesterol Level

Several studies have demonstrated that Cordyceps sinensis helps to lower total cholesterol by 10 to 21% and triglycerides by 9 to 26%. At the same time it helps to increase HDL-cholesterol (“good cholesterol”) by 27 to 30%.

Cordyceps Maintain Healthy Immune Response

Several studies have shown Cordyceps to increase Natural Killer (NK) cells, our body's first line of defense against infections and illness. In in-vitro study, Cordyceps significantly enhance the NK cell activity in healthy individuals as well as in patients with leukemia. According to a study published in Chinese J Integrated Traditional Western Med, Cordyceps enhanced the NK cell activity in healthy individuals by 74% and increased the NK activity of leukemia patients by 400%. Similar improvements of NK cell activities were found in patients with melanoma cancer.

Cordyceps Increases Energy Level and Reduces Fatigue

Several studies with animals have demonstrated that Cordyceps sinensis increases the cellular energy production and oxygen supply. Cordyceps increases ATP synthesis, the basic unit of energy production, thereby promoting better oxygen efficiency, faster energy recovery, and reduce fatigue. In a clinical research involving elderly individuals with fatigue, after taking Cordyceps supplement for 30 days, 92% of individuals are showing reduction of fatigue, 89% showed reduction in feeling cold, 83% showed reduction in dizziness. Cordyceps has been clinically proven to increase cellular Bio-Energy by as much as 55%. In a double blind, placebo controlled investigation that involved elderly individuals, volunteers that took 3 gram of Cordyceps a day showed a marked reduction in fatigue and improvement shortness of breath.

Cordyceps Increases Endurance, Stamina, and Athletic Performance

Cordyceps help reduces muscle Soreness, enhances recovery, improves stamina and athletic performance. In a study with mice demonstrated their improved swimming capabilities after six weeks of Cordyceps supplementation compared with a control group.

Cordyceps Enhance Sexual Function

Cordyceps may help improve libido and quality of life in men & women experiencing sexual frustration. In a double blind and placebo-controlled study involving 200 men with reduced libido and other sexual problems, Cordyceps significantly improve their sexual function. 64% of the Cordyceps-users reported significant improvement in sexual function compared with 24% of the placebo group. According to a double blind, placebo controlled study published on Journal of Alternative & Complementary Medicine, 21 elderly women experiencing sexual frustration were given Cordyceps supplementation. 90% reported improvements in libido and sexual health following the use of Cordyceps, compared with none in the control group. In another human clinical study involving 189 men and women with decreased libido and desire, 66% showed improvement of symptoms and desire after Cordyceps supplementation.

Cordyceps Improve Fertility

Cordyceps help improve fertility by increasing sperm count. According to a study published on J Modern Diagnostics Therapeutics, 22 males with low sperm count were given Cordyceps supplement for 8 weeks. The result showed 33% increase in sperm count, 29% decreased in incidence of sperm malformations, and a 79% increase in survival rate.
Cordyceps Maintain Healthy Respiratory Function

Several scientific studies have demonstrated the benefits of Cordyceps sinensis in alleviating the symptoms of several respiratory illnesses including chronic bronchitis and asthma. In a double blind, placebo controlled study with 30 elderly volunteers Cordyceps significantly improved the maximum amount of oxygen these people were able to assimilate.

Cordyceps Enhanced Cardiovascular Health

Numerous studies have demonstrated the benefits of Cordyceps sinensis on heart rhythm disturbances, such as cardiac arrhythmias and chronic heart failure. In an in vivo mouse model induced with Pneumonia, research results showed that animals taking Cordyceps had a significantly greater survival rate of 20% mortality vs. 80% mortality in 30 minutes, a startling 400% improvement.

Cordyceps Maintain Healthy Liver Functions

In a research published on China J Chinese Materia Medica, that involved 33 patients with Hepatitis “B”, 8 patients with cirrhosis taking Cordyceps supplement showed 71.9% improvement on “Thymol Turbidity Test” and 78.6% improvement in “SGPT Test”, both are enzyme test showing improvement in liver functions.

Cordyceps Maintain Healthy Kidney Function

According to J Administration Traditional Chinese Med, patients with chronic kidney diseases showed 51% improvement after one month with Cordyceps supplement.

Cordyceps as Complementary Chemotherapy Supplement

Several clinical studies have been conducted in China and Japan with cancer patients. The studies were done with CSE (Cordyceps sinensis mycelium) using a therapeutic dose of 6 grams per day (≈ 4 capsules twice daily). In one study with 50 lung cancer patients administered CSE in conjunction with chemotherapy, tumors reduced in size in 46% of patients. A study in cancer patients with various types of tumors found CSE (6 g/day for over 2 months) improved subjective symptoms in the majority of patients. White blood cell counts were maintained and tumor size was significantly reduced in about half of the patients. Researchers in Japan reported that CSE enhances the general reactivity of the immune system in individuals with cancer. Mice were injected with cancerous (lymphoma) cells and then orally administered CSE. This lead to a reduction of tumor size and prolongation of the host survival time. CSE also improved the antibody responses.

Dong Quai

Dong Quai has been utilized for centuries by herbalists to support gynecological health, and has remained one of the most relied upon herbs for women, valued worldwide for supporting a healthy female cycle and easing monthly discomforts. Dong quai is considered the primary female tonifier of traditional Chinese herbalism, and is indispensable for supporting a healthy reproductive system. It is an important component of any women’s health program.
Angelica Sinensia for Women’s Health

Dong quai, derived from the root of the Chinese perennial Angelica sinensis, ranks just below ginseng as the most popular herb in China and Japan. It has often been referred to as the “female ginseng,” popular among women for centuries as a “blood tonic” and used to promote a healthy menstrual cycle and to ease normal menstrual discomfort.

Dong Quai’s Mechanism of Action

Today scientific research is helping to explain how dong quai works. Preclinical pharmacological studies have focused on specific health-promoting compounds. It appears that the principal active constituents of dong quai are Z-ligustilide, which comprises 45% to 60% of the root’s essential oil, ferulic acid, and various polysaccharides.

These studies suggest that dong quai helps dilate peripheral blood vessels and increase circulation, a key to promoting healthy gynecological function according to traditional Chinese herbalism. Dong quai is also believed to have antispasmodic actions, particularly on smooth muscles— which would explain its ability to ease menstrual cramps.

Additional Benefits

Preclinical studies also suggest that dong quai may exert a beneficial cardiovascular effect, through stimulation of circulation, decreased myocardial oxygen consumption, and decreased vascular resistance. In addition to its traditional use as a female tonifier, current research is now focusing on its cardiovascular and liver protective effects, and its role as an antioxidant, antispasmodic, and immunomodulator.

Essential fatty acids

Essential fatty acids & phospholipids are primary constituents of cell membranes, and as such they are vital to the makeup of the human body. Essential fatty acids are used to generate certain intra-cellular hormone-like substances, including prostaglandins and leukotrienes, which are responsible for regulating key bodily processes.

Lipids, Cell Membranes & Eicosanoids

Almost by definition, life is composed of cells, and cells are defined by membranes. One theory suggests that, around four billion years ago, self-replicating molecules, similar to the ribonucleic acid or RNA in our own cells, were synthesized from organic molecules. These self-replicating molecules adapted to changes in their environment to increase their potential for survival. Thus began the process of evolution that has led, over the eons, to us. One turning point was when these molecules developed membranes - envelopes which could help concentrate chemicals needed for the cell's survival. There existed in the "primordial soup"substances uniquely suited to this purpose: a class of organic compounds we call lipids . Lipids are more commonly called fats, and in this health and image-conscious age people often think of them as something to be avoided. However, the word fat refers to a variety of substances with a diverse range of chemical properties, which are essential for survival and well-being . The simplest lipids, fatty acids such as palmitic acid, consist of a hydrocarbon "tail" connected to a carboxyl group (COOH). The majority of lipids in food and in the human body occur in
the form of triglycerides - a molecular configuration in which three fatty acid chains are attached to a 'backbone' of glycerol (an organic alcohol composed of a 3-carbon chain with an alcohol group attached to each carbon). The major roles of lipids can be described as energy and storage, structural, and metabolic.

**Energy and Storage**

Molecules can contain more or less chemical energy. In living systems most of the energy needed to drive chemical reactions is derived from oxidation. Oxygen, the ultimate electron acceptor, is a strong oxidant: it has a marked tendency to attract electrons, becoming reduced in the process. When a molecule undergoes a chemical reaction from a high-energy reduced state to a low-energy oxidized state, energy is released. This is what happens in a fire: the high-energy carbohydrates in wood, such as glucose, react with oxygen, releasing heat and the low-energy molecules of carbon dioxide and water. This is similar to what happens in metabolism. Most of the carbon in a fatty acid chain is highly reduced, which makes fats more energy-rich than the other organic molecules that can be burned as food. This is what we mean when we say fats are high in calories - a measure of the amount of energy released when a substance is oxidized. Fats contain more than twice as many calories as carbohydrates. This makes fats an important storage fuel for most of the body.

**Structure**

Another important class of lipids in the human body consists of the phospholipids. Like triglycerides, phospholipids contain fatty acid chains - in this case two, one saturated and one unsaturated, attached to a glycerol backbone. Unlike triglycerides, in phospholipids the third carbon of the glycerol molecule is attached to a phosphate (a molecular group that contains phosphorus and oxygen), which is in turn attached to either an amino acid or, in the case of phosphatidyl choline, a molecule of the B-vitamin-like substance, choline. Their unique molecular structure makes phospholipids amphipathic, which means 'likes both':

- The phosphate-containing head group is strongly dipolar (it has positive and negative charges and can mix with water, and thus is hydrophilic, which means 'water-loving').
- The two fatty acid chains make up a long tail group which is nonpolar (it has no charge and cannot mix with water, and thus is hydrophobic, which means 'water-hating').

Fats, being hydrophobic, tend to separate out from water. When fat is mixed with phospholipids in the presence of water, the phospholipid molecules attach themselves to the molecules of fat and bring them into the water solution, enabling the fats to dissolve in water.

Phospholipids form a structure called a lipid bilayer, a two-ply sheet of phospholipid molecules in which the hydrophilic head groups face outward and are in contact with the water, and the hydrophobic tails face each other on the inside of the bilayer. This structure is one of the key constituents of the cell membranes that surround every living cell.

The lipid bilayer of cell membranes is a fluid in which membrane-embedded proteins "float." These proteins serve a wide variety of different functions. Some are enzymes, serving to carry out chemical reactions in the adjacent solution. Some are involved in signaling, in which a biochemical action in a cell is 'commanded' by means of a hormone or some such other signaling molecule. Still others are involved in transporting substances across the membrane, into or out of the cell.

The functions of membrane-embedded proteins are dependent on a very precise balance of phospholipids for their function. Phosphatidyl serine, for instance, has a negatively-charged head group that associates preferentially with a class of membrane-bound proteins called ATPases. ATPases regulate, among other things, the balance of sodium and potassium in intra- and extracellular fluids, a balance that is necessary for the integrity of our cells and also for the electrochemical impulses that make up our thoughts and feelings. Without phosphatidyl serine, these vitally important membrane-embedded proteins could not function.
Cholesterol is a waxy substance that is essential to the structure of cell membranes, which depend for their function on a delicate balance between fluidity and solidity. Cholesterol provides a semifluid matrix, as well as enhancing membrane fluidity. About 80% of the cholesterol the body uses is manufactured by the liver; the other 20% is consumed in food. Elevated blood cholesterol levels are associated with heart disease. Saturated fats are converted into cholesterol more readily than unsaturated fats, and polyunsaturated fats usually depress blood cholesterol concentration to some degree. Researchers have thus recommended that people lower their consumption of saturated fats and increase their consumption of polyunsaturated fats. A process called hydrogenation, in which hydrogen molecules are added, is used to harden these unsaturated fats to create solid spreads, such as margarine. This process causes formation of altered fats called trans fatty acids. Although the results are not conclusive, human and animal studies have pointed to possible deleterious effects from consumption of trans-fatty acids, which are estimated to account for 5.5% of all fats consumed by Americans. These studies include one in men and women that showed harmful effects of trans-fatty acids on blood cholesterol ratios.

Metabolic

When each link of a fatty acid chain contains an atom of hydrogen, as in palmitic acid, that fatty acid is said to be saturated. If two carbon links are double bonded to each other, each has one less hydrogen atom, and the fatty acid chain is said to be unsaturated. If a fatty acid contains one double bond, it is said to be monounsaturated, and if it has two or more double bonds it is said to be polyunsaturated. Certain polyunsaturated fatty acids cannot be manufactured by the body and must be obtained from the diet. These nutrients are called essential fatty acids and are necessary for the normal function of all tissues. The essential fatty acids fall into two categories:

1. Those with an unsaturated double bond between the 6th and 7th carbon in the chain, called omega-6 fatty acids, which include linoleic acid (LA), gamma-linolenic acid (GLA), and arachidonic acid (AA).

2. Those with a double bond between the 3rd and 4th carbons, called omega-3 fatty acids, which include alpha-linolenic acid (ALA), eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA).

In addition to being phospholipid precursors, essential fatty acids can be converted to a class of hormone like intracellular messengers called eicosanoids. The physiologic effects of eicosanoids are potent in minute quantities. Their effects are so powerful that they need to be produced near the site of their action and are quickly inactivated. The important eicosanoids include the thromboxanes, leukotrienes and prostaglandins (PGs). Prostaglandin molecules consist of a five-carbon ring with two side chains. They can be distinguished from each other by numbers that refer to the number of double bonds in their molecular side chains: 1-series PGs have one double bond, 2-series have two double bonds, and so on. Prostaglandins mediate a variety of bodily processes, including inflammatory reactions, blood vessel contraction and dilation, and platelet aggregation. The different PGs have different effects on the body, and different essential fatty acids act as precursors for different PGs.

Important essential fatty acids in humans are the omega-6 fatty acids, which include linoleic acid (LA), gamma-linolenic acid (GLA), and arachidonic acid (AA). 1-series PGs are derived from GLA and tend to cause blood vessels to dilate and reduce the stickiness of platelets (cell fragments in the blood that help initiate blood clotting). 2-series PGs are derived from arachidonic acid and tend to increase platelet stickiness and cause blood vessels to constrict. Meat and dairy products are dietary sources of the PG2 precursor, arachidonic acid; American diets tend to be rich in these foods. The rate-limiting step for production of GLA in the human body is an enzyme called delta-6-desaturase (D6D). The action of this important enzyme can be blocked by a number of different lifestyle factors, including a diet high in saturated or trans-fatty acids and chronic alcohol consumption. A modest increase in consumption of GLA will significantly increase the ratio of GLA to AA in the tissues, which may have a beneficial effect on the homeostasis of the cardiovascular system. Supplementation with omega-3 fatty acids, such as flaxseed oil or fish oil, is beneficial for similar reasons. Omega-3 fatty acids are precursors for 3-series PGs, which reduce platelet stickiness. Series-3 PGs also tend to inhibit conversion of AA into its metabolites, the 2-series PGs.
The lipid composition of our diets has changed radically in the 20th century. Our intake of saturated fats has increased dramatically, and trans fatty acids, which did not exist before the advent of modern food processing technology, now form a major part of our diets. We eat less fish and green leafy vegetables, important sources of omega-3 fatty acids, than our ancestors did. Far from being an inert, homogeneous substance, fat is dynamic and varied - a subtle and interactive matrix for many of the biological processes taking place in our bodies, minute by minute.

Ginkgo Biloba

The remarkable effects of ginkgo biloba on brain function and circulation have made this venerable tree one of the most extensively studied and widely used botanicals in the world. Millions of Americans and Europeans now enjoy the benefits of ginkgo for memory, cognitive function, circulatory disorders, and conditions of the eyes and ears. No other known circulation enhancer, natural or synthetic, can increase blood flow not only to healthy areas of the brain, but also to areas already damaged by disease. In addition, ginkgo's powerful antioxidant effects have earned it an international reputation as an "anti-aging" herb among young and old alike.

Ginkgo Biloba has been used in TCM to improve the heart and lungs function, to relieve coughs, asthma, and allergic inflammations. Scientists think this function, along with a potential ability to dilate blood vessels, accounts for its record of use in treating asthma in China for thousands of years. Ginkgo biloba leaves extract has been shown to dilate blood vessels, and improve cognitive function. Ginkgo has been extensively researched for its possible benefits to the elderly. Studies indicate ginkgo has the ability to increase circulation which can lead to enhanced memory. Ginkgo is a powerful antioxidant and contributes to the oxidation of free radicals which are believed to contribute to premature aging. Antioxidants also protect the eyes, cardiovascular system and central nervous system. It may also help control the transformation of cholesterol to plaque associated with the hardening of arteries.

Gingko biloba's beneficial affect on improving blood circulation may have positive benefits for sexual dysfunction. In one open clinical trial involving 60 patients having erectile dysfunction, 50% of the patients regained potency after six months of treatment with Ginkgo Biloba. Ginkgo is slow acting, taking four to eight weeks before benefits may be noticed. Improvements are gradual, but continue for up to a year or more.

Benefits of Ginkgo Biloba:

(1) Improves memory and other cognitive functions
(2) Enhances circulation to the brain, heart, limbs, ears and eyes
(3) May help reduce cardiovascular risks
(4) Potent antioxidant effects
(5) Used in treating cerebral insufficiency, senile dementia, Alzheimer's disease
(6) Peripheral arterial disease and certain eye and ear disorders

Ginkgo and Cerebral Brain Disorder Research
In a multicenter, double-blind, Ginkgo versus placebo trial involving 166 patients, Ginkgo biloba extract is found to be effective against cerebral disorders due to aging 3 months after treatment and continued to increase during the following months. Taillandier J, Ammar A, Rabourdin JP, Ribeyre JP, Pichon J, Niddam S, Pierart H. Presse Med. 1986 Sep 25;15(31):1583-7. French.

Ginkgo Improve Cognitive Function

Ginkgo biloba extract has been reputed to ameliorate cognitive decline in the elderly and slow cognitive deterioration in patients with dementia of the Alzheimer’s type. Ginkgo remains as one of the most popular plant extracts to alleviate symptoms associated with a range of cognitive disorders such as Alzheimer's disease, vascular dementia and age-related amnesic conditions. Ginkgo is known to contain a range of chemically active components that have antagonistic effects on platelet-activating factor, free-radical scavenging activity (antioxidant) and direct effects on the cholinergic neurotransmitter system. In a 30-day randomized, double-blind, placebo-controlled clinical trial in which 61 participants were administered with various neuropsychological tests before and after treatment. Statistical analysis indicated significant improvements in speed of information processing working memory and executive processing attributable to the Ginkgo Biloba Extract. Stough C, Clarke J, Lloyd J, Nathan PJ. Int J Neuropsychopharmacol. 2001 Jun;4(2):131-4.

Ginkgo Reduces oxidative free radicals in Alzheimer's disease

The role of amyloid beta-peptide (Abeta) in the free-radical oxidative-stress model of neurotoxicity in Alzheimer's disease (AD) has received much attention recently. Treatment of the cells with Ginkgo biloba extract significantly reduce the levels of hydrogen peroxide related reactive oxygen species. Among the Ginkgo active components tested, kaempferol and quercetin provided maximum attenuation. Smith JV, Luo Y. J Alzheimers Dis. 2003 Aug;5(4):287-300.

Gingko Reduces Leg Pain associated with Intermittent Claudication

Because of its effects on the circulatory system, ginkgo may also ease the leg pain that arises from intermittent claudication and similar disorders. One study even found that ginkgo performed as well as a leading prescription medication for treating intermittent claudication.

Ginkgo Improves Antidepressant-induced Sexual Dysfunction

Ginkgo has also been used to treat impotence, especially when associated with antidepressant therapy. In an open trial ginkgo biloba was found to be 84% effective in treating antidepressant-induced sexual dysfunction predominately caused by selective serotonin reuptake inhibitors (SSRIs, N = 63). Women (n = 33) were more responsive to the sexually enhancing effects of ginkgo biloba than men (N = 30), with relative success rates of 91% versus 76%. Ginkgo biloba generally had a positive effect on all 4 phases of the sexual response cycle: desire, excitement (erection and lubrication), orgasm, and resolution (afterglow). Patients exhibited sexual dysfunction secondary to a variety of antidepressant medications including selective serotonin reuptake inhibitor (SSRIs), seroton and nonrepinephrine reuptake inhibitor (SNRIs) monoamine oxidase inhibitor (MAOIs), and tricyclics. Dosages of ginkgo biloba extract ranged from 60 mg qd to 120 mg bid (average = 209mg/d). Cohen AJ, Bartlik B J Sex Marital Ther. 1998 Apr-Jun;24(2):139-43.

Ginkgo as Antioxidant

Ginkgo is an antioxidant, giving it the ability to help rid the body of free radicals and thus lessen the risk of chronic degenerative diseases. Also due to the antioxidant activity of ginkgo, it may help treat macular degeneration and decrease the damaging effects of radiation, chemotherapy, and certain medications. Enhanced cell death and elevated levels of reactive oxygen species (ROS) play a major
role in aging. Several neurodegenerative diseases are associated with increased oxidative stress and cell death in neuronal tissue. Antioxidative treatment has neuro-protective effects. Mice were treated daily with 100 mg/kg Ginkgo Extract for two weeks showed significant reduction in ROS induced cell death. J Neural Transm. 2001;108(8-9):969-78.

Common Name: **Vitis vinifera**

The flavonoid-rich active compound in grape seed is one of nature's most potent antioxidant. Grape seeds are an excellent source of oligomeric proanthocyanidins (OPC's) and have been the subject of clinical research in France for their antioxidant activity. Proanthocyanidins, a group of polyphenolic bioflavonoids, have been reported to exhibit a wide range of biological, pharmacological and chemoprotective properties against oxygen free radicals. Grape seed extract may effectively penetrates cell membranes throughout the body with its antioxidant properties. It can even cross into the brain (traversing the blood-brain barrier) to protect brain cells from free-radical damage.

According to a study published on Res Commun Mol Pathol Pharmacology, At a 100 mg/l concentration, Grape Seed Extract exhibited 78- 81% inhibition of superoxide anion and hydroxyl radical. Under similar conditions, vitamin C inhibited these two oxygen free radicals by approximately 12-19%, while Vitamin E inhibited the two radicals by 36-44%. The combination of superoxide dismutase (SOD)and catalase inhibited superoxide anion by approximately 83%, while mannitol resulted in an 87% inhibition of hydroxyl radical. The results demonstrate that Grape Seed Extract is a more potent scavenger of oxygen free radicals as compared to vitamin C and Vitamin E, as almost as strong as SOD, and just a little weaker compared to mannitol.

**Benefits of Grape Seed Extract:**

- **Promote Development of Collagen:** Studies suggest that the active components of grape seed inhibit the destruction of collagen structures. Support of collagen structures is important to the overall health of the tiny capillaries that supply energy to the body’s tissues. Studies involving people with various circulation problems have showed that majority of the people taking the grape seed extract are showing improvement in their condition.

- **Potent Antioxidant:** Grape seed extract are naturally rich in these antioxidants, with an extra-ordinary class of bioflavonoids called proanthocyanidins that are even more powerful than vitamins E and C. OPC may scavenge many types of harmful free-radicals that can damage cell
membranes while supporting healthy blood flow.

- **Anti-inflammatory:** Grape seed extract may inhibit the release of hormone-like substances called prostaglandins, a pain and inflammation-causing chemical.

- **Healthy Skin:** Grape Seed Extract are also naturally high in silicon, a mineral essential for healthy, soft, smooth skin. Grape Seed Extract may keep collagen, elastin and hyaluronic acid within the skin in good shape by blocking enzymes that might disrupt their chemical structure. Its flavonoids also inhibit allergic reactions that can generate skin problems.

- **Radioprotective Effects:** Grape Seed Extract (92% proanthocyanidins) was found to be more radioactive protective against chromosomal damage induced by X-rays, compared to rutin, dimethyl sulfoxide (DMSO), ascorbic acid, 6- n-propyl-2-thiouracil-6c (PTU), and diosmin. This may be due to the antioxidant property of Grape Seed Extract and its ability to scavenge free radicals.

- **Protectant to the heart:** Grape Seed Extract is a potent antioxidant that may prevent the plaque development that can clog arteries and provide protective support to the cardiovascular system.

- **Improve HDL Cholesterol:** Other studies have suggested that using 2 tablespoons a day of grape seed oil (which is related to grape seed extract) to replace other oils in cooking could increase HDL (“good”) cholesterol by 14% and reduce triglycerides by 15% in just four weeks.

- **Protectant to the Eye:** Grape seed extract improves blood flow in the eye’s tiny vessels and warding off the free-radical damage that cause eye macular degeneration. In addition, findings of one recent study indicate that taking 300 mg of Grape Seed Extract daily, will ease eyestrain and enhance perception of contrast after just 60 days, especially useful for people who stare at computer monitors for extended periods.

**Recomended Dosage:** Always use a grape seed extract that is standardized to contain 92% to 95% Proanthocyanidin.

- For antioxidant and anti-aging benefits: Take 100 mg each morning. Smokers should take 100 mg three times a day.
- For Eye health: Take 100mg-200mg once a day.
- For Healthy skin: Take 100mg twice a day.
- For Cardiovascular health: Take 100mg twice a day.

**Research**

*Polyphenol glucosylating activity in cell suspensions of grape (Vitis vinifera).* Krasnow MN, Murphy TM. Division of Biological Sciences, University of California, One Shields Ave, Davis, CA, USA, Jun 2004.


*Major flavonoids in grape seeds and skins: antioxidant capacity of catechin, epicatechin, and gallic acid.* Yilmaz Y, Toledo RT. Department of Food Science and Technology, The University of Georgia, Athens, Georgia, USA, Jan 2004.


**Articles**


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**Family:** *Sapindaceae*  
**Genus:** *Paullinia*  
**Species:** *Cupana*  
**Synonyms:** *Paullinia sorbilis*  
**Common Names:** *Guarana, guarana kletterstrauch, guaranastruik, guarana, quarane, cupana, Brazilian cocoa, uabano, uaranzeiro*  
**Part Used:** *Seed, fruit*
Guarana, a natural herb imported from Brazil, has been used for centuries by indigenous people of the Amazon as an energizer. Guarana is used primarily in the same manner as coffee or tea, as a safe and convenient stimulant due to its caffeine content. Research has shown Guarana to be a great stimulant, thermogenic, appetite-suppressing and diuretic, which makes guarana an ideal supplement for overall workout and fitness purposes.

Guarana is also high in antioxidants, a good memory enhancer, used as nervine(balances/calms nerves), and is cardiotonic (tones, balances, strengthens the heart).

Guarana seeds contain up to 4-8% caffeine (25,000 to 75,000 ppm), as well as trace amounts of theophylline (500 to 750 ppm) and theobromine (300 to 500 ppm). They also contain large quantities of alkaloids, terpenes, tannins, flavonoids, starch, saponins, and resinous substances.

The xanthine alkaloids (caffeine, theophylline, theobromine) are believed to contribute significantly to guarana’s therapeutic activity. In clinical studies, theophylline stimulates the heart and central nervous system, enhances alertness and alleviates fatigue. It also has strong diuretic activity and reduces constriction of the bronchials, making it useful in asthma.

Research has found guarana to be as an effective energy tonic, increase mental acuity, and to enhance long-term memory. An in vivo research study has shown guarana to increase physical activity of rats, increase physical endurance under stress, and increase memory with single doses as well as with chronic doses. The study also revealed that a whole-seed extract performed more effectively than did a comparable dosage of caffeine or ginseng extract. The plant also was found to enhance memory retention and to have an anti-amnesic activity in mice and rats.

**Contraindications:**

- Not to be used during pregnancy or while breast-feeding.
- Guarana is a caffeine-based stimulant, and as such, people have varying levels of tolerance. About 15% of adults are sensitive to caffeine. Excessive consumption of caffeine is contraindicated for persons with high blood pressure, cardiac disorders, diabetes, ulcers, epilepsy, and other disorders.

**Research**

Effect of guarana on exercise in normal and epinephrine-induced glycogenolytic mice.
Miura T, Tatara M, Nakamura K, Suzuki I. 
Department of Clinical Nutrition, Suzuka University of Medical Science, Faculty of Health Science, Mie, Japan. June 1998.

Weight loss and delayed gastric emptying following a South American herbal preparation in overweight patients. 
Andersen T, Fogh J. 
Department of Ultrasound, Medical Center Charlottenlund, Trunnevagen 4A, DK 2920, Charlottenlund, Denmark. Jun 2001.

Extraction of methylxanthines from guarana seeds, mate leaves, and cocoa beans using supercritical carbon dioxide and ethanol. 
Saldana MD, Zetzl C, Mohamed RS, Brunner G. 
Faculty of Chemical Engineering, State University of Campinas, C.P. 6066, CEP 13083-970, Campinas, SP, Brazil. Apr 2002.

Articles

Epimedium Sagittatum Extract
(Common Name: Horny Goat Weed)

Botanical name: Epimedium sagittatum

Common name: Horny goat weed

Part(s) used: Leaf

Traditional Use of Epimedium

Known also as Epimedium or Yin Yang Huo, horny goat weed was first described in ancient classical Chinese medicinal texts. Today, horny goat weed holds an important place in Traditional Chinese Medicine and is gaining popularity around the world. Used by practitioners for over 2,000 years, horny goat weed is several species of epimedium, a leafy plant which grows in the wild, most abundantly at higher altitudes. The leaves of the plant contain a variety of flavonoids, polysaccharides, sterols and an alkaloid called magnaflorine. And while the exact way that horny goat weed works remains unknown, the plant has long been employed to restore sexual fire, boost erectile function, allay fatigue and alleviate menopausal discomfort.

Benefits of Epimedium

- Boosts libido (sex drive)
- Increases energy levels
- Enhances recovery from exercise (via cortisol-control)
- Enhance Sexual desire

Mechanism of Action for Epimedium
Studies have shown that Epimedium increases sexual activity in animals and humans, improves sperm production and has a moderate androgen-like influence on the testes, prostate gland, and anal muscles, thereby influencing sexual desire and activity.

Research has also shown that Horny Goat Weed can inhibit an enzyme called acetylcholinesterase (AChE). AChE rapidly stops neurotransmission at cholinergic synapses like those found in the brain and at neuromuscular junctions, which are needed for speedy responses in the neuromuscular system. By inhibiting AChE, Horny Goat Weed supports higher levels of the key cholinergic neurotransmitters associated with sexual arousal.

Epimedium might have AMO (mono-amine-oxidase-ihibitor) activity. In trials they showed that levels of noradrenaline, adrenaline, serotonin and dopamine levels were all elevated in animals given Epimedium. High dopamine levels encourage the release of leutenizing hormone (LH) from the pituitary gland. LH in turn stimulates the testes to produce more testosterone; this may help to explain the pro-sexual effects. Epimedium also works by stimulating the sensory nerves throughout the body, particularly in the genital region. Additionally, Epimedium has powerful immune stimulating properties.

**Side effects of Epimedium**

Very high doses of epimedium can cause side effects of overstimulation, rapid heart beat, and perhaps heart palpitations.

**Epimedium Research**

*Effects of icariin on cGMP-specific PDE5 and cAMP-specific PDE4 activities.*
Zhonghua Yi Xue Za Zhi. 2004 Jan;84(2):142-5.

To clarify the mechanism of the therapeutic action of icariin on erectile dysfunction. PDE5 was isolated from the human platelet and PDE4 from the rat liver tissue. Icariin and papaverine showed dose-dependent inhibitory effects on PDE5 and PDE4 activities. Icariin is a cGMP-specific PDE5 inhibitor that may be developed into an oral effective agent for the treatment of erectile dysfunction.

*Clinical and experimental research of Epimedium brevicornum in relieving neuroendocrino-immunological effect inhibited by exogenous glucocorticoid*
Cai D, Shen S, Chen X.
Huashan Hospital, Shanghai Medical University, Shanghai (200040).

**OBJECTIVE:** To study protective effect of Epimedium brevicornum (EB) on hypothalamus-pituitary-adrenal-thymus (HPAT) axis inhibited by exogenous glucocorticoid. **METHODS:** In clinical research, variation of cortisol, adrenocorticotrophin (ACTH), lymphocyte proliferative reaction were observed before and after medication in 65 patients took prednisone, and were randomly divided into Fufang prednisone group (mixture of prednisone and EB) and prednisone group. An experimental model of HPAT axis inhibited by corticosterone (CORT) was established to observe the effect of EB on relevant indices of HPAT axis. **RESULTS:** The level of ACTH and CORT in plasma decreased and lymphocyte proliferative reaction reduced in patients (P < 0.05). In experimental study, monoaminic transmitters activated in hypothalamus; weight of pituitary, adrenal and thymus decreased; number of CRH positive neurons in hypothalamic paraventricular nucleus, CRH positive neurofibrilin median eminence and anterior pituitary ACTH positive secretory cells decreased; adrenal fasciculate zone and thymus cortex atrophies; NK cell cytotoxicity and the level of IL-2 and gamma-IFN which were produced by lymphocytes reduced in CORT-rats (P < 0.05). There were significant difference between Fufang prednisone group (clinical research) or EB group (experimental research) and CORT control groups, P
< 0.05. **CONCLUSION**: EB could relieve neuroendocrino-immunological effect inhibited by exogenous glucocorticoid.

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**Tomato Lycopene Complex Benefits Skin**

A double blind, placebo-controlled study which demonstrated supplementation with Lycopene tomato extract helped protect the skin against damage from UV radiation by reducing sunburn cell formation and protecting the skin’s immune system slowing down the depletion of Langerhans cells, following exposure to UVB/UVA solar simulator.

Sunburn cell formation is indicative of photo-damage to the skin and depletion of Langerhans cells negatively affects the important immune function of the skin. Oral supplementation with an antioxidant-rich, natural tomato extract can help protect the health and immune integrity of the skin.

Subjects in this study consumed their normal diet, supplemented with Lyc-O-Mato capsules (10mg/d of lycopene) or a placebo for 10 weeks. At the end of the study period subjects were exposed to UV radiation from a solar simulator, following which, skin cells were sampled and assessed. The Lyc-O-Mato group showed a sunburn cell count six times lower than in the placebo group, and showed evidence of reduced depletion of Langerhans cells.

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**Melatonin**

Melatonin is a hormone that is produced by the pineal gland in the brain. Its secretion is inhibited by environmental light and stimulated by darkness. By the age of 60, a person's natural production of melatonin decreases significantly. Melatonin has received substantial publicity for its ability to regulate natural sleep patterns and as an anti-oxidant. Low levels of melatonin in humans have been associated with depression, fibromyalgia, insomnia, some seizure disorders, and other conditions. Melatonin does not occur in the diet, making supplementation the only source outside the body. Supplemental melatonin should be synthetic since organic melatonin derived from animals carries the risk of possible contamination with viruses and other toxins.

**Popular Uses for Melatonin**

- **Insomnia (0.5mg to 5mg at bedtime)**: Melatonin is best known for its ability to help people get a more restful night’s sleep. Research indicates that low melatonin levels are a frequent cause of insomnia in the elderly. Studies of low dose, oral melatonin (0.3 -1.0mg.) in healthy adult volunteers
given melatonin consistently shows that time to sleep onset, stage-2 sleep, and REM sleep are decreased without affecting the percentage of time in REM sleep or alertness after waking. Further research indicates that melatonin supplementation can induce sleep in people of all ages and be of benefit to women experiencing menopause related insomnia.

- **Jet Lag (0.5mg to 5mg at bedtime for up to 5 days):** Studies showed that melatonin can minimize jet lag symptoms such as loss of appetite, distorted estimation of time, distance and space, irritability, gastrointestinal disturbances, disorientation, difficulties concentrating, depression, and sleep disorders. Many top athletes take melatonin regularly to reduce the negative symptoms associated with jet lag.

- **Anti-oxidant:** Melatonin has been reported to be an effective free radical scavenger. The studies reviewed indicate that providing supplemental melatonin during periods of massive free radical production greatly lowers the resulting tissue damage due to free radicals during an antioxidant challenge. Melatonin is readily absorbed and crosses the blood-brain barrier and the placenta, and it seems to enter all parts of every cell where it prevents oxidative damage.

- **Growth Hormone:** Studies showed that nocturnal increase of melatonin may influence pituitary hormone secretion. Melatonin reportedly regulates the release of growth hormone in men. In a study with new born rats, Melatonin prevents phototherapy-induced hypocalcemia (low calcium levels) suggesting that Melatonin may have an affect on bone metabolism in humans.

- **Melatonin and Women’s Health:** There is a distinct level of Melatonin between premenopausal women and postmenopausal women. Studies show that menopausal women taking melatonin reported a better mood and less signs of depression. Low melatonin levels in women may be correlated with increased breast cancer risk. Recent studies suggest that melatonin may inhibit the growth of breast cancer cells and may enhance the effectiveness of certain chemotherapy drugs.

Recommended Dosage: 0.5 to 3mg daily 30 minutes before bedtime. Take 3 mg in case of resistant insomnia, as anti-oxidant or as preventive treatment of postmenopausal osteoporosis. Melatonin should be used as needed only. Long term side effects of Melatonin over a year has not been studied. Melatonin should not be used in children unless recommended by your physician.

Side Effects: Light drowsiness may persist on waking up the day after the intake. Some other rare side effects have been reported, such as nausea, headache and stomach ache.

**MSM (methylsulfonylmethane)**

Methylsulfonylmethane (MSM, or dimethylsulfone) is an organosulfur compound with the formula (CH3)2SO2. It occurs naturally in some primitive plants and is present in small amounts in many foods and beverages and it is sold as a dietary supplement. MSM is a popular dietary supplement promoted for a variety of conditions including pain, inflammation, allergies, arthritis, and the maintenance of normal keratin levels in hair, skin and nails.

**MSM as Dietary Sulfur**

MSM serves as an important source of bioavailable dietary sulfur, an element that plays a critical role in maintaining the integrity and elasticity of connective and other tissues. It is an important component of proteins found throughout the body, such as in hair, nails, skin and tendons. Sulfur also is found in insulin hormone and bile acid.
**MSM Research for Osteoarthritis**

The organic compound MSM (methylsulfonylmethane) supplies the body with natural sulfur, which plays a major role in cartilage formation, and has been shown to have anti-inflammatory and antioxidant mechanisms.\(^1\) MSM modified immune responses in mice that were induced with arthritis, diminishing the arthritic deformation and swelling induced by type II collagen injections.\(^2\) Animal trials have also confirmed the efficacy of MSM in suppressing UV-induced skin inflammation and swelling reactions, suggesting it has anti-inflammatory activities and mitigates immune reactions that can contribute to inflammation.\(^3\)

There have been a few clinical trials as well. An unpublished, double blind study using OptiMSM found patients with degenerative arthritis taking 750 mg/d showed an 80 percent improvement after six weeks. Follow-up work in a 12-week pilot clinical study found adults with mild to moderate knee OA who took 3 g twice daily of MSM (as OptiMSM) had statistically significant reductions in pain and in difficulty performing activities of daily living.\(^4\) And research out of Nizam’s Institute of Medical Sciences, Hyderabad, India, found combining 500 mg of MSM tid and 500 mg glucosamine tid for 12 weeks provided a significantly greater decrease in joint swelling and pain intensity among patients with mild to moderate OA than either therapy alone; both MSM and glucosamine alone had greater effects than placebo.

**Efficacy of methylsulfonylmethane (MSM) in osteoarthritis pain of the knee: a pilot clinical trial.**

*Osteoarthritis Cartilage.* 2006 Mar;14(3)286-94.

Fifty men and women, 40-76 years of age with knee osteoarthritis pain were given a MSM supplement 3 grams twice a day for 12 weeks. Outcomes included the Western Ontario and McMaster University Osteoarthritis Index visual analogue scale (WOMAC), and patient and physician global assessments. Compared to placebo, patients given a MSM supplement produced significant decreases in WOMAC pain and physical function impairment. No notable changes were found in WOMAC stiffness and aggregated total symptoms scores. MSM also produced improvement in performing activities of daily living when compared to placebo. MSM 3 grams twice a day improved symptoms of pain and physical function during the short intervention without major adverse events.

**A multi-centered, open label trial on the safety and efficacy of methylsulfonylmethane in the treatment of seasonal allergic rhinitis.**

Barrager E, Veitmann JR, Schauss AG, Schiller RN.


In a open-label study of 55 patients with seasonal allergic rhinitis (SAR; hayfever), MSM at 2600mg/day significantly reduced upper and total respiratory symptoms within 7 days; lower respiratory symptoms were significantly improved from baseline by week 3. No significant changes were observed in plasma IgE or histamine levels. Few side effects were associated with the use of MSM and no patient dropped out of the study due to adverse reactions. Energy levels increased significantly by day 14. The results suggest that MSM may be an efficacious in reducing symptoms associated with SAR.

**Randomised, double-blind, parallel, placebo-controlled study of oral glucosamine, methylsulfonylmethane and their combination in osteoarthritis.**


Randomized, double-blind trial comparing MSM, glucosamine, both, or placebo for osteoarthritis of the knee. Approximately 30 patients per group. Dose was 1,500 mg per day for 12 weeks. The efficacy parameters studied were the pain index, the swelling index, visual analogue scale pain intensity, 15m walking time, the Lequesne index, and consumption of rescue medicine. There were statistically significant decreases in pain with Glu and with MSM respectively. The
combination treatment resulted in a more significant decrease in the mean pain index than either treatment alone. Conclusion: Glu, MSM and their combination produced an analgesic and anti-inflammatory effect in osteoarthritis. Combination therapy showed better efficacy in reducing pain and swelling and in improving the functional ability of joints than the individual agents. In reality, however, this was an exceedingly poorly reported study and these conclusions must be considered dubious.

Botanical Name: *Urtica dioica*
Common Name: *Stinging nettle*

Part Used:

**Traditional Uses of Stinging Nettle**

Stinging Nettle is useful in maintaining healthy prostate function and support allergies. *Urtica dioica* extract is a traditional used adjuvant therapeutic in rheumatoid arthritis. Although not scientifically validated, historical consumption of nettle in Europe has included use as a diuretic, astringent, and, to a lesser extent, as an aid in reducing blood pressure.

**Nettle Leaf for Allergies**

The freeze-dried leaf of the stinging nettle has been used to treat allergies with promising results. In a double-blind randomized study involving 98 volunteers taking freeze-dried stinging nettles with placebo on allergic rhinitis, *Urtica dioica* was rated higher than placebo in the global assessments recorded at the follow-up visit after one week of therapy. *Planta Med 2000.*

**Nettle Root for Prostate Health**

Nettle root has been claimed to be beneficial in the treatment of benign enlargement of the prostate gland. 134 patients (aged 53 to 84 years) with symptoms of benign prostatic hyperplasia were randomly assigned to receive two capsules of the standard dose of an urtica/pygeum preparation (300 mg of *Urtica dioica* root extract combined with 25 mg of *Pygeum africanum* bark extract) or two capsules containing half the standard dose twice daily for 8 weeks. After 28 days' treatment, urine flow, residual urine, and nycturia were significantly reduced in both treatment groups. After 56 days' treatment, further significant decreases were found in residual urine (half-dose group) and in nycturia (both groups). *Clin Ther. 1993*

Nettle may help relieve symptoms associated with gout, arthritis, rheumatism and childhood eczema because of its reported ability to help the body rid itself of certain toxins.
Resveratrol

Resveratrol (trans-3,5,4′-trihydroxystilbene) is a protective compound produced by grape seed, red wine, knotweed, polygonum, raspberries, and other plants in response to environmental stresses. Resveratrol is a phytoalexin, a class of antibiotic compounds produced as a part of a plant's defense system against disease and fungus. Since fungal infections are more common in cooler climates, plants grown in cooler climates have a higher concentration. The resveratrol content of wine is related to the length of time the grape skins are present during the fermentation process. Thus the concentration is significantly higher in red wine than in white wine, because the skins are removed earlier during white-wine production, lessening the amount that is extracted.

Benefits of Resveratrol include:

- Anti-infective, antioxidant and anti-inflammatory properties
- Fight cancer initiation, promotion, and progression
- May lower LDL cholesterol
- Anti-aging
- Help protect the brain from free radical
- Reduce the incidence of skin cancer
- Protective to the heart

Resveratrol as anti-inflammatory: Preliminary research results demonstrate that resveratrol may have anti-infective, antioxidant, and anti-inflammatory properties. Resveratrol has been shown to suppress the activation of several transcription factors, including NF-kappaB, AP-1 and Egr-1, thereby reducing proinflammatory cytokines and mediators such as COX-2, 5-LOX, IL-1, IL-6, and IL-8. Research has also found that Resveratrol inhibited iNOS (inducible nitric oxide synthase) expression and nitrite production in human airway cell.

Resveratrol and Cancer: Additional studies suggest that resveratrol is unique because of its ability to battle cancer at all three steps of the cancer process: initiation, promotion, and progression. In the lab, resveratrol found in red wine caused cancer cells to die off in early stage of the cancer process, reported doctors from the Lineberger Cancer Center in Chapel Hill, North Carolina. In addition, Resveratrol has also shown to potentiate the apoptotic effects of cytokines, chemotherapeutic agents and gamma-radiation. With regard to tumor initiation, Resveratrol has been shown to act as an antioxidant by inhibiting free radical formation, and as an anti-mutagen in rat models.

Resveratrol as Anti-aging: Resveratrol is a potent anti-oxidant that may activates a cell's survival defense enzyme, which prolongs the time cells have to repair their broken DNA. It is thought that because it contains highly hydrophilic and lipophilic properties, it can provide more effective protection than other well-known antioxidants, such as vitamins C and E.

Resveratrol and Cardiovascular Health: Resveratrol is a potent antioxidant that may quench free radical damage throughout the body provide protective support to the cardiovascular system. Researchers believe that high consumption of resveratrol-rich foods may result in reduced cardiovascular disease risk, lowered total cholesterol, and lowered LDL cholesterol. Many studies suggest that consuming alcohol (especially red wine) may reduce the incidence of coronary heart disease (CHD).
Saw Palmetto

Saw Palmetto is commonly found in coastal areas of Florida, Georgia, Louisiana, and Texas. It has been used by native Americans for at least 12,000 years as a general tonic. Common uses of Saw Palmetto include to fight coughs, bronchitis, asthma; to stimulate appetite, balance the metabolism, and aid digestion.

Saw Palmetto is also used to enhance sexual performance for both men and women, to treat enlarged prostate, and has mild antiandrogenic effects.

Saw Palmetto and Enlarged Prostate

Enlarged prostate cause painful urination, reduced urine flow, difficulty starting or stopping the flow, dribbling after urination, and more frequent nighttime urination. Prostate enlargement is caused by an increase in testosterone to DHT. For centuries, berries of a small palm tree called Saw Palmetto (Serenoa repens) were used as food by Native Americans living along the southern Atlantic coast of North America. Saw palmetto is well-known for its benefits to men and has been the subject of numerous studies. Its berries are rich in sterols and fatty acids that naturally migrate to the prostate. Here they help prevent the conversion of testosterone to DHT, and accelerate the breakdown and elimination of DHT from prostate tissues. The natural phytoestrogens in saw palmetto berries also can block artificial estrogen-like compounds from accumulating in prostate tissue. In Europe, saw palmetto extract has been studied in six double-blind clinical tests. Men who were given saw palmetto extract showed consistent and statistically significant results. Saw Palmetto is believed to interfere with hormones associated with DHT production, by preventing testosterone from converting into dihydrotestosterone (DHT). DHT is thought to cause prostate cells to multiply, leading to an enlarged prostate.

The active ingredients in Saw Palmetto are phytosterols, which are known to curb prostate cell growth. Saw Palmetto is chiefly used as a diuretic and to tone the bladder by improving urinary flow, and relieving strain. Regular use of saw palmetto may decrease urinary frequency by allowing complete bladder expulsion and reducing inflammation of the bladder and enlarged prostate.

In a double-blind, placebo-controlled studies with 20 subjects, Saw Palmetto works very effective compared to Proscar. Saw palmetto is effective in nearly 90% of patients after six weeks of use, while Proscar is effective in less than 50% of patients. >

Research

The role of a lipido-sterolic extract of Serenoa repens in the management of lower urinary tract symptoms associated with benign prostatic hyperplasia.
Gerber GS, Fitzpatrick JM. Division of Urology, University of Chicago Medical School, Chicago, IL, Aug 2004.

Comparison of Saw Palmetto (extract and whole berry) and Cernitin on prostate growth in rats. Talpur N, Echard B, Bagchi D, Bagchi M, Preuss HG. Department of Physiology, Georgetown University Medical Center, Washington, DC, Aug 2003.


Sensitization to saw palmetto and minoxidil in separate topical extemporaneous treatments for androgenetic alopecia. Sinclair RD, Mallari RS, Tate B. Skin and Cancer Foundation, Melbourne, Victoria, Australia, Nov 2002.

Articles

A Prostate’s Best Friend, Chris Kilham, www.medicinehunter.com

LJ100®
Standardized Tongkat Ali Extract (22% EuryPeptides®, 40% Glyco Saponins)

As seen in Prevention Magazine, Physical, Let’s Live, & Total Health

If you have low testosterone and are in need of a Testosterone Supplement, Herbal-Powers.com has LJ100®: the highest quality, standardized Tongkat Ali extract available for low testosterone. It has undergone a patented extraction process to capture the most potent, biologically active EuryPeptides® to increase libido, energy, enhance sport performance, rejuvenates youthfulness and fertility. Created by the original researchers at the Forest Research Institute of Malaysia (FRIM), this product has shown in human clinical trials - an ability to increase DHEA, increase free testosterone, and decrease Sex Hormone Binding Globulin (SHBG). LJ100® also increase cGMP and cAMP. The bioactive Eurypeptides significantly boost sex drive and function, in both men and women, by increasing testosterone and inhibiting Sex Hormone Binding Globulin (SHBG), so that freer testosterone remains in the blood. This Testosterone Supplement additionally stems the aging process, improves energy and sexual function, and helps to reduce risk factors associated with hypertension and cardiovascular disease. Rigorous toxicology trials have shown it to be safe even at 3000 times greater than the suggested dosage.

LJ100® is a standardized Eurycoma Longifolia extract, containing 22% Bioactive Eurypeptides, and 40% Glyco Saponins. Eurypeptides has been proven to be the compound responsible for increasing...
free testosterone and modulate hormones. LJ100® is extracted with a patented BAT extraction process without any alcohol, concentrated, filtered with a 1-4 micron filter, and freeze-dried to the most stable form without any fillers.

**Tongkat Ali - LJ100 a Multi-Faceted Herb**

has been shown through human clinical trails to be an effective herb for variety of changes and imbalances in the body, including sexual enhancement, Syndrome X, Anti-Aging, Andropause, fat loss, sports nutrition, and more. In the higher doses, it's the ideal supplement for body builders. It's action on the body is proven; and there are clear changes in testosterone, DHEA, cGMP, cAMP, ATP, and SHBG

**Tongkat Ali - Mechanism of Action for LJ100**

LJ100® works by activating the CYP17 (17 a-hyroxylase/17,20 lyase) enzyme to enhance the metabolism of pregnenolone and 17-OH pregnenolone to yield more dehydroepiandrosterone (DHEA) as well as the metabolism of progesterone and 17-OH progesterone to 4-androstenedione. This is important as DHEA is ultimately converted to testosterone.

**Benefits of Testosterone**

Testosterone, or male sex hormone, plays a key role in developing and maintaining masculine sexual organ, and promotes secondary sexual characteristics, including the appearance of facial hair, sexual desire, and sexual behavior. Testosterone stimulates metabolism, which promote fat burning, and accelerates muscle growth. Besides sexual health, testosterone is also responsible for numerous biological actions including protein synthesis, oxygen uptake, cholesterol regulation and immune surveillance. It also affects many metabolic activities such as production of red blood cells in the bone marrow, inhibits cells called osteoclasts that enhance bone breakdown, lipid metabolism, carbohydrate metabolism, liver function and prostate gland growth.

**LJ100® Improve Sport Performance**

Testosterone stimulates the expression of IGF-I and down regulates IGF binding protein-4 in the muscle. LJ100® may mediated through an androgen-receptor-mediated mechanism, improving sport performance by increasing fat free mass, increase arm circumferences and muscle mass, increase muscle strength, and decrease in fat mass. Several studies suggested that testosterone produces muscle hypertrophy in increasing fractional muscle protein synthesis. The increase in muscle mass may be due to the increase in diameter of the muscle fibre. LJ100® increase maximal voluntary strength in a dose-dependent manner and thus may improve performance in power-lifting events.

**If You’re Serious About Testosterone Boosting....**

*LJ100® is the BODY BUILDER’S CHOICE for boosting your testosterone. It is powerful, it is proven!*

LJ100® is revolutionizing the Sports Nutrition Industry with its fast-acting, pro-hormone effects. With as little as 200 mg per day, serum testosterone levels will increase 70% to 120% within 2 to 3 weeks.

LJ100® works by signaling the hypothalamus and pituitary glands to naturally increase your own testosterone levels without causing penile or testicular shrinkage. This pro-hormone stimulator transforms bound testosterone (BT) into free testosterone (FT) and thereby decreases body fat, builds and tones muscles, boosts energy levels, and increases sexual wellness.LJ100® is shown to increase adenosine triphosphate (ATP), the basic unit of energy in the body. By boosting ATP, overall energy and vitality are increased. LJ100® provides the energy without the anxiety, jittery nerves or insomnia that accompany caffeine and ephed.

**Body Building Benefits:**
Greater Testosterone Bioavailability—Unbinds BT and increases FT, without increase in aromatization into estrogen. Approx 80%-150% improvement in serum testosterone in athletes in 2 weeks. Increases 4-Androstenedione - responsible for lean body mass, fat decrease, and muscle building.

- Does not increase Dihydrotestosterone - responsible for hair loss and prostate swelling associated with Prostate Cancer.
- Average Testosterone Increase of 100% in less than 2 weeks—seen in healthy men under age 50.

- Increase in cGMP and cAMP by 60%
- Increase in ATP production by 80%
- DHEA will rise by about 45%
- SHBG suppression reduces fat formation
- Effective even for those with hormonal damage—Studies show positive results in individuals with hypogonadism

This translates to:

- More testosterone for Muscle Build
- Improved Work-Out, Endurance, Strength & Energy
- Improved Recovery After Work Out
- Significantly reduce decreased Body Fat

Interview with the Experts

Dr. Ismail Tambi, Clinical Andrologist, National Human Reproduction Center, Malaysia

**Sexual Benefits:**

- Increased mental and physical sensitivity to sexual stimulus due to increase in Phermone An
- Increase free testosterone level in 76% of individuals
- Average DHEA Increase 47% in 3 week
- Decrease in Sex Hormone Binding Globulin
- No excessively long erections and side effects as with Yohimbe and prescription drugs.

Low Bioavailable Testosterone can lead to low sex drive, emotional, psychological and behavioral changes. In a human clinical study involving 14 volunteers (7 on 100mg of LJ100® and 7 on placebo daily for 3 weeks), majority of volunteers scored better in the Sexual Health Inventory Questionaire, shown decrease in sex hormone binding globulin, show increase in DHEA and free testosterone level. LJ100®is not only capable in increasing the testosterone production but at the same time it also influences the synthesis of pheromone An a which plays an important role in communication, psychological and sexual behavior both in human and animals.

Click here to read the full PADAM research.
**LJ100® and Andropause**

Andropause is associated with low (bioavailable) testosterone levels. Andropause, also called male menopause, occurs in men are between the ages of 40 and 55. Starting at about age 30, testosterone levels drop by about 10 percent every decade. At the same time, Sex Binding Hormone Globulin, or SHBG, is increasing. SHBG traps much of the testosterone that is still circulating and makes it unavailable to exert its effects in the body's tissues. What's left over does the beneficial work and is known as "bioavailable" testosterone. Human clinical study has shown that LJ100® (40% Glyco Saponins, 22% Bioactive Euryopeptides) has been shown as safe and effective for treating PADAM (Partial Androgen Deficiency Among Aghing Men), by decreasing SHBG level and increase free bioavailable testosterone.

Click here to read the PADAM study. Click here to learn about Andropause.

**Anti-aging Properties**

Our recent human clinical trials has shown LJ100® to have secretagogue effect on Growth Hormone and modulates the release of IGF-1. Human Growth Hormone (HGH) enters the liver and is converted into IGF-1. Insulin-like Growth Factor-1 (IGF-1) is a natural anabolic growth factor, regulates cellular growth and development and premature reduction causes cellular apoptosis or cell death. IGF-1 stimulates muscle growth, burns fat, promotes healthy blood sugar level, improves the production of white blood cells, and decreases LDL Cholesterol.

**LJ100® Increase Energy**

LJ100® is shown to increase adenosine triphosphate (ATP), the basic unit of energy in the body. By boosting ATP, overall energy and vitality are increased. LJ100® provides the energy without the anxiety, jittery nerves or insomnia that accompany caffeine and ephedra.

**LJ100® Modulate Tyroxine and Increase Body Basal Metabolism Rate**

LJ100® modulate the release of Tyroxine, thereby increasing Body Basal Metabolism Rate if a person has lower than normal Tyroxine level. Thyroxin plays a vital role in regulating the body's overall metabolism. However, 99.95% of the secreted Tyroxine being protein bound, principally to thyroxine-binding globulin (TBG). A person with hypothyroidism (inadequate thyroxin), burns fewer calories, which makes it difficult for them to expend more calories than they consume.

**LJ100® Modulate Cortisol Level**

Cortisol is a steroid hormone that regulates blood pressure, cardiovascular function, the body's use of proteins, carbohydrates, and fats. High cortisol enhance the immune response during illnesses and defense the body during health crisis. However, high Cortisol over long period of time may cause obesity, diabetes, and hypertension. On the other hand, inadequate cortisol may cause Adison Disease, a condition occurs in persons of all ages and affects approximately one in 100,000 people per year. Symptoms include fatigue, low blood pressure, weight loss, weakness, loss of appetite, moodiness, nausea, vomiting, and diarrhea. LJ100® has influence over the adrenal gland and modulate the release of cortisol when the body is ravaged with illnesses.

**LJ100® Improved Blood Glucose Level**

Low insulin indicates juvenile diabetes and high levels with high blood glucose indicate maturity onset diabetes or Type 2 Diabetes. LJ100® does not exert hypoglycemic effect but may influence the cellular uptake of glucose. It is observed that some volunteers who were having Type 2 Diabetes have improved blood sugar while taking LJ100®.
**Improvement in HDL Cholesterol**

There was a trend of increment of HDL Cholesterol in the majority of the volunteers while they were on the extract. Improvement in HDL is usually associated with reduced cardiovascular risk.

Most studies quoted on the testosterone boosting effects of Tongkat Ali are actually quoting LJ100® results. This is because the research team, led by our scientist Professor Johari Mohd Saad, Ph.d., Dr. Ismail Tambi, and Dr. Azizol Abdul Kadir are at the forefront of Tongkat Ali research and only use the LJ100® Extract in their studies. [click here for LJ100® Anabolic Research.]

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**Vitex Chaste Berry**

**Botanical name:** Vitex agnus-castus

**Common name:** Chasteberry, chaste tree berry, monk's pepper

**Part(s) used:** Berries

Vitex is a pink-violet flowering shrub native to southern Europe and the countries in the Mediterranean Basin. The round, black berry of the chaste tree (Vitex agnus-castus) has been used by women since ancient times to balance the female reproductive system. Nearly 2000 years ago, the Greek physician Dioscorides noted that its Latin name (agnus castus) means chaste lamb and supposedly referred to the ability of its seeds (when prepared as a drink) to weaken male libido, earning it the nickname "monk's pepper". The leaves were strewn at the feet of novices as they entered the monastery. However neither modern science nor practical experience supports this particular use of the plant!

The combined results from three extensive studies performed in Germany found that chaste tree berry completely relieved premenstrual syndrome (PMS) symptoms for nearly one-third of the 4,500 participants, while as many as one-half of the participants reported marked improvement. Additional testing showed more than just relief from PMS. In one particular test with only 45 participants, seven women who previously had difficulty conceiving became pregnant.

**How it works**
German researchers suggest the berries increase production of luteinizing hormone and prolactin. Another study adds the increase of the hormone progesterone to the list. The benefits of chaste berry stem from its actions upon the pituitary gland. Chaste berry keeps prolactin secretion in check. The ability to decrease mildly elevated prolactin levels may benefit some women with breast tenderness associated with PMS. Chaste berry may also be helpful in menopause and cyclic mastalgia. New research indicates that certain compounds in chasteberry may have activity similar to the brain chemical dopamine.

Benefits

In a normal menstrual cycle, estrogen levels are higher before ovulation and progesterone levels are higher following ovulation. A lack of balance in these two hormones can lead to the entire range of symptoms associated with PMS and menopause! Vitex nourishes and supports the endocrine system, helping it find its own balance.

Symptoms associated with the menstrual cycle which can be treated with this plant include:

- **cramps**
- **flooding**
- **headaches**
- **depression**
- **water retention**
- **constipation**
- **acne**
- **breast tenderness**
- **irritability**

Traditional uses

- **Reduce PMS symptoms.** Before their periods, many women find themselves irritable, depressed, and bloated. These typical PMS symptoms may occur because of an insufficient production of progesterone in the two weeks prior to menstruation. Chasteberry helps to normalize the ratio of progesterone to estrogen, thus providing relief from these monthly discomforts. In a recent study of premenstrual women, 90% of those who took the herb reported that they experienced a reduction in PMS symptoms. Chasteberry may be as effective as another common PMS supplement--vitamin B6, which clears excess estrogen from the body--in controlling symptoms. While a German study actually found chasteberry to be superior to vitamin B6 for resolving PMS symptoms, it's worth trying the two together for maximum relief.

- **Minimize fibrocystic breast symptoms.** Many women suffer from the premenstrual breast tenderness and pain associated with fibrocystic breasts. Chasteberry's ability to lower prolactin concentrations as well as to restore the estrogen-progesterone balance may offer significant relief.

- **Regulate ovulation and promote fertility.** A woman with too much prolactin and too little progesterone in her body may not ovulate regularly. Obviously, it would be difficult to become pregnant under these conditions. Chasteberry can help to lower prolactin levels and aid in the normal functioning of the ovaries, thus providing opportunities for conception. The herb works best for women whose progesterone levels are mildly or moderately low. High prolactin levels can also cause amenorrhea (absent menstrual cycles). In such cases chasteberry may be useful in reestablishing a normal monthly cycle. Women suffering from infertility due to not only to an imbalance of estrogen and progesterone but also to high prolactin levels may benefit from chasteberry, too. In a 1988 study, 48 women (ages 23 to 39) with infertility and this type of condition--called a luteal phase defect--were given chasteberry once a day for three months. Of the 45 women who completed the study, seven became pregnant during the study. And in 25 of the women, progesterone levels returned to normal, a situation that improved the chances for future conception.

- **Treat menopausal difficulties.** Declining hormone levels in the years up to and after menopause can cause hot flashes, sweating, vaginal dryness, and even mild depression.
Chasteberry (alone or combined with herbs such as dong quai or black cohosh) works to stabilize these hormone levels and can be beneficial in controlling symptoms.

- **Relieve the pain of endometriosis.** Chasteberry acts to restore hormonal imbalances responsible for endometriosis-related pain, which can be severe. It's commonly taken in combination with the herb dong quai for this purpose. Both herbs help to relax the uterus.
- **Control menstrual-related acne.** Monthly periods involve hormonal shifts that can lead to acne. By helping to stabilize hormone levels, chasteberry may help to keep skin clear.

Research

Treatment of premenstrual syndrome with a phytopharmaceutical formulation containing *Vitex agnus castus*.

Loch E-G, Selle H, Boblitz N., Evelyn Leigh, Herb Research Foundation


*Chaste tree* for premenstrual syndrome. An evolving therapy in the United States.

Mancho P, Edwards QT


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**Arnica Montana**

**Arnica belongs to the sunflower family. It grows mostly in the temperate regions of western North America.**

**Traditional Uses of Arnica**

In herbal medicine, Arnica is used for relief of bruises, stiffness, and muscle soreness. Arnica is widely used as a salve for bruises and sprains, and sometimes as a tincture, for the same anti-inflammatory, pain-relieving purposes. Preparations made from the flowering heads have been used in homeopathic medicine for hundreds of years. It is popular in Germany and over 100 drug preparations are made from the plant. It is available most commonly in gel form, to be applied to the affected area.

**Active Compounds in Arnica**
The active components in arnica are sesquiterpene lactones, which are known to reduce inflammation and decrease pain. Other active principals are thymol (an essential oil), flavonoids, inulin, carotenoids and tannins.

**Benefits of Arnica**

Arnica works by stimulating the activity of white blood cells that perform much of the digestion of congested blood, and by dispersing trapped, disorganized fluids from bumped and bruised tissue, joints and muscles.

Arnica is known to stimulate blood circulation and can raise blood pressure, especially in the coronary arteries. The plant is used externally for arthritis, burns, ulcers, eczema and acne. It has anti-bacterial and anti-inflammatory qualities that can reduce pain and swelling, improving wound healing.

**Toxicity:** The internal use of Arnica is not suggested. It can cause vomiting, weakness, increased heart rate and nervous disturbances.

**Arnica Research**

Patients and doctors found homeopathic arnica get to be more effective than ibuprofen gel at easing finger joint pain (Rheumatology International epub, DO:10.1007/s00296-007-0304-y). The study-planned and performed according to strict international guidelines for studies of multiple osteoarthritis of the fingers was conducted for nearly a year by 20 medical doctors in Switzerland and included 204 patients with the condition. Participants applied either the arnica gel or ibuprofen gel three times daily to the afeective finger joints and completed a detailed questionnaire at their first doctor's visit and again at the last visit, three weeks later.

Although ibuprofen is established and highly effective active substance, it is a non-steroidal anti-inflammatory drug (NSAID), which is known to cause certain sensitivities in some individuals over a long period of use. Arnica has had a safe history of use a topical product by millions of people. This study shows that there is a solid, efficacious choice out there for people who do not want to use an NSAID topical

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**Black Cohosh Rhizome: Menopause Alternative**

The American Herbal Pharmacopoeia and Therapeutic Compendium (AHP), created to meet the need for comprehensive, accurate information about botanical medicines, has released its newest monograph: Black Cohosh Rhizome. The publication of an authoritative review of this traditional woman's herb is especially timely now, when serious doubts have been raised about the safety of Hormone Replacement Therapy for women in menopause. This 38-page, 4-color publication represents months of work by the monograph's many authors and reviewers, as well as by AHP staff and a committee of independent reviewers that includes medicinal plant experts from around the world. The contents include sections on botanical description, history, commercial sources and handling, constituents, therapeutics (including clinical efficacy and medical indications), safety profile and international status.
Indigenous North American Medicinal Plant

Black cohosh (Actaea racemosa) was widely utilized by Native Americans and Eclectic physicians, and continues to be used by modern midwives and herbalists. Traditionally, it was used short-term for a wide range of purposes, including addressing disorders of the female reproductive system. Today, however, black cohosh is being used over long periods of time for the treatment of menopausal systems such as hot flashes, based primarily on modern German research. This difference would indicate the need for more long-term studies of black cohosh than have already been carried out.

Clinical Studies

The monograph authors conclude there is evidence from double-blind placebo-controlled clinical trials that black cohosh is beneficial for treating menopausal complaints, including hot flashes, sweating outbreaks and anxiety, when taken in the dosage and forms used in clinical research. However, more research is needed to clarify the mechanisms. One of the central questions is whether black cohosh works as a phytoestrogen with direct hormonal effects. While some preclinical and clinical trials suggest such an estrogenic effect, other researchers propose that black cohosh may affect the hypothalamus or neurotransmitters. The authors point out this question has important implications, especially for the safety of black cohosh in women with estrogen-sensitive conditions such as breast cancer.

Newest in a Series

Black Cohosh Rhizome is the most recent in a planned series of 300 monographs on Ayurvedic, traditional Chinese and Western herbs used most often in the United States. Each monograph is a collaborative effort with a different writer assigned to each section and an intensive process of peer review. Dozens of experts in the fields of botanical, Chinese and Ayurvedic medicine, botany, chemistry, pharmacology and pharmacognosy are volunteering their time to create these exceptional botanical references.

Catuaba Bark

Products

- Hot Plants For Her
- Maca Shaman Smoothie
- Maca Spiced Chai Shaman Smoothie
- Acai Berry Adventure Shaman Smoothie

Catuaba, a medium-sized tree found in the Amazon forests of northern Brazil, has traditionally been used for its aphrodisiac properties. The Topi Indians have known about the sex-enhancing properties of catuaba for many centuries. The two species preferred and used by the Brazilians are Erythroxylum catuaba and Trichilia catigua. Catuaba bark is also considered a central nervous system stimulant and
a bark decoction is used for nervousness, poor memory, and sexual weakness. The historic, traditional use of this herbal tonic is legendary. Many say it is the most famous of all the Brazilian aphrodisiac plants. It is a strong tonic and nervous system fortifier, known for its general capability of giving strength and relieving fatigue. The effect is pronounced in men, especially as a libido enlivener. Many songs praising its wonders have been sung by the Brazilian Indians. It has reported benefits in relieving insomnia from hypertension, restless sleeping patterns, and even in helping to arrest failing memory. There is a saying in South America that says, "Until a father is 60, the son is his; after that the son is Catuaba's." Catuaba is considered an "innocent" aphrodisiac, meaning no adverse side effects have been reported in its use. Catuaba is usually consumed as a tea made from the bark of this small shrub. After drinking 3-4 cups of tea steadily over a period of time the first indications are usually erotic dreams followed shortly after by increased sexual desire.

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<th>Uses</th>
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<th>Products Formulated With Catuaba</th>
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<td>Aphrodisiac</td>
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Research


Two epimeric flavalignans from Trichilia catigua (Meliaceae) with antimicrobial activity.

Pizzolatti MG, Venson AF, Smania A Jr, Smania Ede F, Braz-Filho R
Departamento de Quimica, Universidade Federal de Santa Catarina, Florianopolis-SC, Brazil.
moacir@qmc.ufsc.br

A mixture of flavalignan cinchonains Ia and Ib was isolated from the bark of Trichilia catigua. The structures were established on the basis of spectroscopic data of the natural products and their methylated derivatives including 2D NMR experiments, and compared with data in the literature. These flavalignans exhibited antibacterial activity against Bacillus

PMID: 12132689 [PubMed - indexed for MEDLINE]


Effects of Catuaba extracts on microbial and HIV infection.

Manabe H, Sakagami H, Ishizone H, Kusano H, Fujimaki M, Wada C,
Komatsu N, Nakashima H, Murakami T, Yamamoto N,
Horiuchi Itaro & Co., Ltd., Tokyo, Japan.

Pretreatment of mice with hot water and alkaline extracts of Catuaba casca (Erythroxylum catuaba Arr. Cam.) effectively protected them from lethal infection of Escherichia coli and Staphylococcus aureus. The extracts significantly inhibited both the human immunodeficiency virus (HIV)-induced cytopathic effect and the expression of HIV antigen in HIV-1HTLV-IIIB or HIV-2ROD infected human lymphotropic virus type I (HTLV-1) positive MT-4 cells. The 50% effective concentrations of the active fractions (21-263 micrograms/ml) were 1/4 - 1/43 of their 50% cytotoxic concentrations. Their anti-HIV activity was shown to be induced, at least in part, via the inhibition of HIV adsorption to the cells. The data suggest a medicinal potential of Catuaba extracts against opportunistic infection in HIV patients.

PMID: 1525337 [PubMed - indexed for MEDLINE]
Chondroitin

What is Chondroitin?

Chondroitin sulfate is a sulfated glycosaminoglycan (GAG) composed of a chain of alternating sugars (N-acetylgalactosamine and glucuronic acid). It is usually found attached to proteins as part of a proteoglycan. Chondroitin sulfate is an important structural component of cartilage and provides much of its resistance to compression. Along with glucosamine, chondroitin sulfate has become a widely used dietary supplement for treatment of osteoarthritis.

Chondroitin Dosage

The dosage of oral chondroitin used in human clinical trials is 800–1,200 mg per day. Pharmacokinetic studies performed on humans and experimental animals after oral administration of chondroitin sulfate revealed that it can be absorbed orally. The bioavailability of chondroitin sulfate ranges from 15% to 24% of the orally administered dose.

How does Chondroitin Works on the Joint?

The benefit of chondroitin sulfate in patients with osteoarthritis is likely the result of a number of effects including its anti-inflammatory activity, the stimulation of the synthesis of proteoglycans and hyaluronic acid, and the decrease in catabolic activity of chondrocytes inhibiting the synthesis of proteolytic enzymes, nitric oxide and other substances that contribute to damage cartilage matrix and cause death of articular chondrocytes. A recent review summarizes data from relevant reports describing the biochemical basis of the effect of chondroitin sulfate on osteoarthritis articular tissues. The rationale behind the use of chondroitin sulfate is based on the belief that osteoarthritis is associated with a local deficiency in some natural substances, including chondroitin sulfate.

Recently, new mechanisms of action have been described for chondroitin sulfate. In an in vitro study, chondroitin sulfate reduced the IL-1β-induced nuclear factor-kB (NF-kB) translocation in chondrocytes. In addition, chondroitin sulfate has recently shown a positive effect on osteoarthritic structural changes occurred in the subchondral bone.

Chondroitin Osteoarthritis Research

Russian researchers reported intervention with chondroitin sulfate in patients with hip OA could protect cartilage, slow disease progression and aid in pain management. Pain management was also the primary efficacy criteria in a 24-week, randomized, placebo controlled study conducted at Rangueil University Hospital, Toulouse, France, in which patients with knee OA (n=307) received 1 g/d chondroitin sulfate for six months. While there was no significant difference in biomarkers between the groups, chondroitin was slightly more effective for pain management and quality of life scores. Another group of French researchers divided a crosssectional observational study, which found long-term users of chondroitin sulfate had a significantly lower current and long-term use of non-steroidal anti-inflammatory drugs (NSAIDs) and analgesics.

In fact, a 2007 risk assessment on the use of glucosamine and chondroitin sulfate noted: “A large body of human and animal research suggests that oral intakes of these ingredients, either alone or in combination, reduces joint pain and improves mobility in persons with osteoarthritis. … The observed safe level (OSL) risk assessment method indicates that the evidence strongly supports safety at intakes up to 2,000 mg/d for glucosamine and 1,200 mg/d for chondroitin sulfate.”

References:
Cranberries: Powerful Antioxidant Support

In 2004, the Journal of Agricultural and Food Chemistry published the results of a U.S. Department of Agriculture study that measured the antioxidant capacity of 100 common foods, including fruits, vegetables, nuts, dried fruits, spices, cereals and others (52:4026-37). The research showed cranberry to have the highest total antioxidant capacity per gram of all the foods tested.

_Cranberries helps prevent oxidation of LDL_

The findings supported earlier research at the University of Scranton in Pennsylvania, which compared cranberries with 19 of the most commonly consumed fruits in North America (J Agric Food Chem, 49:5315-21, 2001). The study found that gram-for-gram, cranberries have the highest phenol content, more than double the next nearest fruit—red grapes—and five times more than broccoli. Phenols are an antioxidant thought to be most active in fighting chronic diseases like cancer, strokes and heart disease, where they prevent the oxidation of low-density lipoproteins (LDL) that contribute to cardiovascular problems.

_Cranberries and Heart Health_

Further research presented at the Canadian Cardiovascular Society Annual Congress Meeting in 2004 indicated drinking a daily glass of light cranberry juice could improve circulation by increasing the level of high-density lipoprotein (HDL), or "good" cholesterol, in the bloodstream by 6.4 percent. This has a corresponding beneficial impact on the risk of heart disease, one of the major causes of death in North America and Europe.
**Cranberries and Urinary Tract Infections (UTI)**

Historically, the anti-adhesion properties of the cranberry are perhaps best known for helping to maintain urinary tract health. Cranberries contain particular antioxidants called proanthocyanidins (PACs), or common tannins, which disable E. coli bacteria—the cause of 80 percent to 90 percent of urinary tract infections—and prevent them from "sticking" to the walls of the urinary tract (J Urol, 131:1013-16, 1984). Unable to stick, the organisms are harmlessly flushed from the body. More recent studies have found cranberries actually have a higher PAC content than any other common fruit (J Nutr, 134:613-17, 2004). The beneficial impact of cranberries on urinary tract health was confirmed in 2004 when the French government’s food safety authority officially approved the health claim that North American cranberries "help reduce the adhesion of certain E. coli bacteria to the urinary tract walls."

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**Echinacea**

### Historical Use of Echinacea

Native Americans have been using Echinacea medicinally since 1800's as a natural remedy for infections and inflammation. Echinacea has been used widely for prevention of the common cold, and to stimulate immune response to fight against virus-related diseases such as herpes, influenza, canker sores, etc. Echinacea also appears to have value in the defense of tumor. Although there are several types of echinacea, each having a slightly different appearance, only 3 of them have been used in American folk medicine: Echinacea purpurea, Echinacea angustifolia and Echinacea pallida. The plants grow in central North America from Texas to southern Canada. They produce single, long-stalked, attractive, terminal flower heads up to 15 cm in diameter and can withstand high temperatures and humidities.

Echinacea was well used by Native Americans for centuries, from whom the knowledge was adopted and the herb widely used by the Eclectic physicians in the late 1800s and early 1900s. In 1909 it was stated to be of no medicinal value by the American Medical Association and its use greatly declined. However studies carried out from the 1930s onward, many in Germany, supported the use of echinacea and it quickly regained popularity, to become one of the most popular herbs in use in the present.
Echinacea Support Healthy Immune Response

There are two active ingredients in echinacea that are responsible for its therapeutic properties: echinacosides, found in the roots and flowers, and polysaccharide heteroxylan, found in the leaves. Clinical studies show that echinacea extracts improve white blood cell count and create other immune responses. It is also an effective herbal antibiotic. A study done with over 200 children found that the group who took echinacea, along with two other herbs, had fewer colds and, when they did get sick, had fewer days of fever. Similar results were observed in studies with upper respiratory tract infections and viral infections.

Contra-Indication for Echinacea

There has been concern regarding the use of echinacea for those with a tendency to allergic reactions, especially against Asteraceae. However risk is minimal with root preparations. Also, as proteins, such as those in pollen which may cause an allergic reaction, are denatured by alcohol, it is unlikely that allergic reactions could be caused by the use of alcoholic extracts or tablets based on dried alcoholic extracts.

Another concern which has been voiced regarding echinacea is that it increases cytokines, which provoke the inflammatory response in asthmatics. However this reaction was found in a study based on constituents in vitro. A clinical study based on oral echinacea showed no detectable effect on cytokine production by lymphocytes. As the use of echinacea acts to reduce the frequency of respiratory viral infections which are known to aggravate asthma, many herbalists hold the view that echinacea is beneficial for asthma.

Another concern was raised by the Commission E monograph, regarding the use of echinacea in progressive systemic disorders. It stated that, "In principle [echinacea is] not to be used in progressive conditions such as tuberculosis, leukaemia, collagenosis, HIV/AIDS, HIV infection, and other autoimmune disorders". However this claim is not supported by any solid evidence such as clinical trials or other reliable evidence. Many herbalists hold the view that echinacea is of value in such disorders due to the beneficial effect it has on the immune system.

Toxicology

None reported.

Echinacea Research

Antioxidant activity of Echinacea root extract.

Researcher at the department of Food, Nutrition and Health, Faculty of Agricultural Science at the University of British Columbia, Vancouver, Canada, examined the antioxidant activity of Echinacea root extract. Methanol extracts of freeze-dried Echinacea (E. angustifolia, E. pallida, and E. purpurea) roots were examined for free radical scavenging capacities and antioxidant activities. Root extracts of E. angustifolia, E. pallida, and E. purpurea were capable of scavenging hydroxyl radical. Meanwhile, antioxidant activities of all three varieties of Echinacea were found to delay the formation of conjugated diene hydroperoxide induced by the
thermal decomposition of 2, 2'-azobis(2-amidinopropane) dihydrochloride and extend the lag phase of peroxidation of soybean liposomes. Echinacea root extracts suppressed the oxidation of human low-density lipoprotein, as evaluated by reduced agarose electrophoretic mobility following oxidative modification by Cu(2+). The mechanisms of antioxidant activity of extracts derived from Echinacea roots included free radical scavenging and transition metal chelating.

**Echinacea purpurea rejuvenates natural killer cells**

Echinacea purpurea was tested on natural killer (NK) cells of aging mice to assess its immuno-stimulating effect. Assessment was made of the numbers and production of NK cells in the spleen and bone marrow of aging, normal mice, after in vivo dietary administration of E. purpurea for 14 days, or after injection of thyroxin, a stimulant of NK cell function, for 10 days. Methods of assessment were immunoperoxidase labeling techniques coupled with hematologic tetrachrome staining, and double immunofluorescence staining using propidium iodide. Results showed that E. purpurea contains phytochemicals capable of stimulating de novo production of NK cells, as well as augmenting their cytolytic function, in animals of advanced age.

**Echinacea stimulates production of cells responsible for immunity**

In this study echinacea root was provided daily in the diet of normal mice for either 1 or 2 weeks so as to establish its possible mechanism of action. Assessment was made of quantitative dynamic changes with time on both mature and precursor cells of the hemopoietic and immune-cell lineages in the spleen and bone marrow. The results showed that natural killer cells and monocytes were significantly increased in both the bone marrow and the spleen one week after beginning treatment with echinacea, while the sizes of all other hemopoietic and immune cell populations remained at control levels.

**Echinacea reduces cold & flu symptoms and duration**

Over a study period of 90 days an echinacea compound herbal tea preparation (Echinacea Plus) or placebo were given randomly to 95 people at early symptoms of cold or flu in a double-blind study. Two weeks after beginning the programme each person completed a questionnaire to assess the efficacy, number of days the symptoms lasted, and number of days for change. Results showed significant effectiveness of echinacea in all three areas. No negative effects were reported.
Latin Name: **Trigonella foenum-graecum**

**Fenugreek** is a traditional culinary and health promoting herb used throughout history. It has been shown in research that the active compounds 4-hydroxyisoleucine can help support healthy glucose levels and healthy sugar metabolism. Your body’s ability to manage blood sugar may well be the single most crucial factor affecting your health and longevity, and the one most affected by diet and lifestyle. But today’s high-glycemic carbs and sugar-laden foods—combined with lack of exercise—are creating a serious challenge to your body’s intricate glucose/insulin regulatory system. The resulting cellular stress and deterioration have serious repercussions for both your mind and body. As a complement to your diet, Fenugreek an excellent supplement to improve blood sugar levels, and consequently, quality of life.

Fenugreek has a long history of folk use throughout Asia and the Middle east as an anti-diabetic, to soothe stomach ulcers, to eliminate catarrh in the upper respiratory tract, to promote lactation, and as a poultice for treating various skin conditions. Much science on fenugreek has focused on the cholesterol-lowering, blood lipid-lowering and anti-diabetic activities of the seed. These activities appear directly linked to the presence of soluble fibers, most notably galactomannans. The galactomannans have additionally been shown to possess fat-sequestering properties, thereby binding directly to dietary fat and reducing its absorption into the body. Furthermore, anti-diabetic properties of fenugreek seed are linked to the presence of a novel free amino acid, 4 hydroxyisoleucine.

**4-hydroxyisoleucine** is an amino acid derivative that assists the pancreas in production of insulin. Studies have shown that adding fenugreek to your diet reduces fasting blood sugars and improves after-meal glucose tolerance significantly. 4-hydroxyisoleucine works by two separate mechanisms: It has a direct, stimulating effect on insulin production for those who wish to increase their glucose metabolism and helps to reduce glucose resistance and the uptake of glucose, thereby reducing overall blood glucose levels. Several studies with animals and with human cell cultures demonstrate this extract’s positive effect on reducing postmeal glucose levels—with little or no increase in blood insulin concentrations—a clear indicator of improved insulin sensitivity.

Several studies show that the free amino acid 4-hydroxyisoleucine plays a valuable role in insulin-promotion and glucose regulation. 4-hydroxyisoleucine stimulates insulin secretion, thereby limiting the extent to which blood glucose (the glycemic index) is elevated. Elevated blood glucose after meals leads to increased production of body fat. 4 hydroxyisoleucine promotes insulin secretion and inhibits the rise of blood glucose, thus helping to reduce body fat production. 4-hydroxyisoleucine exhibits a specific effect on the islets of Langerhans in the pancreas. These cells are directly responsible for insulin production. Most significantly, the effect of 4-hydroxyisoleucine is glucose dependent. The higher the level of blood glucose, the greater the insulin-promoting response elicited by 4 hydroxyisoleucine. Thus 4-hydroxyisoleucine exhibits a significant regulating effect, which corresponds with the insulin needs of the body at any given time. This makes this compound “adaptogenic,” responding to the particular needs of the body at any given time.

**Benefits of Fenugreek**

**Recomended Dosage:** Normal dose for non-diabetic people, take 50mg of 4-hydroxy-isoleucine daily. In insulin-dependent diabetics, take 2.75 grams of 4-hydroxy-isoleucine daily for lowering insulin needs.

**Research**

**Supplementation of fenugreek leaves lower lipid profile in streptozotocin-induced diabetic rats.**
Annida B, Stanely Mainzen Prince P. Department of Biochemistry, Annamalai University, Annamalai Nagar-608 002, Tamil Nadu, India, 2004.
Ginseng

The Chinese discovered ginseng over 5,000 years ago and refer to it as the "King of Herbs" due to its energizing and revitalizing effects on the human body. History shows that early Chinese emperors placed great value in ginseng and was used primarily as a tonic or stimulant for both physical and mental disorders. In addition, it was used for increasing fertility and sexuality, and most importantly for strengthening the body. Ginseng is widely used in the United States to improve overall energy and vitality, particularly during times of fatigue or stress. While there is not much clinical evidence to support an energy boosting effect, there are studies showing its potential value in normalizing glucose levels after meals in diabetics, stimulating immune function, treating male impotence and, when used with Ginkgo biloba, improving memory and symptoms of attention deficit-hyperactivity disorder (ADHD) in children. Plant chemicals called ginsenosides are believed to play a role in ginseng's activity. They are considered "marker" compounds for ginseng - that is, their presence (or absence) and their chemical profiles can indicate the type and quality of ginseng in a product.

Ginseng is an adaptogen that can help improve the body's overall ability to adapt to and cope with the negative effects of physical and environmental stress. Clinical studies confirm that ginseng can help enhance endurance, reduce fatigue, and improve coordination and reaction time. There is also some evidence that ginseng can boost immune function, helping the body fight off infection during times of stress. In laboratory studies, ginseng has shown potential in protecting liver and heart health, regulating the function of reproductive hormones, normalizing cholesterol and blood sugar levels, and improving memory and learning.

Type of Ginseng

American Ginseng
is commonly used as a natural preventive and restorative and is valued highly for its adaptogenic properties. Ginseng contains ginsenosides, these are classified into two groups, the Rb1 group and the Rg1 group. American Ginseng contains higher amounts of Rb1 Ginsenosides which have more sedative and metabolic effects on the central nervous system, whereas Rg1 Ginsenosides, more prominent in Korean Ginseng, are more arousing and stimulating. Rb1 Ginsenosides have Central Nervous System depressing activity, can increase digestive tract peristalsis and have been shown to increase stamina and learning abilities. Other studies have shown Rb1 Ginsenosides to have anti-fatigue, anti-convulsant, analgesic and ulcer protective properties. American Ginseng is more sedative and relaxing than Korean Ginseng and increases "yin" energy while Korean Ginseng is more stimulating and increases the "yang" energy. Often used for stress, fatigue, weakness, convalescence, low resistance, poor immunity or debility due to chronic disease and metabolic disturbances, American Ginseng is a wonderful restorative for a nervous, agitated condition.

**Chinese Ginseng**

In traditional Chinese medicine, ginseng is used for many purposes, including normalizing blood pressure and blood sugar, as a sexual tonic for both men and women, and to strengthen overall health when the body is debilitated.

**Korean Ginseng**

has a high content of the Rg1 group of Ginsenosides which are arousing, stimulating and cause an increase in motor activity. This root has also been of benefit in conditions of tiredness, weakness, debility, convalescence, low resistance and aging. It acts on the adrenal and pituitary glands to help them respond to stress more rapidly and is also used to increase mental and physical work capacity, increase concentration and mental activity, enhance mental acuity and intellectual and physical performance and benefit the immune system among other things.

**Siberian Ginseng**

After nearly a thousand studies, Siberian Ginseng has been shown to increase energy and stamina and to help the body resist viral infections, environmental toxins, radiation and chemotherapy. In Chinese Medicine it has been used to prevent bronchial, respiratory and viral infections, provide energy and vitality, increase resistance to stress, treat rheumatic and heart ailments, improve cardiovascular and neurovascular conditions and help restore memory, concentration and cognitive abilities which may be impaired from poor blood supply to the brain. Additionally Siberian Ginseng is a popular remedy for debility, depression, fatigue and nervous breakdowns. It has a growing reputation for increasing all kinds of body resistance. Also used to regulate low blood pressure and increase circulation. Excellent as a general tonic.

**Benefits of Ginseng**

Traditionally, Ginseng was taken as a general tonic for the whole body, and may help improve energy and endurance, reduce fatigue and stress, enhance sexual performance, etc. Ginseng is also an adaptogens, that may assist the body to restore to its healthy state.

1. Improves resistance to the damaging effects of stress
2. Increases stamina and endurance
3. Improves mental performance in times of stress
4. Enhances overall health and vitality

**Ginseng Improve Sport Performance**
Ginseng may help regulate the basal metabolic rate and increase the breakdown and metabolism of foods. Improved metabolism can increase energy level and remove more waste products in the body. Studies have shown that the athletes were using oxygen much more efficiently after taking ginseng. They also help athletes in recovery time. In addition, ginseng can help reduce stress and has a positive effect on the cardiovascular and central nervous systems.

**Ginseng Improve Recovery Time**

Ginseng improve psychomotor performance during exercise without affecting exercise capacity. In a double blind clinical trial, seven soccer players (age 19.07 +/- 0.62 yrs) receiving 350 mg of ginseng and 8 soccer players receiving a placebo daily for 6 weeks. Before and after the treatment all the subjects performed an incremental bicycle ergometer exercise with intensity increasing 50 W every 3 min until exhaustion. Ginseng treatment was found to shorten recovery time at rest and during exercise, shifting the exercise load associated with the shortest recovery time toward higher exercise loads. Neither ginseng nor placebo influenced Maximal oxygen uptake and lactate threshold. 


**Ginseng and Sexual Dysfunction**

In Asia, ginseng is commonly included in herbals used for the treatment of sexual dysfunction. Recent studies in laboratory animals have shown that both Asian and American forms of ginseng enhance libido and copulatory performance. These effects of ginseng may not be due to changes in hormone secretion, but to direct effects of ginseng, or its ginsenoside components, on the central nervous system and gonadal tissues. Indeed, there is good evidence that ginsenosides can facilitate penile erection by directly inducing the vasodilatation and relaxation of penile corpus cavernosum. Moreover, the effects of ginseng on the corpus cavernosum appear to be mediated by the release and/or modification of release of nitric oxide from endothelial cells and peri-vascular nerves. Treatment with American ginseng also affects the central nervous system and has been shown to significantly alter the activity of hypothalamic catecholamines involved in the facilitation of copulatory behavior and hormone secretion. Recent findings that ginseng treatment decreased prolactin secretion also suggested a direct nitric oxide-mediated effect of ginseng at the level of the anterior pituitary. Thus, animal studies lend growing support for the use of ginseng in the treatment of sexual dysfunction and provide increasing evidence for a role of nitric oxide in the mechanism of ginsenoside action. 

Murphy LL, Lee TJ. Ann N Y Acad Sci 2002 May;962:372-7

**Ginsenos Promote Nitric Oxide Release**

Ginsenosides, the active ingredients extracted from Panax ginseng, have been shown to promote nitric oxide (NO) release and enhance NO release. The nerves in penile tissue contain NO synthase and an NO-like substance that causes relaxation of the corpus cavernosum. Ginsenosides (250, 500 and 750 micrograms/ml-1) relaxed corpus cavernosum. acetylcholine (ACh)-induced relaxations were increased in the presence of ginsenosides (250 micrograms ml-1). Ginsenosides at 100 micrograms ml-1 significantly enhanced relaxation of corpus cavernosum elicited by transmural nerve stimulation. The relaxations were associated with increase and decrease in tissue cyclic GMP levels. These endothelial and neurogenic effects of ginsenosides in inducing relaxation of the corpus cavernosum may account for the aphrodisiac effect of Panax ginseng. 


**Ginseng Improve Memory**

In a double blind, placebo controlled, 14 week, parallel group, repeated assessment, multi-centre trial of two dosing regimens 160 mg (60mg Ginkgo & 100mg Ginseng) and 320 mg (120mg Gingko & 200mg Ginseng) involving 246 healthy middle-aged volunteers was conducted. On various study days (weeks 0, 4, 8, 12 and 14) The volunteers performed various tests of attention and memory from...
the Cognitive Drug Research, completed questionnaires about mood states, quality of life and sleep quality. The Ginkgo/ginseng combination was found significantly to improve an Index of Memory Quality by 7.5% and reflected improvements to a number of different aspects of memory, including working and long-term memory. This enhancement to memory was seen throughout the 12-week dosing period and also after a 2-week washout, demonstrating substantial improvements to the memory of healthy middle-aged volunteers. Wesnes KA, Ward T, McGinty A, Petrini O. *Psychopharmacology (Berl).* 2000 Nov;152(4):353-61.

**Botanical name:** *Camellia sinensis*

**Common name:** Green tea, black tea ("regular"), Oolong tea

For centuries, numerous cultures have used tea, not only as the preferred beverage, but also for its medicinal properties. (the earliest recorded use dates back to around 2700 B.C). Even in today's cultures, tea is a key component in ceremonies and celebrations, and can be found on the table at meal time in most parts of the world. There are, however, a few countries, such as the United States, where coffee has become the more popular beverage. Green, black, and Oolong teas are all made from the leaves of the same plant, (*Camellia sinensis*), but have a different chemical make-up and taste dependent upon the fermentation process used. While Oolong tea is partially fermented and black tea is fully fermented, green tea leaves are allowed to wither in the hot air and are then pan-fried to halt the fermentation process, (also known as oxidation), allowing green tea to retain more of the medicinal chemicals found in the leaves.

**GREEN TEA FOR A HEALTHY BRAIN**

Scientists are toasting both black and green teas as a growing body of research suggests that their components may offer cognitive health benefits. A new study by researchers at Douglas Hospital Research Centre (DHRC) in Quebec, published in a recent issue of the European Journal of Neuroscience, reports that regular consumption of either tea may reduce the risk of age-related degenerative brain disorders such as Alzheimer's disease. "Our findings showed that administration of both black and green tea extracts and catechins strongly blocked death of neurons," says Remi Quiron, scientific director of the DHRC. "This is the first study to show this beneficial effect of both black and green tea."

Also supporting the potential role of green tea in preventing and treating Alzheimer's disease is a study by University of South Florida researchers, published last fall in the Journal of Neuroscience. The scientists used extracts of epigallocatechin-3-gallate (EGCG), an antioxidant polyphenol found in green tea that has also been studied for anticancer effects. Mice that received daily EGCG injections had lower buildups of beta-amyloid, a protein that can lead to nerve damage and memory loss like that of Alzheimer's disease.

Researchers also reported that supplements may be the best way to achieve this result, since other substances present in green tea may hinder the EGCG from providing a beneficial effect.

Finally, a study published in the April 2006 issue of the Journal of Nutrition suggests that green tea
catechins may help boost learning ability related to reference and working memory. Japanese researchers studied the effects of green tea extracts on the cognitive learning ability of rats, using a concentration of catechins classified as 63% EGCG, 11% epicatechin, 6% epigallocatechin, and 6% 'epic ate chin gallate.

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<td>Lowers total cholesterol</td>
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<tr>
<td>Raises HDL (&quot;good&quot; cholesterol)</td>
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**Green Tea for HEALTHY WEIGHT LOSS**

Green tea catechins, a class of polyphenols, are known to promote weight loss by increasing the metabolism of fats by the liver (thermogenic effect), inhibiting lipase (fat absorption enzyme) in the digestive tract, and providing a feeling of satiety and fullness. Catechins do not function as a stimulant.

**Green Tea Weight Loss Research**

Five independent clinical trials with a total of 500 subjects have documented that green tea catechins have reduced body weight, especially abdominal body fat. These results were even more dramatic in obese subjects, who observed a greater reduction. In one particular double-blind study involving 80 subjects, the Green Tea treatment group received 588 catechins daily and showed a significant (P<0.01) weight loss of 1.7kg in 12 weeks.

A separate study conducted in Switzerland supported these results (Dullo, et.al 1999). This study found that green tea weight loss programs can raise metabolic rates and speed up fat oxidation. Compared with placebo and caffeine alone, subjects taking green tea extracts have a significant increase in daily energy expenditure. The study noted that green is superior to stimulant diet drugs, which can have adverse cardiac effects, especially in obese individual’s with hypertension and other cardiovascular complications.
GREEN TEA DECREASES ABDOMINAL FAT

Excess abdominal fat is associated with high cholesterol and an increased risk of heart disease and stroke. In another Green Tea study, healthy male and female subjects were given 500-600mg per day of Green Tea Catechins 12 weeks without any dietary restriction. Green Tea Catechins significantly (P<0.01) reduced abdominal fat, measured by CT scan.

Other studies support these findings. In a study of 1200 Taiwanese adults, adults who consumed tea more than once a week for six months had 19.6% less body fat and 2.1% reduction in waist to hip ratio compared to non-tea drinkers (Wu, 2003). Another study found a significant decrease in body weight, body mass index, waist circumference, body fat ratio, abdominal fat, glucose, insulin and total cholesterol in a group of 23 healthy adult males who took 483mg catechins per day over a twelve week period (Hase 2001). In those who took 118mg daily only weight, body mass index and insulin changed.

Gymnema Sylvestre

For centuries, Gymnema Sylvestre has been used in Ayurveda, (traditional Indian holistic medicine), to regulate sugar metabolism. The hypoglycemic action of gymnema leaves has been thoroughly documented. Based on extensive research in both humans and animals, it is believed that gymnema boosts the amount of insulin available in the body to process sugar. When chewed, gymnema leaves actually block the taste of sweetness, thereby effectively suppressing the craving for sugar. Studies have also shown that gymnema leaves are effective in lowering serum cholesterol and triglycerides. Natrol uses a pure Gymnema Sylvestre extract (5:1), which is the most desirable form.

Suggested uses for Gymnema Sylvestra include:

- Balance Blood Sugar
- Control Cravings
- Lose Weight
- Aid in controlling diabetes.

Research

Effects of a natural extract of (-)-hydroxycitric acid (HCA-SX) and a combination of HCA-SX plus niacin-bound chromium and Gymnema sylvestre extract on weight loss.
Preuss HG, Bagchi D, Bagchi M, Rao CV, Dey DK, Satyanarayana S. Department of Physiology and Biophysics, Georgetown University Medical Center. May 2004.

Antimicrobial activity of Gymnema sylvestre leaf extract

Satdive RK, Abhilash P, Fulzele DP. Plant Biotechnology and Secondary Products Section, Nuclear Agriculture and Biotechnology Division Bhabha Atomic Research Centre, India, Dec 2003.


Medicinal plants of India with anti-diabetic potential. Grover JK, Yadav S, Vats V. Department of Pharmacology, All India Institute of Medical Sciences, New Delhi, India, Jun 2002.


Articles


Hyaluronic acid

What is Hyaluronic Acid (HA)?

HA is a non-sulfated glycosaminoglycan distributed widely throughout connective, epithelial, and neural tissues. The average 70-kg man has roughly 15 grams of hyaluronan in his body, one-third of which is turned over (degraded and synthesised) every day.1

HA in Joints

Hyaluronan is an important component of articular cartilage, where it is present as a coat around each cell (chondrocyte). When aggrecan monomers bind to hyaluronan in the presence of link protein, large highly negatively-charged aggregates form. These aggregates imbibe water and are responsible for
the resilience of cartilage (its resistance to compression). The molecular weight (size) of hyaluronan in cartilage decreases with age, but the amount increases. 2

HA in Synovial Fluid

Hyaluronic acid (HA) plays a large part in synovial fluid where it is responsible for the fluid’s viscous and elastic properties, which are essential for healthy joint function. The majority of studies have examined intra-articular injections of HA.

HA and Collagen

Polish researchers reported in vitro, HA exerts a protective effect against interleukin-1-induced inhibition of collagen biosynthesis. 3. A review from the Orthopedic Specialists of Louisiana, Shreveport, noted intra-articular HA viscosupplementation does appear to improve joint function and help relieve OA-related pain. 4 Further, it added, reduction of NSAID medication use and delayed need for surgical intervention could also mean total cost savings through the use of HA viscosupplementation. Similarly, Canadian researchers reported intraarticular HA injections can improve resting and walking pain in knee OA patients, with symptom control lasting approximately six months. 5 And the AHRQ review released in September 2007 stated results from 42 trials (n=5,843) generally showed positive effects on pain and function scores with HA viscosupplementation; however, it qualified the outcome, stating there is considerable uncertainty due to trial quality, publication bias and unclear clinical significance. 6

HA is a component of collagen in the joints and in type II collagen or collagen hydrolysate supplements. Cartilage is also an important factor in the protection of joints, and one of its key components is collagen. Chicken collagen is a popular material because it provides chondroitin, HA and type II collagen, which is a rope-shaped, fiber-like protein that gives cartilage its structural strength. Researchers from the University of Illinois College of Medicine at Chicago reviewed medical literature on collagen hydrolysate, and found orally administered collagen hydrolysate is absorbed and accumulates in cartilage. 7 Further, it appears to stimulate a significant increase in synthesis of extracellular matrix molecules by chondrocytes.

HA in Skin

Hyaluronan is also a major component of skin, where it is involved in tissue repair. When skin is excessively exposed to UVB rays, it becomes inflamed (sunburn) and the cells in the dermis stop producing as much hyaluronan, and increase the rate of its degradation. Hyaluronan degradation products also accumulate in the skin after UV exposure. 8

Reference:
L-GLUTAMINE

L Glutamine is the most abundant amino acid in the body. In a 1995 study conducted by Thomas C. Welbourne of Louisiana State University College of Medicine in Shreveport, Welbourne showed that a surprisingly small oral dose of about 2 grams of glutamine raised growth-hormone levels more than four times over that of a placebo. Even more exciting, age did not diminish the response at least in this small study of volunteers, who ranged from thirty-two to sixty-four years.

Glutamine is the amino acid that is most used by the body, particularly during times of stress. The immune system and the gut practically live on glutamine. If the body does not produce enough glutamine, muscle loss and immune dysfunction can occur. The gut atrophies, meaning nutrients all kinds cannot be absorbed as well as before.

A 1993 study by Welbourne in animals showed that glutamine supplementation protects muscle mass and prevents acidosis, which occurs with strenuous exercise and causes muscle breakdown. According to Tudy Shabert, M.D., author of The Ultimate Nutrient Glutamine, supplementation with glutamine, especially in times of stress, would prevent muscle wasting. In a foreword to the book, Douglas Wilmore, M.D., of Harvard Medical School, points out that glutamine is a key to the metabolism and maintenance of muscle, the primary energy source for the immune system, and essential for DNA synthesis, cell division, and cell growth, all factors that are enhanced by HGH. It also crosses the blood-brain barrier into the brain, where it increases energy and mental alertness.

High levels of glutamine in the blood translates into greater health as a 1994 study showed. In a survey of thirty-three people over the age of sixty, those at the top of the scale of blood glutamine levels had fewer illnesses, lower cholesterol, lower blood pressure, and were closer to their ideal weights than people at the bottom of the scale in this nutrient. The low-glutamine subjects had higher rates of arthritis, diabetes, and heart disease, while those who were high in glutamine said that they felt great.

MACA (Lepidium Meyenii)
Botanical name: Lepidium Meyenii  
Common Names: Maca, Peruvian ginseng  
Part Used: Root

Maca (Lepidium meyenii) comes from a root of the radish family that grows high in the Peruvian Andes Mountains of South America. For hundreds of years native Peruvians have used Maca for its ability to increase energy and stamina and, more popularly, for its effectiveness as an aphrodisiac.

Traditional Use of Maca

According to local folklore, Maca, (also called Peruvian Ginseng), was introduced to Spanish explorers by the native Incas sometime during the 16th century. Although their livestock survived the arduous journey, they were weak and infertile. Upon the advice of the Incas, the Spaniards fed Maca to their horses and other animals; within a short period of time, the livestock regained its health and started to reproduce normally. In addition to its use for fertility, Inca warriors would eat Maca before battles to promote strength and stamina. Maca is still a staple in the Peruvian diet. The root may be roasted like a potato, or it may be used to make jam, pudding, juice or soup. As an aphrodisiac, Maca is typically formulated into a capsule.

In Peruvian herbal medicine today, maca is reported to be used as an immunostimulant; for anemia, tuberculosis, menstrual disorders, menopause symptoms, stomach cancer, sterility (and other reproductive and sexual disorders); and to enhance memory. Maca's fertility-enhancing properties were reported as early as 1961, when researchers discovered that it increased fertility in rats. Maca is a powerful adaptogen that can help balance our body's systems. Maca can stabilize blood pressure, boost immunity, and harmonize the body's overall vitality.

Nutritional Value of Maca

Make no doubt - maca is a wonderful source of natural vital nutrients. The synergy of so many amino acids, vitamins, and minerals in their natural states may increase the assimilation, uptake, and utilization of them in the body. The nutritional value of dried maca root is high, resembling those of cereal grains such as maize, rice, and wheat. It contains 60-75% carbohydrates, 10-14% protein, 8.5% fiber, and 2.2% lipids. The protein content of maca exists mainly in the form of polypeptides and amino acids (including significant amounts of arginine, serine, histidine, aspartic acid, glutamic acid, glycine, valine, phenylalanine, tyrosine, and threonine). It also has about 250 mg of calcium, 2 g of potassium, and 15 mg of iron in 100 g of dried root-and important amounts of fatty acids (including linolenic, palmitic, and oleic acids). Maca contains sterols (about 0.05% to 0.1%) and other vitamins and minerals. In addition to its rich supply of essential nutrients, maca contains alkaloids, tannins, and saponins.

Actives in Maca root

Maca root contains sterols, uridine, malic acid, macamides, and glucosinolates. Oil components include phenyl acetonitrile and benzaldehyde. Many of the compounds in maca have an effect on the
central nervous system. The mechanism of action of maca is presently not well understood, but probably seems to be independent of a hormonal effect since studies show maca does not influence blood levels of hormones, for instance testosterone. Maca has alkaloids, steroids, tannins, saponins, and cardiotonic glycosides.

Benefits of Maca

- Energizes and revitalizes physical and mental strength
- Regulates menstruation and lessens menopausal symptoms
- Aids in fertility and as an aphrodisiac
- Anti-Arthritic

Research on Maca for Sexual Health

Effect of Lepidium meyenii (Maca herb), a root with aphrodisiac and fertility-enhancing properties, on serum reproductive hormone levels in adult healthy men.


Lepidium meyenii (Maca) is a Peruvian hypocotyl that grows exclusively between 4000 and 4500 m in the central Andes. Maca is traditionally employed in the Andean region for its supposed aphrodisiac and/or fertility-enhancing properties. This maca study was a 12-week double-blind, placebo-controlled, randomized, parallel trial in which active treatment with different doses of Maca Gelatinizada was compared with a placebo. The study aimed to test the hypothesis that Maca has no effect on serum reproductive hormone levels in apparently healthy men when administered in doses used for aphrodisiac and/or fertility-enhancing properties. Men aged between 21 and 56 Years received 1500 mg or 3000 mg Maca. Serum levels of luteinizing hormone, follicle-stimulating hormone, prolactin, 17-alpha hydroxyprogesterone, testosterone and 17-beta estradiol were measured before and at 2, 4, 8 and 12 weeks of treatment with placebo or Maca (1.5 g or 3.0 g per day). Data showed that compared with placebo Maca had no effect on any of the hormones studied nor did the hormones show any changes over time. Multiple regression analysis showed that serum testosterone levels were not affected by treatment with Maca at any of the times studied. In conclusion, treatment with Maca does not affect serum reproductive hormone levels.

Effect of Lepidium meyenii (maca herb) on sexual desire and its absent relationship with serum testosterone levels in adult healthy men.


This maca study was a 12-week double blind placebo-controlled, randomized, parallel trial in which active treatment with different doses of Maca Gelatinizada was compared with placebo. The study aimed to demonstrate if effect of Maca on subjective report of sexual desire was because of effect on mood or serum testosterone levels. Men aged 21-56 years received maca in one of two doses: 1,500 mg or 3,000 mg or placebo. Self-perception on sexual desire, score for Hamilton test for depression, and Hamilton test for anxiety were measured at 4, 8 and 12 weeks of maca treatment. An improvement in
sexual desire was observed with maca since 8 weeks of treatment. Serum testosterone and estradiol levels were not different in men treated with maca and in those treated with placebo. Logistic regression analysis showed that maca has an independent effect on sexual desire at 8 and 12 weeks of treatment, and this effect is not because of changes in either Hamilton scores for depression or anxiety or serum testosterone and estradiol levels. In conclusion, treatment with maca improved sexual desire.

Hexanic Maca extract improves rat sexual performance more effectively than methanolic and chloroformic Maca extracts.


*Lepidium meyenii (Maca)* is traditionally employed in the Andean region for its supposed properties in improving fertility. The aim of this study was to determine the effect of subacute oral administration of hexanic, methanolic and chloroformic extracts of Maca root on sexual performance in inexperienced male rats. The following sexual performance parameters were evaluated: 1st mount, 1st intromission, ejaculation and post-ejaculatory latencies, intercopulatory interval and copulatory efficacy. All the tested fractions significantly decreased intromission latency and intercopulatory interval and increased intromission frequency and copulatory efficacy (*P < 0.05*) as compared to controls. Hexanic and methanolic extracts were able to increase mount frequency (MF), while only hexanic fraction significantly improved mount latency. Globally, only the hexanic fraction significantly improved the majority of the sexual parameters measured. Sub-acute oral administration of hexanic Maca extract improved sexual performance parameters in sexually inexperienced male rats most effectively.

Maca root improves sexual behaviour in male rats independently from its action on spontaneous locomotor activity.

*J Ethnopharmacol. 2001 May;75(2-3):225-9.*

*Lepidium meyenii Walpers (Maca root)* is traditionally employed in the Andean region for its supposed properties to improve energy and fertility. The aim of this study was to evaluate the effect of acute and chronic Maca pulverised root oral administration on rat sexual behaviour. Sixty male sexually experienced rats (20 group) were daily treated for 15 days with Maca 15 mg kg(-1), Maca 75 mg kg(-1) or saline 0.5 ml kg(-1). The following sexual performance parameters were evaluated at first and last day of treatment: 1st mount (ML), 1st intromission (IL), ejaculation (EL) and postejaculatory (PEL) latencies, intercopulatory interval (ICI) and copulatory efficacy (CE). An activity cage test was carried out to evaluate if Maca-induced locomotion changes could indirectly improve rat sexual performances. It was observed that both lower and higher Maca doses acutely decreased ML, IL and ICI in a significant way (*P < 0.05*), while only the 75 mg kg(-1) dose decreased the PEL (*T = 29, P < 0.05*). This effect seems to be the only one dose-dependent. After 15 days of treatment, both doses are able to significantly decrease ML, IL, EL and PEL, while the 75 mg kg(-1) dose decreased the ICI (*T = 40, P < 0.05*) too. IL, EL and PEL variations seem to be dose-related after chronic treatment. Moreover, chronic Maca treatment induced an apparently not dose-related increase in rat locomotion, during the second 10-min period of observation in the activity cage. The late
Research on Maca for Prostate and Testicular Health


Epidemiological studies have found that consumption of cruciferous vegetables is associated with a reduced risk of prostate cancer. This effect seems to be due to aromatic glucosinolate content. Glucosinolates are known for have both antiproliferative and proapoptotic actions. Maca is a cruciferous cultivated in the highlands of Peru. The absolute content of glucosinolates in Maca hypocotyls is relatively higher than that reported in other cruciferous crops. Therefore, Maca may have proapoptotic and antiproliferative effects in the prostate. **METHODS:** Male rats treated with or without aqueous extracts of three ecotypes of Maca (Yellow, Black and Red) were analyzed to determine the effect on ventral prostate weight, epithelial height and duct luminal area. Effects on serum testosterone (T) and estradiol (E2) levels were also assessed. Besides, the effect of Red Maca on prostate was analyzed in rats treated with testosterone enanthate (TE). **RESULTS:** Red Maca but neither Yellow nor Black Maca reduced significantly ventral prostate size in rats. Serum T or E2 levels were not affected by any of the ecotypes of Maca assessed. Red Maca also prevented the prostate weight increase induced by TE treatment. Red Maca administered for 42 days reduced ventral prostatic epithelial height. TE increased ventral prostatic epithelial height and duct luminal area. These increases by TE were reduced after treatment with Red Maca for 42 days. Histology pictures in rats treated with Red Maca plus TE were similar to controls. Phytochemical screening showed that aqueous extract of Red Maca has alkaloids, steroids, tannins, saponins, and cardiotonic glycosides. The IR spectra of the three ecotypes of Maca in 3800-650 cm\(^{-1}\) region had 7 peaks representing 7 functional chemical groups. Highest peak values were observed for Red Maca, intermediate values for Yellow Maca and low values for Black Maca. These functional groups correspond among others to benzyl glucosinolate. **CONCLUSIONS:** Red Maca, a cruciferous plant from the highland of Peru, reduced ventral prostate size in normal and TE treated rats.

Effect of alcoholic extract of Lepidium meyenii (Maca) on testicular function in male rats.

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**Objective:** To evaluate the effect of the alcoholic extract of Lepidium meyenii (Maca) on the spermatogenesis in male rats. **Method:** In Holtzman rats, Maca alcoholic extract (5%) was given by oral route at doses of 48 mg/day or 96 mg/day for 7 days, 14 days and 21 days. Testicular function was assessed by measurements of lengths of different stages of seminiferous epithelia and by epididymal sperm count. **RESULTS:** Ethanolic extract of Maca increased the length of stages IX-XI of seminiferous epithelium at treatment day 7, day 14 and day 21. Progression of spermatogenesis was evident only after day 21 when lengths of stages XII-XIV of seminiferous epithelium were increased; at day 7 and day
14, no important change in spermatogenesis was observed. Epidydymal sperm count was increased with 48 mg/day at all times. With 96 mg/day an increase in sperm count was observed at day 7, but it was reduced at day 14 and day 21 of treatment. Serum testosterone levels were not affected. **CONCLUSION:** The alcoholic extract of Maca activates onset ant progression of spermatogenesis at 48 mg/day or 96 mg/day in rats.

**Research on Maca for Fertility**

*Lepidium meyenii (Maca)* increases litter size in normal adult female mice.

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**BACKGROUND:** Lepidium meyenii, known as Maca, grows exclusively in the Peruvian Andes over 4000 m altitude. It has been used traditionally to increase fertility. Previous scientific studies have demonstrated that Maca increases spermatogenesis and epididymal sperm count. The present study was aimed to investigate the effects of Maca on several fertility parameters of female mice at reproductive age. **METHODS:** Adult female Balb/C mice were divided at random into three main groups: i) Reproductive indexes group, ii) Implantation sites group and iii) Assessment of uterine weight in ovariectomized mice. Animals received an aqueous extract of lyophilized Yellow Maca (1 g/Kg BW) or vehicle orally as treatment. In the fertility indexes study, animals received the treatment before, during and after gestation. The fertility index, gestation index, post-natal viability index, weaning viability index and sex ratio were calculated. Sexual maturation was evaluated in the female pups by the vaginal opening (VO) day. In the implantation study, females were checked for implantation sites at gestation day 7 and the embryos were counted. In ovariectomized mice, the uterine weight was recorded at the end of treatment. **RESULTS:** Implantation sites were similar in mice treated with Maca and in controls. All reproductive indexes were similar in both groups of treatment. The number of pups per dam at birth and at postnatal day 4 was significantly higher in the group treated with Maca. VO day occurred earlier as litter size was smaller. Maca did not affect VO day. In ovariectomized mice, the treatment with Maca increased significantly the uterine weights in comparison to their respective control group. **CONCLUSION:** Administration of aqueous extract of Yellow Maca to adult female mice increases the litter size. Moreover, this treatment increases the uterine weight in ovariectomized animals. Our study confirms for the first time some of the traditional uses of Maca to enhance female fertility.
Effect of Lepidium meyenii (Maca) on spermatogenesis in male rats acutely exposed to high altitude.


Lepidium meyenii (Maca) is a Peruvian hypocotyl that grows exclusively between 4000 and 4500 m in the central Andes. Maca is traditionally employed in the Andean region for its supposed fertility-enhancing properties. The aim of this study was to test the hypothesis that Maca can prevent high altitude-induced testicular disturbances. Adult male rats were exposed for 21 days to an altitude of 4340 m and treated with vehicle or aqueous extract of Maca. The lengths of the stages of the seminiferous epithelium and epididymal sperm counts were obtained at 0, 7, 14 and 21 days of exposure. The stages of the seminiferous tubules were assessed by transillumination. A dose-response study was also performed at sea level to determine the effect of Maca given to male rats for 7 days on body weight, seminiferous tubule stages and epididymal sperm count. The length of stage VIII and the epididymal sperm count were increased in a dose-dependent manner in Maca-treated rats but treatment reduced the length of stage I. At the highest dose, sperm count increased 1.58 times, the length of stage VIII increased 2.4 times and the length of stage I was reduced 0.48 times compared with the value at dose 0. Exposure to high altitude resulted in a reduction in epididymal sperm count after 7 days and lower values were maintained up to 21 days. Altitude reduced spermiation (stage VIII) to half and the onset of spermatogenesis to a quarter on days 7 and 14 but treatment with Maca (666.6 mg/day) prevented these changes. Data on transillumination and epididymal sperm count in the Maca-treated group exposed to high altitude were similar to those obtained at sea level. Maca increased the sperm count on day 21 of exposure to high altitude to values similar to those obtained in the Maca-treated group at sea level. Furthermore, in the Maca-treated group exposed for 21 days to high altitude, epididymal sperm count was higher than in the non-treated group at sea level sperm). In conclusion, treatment of rats with Maca at high altitude prevented high altitude-induced spermatogenic disruption.

Effect of Lepidium meyenii (maca) roots on spermatogenesis of male rats.


AIM: To determine the effect of oral administration of an aqueous extract from the roots of Lepidium meyenii (maca) on spermatogenesis in adult male rats. METHODS: Male rats received an aqueous extract of the root (66.7 mg in one mL) twice a day for 14 consecutive days. RESULTS: Treatment with Lepidium meyenii resulted in an increase in the weights of testis and epididymis but not the seminal vesicle weight. The length and frequency of stages IX-XIV seminiferous tubules, where mitosis occurred, were increased and stages I-VI were reduced in rats treated with Lepidium meyenii. CONCLUSION: The maca root invigorates spermatogenesis in male rats by acting on its initial stages (IX-XIV).

Doctor’s Comments on Maca

Gary F. Gordon, M.D., former President of the American College for Advancement in Medicine, now founder and president of the International College of Advanced Longetivity Medicine, located in Chicago, Illinois, knows first hand the value of Maca.
"We all hear rumors about various products like Maca," he says. "but using this Peruvian root myself, I personally experienced a significant improvement in erectile tissue response.

Dr. Gordon explains that Maca works by normalizing our steroid hormones like testosterone, progesterone, and estrogen. Therefore it has the facility to forestall the hormonal changes of aging. It acts on men to restore them to a healthy functional status in which they experience a more active libido." Lots of men and women who previously believed their sexual problems were psychological are now clearly going to look for something physiological to improve quality of life in the area of sexuality" says Dr. Gordon. "In other words, I believe that people who engage in sex twice a week or more live longer. I've found sexual activity to be a reliable marker for overall aging."

Henry Camponile, M.D., of St. Petersburg, Florida states that his first menopausal patient "started to feel better four days after she began taking Maca," and finds that it promotes energy unlike any other herb he has used.

Hugo Malaspina, M.D., a cardiologist practicing complementary medicine in Lima, Peru, has been using Maca in his practice for more than ten years. Dr. Malaspina first found out about Maca through a group of sexually active older men who were taking the herb with good results. "One of this group started taking Maca and found he was able to perform satisfactorily in a sexual relationship with a lady friend. Soon everyone in the group began drinking the powdered Maca as a beverage and enjoying the boost that the root was giving their hormonal functions. I have several of these men as patients, and their improvement prompted me to find out more about Maca and begin recommending it to my other patients."

Dr. Malaspina frequently prescribes Maca to women experiencing premenstrual discomfort or menopausal symptoms. "There are different medicinal plants that work on the ovaries by stimulating them," he says. "With Maca though, we should say that it regulates the ovarian function." Dr. Malaspina further notes that "Maca regulates the organs of internal secretion, such as the pituitary, the adrenal glands, and the pancreas. I have had perhaps two hundred female patients whose perimenopausal and menopausal symptoms are alleviated by taking Maca."

Mark Smith , M.D has said, "I have noticed a significant level of more balanced energy, stamina & endurance markedly during cardiovascular workouts using Maca". Viagra, on the other hand has been associated with at least 70 cardiovascular related deaths. Burton Goldberg, president of Future Medicine Publishing in Tiburon, California, whose latest book is An Alternative Medicine Definitive Guide to Cancer, is another enthusiast of Maca. He says that when he tried Maca he was very pleased with the results and began taking it regularly. "I'm a 72 year-old man and this Maca has taken 25 years off my aging sex life," declares Goldberg. "That's pretty important to me!"
Medicinal Mushrooms

Medicinal mushrooms are loaded with nutritional value and are widely recognized for their ability to enhance immune function and inhibit tumor growth. As more research is being conducted the list of their possible health advantages has become endless.

Nearly 2,000 mushrooms are edible and most are chock-full of protein, calcium, fiber, B vitamins, vitamin C and other nutrients. Studies show that mushrooms may be the world’s greatest natural food resource because they are nutrient rich and area good source of protein (generally 34-97%). Polysaccharides are a crucial component of a mushrooms structure, which trigger cell response that increases macrophages and T-cell activity. And may help patients with immune-compromising illnesses. Below is a sampling of some medicinal mushrooms.

AGARICUS (Agaricus blazei Murill)

Found in Brazil and the Southeastern U.S., Agaricus Blazei is showing promise in the treatment and prevention of a number of ailments. For one, research indicates that it helps shrink tumors - but only tumors in a host, such as a human or other mammal, not tumors in a test tube. This medicinal mushroom species is also showing an ability to jump-start the immune system to respond to abnormal cells (cancer is considered abnormal cell growth), without damaging normal cells. This relatively new medicinal mushroom contains the most beta glucans of all medicinal mushrooms and is most commonly used for the relief of fatigue and the common cold. In the mid-1960's researchers found that the people of Piedade rarely became ill and credited their strong immune systems to their regular diet of Agaricus mushrooms.

Potential Benefits of Agaricus: Immune and cardiovascular function, anti-cancer, healthy cholesterol, antioxidant, liver support and allergy support.

CORDYCEPS (Cordyceps Sinensis)

In Traditional Chinese medicine, Cordyceps were used to increase stamina, including sexual stamina, and for treatment of kidney and lung ailments, such as bronchitis, asthma and tuberculosis. Studies have indicated that Cordyceps help mammals to use oxygen more efficiently and reduce some of the effects of aging. Research also indicates that Cordyceps may lower cholesterol and might also be effective in reducing inflammation.

In an animal study, indicated that the mushroom extract enhanced the activity of natural killer cells in mice that had cancer. After receiving radiation therapy mice given the extract were more likely to survive than the control group. Athletes, too, have long used this mushroom to improve energy, stamina, and endurance. The women of the 1993 Chinese National running team attributed their nine world records to Cordyceps. The overall effect of Cordyceps though may be dependent on which fraction is used.


LION’S MANE (Hericium erinaceaus)

Long used in Traditional Chinese medicine for the treatment of stomach disorders and as cancer prevention. Studies have found that Lion’s Mane exhibits anti-tumor activity, maintain healthy
cholesterol level, and support cardiovascular health. More recent research indicates that this particular medicinal mushroom might be useful in treating senility and Alzheimer. Lion’s Mane is often studied for the possible benefit of nerve growth, which may help prevent brain dysfunction linked with Alzheimer and other neurological disease. A recent trial studied the effects of the mushroom on elderly patients in Japan suffering from such diseases. In the experimental group, seven of the patients suffered from dementia and received five grams per day of dried Lion’s Mane for six months. Six out of the seven dementia patient’s showed improvements in their perceptual capacities and all seven showed improvements in their function independence measure.

**Potential Benefits for Lion’s Mane:** Immune support anticancer/tumor, nerve tonic and digestive support.

**MAITAKE (Grifola frondosa)**

Famous for its taste and broad health benefits the maitake mushroom is abundant in nutrients and can be consumed as food in tea or as a supplement. The primary polysaccharide in maitake mushroom is beta-D-glucan, which is being studied for potential cancer and HIV prevention and treatment as well as for controlling diabetes. Said naturopathic doctor Mark Stengler, ND of a recent trial “Cancer regression or significant symptoms improvement was observed in 11 out of 16 breast cancer patients, seven out of 12 liver cancer patients, and five out of eight lung cancer patients” A separate study was conducted on the effects of a specific maitake mushroom fraction (D-fraction and SX fraction, Maitake Products) on patients with human prostate cancer and type 2 diabetic patients, five individuals taking oral maitake mushroom supplements (containing about 4-5% of SX-fraction) showed improved glycemic levels. In one case study, the blood glucose level of a type 2 diabetic dropped from 248mg/dl to 80-90 mg/dl when taking maitake mushroom powder caplets.

**Potential Benefits of Maitake:** Immune support, anti cancer/tumor, antiviral, reduces blood pressure and cholesterol, liver support, blood sugar balancing, HIV support, radiation/chemo adjunct, infection and weight loss.

**POLYPORUS (Polyporus tuberaster)**

Although polyporus is mainly used in China, Native Americans may have relied on this fungus for food. Polyporus contains ergosterol and the polysaccharide I (Gu I) and is also rich in minerals such as potassium, calcium, magnesium and iron.

**Potential Benefits of Polyporus:** Immune enhancement, anti-cancer/tumor and kidney support.

**REISHI (Ganoderma lucidum)**

Reishi is perhaps one of the oldest of medicinal mushrooms, in terms of use by humans for medical purposes. Traditionally, Reishi has been used in Eastern medicine to treat a variety of conditions such as heart disease, bronchitis, cancer, high blood pressure, joint inflammation, ulcers and liver conditions.

Modern medical research into the benefits of Reishi back some of these traditional claims, including use of the mushroom for cancer treatment, HIV AIDS and Hepatitis B. It's also been shown to aid in treating hypertension and allergies. Some of the recent research into the benefits of Reishi mushrooms has focused on its anti-inflammatory benefits, which is showing tremendous promise. In addition, studies indicate that Reishi mushrooms may be beneficial in treating Alzheimer. Reishi is often used to support respiratory health. In china, a formula using the reishi mushroom was tested in 2,000 patients coping with bronchitis and was deemed effective in 90% of the cases. After numerous months, the patients showed an increase of immunoglobulin A (Ig A) in their respiratory tract, which is vital factor for defending the immune system.

**Potential Benefits:** Degenerative disease immune enhancement, anti-cancer/tumor, anti vital, cardiovascular support, lowers blood pressure and cholesterol, liver function, nerve tonic, respiratory tonic, blood sugar balancing, radiation/chemo adjunct, anti-inflammatory, and anti-allergy. Also used to fight altitude sickness.
SHITAKE (Lentinus Edodes)

The shitake mushroom is rich in B1 (thiamin) B2, (riboflavin), B12 Vitamin D, calcium phosphorous iron, sodium, and potassium. Shitake also contains all nine amino acids and is 30% protein. The fiber in shitake mushrooms contains eritadenine, which helps to maintain healthy cholesterol level. It is also an energy enhancer and contains the bioactive constituents beta-glucan, heteroglucan, adenine derivative, guanosine f'-monophosphate and polyacelylene.

The shitake mushroom stimulates the macrophages and natural killer cells of the immune system. Lentinan, a polysaccharide in shitake, is approved in Japan to be used for cancer treatment along with chemotherapy. Research has proven that this medicinal mushroom can increase the life span of cancer patients and possibly inhibit the recurrence of cancer after treatment. For example, shitake was used in a study with 16 patients with advanced cancer; a clinical response appeared in 80% of the lesions. And, the survival time for patients who responded was 129 days and 49 days for those who did not respond.

Potential Benefits: Immune enhancement, anti-cancer/tumor, anti-viral, lowers blood pressure and cholesterol, liver support and radiation/chemo adjunct.

TREMELLA (Tremella Fuctiformis)

The tremella medicinal mushroom contains 70% dietary fibers such as acidic polysaccharides and is very rich in vitamin D. This mushroom contains the bioactive constituent’s glucuronoxylomannan and vitamin D. Tremella has been used as a cough syrup to treat chronic cough it is also suitable for skin because it contains polysaccharides mannosae, xylose and glucuronic acid.


TURKEY TAIL (Coriolus versicolor)

This medicinal mushroom has long been used to aid in the treatment of respiratory ailments and the treatment of urinary, digestive and liver problems. The turkey tail mushroom annually accounts for 25% of Japan’s expenditure on anti cancer agents. Studies indicate that Coriolus not only aids in the treatment of some forms of cancer but also helps prevent a recurrence, without much side effects. Studies also show that substances found in Turkey Tail appear to inhibit HIV replication, which means it might be useful in slowing the progression of HIV Aids.

Turkey tail mushroom contains the bioactive constituent’s beta-clucan protein complex and heteroglucan –peptide. The turkey tail is said to extend the survival rates of certain cancer patients and can help fight hepatitis B and chronic active hepatitis. Coriolus is responsible for providing protein-bound polysaccharide complexes that enhance the immune system and have enzymes that inhibit oxidative stress and cell growth. Research has shown that after treatment with turkey tail, five-year survival rates have been increased by nearly 30%. Researchers from Bastyr University will soon begin a double-blind, placebo-controlled study on the nutritional use of Coriolus versicolor mushroom in women who have undergone breast cancer treatment. This clinical trial will follow 50 patients to determine whether taking 4500 mg of C. versicolor per day for eight weeks can increase natural killer cell activity.


AHCC

Some mushroom extract supplements are hybridized of several mushrooms. One such version, active hexose-correlated compound (AHCC), has a unique alpha-1, 4 glucan structure and low-molecular weight to support optimal immune function. At the April 2006 Experimental Biology Conference, Drexel University researchers presented findings indicating that AHCC supplements boosted immune
response to the flu, increased natural killer cell activity and accelerated recovery time.

Medicinal mushrooms may be considered safe, but before using them, one should review the product labels and pay close attention to the mushroom’s name, type of extract, extraction techniques and quality assurance. Individuals with high or low blood pressure should consult their physician before use.

MUCUNA PRURIENS (Velvet Bean)

**Botanical name:** Mucuna Pruriens  
**Common name:** Cowitch, Cowhage, Velvet Bean, Cow-it, Buffalo bean  
**Latin name:** Mucuna Pruriens  
**Part used:** Seeds, Root, Legumes

Mucuna Pruriens, also known as Cowhage, and velvet bean contains a very powerful neurotransmitter pre-cursor L-Dopa. Mucuna pruriens is a reputed remedy of Ayurveda in nervous and sexual diseases. Traditionally, Mucuna pruriens is commonly used as carminative, hypertensive and hypoglycemic agent. Mucuna pruriens has been found to contain L-DOPA, 40 mg/g of the plant. The plant/seeds contain the bioactive alkaloids mucunine, mucunadine, mucuadinine, pruriendine and nicotine, besides B-sitosterol, glutathione, lecithin, oils, venolic and gallic acids. Studies in experimental model show L-Dopa also helps in the reduction of cholesterol and blood sugar levels.

**L-Dopa**

L-Dopa is an amino acid that converts into dopamine. Dopamine is an essential component of our body and it's required for proper functioning of the brain. Research discovered the body converts the amino acid tyrosine into L-dopa; L-dopa is then converted into dopamine. Without the neurotransmitter dopamine to serve a damping effect on neural transmissions, muscles become tense and tremble.

**Benefits of Mucuna Pruriens L-Dopa:**

- *Improved sleep (promotes deep sleep)*
- *Reduced bodyfat & decreased cellulite*
- *Decreased wrinkles*
- *Improved skin texture & appearance*
- *Increased bone density and reversal of osteoporosis*
- *Increased lean muscle mass*
- *Improved mood and sense of well-being*
- *Enhanced libido & sexual performance*
- *Increased energy levels*
- *Improved cholesterol profile & regeneration of organs (heart, kidney, liver, lungs)*
- *Dramatically strengthened immune system*
**Mucuna: Human Growth Hormone**

L-Dopa contains natural secretagogues which may support the body’s ability to stimulate the natural release of growth hormone. The blood carries the dopamine into the brain, where it naturally increases HGH production from the pituitary gland. The increased dopamine levels also optimize the production of other hormones, including testosterone, leading to increased sex drive and improved sexual performance for both men and women, beneficial in stimulating muscle growth, as well as burning fat from fat cells.

**Mucuna and Parkinson**

The seed powder of Mucuna pruriens has long been used in traditional Ayurvedic Indian medicine for diseases including parkinson. L-Dopa significantly affects dopamine metabolism in the striatonigral tract. This ability helps improve Parkinsonian symptoms in humans. The seeds of Mucuna pruriens accumulate 0.2% - 2% L-dopa in their dry weight. Parkinson's disease study group evaluated activity of Mucuna pruriens extract v/s Levodopa/ carbidopa in sixty patients and during their 12 weeks treatment , they proved that the extract was effective with less adverse effects.

In a randomised, controlled, double blind crossover trial published on Journal of Neurology, Neurosurgery, Psychiatry, the clinical effects of levodopa L-dopa/carbidopa (LD/CD) are compared with two different doses of mucuna preparation. Eight Parkinson's disease patients were given with single doses of 200/50 mg LD/CD, or 15 and 30 g of mucuna preparation in randomised order. Compared with standard LD/CD, the 30 g mucuna preparation led to a considerably faster onset of effect (34.6 v 68.5 min; p = 0.021), Mean on time was 21.9% (37 min) longer, peak L-dopa plasma concentrations were 110% higher and the area under the plasma concentration v time curve (area under curve) was 165.3% larger (p = 0.012). The rapid onset of action and longer on time without concomitant increase in dyskinesias on mucuna seed powder formulation suggest that this natural source of L-dopa might possess advantages over conventional L-dopa preparations in the long term management of PD.

**Mucuna Pruriens Aphrodisiac Effects**

Mucuna pruriens can improve sexual behavior, libido, and performance. In an aphrodisiac study done at College of Pharmaceutical Sciences, Manipal, Mucuna Pruriens when administered in a dose of 75 mg/kg body weight daily, increased the sexual activity of male albino rats considerably by stimulating testosterone level. A ten fold increase in the mounting frequency was observed. The research shows that sexually active animals had increased sexual desire and improved sexual performance after 21 to 28 days. However, impotent animals did not derived any benefits.

Another research shows that Mucuna Pruriens heightened arousal and increased sexual activity to a moderate extent but also sustains it for a longer time as indicated by the increase in below Ejaculation Latency and decrease in Post Ejaculatory Interval. Mucuna Prueins is shown to possess central depressant activity. The delay in ejaculation could be due to toning down of hypersensitivity of genitals and hyperexcitation of the regulatory centers. This study show that Mucuna Pruriens can be used to improve libido and delay premature ejaculation.

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### Mucuna Increase Sperm Count

The total alkaloids from Mucuna Pruriens comprise of five alkaloids (purienine and purienidine), are found to stimulate the secretion of testosterone to ensure greater availability to gonads. These leads to increase sperm count and increase testes size. The testes section of the mice shows increase sperm count at the 20th day, and even higher sperm count on the 30th day. Spermatogenesis is governed by testosterone. The alkaloids in Mucuna increase testosterone level in seminiferous tubules either by action on pituitary function or on Leydig's cells that store testosterone.

### Mucuna pruriens on free radicals and oxidative stress

In a research published on Phytotherapy Research, 2002, in vitro studies with alcohol extract of Mucuna pruriens showed no change on the rate of aerial oxidation of GSH content but it significantly inhibited FeSO(4) induced lipid peroxidation. It also inhibited the specific chemical reactions induced by superoxides and hydroxyl radicals. An in vivo study on albino rats for 30 days showed no toxic effect up to a dose of 600 mg/kg body weight, on oral administration. There was no change in the level of TBA-reactive substances, reduced glutathione content and SOD activity in the liver. The activity of serum GOT, GPT and alkaline phosphatase was also unchanged. Thus it could be concluded that the alcohol extract of the seeds of M. pruriens has an anti-lipid peroxidation property, which is mediated through the removal of superoxides and hydroxyl radicals.

### Antidiabetic evaluation of Mucuna pruriens

In normal rabbits, Mucuna Pruriens (0.5, 1 and 2 g/kg) significantly decreased the blood glucose levels while in diabetic rabbits only 1 and 2 g/kg body weight caused a significant fall. High levels of trace elements like manganese, zinc, and others were found in these seeds. Therefore, it is conceivable that Mucuna pruriens seeds contain hypoglycaemic principles, may be both organic and mineral, which seem to act indirectly by stimulating the release of insulin and/or by a direct insulin-like action.
Pine Bark

Pine bark extract is obtained from the inner bark of a specific type of pine trees that grow mainly in the coastal areas of southwestern France. Pine bark extract contains chemicals that have various effects. Some of them act as antioxidants in the body. Antioxidants are thought to protect body cells from damage caused by a chemical process called oxidation. Pine bark extract also has anti-inflammatory effects. Inflammation is often a response to irritation, injury, or infection and it usually includes pain, redness, and swelling in the area of the damage. Inflammation can occur within body tissues as well as on the surface of the skin. Pine bark extract has been shown in studies to help relieve the swelling and pain associated with chronic venous insufficiency in the legs and to delay or prevent damage to blood vessels in the retinas of the eyes. Study evidence also supports its use in enhancing exercise capacity, improving fertility for men with inadequate sperm quality and/or movement, and smoothing out uneven skin color.

Pine Bark Extract as Potent Antioxidant

Antioxidants are a class of biological molecules that function to scavenge and neutralize free radicals. The most common antioxidants are Vitamin C and Vitamin E. Pine Bark Extract is 20 times more potent than Vitamin C, and 50 times more than Vitamin E. Pine Bark extract is thought to improve fertility in men by increasing sperm quality and movement probably due to its high antioxidant level.

OPC Help Fight Free Radicals

Uniquely vulnerable targets of free radical attack that require a regular supply of antioxidants just to maintain a basic level of function include fatty acids – especially those in cell membranes – and sulfhydryl proteins, which form one of the most common types of chemical bonds found in biological organisms. The importance of these substances for overall health cannot be overstated, as they are critical components not only of tissues throughout the body, but most importantly, of the principal regulatory organs – the brain and liver – and every blood vessel. Free radical attack on fatty acids – known as lipid peroxidation – and related destruction of sulfhydryl proteins can lead to diminished function of cell membranes and whole organs. This, in turn, can contribute significantly to decreases in quality of life. Free radicals are believed to be active in the development of cumulative damage to the system, as well as in many of the undesirable effects of aging. Free radicals are constantly being produced due to the natural intake of oxygen and generation of energy by the body’s cells. However, their production is heightened by pollutants such as tobacco smoke, alcohol, solvents, and oxidized
cholesterol from foods. Therefore, health scientists suggest we may need to increase our intake of antioxidants either from foods or from supplements – such as Vitamin A and Beta Carotene, Vitamins C and E, Resveratrol, etc.

**Oligomeric Proanthocyanidin Complexes (OPC)**

Proanthocyanidins are a special class of highly bioavailable, water-soluble bioflavonoids with unparalleled free radical scavenging activity. They readily cross the Blood-Brain Barrier to provide antioxidant protection to the central nervous system, and stay in the bloodstream for approximately 72 hours. Research shows that proanthocyanidins are highly beneficial with no evidence of adverse effects.

As a potent antioxidant, Pine Bark is valuable for protecting the liver from free radical attack. Since the liver is the main detoxifying, nutrient-assimilating, and energy-generating organ of the body, this may mean more potential for activity in your life. Another major beneficiary of the protective actions of Pine Bark is collagen, the most abundant protein in the body. Collagen is responsible for maintaining the integrity of “ground substance,” the basic material in functional fluids, mucus linings, and connective tissue such as tendons, ligaments, cartilage, and most importantly, blood vessels linings. It is highly vulnerable to free radical attack, and a number of discomforting and depreciating processes are associated with its destruction. There is evidence showing that Pine Bark extract may support for the prevention of collagen destruction.

**Benefits of Pine Bark:**

- **Healthy Brain Function:** Pine Bark OPCs help Vitamin C to work better in the brain to effectively synthesize the neurotransmitters norepinephrine, dopamine and serotonin. In addition, OPC also increases NITRIC OXIDE and improve micro-circulation in the brain and can help improve learning ability and memory through its effects as a neurotransmitter. Recent studies have shown that ADD to be associated with the breakdown of dopamine. By effectively synthesizing the neurotransmitters, pine bark help to maintain healthy brain function.

- **Potent Antioxidants:** OPCs protect against free-radical damage, suggested to be a major cause of the ageing process. The antioxidant effect is 50 times greater than that of vitamin C and E. A major advantage of these molecules is that they are taken up into the cell membranes and protect against both water- and fat soluble free-radicals. Pine Bark’s OPC has superior free radical scavenging activity because of its ability to protect against both water and fat soluble free radicals, and provides incredible protection to the cells against free radical damage. Recent study has shown that OPC from pine bark to trap hydroxyl free radicals, inhibit production of free radicals, inhibit the damaging effects of the enzymes (eg. hyaluronidase, elastase, collagenase, etc) which can degrade connective tissue structures.

- **Healthy Cholesterol Level:** Recent research has shown OPC from pine bark extract to trap lipid peroxides and free radicals, markedly delay the onset of lipid peroxidation, bind to free iron molecules to prevent iron-induced lipid peroxidation.

- **Healthy Blood Pressure:** OPCs is shown to inhibit angiotensin 1-converting enzyme (ACE) - much the same effect as ACE inhibitor drugs used in blood pressure regulation. Data suggests that OPC supplementation is effective in reducing systolic blood pressure in mildly hypertensive patients.

- **Cardio-protective:** OPCs protect fat and cholesterol from oxidation, thus reducing arterial damage leading to heart disease. OPCs have also been shown to lower cholesterol levels, shrink the deposits in the arteries, inhibit platelet aggregation, and in vitro studies found that pine bark extract modulated the release of nitric oxide, which affected the dilation diameter of blood vessels and has cardio protective property. Proanthocyanidins in pine bark extract also help strengthen the walls of blood vessels.
• **Eye Health:** Pine bark extract may also be effective for slowing retinopathy, the gradual break down of the retina in the eyes. Individuals with arteriosclerosis (a build up of fatty deposits in the arteries), diabetes, or other conditions that increase the likelihood for damage to the small blood vessels in the eyes are more likely to have serious vision problems as a result of blood vessel damage. Studies in healthy volunteers have shown that an intake of 200mg/day of OPCs significantly improved visual performance in dark and after glare tests. A number of European studies have shown that OPCs from pine bark, greatly improved symptoms in patients with diabetic retinopathies, maculopathies, and other visual dysfunctions.

• **Healthy Looking Skin:** Oxidation damage causes most visible signs of aging in our skin. By preventing this damage, skin will stay younger looking. One way to achieve this is to reduce the damaging effects of ultraviolet (UV) light. Sunscreen products have incorporated a variety of antioxidants with the intent that they will prevent sun injury to the skin. Part of the aging process is the degradation of skin by the enzyme elastase, which is released with the inflammatory response. OPCs specifically block elastase, thus maintaining the integrity of elastin. Another major beneficiary of the protective actions of Pine Bark is collagen, the most abundant protein in the body. Collagen is responsible for maintaining the integrity of “ground substance,” the basic material in functional fluids, mucus linings, and connective tissue such as tendons, ligaments, cartilage, and most importantly, blood vessels linings. It is highly vulnerable to free radical attack, and a number of discomforting and depreciating processes are associated with its destruction. There is evidence showing that Pine Bark extract may support for the prevention of collagen destruction.

**Pine Bark Extract for Varicose Veins**

Recent findings published in the journal of *Clinical and Applied Thrombosis/Hematosis* show a significant symptom reduction of chronic venous insufficiency (CVI) in patients after supplementing with Pine bark extract. According to the study, pine bark is more effective in reducing edema (leg swelling) tight calves, skin alterations, pain during walking and swelling limbs compared to Daflon, which is a combination of diosmin and hesperidin, a commonly prescribed drug used to treat CVI.

Nearly half a million people in the U.S. develop leg ulcers due to CVI. If left untreated, leg and ankle swelling can lead to dangerous conditions such as deep vein thrombosis (DVT). Previous studies have shown Pine bark extract to be effective in encouraging improved circulation and helping to prevent travel-related DVT. Like varicose veins, spider veins also develop if edema is left untreated.

**Who Should Not Taking Pine Bark Extract**

Individuals who have autoimmune conditions should not take pine bark extract due to its effects on the immune system. Some autoimmune conditions include Crohn's disease, Multiple Sclerosis, Psoriasis, Rheumatoid Arthritis, Lupus, Type 1 diabetes, etc. Because it can enhance immune system function, pine bark extract may interfere with the effects of drugs used to suppress the immune system.
Background and Traditional Use of Rhaponticum

Rhaponticum carthamoides, also known as Leuzea carthamoides and/or Maral root, is an herbal perennial that grows only on the mountain slopes of southern Siberia. Because of its rarity in nature and because the plant grows slowly, the harvesting of wild-growing Rhaponticum is restricted and controlled by the Russian government.

The usage of Rhaponticum as a medicinal plant came about as the result of observations made by local hunters who became fascinated by the behavior of a breed of deer known as Marals. During mating season, when male deer fight each other, they could be seen digging out and eating the Rhaponticum root, (known at that time as Leuzea root), in order to restore their strength. Acting upon this information, local healers started using the root and learned that men who ingested dried Leuzea root would recover from the effects of fatigue and, as an added benefit, experienced an increase in sexual potency. From that point on, Leuzea was called Maral root, which has since been adopted as the official common name. Modern research done in Russia and Eastern Europe has shown that Maral Root may in fact be of benefit in cases of impotence, lead to improvements in memory and learning capacity, increase working capacity of tired skeletal muscles, and possess anabolic and adaptogenic properties.

In 1993, following the amazing success of Chinese endurance athletes, it came to light that coach Ma Junren was secretly using adaptogens, specifically, Cordyceps, Rhodiola rosea, Eleuthero, and Leuzea carthamoides, a legal herbal alternative to anabolic steroids.

Benefits of Rhaponticum

- Improves muscular performance, endurance, strength, and coordination
- Speeds up recovery time following mental, physical, or sexual exertion
- Helps resist effects of stress on the body
- Increases restoration rate of ATP
- Aids in increasing muscle mass
• Improves ability to focus and concentrate on mental tasks while mentally fatigued (men)
• Increases resistance to the common cold

Active Compounds in Rhanponticum

Key active constituents responsible for specific anabolic effect of Rhaponticum carthamoides is a mixture of compounds called, "levseins". Levseins represents a complex of more than 10 ecdysterones including 20-beta-ecdysterone, makisterone C, 24-dehydromakisterone A, carthamosterone, polypodyne B and ajugasterone C.

Ecdysteroids are hormones controlling cell proliferation, growth and the development. Ecdysteroids are accumulated to high levels in leaves and roots of Rhanponticum and have medicinal values. A pharmacological preparation from this plant, "Ekdisten", is already available as a commercial preparation for its anabolic, tonic and other physiological effects.

Rhanponticum Enhanced Sport Performance

According to Russian researchers the Rhanponticum extract stimulates muscle protein synthesis by increasing the activity of the polyribosomes. Polyribosomes are the cellular compartments where the actual protein synthesis takes place. Researchers extracted and purified various ecdysteroids from Leuzea and found that the ecdysteroids increased the mass of the developing quails in a dose-dependent manner, with the rate of increase proportional to the ecdysteroids content. It was evident that the plethora of growth-promoting, vitamin-like effects induced by Leuzea is mediated by ecdysteroids. However it is important to point out that the mixture of ecdysterones was found to be responsible for enhancement of muscle protein synthesis. The research indicated that the whole extract of Rhaponticum carthamoides containing mixture of levseins possess much superior physiological activity compared with the activity of purified individual constituents. Results indicated that 0.5mg/kg body weight is the optimal dosage of 20-beta-ecdysterone in any sport and performance formula.

Rhanponticum- Natural Anabolic

Rhanponticum is a natural anabolic that had a long history of use by Soviet sports teams. Rhanponticum extract induce endurance and muscle cell growth. Beta-ecdysterone, goes directly to the ribosome and accelerates translation, or direct protein synthesis. Levseins doubles the rate of translation and is very safe. Aside from increasing the rate of muscle growth, this same plant sterol strengthens kidney and liver function.

Rhanponticum Lowered IgG, IgA, and C3 Concentration

The effect of 20-day administration of Leuzea extract on humoral immunity of track and field runners for distances of 5,000 and 10,000 m was studied. Intensive cyclic physical activity induced a significant decrease of IgG and IgA in blood serum of the athletes as well as the complement C3 component on the 10th and 20th days. Leuzea extract contributed to restoration of the lowered IgG, IgA, and C3 concentration. The working capacity of the athletes grew by 10 to 15% in this case. Leuzea extract in combination with L-Carnitine and Acetyl-L-Carnitine when used for 10 days significantly increased the maximum running speed and endurance, whereas L-Carnitine alone failed.
Leuzea extract considerably increases the working capacity of tired skeletal muscles and increases their content of glycogen, ATP and Creatine Phosphate. Rhanponticum is traditionally combined with Rhodiola rosea and is not only used by professional athletes, but is also widely used as an everyday health tonic for increasing mental and physical health, reduce fatigue, and improve memory.

Tribulus Terrestris

In ancient India and Greece, Tribulus Terrestris was used as a physical rejuvenation tonic. It is traditionally used in various herbal formulas to treat headaches, eye problems, nervousness, and high blood pressure. This fruit extract is a natural testosterone enhancer which can improve sexual desire and performance. Research suggests that tribulus help in proving fertility in women, and improved sexual performance in men. In Bulgaria, tribulus is used as a sex enhancer and to treat infertility. Indians used it as a diuretic, antiseptic, and anti-inflammatory. The Chinese used it for a variety of liver, kidney, and cardiovascular diseases. Recently, eastern European athletes and bodybuilders have used it for bodybuilding purpose.

*Tribulus Terrestris* is a very unique and potent natural herb. Tribulus supports an anabolic condition by enhancing testosterone, spermatogenesis, LH (lutenizing hormone), FSH (Follicle stimulating hormone), and libido. Tribulus increase the production of lutenizing hormone which lead to increased testosterone level. Tribulus Terrestris is reputed to support increased production of seminal fluid, not only by volume but by sperm count, at the same time supporting increased sexual performance in both men and women. Tribulus Terrestris works synergistically to stimulate male sexual prowess through a non hormonal pathway, by supporting the body's own hormonal feedback system, and may also assist in improved athletic performance.

Much of the interest surrounding Tribulus terrestris is based on its ability to raise testosterone levels. Testosterone, a hormone that plays a vital role in muscle growth, is traditionally seen as a symbol of youth and vitality. In much the same way that the menopause indicates a change in female hormone levels, the andropause (also known as the male menopause) reflects a decline in testosterone levels.

**Research Study**

The active ingredient in tribulus is known as furostanol saponins. In animals study, tribulus is shown to stimulate "mounting" behavior, increase sperm count as well as motility levels after taking it for 30 days. Two other studies performed on animals reported increased testosterone production and testicular maturation. A European study suggest that tribulus extract can increase testosterone levels 30-50% above baseline levels - which is within the normal range. A study involving healthy individuals taking 750 mg/day of tribulus terrestris evaluated hormonal responses and revealed LH increased in males from 14.38 ml/U/ml to 24.75 ml/U/ml (that s a 72% increase). The free testosterone in males went from 60 ng/dl to 84.5 ng/dl (an increase of 41%).
Studies involving 212 males confirm Tribulus increases libido, frequency and strength of erections and sexual reflexes. Most of the men experienced an increase in LH and testosterone as well as sperm production and mobility. Other positive changes include reduced cholesterol levels, and positive psychological effects such as improved mood and increased self-confidence. No adverse effects were noted in clinical studies, and additional animal research demonstrated no adverse effects on the central nervous or cardiovascular systems.

Benefits

- Increased testosterone production
- Increased muscle mass/strength
- It has been proven to increase testosterone levels by 30% in only 5 days.
- Increased sex drive in men and women.

Proerectile pharmacological effects of Tribulus terrestris extract on the rabbit corpus cavernosum.


The objective of the present study was to investigate the effect of oral treatment of Tribulus terrestris (TT) extract on the isolated corpus cavernosal tissue of New Zealand white (NZW) rabbits and to determine the mechanism by which protodioscin, a constituent of the TT, exerts its pharmacological effects. 24 rabbits were randomly assigned to 4 experimental groups of 6 each. Group I served as control. Groups II to IV were treated with the extract at different dose levels, i.e. 2.5 mg/kg, 5 mg/kg and 10 mg/kg body weight, respectively. The TT extract was administered orally, once daily, for a period of 8 weeks. The rabbits were then sacrificed and their penile tissue isolated to evaluate the responses to both contracting and relaxing pharmacological agents and electrical field stimulation (EFS). RESULTS: Protodioscin on its own had no effect on the isolated corpus cavernosal strips. The relaxant responses to EFS, acetylcholine and nitroglycerin in noradrenaline precontracted tissues from treated groups showed an increase in relaxation of a concentration dependent nature compared to that of the tissues from control group. However, the contractile, anti-erectile response of corpus cavernosal tissue to noradrenaline and histamine showed no significant change between the treatment and the control groups. CONCLUSIONS: The relaxant responses to acetylcholine, nitroglycerin and EFS by more than 10%, 24% and 10% respectively compared to their control values and the lack of such effect on the contractile response to noradrenaline and histamine indicate that PTN has a proerectile activity. The enhanced relaxant effect observed is probably due to increase in the release of nitric oxide from the endothelium and nitrergic nerve endings, which may account for its claims as an aphrodisiac. However, further study is needed to clarify the precise mechanism of its action.

Aphrodisiac properties of Tribulus Terrestris extract (Protodioscin) in normal and castrated rats.


Tribulus terrestris (TT) has long been used in the traditional Chinese and Indian systems of medicine for the treatment of various ailments and is popularly claimed to improve sexual functions in man. Sexual behaviour and intracavernous pressure (ICP) were studied in both normal and castrated rats to further understand the role of TT containing protodioscin (PTN) as an aphrodisiac. Adult Sprague-Dawley rats were divided into five groups of 8 each that included distilled water treated (normal and castrated), testosterone treated (normal and castrated, 10 mg/kg body weight, subcutaneously, bi-
weekly) and TT treated (castrated, 5 mg/kg body weight, orally once daily). Decreases in body weight, prostate weight and ICP were observed among the castrated groups of rats compared to the intact group. There was an overall reduction in the sexual behaviour parameters in the castrated groups of rats as reflected by decrease in mount and intromission frequencies (MF and IF) and increase in mount, intromission, ejaculation latencies (ML, IL, EL) as well as post-ejaculatory interval (PEI). Compared to the castrated control, treatment of castrated rats (with either testosterone or TT extract) showed increase in prostate weight and ICP that were statistically significant. There was also a mild to moderate improvement of the sexual behaviour parameters as evidenced by increase in MF and IF; decrease in ML, IL and PEI. These results were statistically significant. It is concluded that TT extract appears to possess aphrodisiac activity probably due to androgen increasing property of TT (observed in our earlier study on primates).

**Sexual effects of puncturevine (Tribulus terrestris) extract (protodioscin): an evaluation using a rat model.**


Apart from its claims for improvement of sexual functions in men, the puncturevine plant (Tribulus terrestris: TT) has long been considered as an energizer and vitalizer in the indigenous system of medicine. Sexual behavior and intracavernous pressure (ICP) measurements were taken in rats to scientifically validate the claim of TT [containing protodioscin (PTN)] as an aphrodisiac. Forty sexually mature male Sprague-Dawley rats were randomly divided into four groups of 10 each. Group I served as a control group and groups II, III, and IV were treated with three different doses of TT extract (2.5, 5 and 10 mg/kg body weight, respectively), orally, once daily for 8 weeks. Weight was recorded and the rats from all four groups were subjected to sexual behavior studies with primed females and various parameters namely mount and intromission frequencies (MF and IF, respectively), mount, intromission and ejaculation latencies (ML, IL, and EL, respectively) as well as postejaculatory interval (PEI) were recorded. In addition, blood pressure and ICP were recorded for all rats at the end of study.

**RESULTS:** Increases in body weight (by 9, 23, and 18% for groups II, III & IV) and ICP (by 43% and 26% for groups III and IV) were statistically significant compared to the control group. Increases in MF (by 27% and 24%) and IF (by 19% and 22%) for the groups III and IV were statistically significant. Decreases in ML (by 16%, 23%, and 22% for groups II, III, and IV) and PEI (by 20% for group III) were statistically significant compared to the control. **CONCLUSIONS:** The weight gain and improvement in sexual behavior parameters observed in rats could be secondary to the androgen increasing property of TT (PTN) that was observed in our earlier study on primates. The increase in ICP which confirms the proerectile aphrodisiac property of TT could possibly be the result of an increase in androgen and subsequent release of nitric oxide from the nerve endings innervating the corpus cavernosum.
Yerba Mate
(Ilex paraguariensis)

The leaves of this plant contain both caffeine and theobromine, two methylxanthines which boost metabolism. Originating from South America, Yerba Mate’ is a tree cultivated in Paraguay, Brazil and northern Argentina. The leaves of Yerba Mate’ are made into a tonic and stimulating beverage, due to the presence of both caffeine and theobromine. Decoction of Yerba Mate’ is drunk both hot and cold, to alleviate fatigue, suppress appetite, stimulate body and mind, and boost metabolism.

Current science on Yerba Mate’ shows that a decoction of the leaves enhances bile flow and speeds intestinal transit time. Yerba Mate’ also demonstrates 5-lipoxygenase inhibitory activity, thereby making the herb of use in some cases of mild to moderate asthma.

Analytical studies show that dried Yerba Mate’ naturally contains approximately 0.56% caffeine. Yet some standardized extracts contain 2% caffeine, approximately four times the caffeine of dried Yerba Mate’. Most significant is the theobromine value of concentrated extracts. Like caffeine, theobromine is a central nervous system stimulant alkaloid, though it is appreciably weaker than caffeine. But theobromine is a stronger cardiac stimulant, smooth muscle relaxant, and diuretic. While dried Yerba Mate’ naturally contains approximately 0.03% theobromine, some extracts on the market today contain .2% theobromine. This six-fold increase in theobromine gives concentrated extracts of YerbaMate’ enhanced metabolic, diuretic, and appetite-suppressing properties. Yerba Mate’ and concentrated extracts of this plant are for those who wish to suppress appetite, boost metabolism and achieve a leaner body.

Research:

Researching on new species of "Mate": Ilex brevicuspis: phytochemical and pharmacology study. Filip R, Ferraro GE.; Eur J Nutr.; 2003 Jan

Article Links:
Yerba Mate: Traditional Herb, New Diet Ingredient; Chris Kilham.

http://herbal-powers.com/siinhe.html