ActivNutrients®

the girlfriend doctor
DR. ANNA CABECA

Hypoallergenic Multivitamin/Mineral Formula for Wellness Support*

Discussion

Good nutrition is a basis for wellness, and good nutrition usually translates into a stronger immune system and better health. An important aspect of good nutrition is micronutrition (vitamins and minerals).[1-4] Micronutrients participate in converting food to energy; building and repairing tissues and DNA; manufacturing neurotransmitters, hormones, and other modulators in the body; breaking down and detoxifying xenobiotics and medications; and maintaining growth, reproduction, and health. According to research by the USDA and other organizations, the American diet is lacking micronutrients.[5-8] In fact, nine out of 10 Americans are missing key micronutrients.[7] Mass food production, storage techniques, poor food choices, and nutrient-depleting preparation methods may contribute to inadequacies. The bottom line is that children and adults are not consuming enough nutrient-rich foods to meet all their most basic vitamin and mineral needs.[6] What's more, some scientists feel that the recommended intakes (e.g., %DV, DRIs, EARs, RDAs) may not meet the requirements of all individuals, especially the chronically ill.*

There are numerous reasons to select ActivNutrients formulas:

Balanced Profile Vitamins and minerals work synergistically and cooperatively when present in proper amounts. However, imbalances between micronutrients can disrupt this synergistic relationship, possibly leading to instances of competitive intestinal absorption or displacement at the metabolic/cellular level, which can produce relative excesses and insufficiencies. For this reason, ActivNutrients formulas feature a balanced nutrient profile that includes calcium and magnesium, zinc and copper, vitamins C and E, bioactive folate, vitamin B12, B vitamin complex, beta-carotene, and trace elements.*

Bioavailability The micronutrients are provided in bioavailable forms so that they can be better absorbed and utilized. ActivNutrients formulas contain a full complement of Albion patented mineral chelates and complexes. Albion is a recognized world leader in mineral amino acid chelate nutrition and manufactures highly bioavailable nutritional mineral forms that are validated by thirdparty research and clinical studies. Not only do these formulas contain natural vitamin E, which has been proven to be up to 100% more bioavailable than synthetic dl-alpha-tocopherol, but it is also provides mixed tocopherols to more closely approximate how one might consume vitamin E in healthful foods.[9,10] Folate is provided as 5-methyltetrahydrofolate (5-MTHF)—the most bioactive form of folate.[11] ActivNutrients formulas feature 5-MTHF as Quatrefolic®, which is proven to have greater stability, solubility, and bioavailability over calcium salt forms of 5-MTHF. Vitamin B12 is provided as MecobalActive™. This patented form of methylcobalamin has very high purity; no harmful solvents are used in its production.[12] Vitamins B2 and B6 are also provided in activated forms.*

Energy Production ActivNutrients formulas provide generous levels of B vitamins, which serve as prime coenzymes in glycolysis and oxidative phosphorylation and as cofactors in amino acid and lipid metabolism. The balanced presence of B vitamins is essential to their cooperative functioning and excellent for those with stressful lifestyles.*

Clinical Applications

- Foundation Nutrition for a Variety of Protocols*
- Basic "Insurance" Formulas for Wellness*
- Supports Detoxification*
- Supports Health in Individuals with Poor Nutrient Intake*
- Supports Individuals with Stressful Lifestyles*

*This high-quality, hypoallergenic, multivitamin/mineral blend includes activated vitamins; folate as Quatrefolic®(5-MTHF) for optimal utilization; and patented Albion® TRAACS® chelated mineral complexes in vegetarian capsules. The comprehensive nutrient profile in **ActivNutrients®** supports foundational wellness; antioxidant activity with vitamins C and E, selenium, and beta-carotene; and phase I detoxification.**

Antioxidant Protection Vitamins E and C, selenium, zinc, beta carotene, and trace elements provide broad-spectrum antioxidant activity. Their combined presence supports their ability to regenerate each other and maintain consistent levels of antioxidant activity both intra- and extracellularly.*

Detoxification Support Xenobiotics, including environmental pollutants and medications, must undergo biotransformation into molecules that can be easily excreted from the body. There are significant levels of bioavailable riboflavin, niacin, folate, and B12 present in these formulas to support phase I detoxification. Beta carotene, vitamin C, tocopherols, selenium, copper, zinc, and manganese are present to protect tissues from reactive intermediates formed between phase I and phase II detoxification.*

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Hypoallergenic Multivitamin/Mineral Formula for Wellness Support*

ActivNutrients® Supplement Facts

Serving Size: 2 Capsules

	Amount Per Serving	%Daily Value
Vitamin A (75% as natural beta-carotene and 25% as retinyl palmitate)	1,120 mcg	124%
Vitamin C (as sodium ascorbate, potassium ascorbate, zinc ascorbate, and calcium ascorbate)	125 mcg	139%
Vitamin D3 (cholecalciferol)	2.5 mcg (100 IU)	13%
Vitamin E (as d-alpha tocopheryl succinate)	67 mg	447%
Thiamin (as thiamine mononitrate)	10 mg	833%
Riboflavin (as riboflavin 5'-phosphate sodium)	10 mg	769%
Niacin (as niacinamide and niacin)	32 mg	200%
Vitamin B6 (as pyridoxal 5'-phosphate)	10 mg	588%
Folate (as (6S)-5-methyltetrahydrofolic acid, glucosamine salt)S1	340 mcg DFE	85%
Vitamin B12 (as methylcobalamin)	250 mcg	10,417%
Biotin	500 mcg	1,667%
Pantothenic Acid (as d-calcium pantothenate)	100 mg	2,000%
Choline (as choline dihydrogen citrate)	18 mg	3%
Calcium (as di-calcium malateS2, d-calcium pantothenate, and calcium ascorbate)	50 mg	4%
Iron (as ferrous bisglycinate chelate)S2	2.5 mg	14%
Iodine (as potassium iodide)	50 mcg	33%
Magnesium (as di-magnesium malate)S2	50 mg	12%
Zinc (as zinc bisglycinate chelate)S2	6.5 mg	59%
Selenium (as selenium glycinate complex)S2	50 mcg	91%
Copper (as copper bisglycinate chelate)S2	0.5 mg	56%
Manganese (as manganese bisglycinate chelate)S2	0.25 mg	11%
Chromium (as chromium nicotinate glycinate chelate)S2	250 mcg	714%
Molybdenum (as molybdenum glycinate chelate)S2	25 mcg	56%
Potassium (as potassium glycinate complexS2 and potassium ascorbate)	49.5 mg	1%
Inositol	18 mg	**
PABA (*para*-aminobenzoic acid)	6 mg	**
Vanadium (as vanadium nicotinate glycinate chelate)S2	375 mcg	**
** Daily value not established.		

Other Ingredients: Capsule (hypromellose and water), microcrystalline cellulose, ascorbyl palmitate, silica, medium-chain triglyceride oil, and mixed tocopherols.

DIRECTIONS: Take two capsules daily, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medications should discuss potential interactions with their healthcare practitioner. Do not use if tamper seal is damaged.

WARNING: Accidental overdose of iron-containing products is a leading cause of fatal poisoning in children under 6. Keep this product out of reach of children. In case of accidental overdose, call a doctor or poison control center immediately.

STORAGE: Keep closed in a cool, dry place out of reach of children.

FORMULATED TO EXCLUDE: Wheat, gluten, yeast, soy, dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, and artificial preservatives.

Also Available in:

ActivNutrients® without Copper & Iron **Activated Vitamin Cofactors in a Hypoallergenic Proprietary Blend with Patented Mineral Chelates**
The same great formula as ActivNutrients, but without copper or iron. Folate is provided as a blend of calcium folinate and Quatrefolic.

ActivNutrients® without Iron
Hypoallergenic Multivitamin/Mineral Formula for Wellness Support*
The same great formula as ActivNutrients, but without iron.

Quatrefolic®

S1. Quatrefolic is a registered trademark of Gnosis S.p.A. Produced under US Patent 7,947,662.

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S2. Albion, DimaCal, Ferrochel, TRAACS and the Albion Medallion design are registered trademarks of Albion Laboratories, Inc. Malates covered by U.S. Patent 6,706,904 and patents pending

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Additional references available upon request

Bio C 1:1™

Featuring Vitamin C and Bioflavonoids

the girlfriend doctor
DR. ANNA CABECA

Discussion

Bio C 1:1 is formulated to provide antioxidant protection, enhance immune function, and support synthesis and function of collagen, carnitine, and neurotransmitters. Each capsule of Bio C 1:1 provides 500 mg of vitamin C and 500 mg of citrus bioflavonoid complex in a one-to-one ratio.*

Vitamin C (ascorbic acid) is a water-soluble antioxidant vitamin that is essential to humans. While most mammals are able to synthesize vitamin C, humans must obtain it exogenously. Stress, smoking, pollution, radiation and heavy metal exposure, immune challenge, and temperature change all increase the human requirement for vitamin C.[1] Well-known functions of this ubiquitous vitamin include antioxidant protection from free radicals and oxidative processes; synthesis of collagen, carnitine, and neurotransmitters; adrenal support; and immune stimulation and support.[2-4] Vitamin C serves as a cofactor for several metabolic enzymes, including hydroxylase and oxygenase (hydroxylation reactions).*[5]

Vitamin C has long been recognized for its contribution to immune support.[3] Immune cells absorb and concentrate vitamin C. Immune cell activity, particularly T-cell function and phagocytosis, is found to be enhanced by this essential vitamin.[6-7] In early 1972, a randomized, double-blind, placebo-controlled study of 1000 subjects taking 1000 mg of vitamin C per day provided support for the use of vitamin C supplementation for common immune challenges. The study results revealed that the supplementation group missed significantly fewer days from work/activities and had fewer days per episode of immune challenge; in addition, significantly more subjects taking vitamin C remained symptom free throughout the study.[8] Optimal intake of vitamin C for humans continues to be debated, though normal vitamin C synthesis in mammals such as the rat is calculated to be 26-58 mg/ kg/day. Dr. Linus Pauling, in his 1970 article on evolution and vitamin C requirements, recommended a minimum intake of 2300 mg per 2500 kilocalorie intake per day for humans.*[9]

Vitamin C has far-reaching effects on a number of tissues in the body because it is required for the synthesis of collagen.[4] Collagen is a fundamental component of bones, tendons, ligaments, blood vessels, skin, gums, and joints. Ultimately, the health of these tissues depends on vitamin C. Energy generation from fatty acids is vitamin C-dependent as well since synthesis of carnitine (the molecule that shuttles long-chain fatty acids into the mitochondria) requires this versatile vitamin. Vitamin C is maintained in relatively high concentrations in the brain; it is essential to maintaining healthy mood and brain function because it facilitates conversion of dopamine to norepinephrine and enhances interneuronal communication.*[10]

Bioflavonoids (also known as flavonoids) are phytochemicals that are often found together with vitamin C in nature and are generally considered to be among the most important and interesting classes of biologically active compounds in contemporary research. More than 4000 bioflavonoids have been identified. Intake of flavonoids is associated with healthy cardiovascular status, the body's normal response to inflammation, and positive microbial balance.*[11,12]

Clinical Applications

- Antioxidant support*
- Healthy Connective Tissue and Blood Vessel Synthesis*
- Support of Normal Immune System Function*
- Synthesis of Carnitine, Neurotransmitters, and Collagen*

Bio C 1:1™ *combines high-potency vitamin C with a standardized, full-spectrum, citrus bioflavonoid complex. Both vitamin C and bioflavonoids have been extensively researched for their roles in supporting antioxidant and immune function. In addition, research indicates that vitamin C is required for the synthesis of collagen, neurotransmitters, and carnitine. Bioflavonoids appear to support healthy metabolism and cognition by functioning as cell-signaling agents.**

Citrus bioflavonoids are commonly used in Europe for blood vessel and lymph system support. US practitioners utilize bioflavonoids in protocols to support tissue and joint comfort and the body's normal response to inflammation,[13-15] respiratory [16,17] and eye health,[18] and maintenance of cardiovascular health.[19-21] Citrus bioflavonoids are able to cross the blood-brain barrier and have been recognized for their neuroprotective effects.[22] As cell-signaling agents, bioflavonoids are believed to support healthy cell growth and normal cell-life regulation, stimulate detoxification enzymes, decrease vascular cell adhesion molecules, increase vasodilation, and support healthy platelet function.*[23]

The combination of vitamin C and citrus bioflavonoids in Bio C 1:1 ensures that a wide range of metabolic functions will be supported.*

Bio C 1:1™ Supplement Facts

Serving Size: 1 Capsule

	Amount Per Serving	%Daily Value
Vitamin C (ascorbic acid)	500 mg	556%
Citrus Bioflavonoid Complex (Citrus aurantium) (skin)(50% citrus bioflavonoids)	500 mg	**

** Daily value not established.

Other Ingredients: HPMC (capsule), stearic acid, magnesium stearate, medium-chain riglyceride oil, and silica.

DIRECTIONS: Take one capsule daily, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medications should discuss potential interactions with their healthcare practitioner. Do not use if tamper seal is damaged.

STORAGE: Keep closed in a cool, dry place out of reach of children.

DOES NOT CONTAIN: Wheat, gluten, corn, yeast, soy, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms, artificial colors, artificial sweeteners, or artificial preservatives.

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Bio C 1:1™

Featuring Vitamin C and Bioflavonoids

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DR. ANNA CABECA

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Additional references available upon request

K2

Natural Vitamin K2

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Discussion

Naturally occurring vitamin K is found as either K1 (phylloquinone), which is derived from food sources such green leafy vegetables, or K2 (menaquinones). Menaquinones are designated as MK-n, where n denotes the length of the molecule's aliphatic side chain. Menaquinones are synthesized by bacteria and can be obtained from animal-based and fermented foods. Structural differences between K1 and K2 impact their bioavailability and bioactivity. Furthermore, among menaquinones, menaquinone-7 (MK-7), with its longer side chain, is very mhydrophobic. Compared to K1, MK-7's physiochemical properties make it highly transportable by plasma lipoproteins, increase its extrahepatic (bones, arteries, etc.) availability, and produce its long half-life.[1-3]

Absorption of K1 from food can be limited due to its membrane-bound nature and the individual consumer's digestive and absorptive variability. Moreover, adequate consumption of foods high in K2 can be challenging. Therefore, dietary supplementation is an important option. In addition, research suggests that higher levels of menaquinones are needed than were previously thought. Supplementary vitamin K can be found in three forms: synthetic K1; MK-4, which is structurally similar to K1; and natural, long-chain MK-7. XYMOGEN provides MK-7 as Vitamk7™, a naturally derived and solvent-free vitamin K2 that has been obtained through a patent-granted biofermentation process of Bacillus subtilis natto cultures.*

MK-7 Bioavailability Increases Extrahepatic Tissue Utilization Schurgers et al conducted human studies to compare the in vivo properties of orally administered K1 and MK-7. The results supported better bioavailability and utilization of MK-7. Expressed as AUC96, MK-7 demonstrated a six-fold better half-life, a seven- to eight-fold higher dose-response level, and a three times higher carboxylated to uncarboxylated osteocalcin ratio (cOC:ucOC†). Furthermore, on a molar basis, MK-7 is a three-to-four times more potent antidote for oral anticoagulation than is K1. Researchers note that, aside from sensitive individuals, "MK-7 supplements containing more than 50 mcg/d may interfere with oral anticoagulant treatment, whereas doses of at least 50 mcg are not likely to affect the INR value in a relevant way."[2] Nonetheless, practitioners should closely monitor patients taking anticoagulants.*

While studies on the absorption and bioavailability of MK-4 at nutritional levels (i.e., doses of 500 mcg/d or lower) suggest less efficacy compared to longer-chain menaquinones at similar doses,[4] this remains subject to debate. It is possible that rapid uptake of MK-4 could account for its observed lack of detection in serum after oral administration,[5] but more studies are needed for clarification.*

Bone Benefits

Among the dietary factors critical to bone health, vitamin K has emerged as a key player. Vitamin K is believed to be necessary for bone mineralization. Through carboxylation, vitamin K activates osteocalcin, the protein needed to bind calcium to the mineral matrix in bone.[6] Several studies have demonstrated the efficacy of MK-7 (e.g., doses of 45-90 mcg/d) to increase osteocalcin carboxylation and to increase the cOC:ucOC ratio. A high cOC:ucOC ratio is associated with bone health.[1,2,4] A recent in vitro study also showed an osteogenic effect of MK-7 administration on human mesenchymal cell differentiation.[6] In addition, the vitamin may protect bone integrity by reducing the synthesis of prostaglandin E2 or interleukin-6 by osteoclasts.[7] Animal and human studies have demonstrated a significant beneficial effect of MK-7 supplementation on bone health.[8-10] Vitamin K and vitamin D share some similar characteristics and are believed to act synergistically.*[11]

Cardiovascular and Other Health Benefits

Vitamin K benefits cardiovascular health by participating in the carboxylation of matrix GLA protein (MGP), a protein regarded to be the most potent inhibitor of arterial calcification. Researchers have demonstrated that supplementation with vitamin K reduces arterial calcium deposits[1,3,12] and that long-term intake of long-chain menaquinones is inversely correlated with calcium accumulation in arteries.*[5]

Vitamin K has specific receptor binding sites that allow it to regulate gene activity.[13] Besides its gene-mediating effects upon critical proteins, the vitamin can also bind with the steroid and xenobiotic receptors and influence their expression.[14] In addition, vitamin K also demonstrates antioxidant activity[15]; reduces levels of certain markers, such as acute phase reactants (e.g., C-reactive protein)[16]; and participates in the induction of apoptosis.*[17]

Vitamin D (as D3)

Although vitamin D3 (cholecalciferol) is made in the skin when 7-dehydrocholesterol reacts with sunlight, many things affect the degree to which this biosynthesis occurs, including time of day, seasons, location, smog/pollution, clothing, shade of skin (darker skin requires more sun), and sunscreen use. Low-cholesterol diets and certain cholesterol therapies can also affect vitamin D formation. By some estimates, one billion people worldwide have vitamin D deficiency or insufficiency.[18] The body needs vitamin D to absorb calcium, and the importance of vitamin D in skeletal health and bone density is well-established. Without adequate absorption, the body must take calcium from its stores in the skeleton, which weakens existing bone and prevents the formation of strong, new bone. Researchers suggest that vitamin D supplementation may decrease bone turnover and increase bone mineral density.[19]

Clinical Applications

- **Supports Bone Health by Promoting Carboxylation of Bone Proteins***
- **Supports Cardiovascular Health by Affecting Arterial Calcium Deposits***
- **Supports Healthy Blood Clotting***

K2-45, K2-D3 10,000, *and* ***K2-D3 5000*** *provide vitamin K2 as menaquinone-7 (MK-7), a highly bioavailable and bioactive form of K2. K2-D3 also features vitamin D3 (cholecalciferol), the identical form in which vitamin D is derived in the body from cholesterol and synthesized by sunlight on the skin. Historical use and numerous studies have demonstrated the efficacy of vitamin K supplements for bone and cardiovascular health.**

Discussion Continued

A pooled analysis evaluating 11 randomized, double-blind, placebo-controlled trials supported this analysis. It concluded that vitamin D supplementation (> 800 IU daily) was favorable in maintaining hip and nonvertebral bone integrity in individuals aged 65 and older.*[20]

Although D2 and D3 are similar biochemically, one study demonstrated D3 to be approximately 87% more potent in raising and maintaining serum calcidiol (the body's storage form) concentrations and in producing two- to threefold greater storage of vitamin D than did equimolar D2.*[21]

†The cOC:ucOC ratio can be used as a determinant of vitamin K status.

K2-45 Supplement Facts

Serving Size: 1 Capsule

	Amount Per Serving	%Daily Value
Vitamin K2 (as menaquinone-7)	45 mcg	38%

Other Ingredients: Microcrystalline cellulose, HPMC (capsule), stearic acid, magnesium stearate, and silica.

DIRECTIONS: Take one capsule with a meal, one to two times daily, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medication should discuss potential interactions with their healthcare practitioner. Consider total vitamin K intake (food + supplements) if you are taking blood-thinning medication. Present studies show that 45 mcg of MK-7 from Vitamk7™ daily is not likely to interfere with blood-thinning medicines. Do not use if tamper seal is damaged.

STORAGE: Keep closed in a cool, dry place out of reach of children.

DOES NOT CONTAIN: Wheat, gluten, yeast, soy protein, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

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K2-D3 10,000 Supplement Facts

Serving Size: 1 Capsule

	Amount Per Serving	%Daily Value
Vitamin D3 (cholecalciferol)	250 mcg (10,000 IU)	1250%
Vitamin K2 (as menaquinone-7)	45 mcg	38%

Other Ingredients: Microcrystalline cellulose, HPMC (capsule), vegetable stearic acid, vegetable magnesium stearate, and silica.

DIRECTIONS: Swallow one capsule daily with water, preferably at mealtime, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medication should discuss potential interactions with their healthcare practitioner. Consider total vitamin K intake (food + supplements) if you are taking blood-thinning medication. Do not use if tamper seal is damaged.

STORAGE: Keep closed in a cool, dry place out of reach of children.

DOES NOT CONTAIN: Wheat, gluten, yeast, soy protein, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

VEGETARIAN CAPS

K2-D3 5000 Supplement Facts

Serving Size: 1 Capsule

	Amount Per Serving	%Daily Value
Vitamin D3 (cholecalciferol)	125 mcg (5000 IU)	625%
Vitamin K2 (as menaquinone-7)	90 mcg	75%

Other Ingredients: HPMC (capsule), microcrystalline cellulose, ascorbyl palmitate, and silica.

DIRECTIONS: Take one capsule daily, preferably at mealtime, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medication should discuss potential interactions with their healthcare practitioner. Consider total vitamin K intake (food + supplements) if you are taking blood-thinning medication. Do not use if tamper seal is damaged.

STORAGE: Keep closed in a cool, dry place out of reach of children.

DOES NOT CONTAIN: Wheat, gluten, yeast, soy protein, dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

VEGETARIAN CAPS

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Melatonin

Support for Healthy Sleep Patterns

the girlfriend doctor
DR. ANNA CABECA

Clinical Applications

- Supports the Natural Functioin of the Pineal Gland*
- Helps Support Healthy Sleep Patterns*
- May Support Antioxidant Activity and Cardiovascular Health*
- May Support Immune System Activity*

*Melatonin is produced naturally in the pineal gland of the brain in response to changes in light exposure; it helps maintain healthy sleep patterns as well as antioxidant and immune activities. Melatonin can be taken as a supplement to support these functions by promoting normal levels of melatonin in the body.**

Melatonin Peppermint 60 Tablets
Serving Size: 1 Quick-Dissolve Tablet
Serving Per Container: 120

	Amount Per Serving	%Daily Value
Melatonin	3 mg	**

** Daily value not established.
All Formulas Meet or Exceed cGMP Quality Standards.

DIRECTIONS: Take one quick-dissolve tablet 15 to 60 minutes before bedtime as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medications should discuss potential interactions with their healthcare practitioner. Do not use if tamper seal is damaged.

STORAGE: Keep closed in a cool, dry place out of reach of children.

DOES NOT CONTAIN: Wheat, gluten, yeast, soy, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

OTHER INGREDIENTS: Xylitol, mannitol, stearic acid, silica, magnesium stearate, and natural peppermint flavor.

OptiMag®125

Proprietary Blend of Patented Magnesium

the girlfriend doctor
DR. ANNA CABECA

Discussion

Magnesium Lysinate Glycinate Chelate, a mineral amino acid chelate in which magnesium is bound to two amino acids, creates a complex that is more readily absorbed across the intestinal wall. Since the body can efficiently absorb dipeptides (two amino acids linked together), Albion's TRAACS magnesium lysinate glycinate is an excellent delivery system for magnesium. In general, Albion TRAACS patented mineral amino acid chelates are resistant to competitive minerals, do not weaken the action of vitamins, and pose a smaller risk of overdosing.*[1]

Di-Magnesium Malate, the other chelate in OptiMag 125, contains 69% malate (malic acid). Each capsule of OptiMag 125 supplies approximately 400 mg of malic acid. Malic acid was chosen because it forms complexes with magnesium.[2] Magnesium and malate play critical roles in energy production under aerobic conditions or when oxygen is lacking.[3] Malic acid also appears to exert a protective effect by binding aluminum.*[4]

Magnesium, the fourth most abundant mineral in the body, participates in about 300-350 enzymatic reactions in nearly all tissues. Deficiency is common and results from poor dietary intake, poor absorption, and excessive losses through urine, stool, perspiration, or lactation. Certain drugs, certain herbs, poor kidney function, excessive alcohol intake, and drinking mostly "soft" water can contribute to magnesium depletion as well.*[5]

Magnesium's role in the clinical applications cited above is quite well established. Beyond these commonly recognized applications, researchers have demonstrated that magnesium can support cytokine balance and decrease sensitivity to oxidative stress.[6] An analysis of the results of a National Health and Nutrition Examination Survey (NHANES) suggested that children who consumed less than 75% of the recommended dietary allowance (RDA) for magnesium were 58% more likely to have elevated C-reactive protein (CRP) levels.[7] Magnesium's role in modulating CRP and supporting the body's normal response to inflammation may be significant. In addition, although underlying mechanisms remain unclear, it appears that men who consume diets rich in magnesium are able to maintain healthy gallbladder function.[8] Adequate magnesium intake indeed has strong, far-reaching health benefits.*[9]

Clinical Applications

- **Supports Cardiovascular Health***
- **Supports Healthy Muscle Function/Healthy Nerve Conduction***
- **Supports Bone Health***
- **Supports Energy Production***
- **May Support Healthy Glucose Metabolism***

Magnesium, the fourth most abundant mineral in the human body, plays a role in over 300 metabolic processes. It participates in the development and maintenance of bones and teeth; the metabolism of carbohydrates, blood glucose, fats, and proteins; the formation of cells and tissues; and the maintenance of muscle function, including cardiac muscle. ***OptiMag® 125*** *contains Albion's TRAACS magnesium lysinate glycinate (mineral amino acid chelate) and Albion's chelated dimagnesium malate—both formulated for enhanced absorption. Malic acid (from di-magnesium malate) supports energy production and lactic acid clearance via the Krebs cycle. Malic acid may also support antioxidant systems by enhancing glutathione and antioxidant enzymes.**

OptiMag® 125 Supplement Facts

Serving Size: 2 Capsules

	Amount Per Serving	%Daily Value
Magnesium (as Albion® di-magnesium malate and TRAACS® magnesium lysinate glycinate chelate)	250 mg	60%
Malic Acid (as Albion® di-magnesium malate)	828 mg	**

** Daily value not established.

Other Ingredients: HPMC (capsule), stearic acid, medium-chain triglyceride oil, magnesium stearate, and silica.

DIRECTIONS: Take one to two capsules twice daily at or between meals, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medications should discuss potential interactions with their healthcare practitioner. Do not use if tamper seal is damaged.

STORAGE: Keep closed in a cool, dry place out of reach of children.

DOES NOT CONTAIN: Wheat, gluten, corn, yeast, soy, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

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Additional references available upon request

SynovX® Tendon & Ligament

the girlfriend doctor
DR. ANNA CABECA

Tendon and Ligament Support*

Discussion

It is known that tendons and ligaments have a slower and more limited ability to self-repair than other tissues. However, healthy tendons and ligaments do indeed have an intrinsic capacity for repair, which is controlled by resident fibroblasts and their surrounding extracellular matrix (ECM).[1] Fibroblasts (e.g., tenocytes) are responsible for producing the ECM and therefore the proteoglycans (protein/mucopolysaccharide complex) and collagen needed for tissue repair. The key is to stimulate this process. In vitro and in vivo research suggests SynovX Tendon & Ligament does just that. This proprietary blend of type I collagen and mucopolysaccharides combined with vitamin C supports the structural and functional needs of tendons and ligaments.*

Type I Collagen and Mucopolysaccharides Adult tendons are comprised mainly of type-I collagen molecules that are hierarchically organized into structural units. The molecular structure and organization of tendon and ligament collagen fibrils are key determinants in the ability of these tissues to endure mechanical force and fuel self-repair.[1] While collagen provides much of tendon/ligament structure and strength, mucopolysaccharides are said to provide the "glue" that holds them together and allows them to stretch, flex, bend, and maintain their resilience. Mucopolysaccharides—also known as glycosaminoglycans or GAGs—are a critical component of ECM and are important in maintaining structural integrity, lubrication, and spacing of collagen fibers. Furthermore, mucopolysaccharides have been shown to increase collagen and non-collagenous protein synthesis in cultures of bovine tenocytes and ligament cells.*[2]

Vitamin C This vitamin helps maintain tendon/ligament structure and biomechanical properties by stimulating collagen biosynthesis.*[3-5]

In Vitro IL-1beta (interleukin-1beta) is a cytokine associated with adverse tendon/ligament changes. The effect of SynovX Tendon & Ligament in the presence of IL-1beta was studied in primary human tenocytes. Tenocyte cultures treated with 250, 500, and 1000 µg/ml of SynovX Tendon & Ligament showed no signs of cytotoxicity or other negative effects on the viability of cells. The major findings were that this formula counteracted the negative effects of IL-1beta by: (1) protecting tenocytes from degenerative morphological changes, cellular degeneration, and apoptosis, (2) reversing the downregulation of collagen type I and beta 1-integrin receptor expression, (3) increasing tenomodulin production, and (4) causing a significant dose- and time-dependent increase in proliferation and viability of tenocytes. These results demonstrated that SynovX Tendon & Ligament supports tenocyte viability and proliferation and type I collagen synthesis.[1] Furthermore, the treated cells appeared healthy; displayed an abundant and well-organized ECM; and exhibited high levels of euchromatin, indicating that the cells were very active and had a high rate of protein (i.e., collagen) biosynthesis. [1] In another in vitro test, human tenocytes incubated with SynovX Tendon & Ligament for 10 days showed a strong stimulatory effect on cell proliferation that exceeded the proliferation seen in cells incubated with (IGF-1) insulinlike growth factor 1 (positive control).[6] In addition, cells remained viable and showed large amounts of endoplasmic reticulum, which is needed for synthesis of ECM.*

Clinical Applications

- **Promotes the Body's Processes of Tendon/Ligament Self-Repair***
- **Supports Tendon/Ligament Function***
- **Protects and Promotes Collagen Biosynthesis***
- **Supports Tendon/Ligament Comfort***

SynovX® Tendon & Ligament *is an advanced formula designed to bolster tendon/ligament comfort and recovery. Whether repetitive use or something more acute is your challenge, preliminary research suggests that SynovX Tendon & Ligament can support the stability, health, and proliferation of tendon and ligament cells and thereby promote the body's ability for self-repair. Let SynovX Tendon & Ligament help you stay active.**

In Vivo A prospective observational study performed by Nadal et al demonstrated the effects of SynovX Tendon & Ligament on the health of epicondyles, plantar fascia, Achilles tendons, or supraspinatus tendons. Patients were selected on the basis of clinical assessment and ultrasound results. For three months, all of the patients received 20 to 30 physical therapy sessions and the study group received two caps/d of SynovX Tendon & Ligament.[7] Comfort, quality of life (SF-36), and physiotherapist assessments were performed before intervention began and also at 30-, 60-, and 90-day intervals during intervention. In every assessment, patients given SynovX Tendon & Ligament showed numerical or statistically significant improvements after two to three months of supplementation compared to controls.[7] Researchers concluded that supplementing with SynovX Tendon & Ligament improved comfort level and biomechanical properties without adverse effects.*

Several other human studies using SynovX Tendon & Ligament have demonstrated its positive effects on tendon comfort and structure.[8-10] For instance, in a randomized placebo-controlled study (n = 60) designed to test the effects of SynovX Tendon & Ligament versus placebo on Achilles, supraspinatus, lateral epicondyle, and plantar fascia comfort and tendon structure, Binh et al found that subjects taking SynovX Tendon & Ligament (two caps/day) had significantly greater comfort at 90 days. At the end of the study, ultrasound assessment showed no signs of structural issues in the supplemented group.[8] In a prospective, randomized, controlled trial, 59 subjects were assigned to one of three groups: eccentric training, eccentric training plus SynovX Tendon & Ligament, or passive stretching plus SynovX Tendon & Ligament. Compared to physical therapy alone, the researchers found that supplementation with SynovX Tendon & Ligament provided additional benefits associated with comfort at rest and exercise recovery as well as changes in tendon thickness and vascularization in certain subjects.*[9]

SynovX® Tendon & Ligament

the girlfriend doctor
DR. ANNA CABECA

Tendon and Ligament Support*

SynovX™ Tendon & Ligament Supplement Facts

Serving Size: 2 Capsules

	Amount Per Serving	%Daily Value
Vitamin C (ascorbic acid)	60 mg	67%
TENDOACTIVE® Proprietary Blend Mucopolysaccharides and Type I Collagen	520 mg	**

** Daily value not established.

Other Ingredients: HPMC (capsule), microcrystalline cellulose, ascorbyl palmitate, silica, and medium-chain triglyceride oil.

DIRECTIONS: Take two capsules daily, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medications should discuss potential interactions with their healthcare practitioner. Do not use if tamper seal is damaged.

STORAGE: Keep closed in a cool, dry place out of reach of children.

DOES NOT CONTAIN: Wheat, gluten, yeast, soy, dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

TENDOACTIVE® is a registered trademark licensed by Bioiberica, S.A.

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Additional references available upon request

XymoZyme®

the girlfriend doctor
DR. ANNA CABECA

Clinical Applications

- Supports Healthy Digestion of Macronutrients and Enhances Nutrient Absorption*
- Supports Breakdown of Polysaccharides in Beans and Cruciferous Vegetables*
- Helps Support Pancreatic and Brush Border Enzyme Function*
- Supports Breakdown of Lactose*

*XymoZyme® is a cost-effective, non-prescription, broad-spectrum, digestive enzyme formula suitable for vegans and designed to support the digestion of fat, protein, carbohydrate, fiber, and lactose. This comprehensive formula contains lipase, proteases, alpha-galactosidase, hemicellulase, papain, lactase, and other key digestive enzymes. XymoZyme works in a wide pH range—unlike porcine pancreatin, which works in a narrow pH range.**

XymoZyme® 120 Capsules Supplement Facts

Serving Size: 2 Capsules
Serving Per Container: 30

	Amount Per Serving	%Daily Value
Protease (pH 3.0-9.0)	120,000 HUT	**
Papain (from papaya)	50,000 TU	**
Bromelain (from pineapple)	120 GDU	**
Amylase	4,000 SKB	**
Amyloglucosidase (glucoamylase)	30 AG	**
Cellulase	4,000 CU	**
Beta-Glucanase	50 BGU	**
Alpha-Galactosidase	400 GAL	**
Invertase	2,000 Sumner	**
Peptidase (29 DPPIV)	2,400 HUT	**
Pectinase	70 Endo PG	**
Lactase	700 ALU	**
Phytase	20 U	**
Acid Stable Protease (pH 2.0-3.5)	400 HUT	**
Lipase	1,200 FIP	**
Xylanase	300 XU	**
Hemicellulase	200 HCU	**

** Daily value not established.

DIRECTIONS: Take one to two capsules daily, or use as directed by your healthcare practitioner. If necessary, capsules may be opened and contents sprinkled over food.

Consult your healthcare practitioner prior to use. Individuals taking medications should discuss potential interactions with their healthcare practitioner. Do not use if tamper seal is damaged.

STORAGE: Keep closed in a cool, dry place out of reach of children.

DOES NOT CONTAIN: Wheat, gluten, yeast, soy, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, or artificial sweeteners.

Maltodextrin (derived from corn) is used to standardize enzyme activity.

OTHER INGREDIENTS: HPMC (capsule), microcrystalline cellulose, stearic acid, magnesium stearate, and silica.

CarniteX™

Ultra-Pure L-Carnitine

the girlfriend doctor
DR. ANNA CABECA

Discussion

L-carnitine is a conditionally essential micronutrient synthesized from the essential amino acids L-lysine and L-methionine primarily in the human brain, liver, and kidney. Production is a multi-step process and requires adequate niacin, pyridoxine, vitamin C, and iron. Once synthesized, carnitine is transported to other parts of the body, especially cardiac and skeletal muscle where 98% of total body carnitine is confined.*[1]

Carnitine plays an important role in fat and carbohydrate metabolism and energy production by transporting long-chain fatty acids into the mitochondria where beta-oxidation of the fatty acids produces energy in the form of ATP (adenosine-5'-triphosphate). It transports short- and medium-chain fatty acids out of the mitochondria and assists in the liberation of coenzyme A, further promoting ATP synthesis. Carnitine facilitates oxidation of glucose, branched-chain amino acids, and ketones, and is required for the oxidation of medium-chain fatty acids in cardiac and skeletal muscle, tissues that use fatty acids as their primary fuel.*[1,2]

Carnitine requirements may vary under certain conditions—for example, overnutrition or aging—and supplementation may support energy and glucose metabolism during these times. Researchers studying carnitine function and requirements utilized supplementation to support energy and substrate metabolism in an animal model. The results suggested that orally administered L-carnitine does indeed support complete fatty acid oxidation, normal mitochondrial fuel metabolism, and glucose tolerance.[3] According to the Council for Responsible Nutrition, the observed safe level for carnitine supplementation in humans appears to be 2,000 mg per day, although higher doses have been tested and tolerated.*[4]

Muscle fuel metabolism also depends on carnitine when fatty acids become the primary energy source for muscles during ongoing low to moderate exercise. Increasing total muscle carnitine content in healthy humans may support physiological function by reducing muscle glycolysis and increasing glycogen storage, fat oxidation, and work output.[5,6] A randomized, placebo-controlled human subject study suggested that carnitine can improve exercise tolerance and inspiratory muscle strength, as well as reduce lactate production.[7] A six-month, randomized, double-blind, placebo-controlled study of 50 children suggested that oral supplementation with L-carnitine helped support normal carnitine levels in the body with statistically significant positive effects on support of lung function.*[8]

The role of carnitine in normal fertility has been investigated with meta-analysis of nine randomized controlled trials suggesting that carnitine may be effective in improving pregnancy rate and sperm kinetics, though further research is warranted.[9] In some individuals, carnitine supplementation may support cardiovascular health and triglyceride and HDL levels already within the normal range.*[10,11]

Carnitine participates in cell volume and fluid balance, liver lipid metabolism, and antioxidant activity. Ongoing research suggests that carnitine supplementation may effectively help maintain the health and function of the cardiovascular, nervous, immune, and endocrine systems, as well as the kidneys and the liver.*[12]

Clinical Applications

- **Supports Cardiovascular, Neurological, and Endocrine System Health***
- **Supports Fat Utilization and Energy Generation***
- **Supports Post-Exercise Muscle Recovery***
- **Provides 680 mg of Stabilized L-Carnitine per Two-Capsule Dose***

CarniteX™, *a highly stabilized form of the amino acid L-carnitine, supports cardiovascular health, pulmonary function, and muscle recovery from exercise. L-carnitine supports fat utilization and energy production in the mitochondria and is found in abundance in heart and skeletal muscle. CarniteX contains 60% pure L-carnitine and 32% natural L-tartaric acid.**

CarniteX™

Ultra-Pure L-Carnitine

the girlfriend doctor
DR. ANNA CABECA

CarniteX™ Supplement Facts

Serving Size: 1 Capsule

	Amount Per Serving	%Daily Value
L-Carnitine (as L-carnitine L-tartrate)	340 mg	**

** Daily value not established.

Other Ingredients: HPMC (capsule), stearic acid, magnesium stearate, and silica.

DIRECTIONS: Take one capsule twice daily between meals, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medications should discuss potential interactions with their healthcare practitioner. Do not use if tamper seal is damaged.

STORAGE: Keep closed in a cool, dry place out of reach of children.

DOES NOT CONTAIN: Wheat, gluten, corn, yeast, soy, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

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CoQmax™ Ubiquinol

Bioactive Antioxidant Support*

the girlfriend doctor
DR. ANNA CABECA

Discussion

CoQ10 and the CoQ10 cycle play fundamental roles in the antioxidant and energy systems of the body. The ubiquinone form of CoQ10 is produced in the mitochondria, where it directly participates in energy production by accepting electrons in the electron transport chain. Through the action of an oxidoreductase enzyme, ubiquinone is rapidly converted to ubiquinol, the lipidsoluble form that supports antioxidant activity throughout the body. Conversion of ubiquinone to ubiquinol declines with age, particularly after age 40. Supplementation may help maintain normal levels of ubiquinol in the body as well as address drug-induced nutrient depletion of CoQ10. Until recently, the ubiquinol form had not been effective as a supplement because it was chemically unstable and easily oxidized. CoQmax Ubiquinol™ contains a patented, absorbable form of ubiquinol that maintains its structure and stability in the gastrointestinal environment.*

Antioxidant Status Oxidative stress is detrimental to the integrity and function of cell membranes and tissues, and ultimately to DNA itself. Antioxidant status must be maintained throughout the body in order to protect vulnerable cells. Research indicates that ubiquinol supports antioxidant activity, including the regeneration of vitamins C and E, helping to maintain normal levels of free radical activity in the body. Researchers also suggest a possible role for CoQ10 in redox control of cell signaling and gene expression.*[1]

Cholesterol Antioxidant protection is vital to maintaining the integrity of cholesterol and its role as a precursor to vitamin D, hormones, cell membranes, and brain tissue. Reactive oxygen species, including superoxide released by immune cells, cause the oxidation of cholesterol and can turn a vital biochemical precursor into a toxin.*[2]

CoQ10 Depletion Serum CoQ10 levels decline with age but are also reduced with inhibition of the HMG-CoA reductase enzyme, an enzyme essential to CoQ10 production. In the event of reduced production, or drug-induced nutrient depletion, physicians recommend supplementation with CoQ10 to help maintain normal levels in the body.[3] Related depletion of vitamin E in lymphocytes may raise further concerns about patients' vulnerability to oxidative stress.*[4]

Heart Health Research suggests that patients experienced significant support of cardiac function after receiving supplemental ubiquinol (an average 450-580 mg per day). These patients achieved more desirable levels of serum CoQ10 when switched from ubiquinone to ubiquinol.[5] Researchers suggest that ubiquinol had dramatically improved absorption. Research on the elderly also appears to indicate that supplemental CoQ10 can increase tolerance to aerobic stress in cardiac tissue.*[6]

Aging The role of CoQ10 in aging has become a topic of great interest. Supplementation with both forms of CoQ10—ubiquinone and ubiquinol—was studied in a SAMP1 mouse model. Results suggest that the ubiquinol form more effectively raised CoQ10 levels in the liver (the main target tissue), followed by kidney, heart, and brain. Ubiquinol also appeared to have a more positive effect on maintenance of healthy function than did ubiquinone.*[7,8]

Clinical Applications

- **Supports Antioxidant Activity in Lymph, Blood, and Cell Membranes***
- **Provides Fully Reduced Form of CoQ10***
- **Neutralizes Superoxide and Other Free Radicals***
- **Patented, Stabilized Form of Ubiquinol***

*Ubiquinol, the bioactive form of CoQ10, supports antioxidant activity by neutralizing free radicals and toxic superoxides. It supports cytoprotection by minimizing membrane lipid peroxidation as well. The patented, lipid-stabilized form of ubiquinol in CoQmax™ Ubiquinol is present for enhanced bioavailability. Ubiquinol, representing over 90% of total body CoQ10, is efficiently converted to the energy-generating ubiquinone form as the body needs it.**

Kaneka QH™ Stabilized ubiquinol was developed by Kaneka Corporation[9] (the world's largest manufacturer of CoQ10) and was found to be safe and bioavailable following single and multiple doses.*[10]

CoQMax™ Ubiquinol Supplement Facts

Serving Size: 2 Softgels

	Amount Per Serving	%Daily Value
Calories	15	67%
Total Fat	1.5 g	2%†
Kaneka Ubiquinol® Coenzyme Q10 (as ubiquinol)	200 mg	**

† Percent Daily Values are based on a 2,000 calorie diet.
** Daily value not established.

Other Ingredients: Medium-chain triglycerides, softgel (bovine gelatin, glycerin, purified water, and annatto in sunflower oil), ascorbyl palmitate, white beeswax, and sunflower lecithin.

DIRECTIONS: Take one to two softgels daily, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medications should discuss potential interactions with their healthcare practitioner. Do not use if tamper seal is damaged.

STORAGE: Keep closed in a cool, dry place out of reach of children.

DOES NOT CONTAIN: Wheat, gluten, corn, yeast, soy, dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

CoQmax™ Ubiquinol

the girlfriend doctor
DR. ANNA CABECA

Bioactive Antioxidant Support*

CoQMax™ Ubiquinol 200 mg Supplement Facts

Serving Size: 1 Softgels

	Amount Per Serving	%Daily Value
Calories	10	
Total Fat	1 g	1%†
Kaneka Ubiquinol® Coenzyme Q10 (as ubiquinol)	200 mg	**

† Percent Daily Values are based on a 2,000 calorie diet.
** Daily value not established.

Other Ingredients: Medium-chain triglycerides, softgel (bovine gelatin, glycerin, purified water, and annatto in sunflower oil), ascorbyl palmitate, sunflower lecithin, and white beeswax.

DIRECTIONS: Take one softgel daily, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medications should discuss potential interactions with their healthcare practitioner. Do not use if tamper seal is damaged.

STORAGE: Keep closed in a cool, dry place out of reach of children.

DOES NOT CONTAIN: Wheat, gluten, corn, yeast, soy, dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

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Additional references available upon request

OncoPLEX™ Plus Myrosinase

the girlfriend doctor®
DR. ANNA CABECA

Enhanced Conversion to Sulforaphane*

Discussion

There is a link between the regular intake of cruciferous vegetables and good health. This connection can be attributed to a naturally occurring phytochemical called glucoraphanin, which is found in plants from the Brassicaceae family. Glucoraphanin is also known as sulforaphane glucosinolate (SGS), a precursor for the biologically active yet highly reactive and unstable compound isothiocyanate sulforaphane (SFN). The positive effects of SFN on antioxidant activity, detoxification, cellular metabolism, and cell-life regulation have been documented.*[1]

Manipulating foods containing glucoraphanin by physical processes, such as chopping or chewing, triggers the natural enzymatic activity of the plant enzyme myrosinase, which is responsible for the conversion of glucoraphanin to SFN. Gastrointestinal microorganisms also produce SFN from glucoraphanin, which is important as glucoraphanin from food is rarely affected by cooking; however, myrosinase is denatured irrespective of cooking.[1-3] Metabolism of SFN occurs via the mercapturic acid pathway, and metabolites yielded through this process predominately appear in the urine as SFN N-acetyl-L-cysteine (SFN-NAC), a standard measure of SFN bioavailability.*[2]

Mustard seeds are a naturally rich source of myrosinase, and mustard seed powder has been shown in vitro to be capable of reinitiating SGS hydrolysis to SFN. In a crossover study designed to investigate the bioavailability of SFN, SFN-NAC was measured in the urine of healthy adults (N = 12) after consumption of cooked broccoli with and without mustard powder. The addition of mustard powder enhanced the formation of SFN metabolites, suggesting that the presence of plant myrosinase is important for SFN bioavailability.*[2]

In a small study (N = 22), the bioavailability of SFN was evaluated through urinary measurement of SFN metabolites after direct administration of glucoraphanin from broccoli seed extract (BSE) or by coadministration of glucoraphanin and the enzyme myrosinase. A range of doses and delivery matrices (liquid bolus or gel capsules) were used. All preparations that included myrosinase were 3- to 4-fold more bioavailable than the samples without myrosinase, which is consistent with previously published data. Prehydrolyzed BSE in juice containing vitamin C provided similar bioavailability to the gel capsules.*[1]

Antioxidant and Detoxification Support

Sulforaphane is an effective, long-acting, indirect antioxidant and significant inducer of phase II detoxification enzymes.[2] Mechanistically, it stimulates the expression of critical enzymes (via the KEAP1/Nrf2/ARE pathways), which supports antioxidant activity, redox cycling, and phase II detoxification. The activation of transcription factor Nrf2 results in increased output of enzymes (primarily glutathione and superoxide dismutase) that can extend antioxidant activity longer than direct antioxidants, such as vitamins C, E, and beta-carotene. The activation of Nrf2 also regulates the production of detoxification enzymes, including glutathione S-transferase, and downregulates inflammatory signaling factors, such as NF-κB. Additionally, the antioxidant enzymes generated are thought to participate in the recycling and maintenance of vitamins A, C, and E.[3,4] In turn, the role of vitamin C in the activation of myrosinase could be the basis of a regulation mechanism for myrosinase activity contributing to the redox potential in cells.*[4,5]

Clinical Applications

- **Provides Concentrated Glucoraphanin From Broccoli Seed Extract***
- **Supports Healthy Cell-Life Cycles***
- **Supports Phase II Detoxification Enzymes***
- **Supports Extended Antioxidant Activity***
- **Myrosinase Promotes Conversion of Glucoraphanin to Sulforaphane***

*OncoPLEX™ Plus Myrosinase features broccoli seed extract enhanced with myrosinase, the enzyme that promotes the conversion of naturally occurring glucoraphanin in broccoli to sulforaphane (SFN). A potent activator of antioxidant activity, healthy cell-life cycles, and the production of detoxification enzymes, SFN is linked to the many health benefits associated with cruciferous vegetables.**

Support for Cellular Health and Cell-Life Cycles

Sulforaphane is believed to play a multidimensional cytoprotective role, maintain cellular health, support healthy cell-life cycles, and promote a healthy inflammatory response.[6] Coupled with an inhibitory effect on certain phase I enzymes, the induction of phase II enzymes and their effect on Nrf2 pathways are considered paramount to SFN's protective effect on cells.*[7-9]

The mechanism of action, pharmacokinetics, pharmacodynamics, and role of SFN in health maintenance have been widely examined in animal, in vitro, and in vivo clinical trials.[9] Owing to the limited conversion of glucoraphanin to SFN in the absence of exogenous myrosinase, studies have trended toward higher dosing of glucoraphanin or glucoraphanin combined with myrosinase. When administered in the glucoraphanin form alone, dosing is complicated by the variance in bioavailability. However, the addition of myrosinase has been demonstrated to enhance the absorption of glucoraphanin by up to 40%.[1,9] The optimal ratio of glucoraphanin to myrosinase to maximize the conversion of glucoraphanin to SFN is an area of ongoing research. Estimates are often based on the naturally occurring ratio in broccoli seeds and sprouts (glucoraphanin) to mustard seed powder (myrosinase), which is approximately 4:1.*[1]

OncoPLEX™ Plus Myrosinase provides a 4:1 ratio of glucoraphanin to myrosinase. As a cofactor for the myrosinase enzyme,[5] vitamin C is included for maximum bioavailability.*

OncoPLEX™ Plus Myrosinase

the girlfriend doctor®
DR. ANNA CABECA

OncoPLEX™ Plus Myrosinase Supplement Facts

Serving Size: 1 Capsule
OncoPLEX™ Plus Myrosinase 30 Capsules AM dosage

	Amount Per Serving	%Daily Value
Vitamin C (ascorbic acid)	100 mg	111%
Glucoraphanin (from broccoli extract) (Brassica oleracea italica)(seed)[S1]	30 mg	**
Myrosinase (from mustard powder) (Sinapis alba) (seed)	170 mg (17 U)	111%
* *Daily Value (DV) not established.		

Other Ingredients: Capsule (hypromellose and water), microcrystalline cellulose, ascorbyl palmitate, and silica.

DIRECTIONS: Take one capsule daily, or use as directed by your healthcare professional.

Consult your healthcare professional before use. Individuals taking medication should discuss potential interactions with their healthcare professional.

STORAGE: Keep closed in a cool, dry place out of reach of children.

FORMULATED TO EXCLUDE: Wheat, gluten, yeast, soy, animal and dairy products, fish, shellfish, peanuts, tree nuts, egg, sesame, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, and artificial preservatives.

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