Carotenoid Blend

Stock #4073-3 (60 capsules)

Carotenoid Blend is a powerful antioxidant supplement providing a wide variety of carotenoids. Taking an assortment of carotenoids like that found in Carotenoid Blend helps to ensure optimum health benefits, since controlled studies indicate that carotenoids work synergistically (together) with one another.[1,2]

Carotenoids are naturally-occurring nutrients found in orange, yellow and red-orange foods. Carotenoids provide significant antioxidant activity. Carotenoids protect cells against UV radiation and destroy oxygen free radicals that would otherwise damage the structural integrity of cells and tissues. For example, consuming high amounts of carotenoids results in pigmentation of the skin and can also significantly protect against light-induced skin damage. The antioxidant activity of carotenoids is especially important to healthy vision—it appears that carotenoids helps reduce the risk of developing cataracts and macular degeneration. In addition, carotenoids may also help protect against cardiovascular disease, since low blood levels of carotenoids are strongly associated with increased risk of atherosclerosis (fatty plaque buildup in the arteries), as well as with an increased risk of myocardial infarction (heart attack) among smokers. Carotenoids also appear to improve wound healing. In one study, significantly lower blood levels of carotenoids were found in patients with chronic leg ulcers, compared to healthy controls. Furthermore, carotenoids enhance immune response and have demonstrated anti-cancer activity. Research suggests that carotenoids may offer protection against breast, colorectal, lung, prostate and uterine cancers. In fact, results from a recent case-control study indicate that low intake of carotenoids resulting from poor diet and/or lack of vitamin supplementation may be linked to increased risk of breast cancer.[1,3-12]

Each capsule of Carotenoid Blend contains:

Alpha-carotene - A large study published in the *American Journal of Clinical Nutrition* found alpha-carotene intake to be significantly associated with a reduced risk of lung cancer—among those never having smoked, individuals with the highest alpha-carotene intake had a 63% lower incidence of lung cancer. In addition, carotene intake (especially alpha-carotene) from food and supplements has been shown to be significantly and inversely associated with risk for ovarian cancer, predominantly in postmenopausal women. Furthermore, researchers from New York University School of Medicine found evidence indicating that low levels of alpha-carotene, as well as beta-carotene, cryptoxanthin and lutein, are associated with an increase in the risk of breast cancer.[2,11,13]

Astaxanthin - Astaxanthin's antioxidant capacity is at least 10 times more potent than other carotenoids, according to in vitro measurements. Not surprisingly, astaxanthin has been shown to inhibit LDL oxidation and may therefore contribute to the prevention of atherosclerosis. In addition, a promising preliminary human study of *H. pylori*-positive patients demonstrated that daily intake of astaxanthin for 3 weeks decreased gastritis (inflammation of the stomach lining) in all subjects even though they remained positive for *H. pylori*. Furthermore, a recent animal study found dietary astaxanthin suppressed tumor cell growth and stimulated immunity, specifically killer T-cell activity and production of interferon (a powerful immune-enhancing substance that protects against viral infections).[14-16]

Beta-carotene is readily converted into vitamin A in the body, which is necessary for maintaining healthy skin, vision and immune system function, and helps to protect against cardiovascular disease and cancer. For example, a prospective cohort study of 4,802 elderly subjects (over 55 years-old) found that those with the highest beta-carotene intake from food and dietary supplements had a 49% lower risk of myocardial infarction compared to those with the lowest intake. Likewise, a cohort study involving over 26,000 male smokers (aged 50-69 years) without a history of stroke showed that beta-carotene intake was associated with a lower risk for cerebral infarction (death of brain tissue resulting from inadequate blood supply). In addition, significantly lower blood levels of both beta-carotene and lycopene were observed in pregnant women with preeclampsia (a condition involving high blood pressure, swelling of the upper body and weight gain), compared to healthy controls. With regards to beta-carotene's effect on cancer, a study conducted at New York University School of Medicine found that risk of breast cancer in women with the lowest blood levels of beta-carotene was approximately double that of those with the highest levels. Interestingly, risk of breast cancer associated with other carotenoids was similar. Furthermore, beta-carotene, which appears to be better-absorbed from supplements than from foods, has also been shown to enhance thymus gland function and increase interferon's stimulatory action on the immune system.[11,17-21]

Cryptoxanthin - Research has found evidence indicating that low levels of cryptoxanthin, as well as

alpha-carotene, beta-carotene and lutein, are associated with an increase in the risk of breast cancer. Similarly, a recent Chinese study determined that high prediagnostic serum levels of cryptoxanthin were significantly associated with a reduced risk of lung cancer in middle-aged and older Chinese men. In a different study, participants with the highest blood levels of either cryptoxanthin or lutein were approximately 70% less likely to have knee osteoarthritis than those in the control group.[11,22,23]

Lutein - Lutein, which is concentrated in the central retina of the eye (along with zeaxanthin) and acts as a protective pigment, is essential for maintaining human vision. However, blue-eyed individuals need more lutein and zeaxanthin because they have less of these pigments in their retinas. Fortunately, several studies have established that the concentration of macular pigment can be increased by supplementation with lutein and zeaxanthin; and, a study published in the *Journal of the American Medical Association* found that participants with the highest carotenoid intake (specifically lutein and zeaxanthin) had a 43% lower risk for age-related macular degeneration compared with those having the lowest intake of these carotenoids. Lutein and zeaxanthin may also help prevent cataracts and glaucoma. In addition, lutein has been shown to help reduce the risk of various cancers. For example, results from a recent study found that women with the highest dietary intake of lutein and zeaxanthin had a 40% lower risk of ovariancancer than women with the lowest intake, supporting earlier findings which suggest an inverse relationship between carotenoid intake and risk of ovarian cancer. Another study showed evidence indicating that low levels of lutein, along with alpha-carotene, beta-carotene and cryptoxanthin, are associated with an increase in the risk of breast cancer. Furthermore, lutein and cryptoxanthin may help protect against knee osteoarthritis. Study participants with the highest blood levels of either lutein or cryptoxanthin were approximately 70% less likely to have knee osteoarthritis than those in the control group.[3,11,23-26]

Lycopene appears to exhibit about twice the antioxidant activity of beta-carotene and may be more important for preventing cancer than the better known vitamin. Lycopene intake is significantly associated with a reduced risk of lung cancer, as well as significantly and inversely associated with risk for ovarian cancer, predominantly in premenopausal women. An inverse association has also been observed between dietary intake of lycopene and risk of prostate cancer. In a clinical trial, 26 men with newly diagnosed, clinically localized prostate cancer were randomly assigned to receive either 15 mg of lycopene twice daily or no supplementation for 3 weeks before radical prostatectomy (surgical removal of the prostate gland). After 3 weeks, plasma prostate-specific antigen (an indicator of prostate cancer) levels had decreased by 18% in the lycopene group, yet had increased by 14% in the control group, which suggests that lycopene supplementation may decrease the growth of prostate cancer. Lycopene has also been shown to help reduce the risk of heart disease. For example, low blood levels of lycopene were found to be associated with an increased risk of atherosclerotic vascular events in middle-aged men previously free of coronary heart disease and stroke. Of 725 men aged 46-64 years, those in the lowest quarter of blood lycopene levels had a 3.3-fold risk of acute coronary events or stroke compared to the others. In addition, significantly lower blood levels of both lycopene and beta-carotene were observed in pregnant women with preeclampsia, as compared to healthy controls. In another study, lycopene supplementation (30mg daily for 1 week) significantly protected 55% of study participants against exercise-induced asthma, while all of the placebo group experienced post-exercise reductions in lung function. Furthermore, in a study of 372 men and women aged 66-75 years, individuals with the highest plasma concentrations of lycopene were found to have lowest risk of cortical cataracts.[2,13,20,27-31]

Phytoene - Japanese researchers have confirmed the cancer-preventative activity of phytoene. For example, mice treated with phytoene developed fewer skin tumors (induced by UV-B radiation), with a delay in tumor appearance, than control mice receiving a placebo.[32,33]

Phytofluene - Researchers have demonstrated that phytofluene inhibits cancer cell growth by means of inducing apoptosis (cell death). A study published in the *Journal of Nutrition* showed that phytofluene significantly reduced the viability (ability to live) of cultured human prostate cancer cells.[34,35]

Zeaxanthin - Zeaxanthin, which is concentrated in the central retina of the eye (along with lutein) and acts as a protective pigment, is essential for maintaining human vision. However, blue-eyed individuals need more zeaxanthin and lutein because they have less of these pigments in their retinas. Fortunately, several studies have established that the concentration of macular pigment can be increased by supplementation with zeaxanthin and lutein; and, a study published in the *Journal of the American Medical Association* found that participants with the highest carotenoid intake (specifically zeaxanthin and lutein) had a 43% lower risk for age-related macular degeneration compared with those having the lowest intake of these carotenoids. Zeaxanthin and lutein may also help prevent cataracts and glaucoma. In addition, zeaxanthin has been shown to help reduce the risk of various cancers. For example, results from a recent study found that women with the highest dietary intake of zeaxanthin and lutein had a 40% lower risk of ovariancancer than women with the lowest intake, supporting earlier findings which suggest an

inverse relationship between carotenoid intake and risk of ovarian cancer. Furthermore, a study of 98 patients with different malignant gastrointestinal diseases (esophageal, gastric, liver and colon cancer) found that blood levels of zeaxanthin were significantly lower in all of these individuals, compared to healthy subjects.[3,24-26,36]

Hibiscus flowers, which naturally contain beta-carotene, have been proven to have antioxidant activity and may also help reduce moderate essential hypertension (high blood pressure). For example, after 12 days of treatment, statistical findings showed an 11.2% reduction in systolic blood pressure and a 10.7% reduction in diastolic blood pressure in those receiving hibiscus tea. Hibiscus flowers also contain a substance that demonstrates anti-carcinogenic activity.[37-40]

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