

FORSIGHT

90% of the information you receive is through your eyes



- Sustains important eye functions
- Protects from macular degeneration
- Alleviates eye disease
- Reduces risk of cataracts
- Support for vibrant healthy eyes

CAROTENOIDS & EYE HEALTH

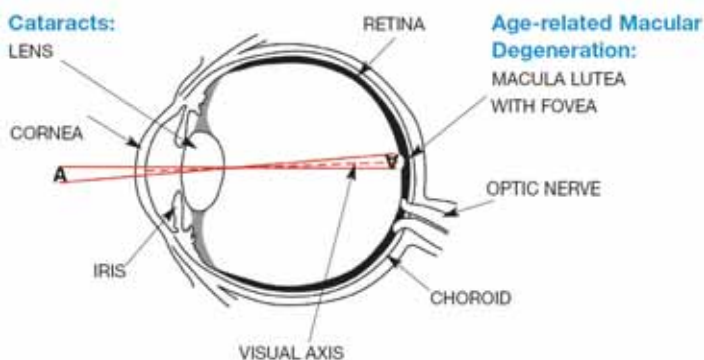


Cognis Nutrition & Health

Good nutrition is essential for maintaining healthy vision. Data collected from many different studies suggest that antioxidants, particularly the carotenoids lutein and zeaxanthin, may provide at least part of the answer to preventing degenerative eye diseases such as cataracts and age-related macular degeneration.

Free Radical Attack

Oxidative stress is often cited as a leading mechanism of ageing and degenerative disease including age-related ocular disorders. Both the retina and lens are believed to be at risk of oxidation from free radicals induced by sunlight. Research suggests that antioxidants, such as vitamins E, C and carotenoids, can help to combat the harmful effects of free radicals.



Age-related Macular Degeneration (AMD)

- AMD is the principal cause of irreversible blindness in the elderly. It leads to loss of central vision.
- The ability to read or identify faces gradually diminishes and glare sensitivity increases

- There is currently no effective treatment
- Prevention is particularly important as increasing longevity means numbers of AMD sufferers are likely to rise
- Risk factors include: advanced age, family history, excessive sun exposure, smoking, light-coloured eyes
- Oxidative damage is implicated in AMD
- AMD affects the macula, which is the site of highest visual acuity because it contains the greatest concentration of photoreceptor cells
- Photoreceptor cells are particularly susceptible to free radical and blue light damage

Cataracts

- Cataracts are the leading cause of visual impairment in elderly people
- They are characterised by opacification of the lens
- Ultraviolet radiation has been identified as a principal risk factor in age-related cataracts
- Oxidative damage is implicated in cataract formation

Carotenoids

Carotenoids are the most ancient protectors against sunlight and were developed by photosynthetic bacteria when life first began. In plants, carotenoids have two essential functions. Firstly, they enable photosynthesis to take place, helping the plants to make optimal use of sunlight. Secondly they protect the photosynthesizing plants against the damaging effects of too much sunlight

– without this protection, our plant life would burn up soon after sunrise. Today, carotenoids are recognised as important constituents of our diet and it has been suggested that in humans, they perform a similar protective function for tissues exposed to sunlight. In the case of eyes, research increasingly supports the idea that it is the yellow carotenoids, lutein and zeaxanthin, which are the most significant. It is believed they both absorb harmful blue light and, according to the very latest research, act as antioxidants.

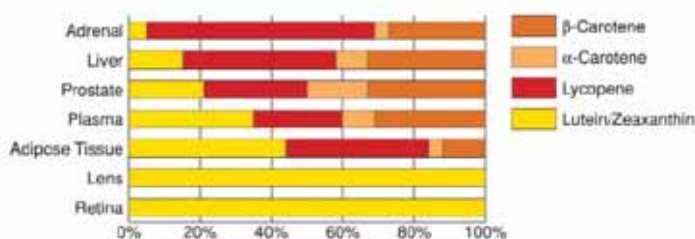
Lutein and Zeaxanthin

Lutein and zeaxanthin and their derivatives are the only carotenoids found in the lens and retina of the eye (see chart below). They are particularly concentrated in the central part of the retina called the 'macula lutea' (latin for 'yellow spot') the yellow colour being due to the presence of these two carotenoids. Here they form the 'macular pigment', a protective layer that absorbs blue light – which is particularly damaging to photoreceptor cells – thus reducing the amount able to reach delicate retinal structures. People with a lower density of macular pigment are believed to be at greater risk of AMD.



first time, in the photoreceptor cells, i.e. the outer segments of rods, where the visual process takes place (study 2). Since the rod outer segment membranes are rich in polyunsaturated fatty acids and thus particularly vulnerable to free radical damage, the carotenoids appear to be present exactly at the site where they would be most needed to perform their antioxidant function.

LUTEIN & ZEAXANTHIN IN TISSUES



Evidence for Protection: Lutein/Zeaxanthin

Scientists have yet to prove that the macular pigment protects against AMD and, ipso facto, that increasing its density by ingesting more lutein and zeaxanthin will result in a reduced incidence of the disease. However, a growing body of evidence does indeed point to a protective effect for the lutein/zeaxanthin-formed macular pigment, both through its absorption characteristics and its antioxidant properties.

Previous research has shown that lutein and zeaxanthin and their derivatives are found in almost all ocular tissues, together with other carotenoids, but they are the only carotenoids present in the lens and retina. A recent study by Bernstein et al. (study 1) confirms the results of earlier work and strongly suggests that there is a specific and critical purpose for this very selective concentration of carotenoids.

In another study, Laurence Rapp and co-workers have confirmed the presence of lutein and zeaxanthin for the

A higher intake of lutein and zeaxanthin (from foods such as spinach) is associated with a reduced risk of AMD and cataracts (studies 3, 4 and 5). Higher levels of lutein and zeaxanthin in blood plasma are associated with reduced risk of cataract and AMD (studies 6 and 7). The low level of lutein and zeaxanthin seen in the retinas of AMD sufferers is more likely to be a causal factor, rather than a destructive effect, of the disease (study 8). Levels of lutein and zeaxanthin in the macula lutea decline with age. The lower levels observed in AMD patients can be 'normalised' to levels found in the eyes of healthy people of the same age by increasing the lutein intake (study 9).

Recent pilot trials investigated whether lutein may also be beneficial for patients who already suffer from cataracts or AMD. In a pilot study conducted by the Spanish researcher Prof. Begoña Olmedilla, visual acuity improved in cataract, and the patients became less sensitive to glare. Visual acuity remained constant or even improved in AMD patients, who all reported that they experienced better vision (study 10). Prof Falsini, university of Rome, Italy, demonstrated improved retinal function with lutein supplementation, both in patients with early AMD, as well as in normal ageing (study 11). These results urgently await confirmation from larger scale placebo-controlled trials.

Density of the macular pigment is related to blood levels and dietary intake of lutein and zeaxanthin (study 12). Higher levels of lutein and zeaxanthin in the macula lutea - and thus greater density of the macular pigment - can be achieved by increasing dietary intake, from food or supplements (studies 13,14 and 15).



In an accompanying editorial about the study, Dr Lee Jampol, from the Department of Ophthalmology, Northwestern University Medical School, Chicago, USA, says that he believes the results demonstrate impressive efficacy. "I would conclude that patients of any age that demonstrate extensive intermediate sized drusen, large drusen (AMD-related changes in the retina), or especially those who have extensive advanced AMD in one eye, should consider taking a supplement containing these dosages of antioxidants and zinc" he says. "It seems desirable that this supplement should be taken indefinitely, though AREDS cannot determine ideal duration of treatment." [Lee M. Jampol: 'Antioxidants, Zinc, and Age-Related Macular Degeneration: Results and Recommendations'. Arch of Ophthalmol 119 (2001),1533-1534]

Note: The carotenoids lutein and zeaxanthin were not included in the AREDS trial because they were not commercially available in supplement form at the time the trial was designed.

Results of earlier trials have suggested that antioxidants can reduce the risk of cataract. The recently-reported REACT trial investigated whether antioxidant supplementation may also slow the progression of age-related cataract (study 19). After 3 years of treatment, opacification of the lens was significantly reduced in the patients receiving antioxidants, compared to those receiving placebo. Three years is a relatively short study period, compared with the slow process of cataract progression. Therefore, the scientists extrapolated their results to a longer period of time, using conservative estimates. They estimated that over 21 years, cataract progression would be reduced by approximately 10%. Even effects as small as these could have very sizeable effects in the long term, helping to maintain vision and quality of life in all those affected.

Note 1: In addition to the effects of AMD, AREDS also investigated whether the antioxidant supplementation regime had an effect on cataract progression. However, unlike REACT, slowing down of cataract progression was not observed in AREDS (AREDS report no. 9. Arch Ophthalmol 119 (2001), 1439-1452). Based on a re-evaluation of REACT data using AREDS methods, REACT authors Schalch and Chylack attribute the beneficial effect observed in their study to: (a) REACT volunteers having had earlier-stage cataract when the supplementation regime began, (b) higher dosages in the antioxidant supplements and (c) the technique used in REACT to assess disease progression being more sensitive to subtle changes in cataract progression. (Schalch W & Chylack LT. Ophthalmology 100 (2003), 181-9

Note 2: The effects of diet and other lifestyle factors on the risk of AMD are being investigated in an ongoing European-wide study (study 20).

The bioavailability of lutein from either lutein esters or (free) lutein is influenced by several factors. However, in a head to head comparison using standard methods of pharmacokinetics, the bioavailability of lutein from a lutein ester formulation was found to be significantly higher than the bioavailability of lutein from a formulation containing free lutein (study 16). Lutein that we get from lutein esters from marigolds has been found to be identical to the lutein found in fruits and vegetables and in human plasma. During digestion the body breaks apart the lutein esters and lutein is released. The lutein is then absorbed into the blood. Thus, once absorbed into the bloodstream, the human body cannot distinguish between the various sources of lutein (study 17).

Evidence for Protection: Antioxidant Supplementation

In the early 1990s, the US National Eye Institute, included an intervention trial on the effect of high-dose antioxidant supplements on the progress of age-related macular degeneration (AMD), as part of the Age Related Eye Disease Study (AREDS) (study 18). Compared to placebo, antioxidant supplementation reduced the risk for disease progression in patients with more the advanced stages of AMD.

Research Summary

The role of carotenoids, particularly lutein and zeaxanthin, in maintaining healthy vision is a fast-developing and fascinating area of antioxidant research – scientific interest in their potential for eye health has never been greater. In their study into AMD and macular pigment, Stephen Beatty and his colleagues at Manchester Royal Eye Hospital say: "The hypothesis that macular pigment reduces the risk of development of AMD is particularly enticing because macular pigment is entirely made up of dietary origin, thus suggesting that the most common cause of blind registration in the Western world could be delayed, or even averted, with appropriate dietary modification." The following pages contain a summary of significant studies published in the last few years into carotenoids and eye health, as well as a list of five recent reviews which provide an invaluable overview of research to date. References for these can be found in the **Further Reading** list at the end of this document.

RISK OF CATARACT: ASSOCIATION WITH DIETARY INTAKE OF ANTIOXIDANTS

Beaver Dam Eye Study

Design

- 1,354 residents of Beaver Dam, Wisconsin, USA
- Eye examination at baseline and 5 years later
- Antioxidant intake at baseline and 10 years earlier ('distant past') by food frequency questionnaire

Results

- High lutein intake in the distant past resulted in 50% lower risk of cataract

Lyle BJ et al., Am J Epidemiol 149 (1999), 801-809

RISK OF CATARACT: ASSOCIATION WITH PLASMA LEVELS OF ANTIOXIDANTS

Beaver Dam Eye Study

Design

- 325 participants of the Beaver Dam Eye Study
- Eye examination at baseline and 5 years later
- Plasma levels at baseline

Results

- 70% reduced risk for cataract with higher lutein serum levels in people of 65+ (for all participants, risk reduction was 30%)

Lyle BJ et al., Am J Clin Nutr 69 (1999), 272-277

RISK OF AGE RELATED MACULAR DEGENERATION: ASSOCIATION WITH CAROTENOID PLASMA LEVELS

Multi-Centre Eye Disease Case Control Study

Design

- 391 cases/577 controls
- plasma levels, neovascular AMD

Results

- 70% risk reduction with high (>2.39 µmol/L) vs low (<1.02 µmol/L) total carotenoid plasma levels
- 70% risk reduction with high (>0.67 µmol/L) vs low (<0.25 µmol/L) lutein/zeaxanthin plasma levels

Sperduto RD et al., Arch Ophthalmol 111 (1993), 104-109

RISK OF AGE RELATED MACULAR DEGENERATION: ASSOCIATION WITH LUTEIN AND ZEAXANTHIN IN EYES, SERUM AND DIET

Design

- 19 healthy subjects
- Food frequency questionnaire to establish dietary intake
- Measurement of lutein and zeaxanthin in serum and of macular pigment optical density (MPOD)
- 23 pairs donor eyes plus blood samples from the same donors
- Measurement of lutein and zeaxanthin in serum and retinas

Results

- Dietary and serum levels of lutein and zeaxanthin correlated with MPOD, both in healthy people as well as in tissue donors

Bone R et al., Exp Eye Res 71 (2000), 239-245

LUTEIN SERUM LEVELS AND MACULAR PIGMENT DENSITY: EFFECTS OF CAROTENOID INTAKE USING A LUTEIN SUPPLEMENT

Design

- 5 subjects
- 30 mg supplement of lutein daily (as lutein esters, based on the chemical conversion of lutein esters to lutein)
- 21 weeks

Results

- Seven fold increase in lutein serum levels
- 20-40% increase in macular pigment density

Landrum J et al., FASEB J 11 (1997), 2588 Abstract



Further Reading

Perspective: Macular pigment and age-related macular degeneration

Beatty S et al., Br J Ophthalmol 8 (1999), 867-888

"We have presented the mounting circumstantial, epidemiological, experimental and clinical evidence that supports the hypothesis that macular pigment protects against age-related maculopathy (ARM) and AMD. The possibility that macular pigment is protective for AMD cannot be ignored, and further research is indicated. In particular, well-designed, prospective and randomised clinical trials are needed to evaluate the effects of dietary carotenoid supplementation on the risk for AMD".

Mini-review: Carotenoids in the retina and lens: possible acute and chronic effects on human visual performance

Hammond BR et al., Arch Biochem Biophys 385 (2001), 41-46

"Lutein and zeaxanthin may help improve vision throughout life through direct effects on the optics of the eye. These carotenoids may also help retard age-related visual loss by retarding the cumulative effects of oxidative damage to the retina and lens".

Mini-review: Lutein, zeaxanthin and the macular pigment

Landrum J & Bone R, Arch Biochem Biophys 385 (2001), 28-40

"The picture of a functional macular pigment that has emerged during the past 15 years is promising. It is essential that a detailed understanding of this function be carefully and completely proven so that we can enable clinicians and their patients to make appropriate decisions about the role of carotenoids in ocular health".

The potential role of dietary xanthophylls in cataract and age-related macular degeneration

Moeller SM et al., J Am Coll Nutr 19 (2000), 522S-527S

"The prevalence and impact of age-related eye diseases will continue to increase with the rapid growth of the

population of older adults in the US and throughout the world. New research to clarify their relationship to dietary antioxidants presents a potentially promising strategy for the primary and/or secondary prevention of cataracts and AMD".

Can Lutein Protect Against Chronic Disease? A Multidisciplinary Approach Involving Basic Science and Epidemiology to Weigh Evidence and Design Analytic Strategies

The papers presented at a Symposium held during the Experimental Biology Meeting in Orlando, Florida, USA, April 2, 2001 were published as Supplement to the March 2002 Issue of the Journal of Nutrition (J Nut. 132 (2002), 517-542. These include short summaries on 'The Body of Evidence to Support a Protective Role for Lutein and Zeaxanthin in Delaying Chronic Disease. Overview' (Julie A. Mares-Perlman, Amy E. Millen, Tara L. Ficek, and Susan E. Hankinson, or 'In Vivo Assessment of Retinal Carotenoids: Macular Pigment Detection Techniques and Their Impact on Monitoring Pigment Status (Joanne Curran Celentano, Joanne D. Burke, and Billy R. Hammond, Jr).

Ingredients in New Roots Herbal's **FORSIGHT**

Each Vegetable Capsule Contains:

Nutraceuticals:

Bilberry 25% Anthocyanidins.	80 mg
Alpha Lipoic Acid.	50 mg
Grapeseed Extract	
95% Procyanidolic 5000:1.	50 mg= 250,000 mg
Lutein Extract 10%.	40 mg
Ginkgo Biloba 24% Flavonoids	
6% T. Lactones.	25 mg
Glutathione Reduced.	25 mg
Multi-Anthocyanidins 20%.	25 mg
Astaxanthin Extract 2%.	10 mg
Lycopene Extract 5% (Tomato).	10 mg
Zeaxanthin Extract 20%.	10 mg

Vitamins & Minerals:

Vitamin C (Ascorbic Acid).	200 mg
Vitamin B3 (Niacinimide).	75 mg
Vitamin B3 (Inositol Hexanicotinate).	25 mg
Vitamin E Non-GMO d'alpha (Acetate).	30 I.U.
Beta-Carotene (D.Salina) 100% natural.	5080 I.U.
Vitamin B2 (Riboflavin).	25 mg
Vitamin B1 (Thiamine).	5 mg
Vitamin B2 (Riboflavin 5-Phosphate).	5 mg
Vitamin B6 (Pyridoxine HCL).	5 mg
Zinc (Citrate).	5 mg
Vitamin B6 (Pyridoxal 5-Phosphate).	2 mg
Copper (Gluconate).	500 mcg
I-Selenomethionine.	50 mcg



FORSIGHT

Eyes bring in more than 90 percent of the information entering the average human brain. From books, computers and television to sunsets and landscapes, it is clear that vision plays a major role in your life.

With today's ever-accumulating pollution and diminishing nutrient quality of foods, nutrition for your eyes is important to retain proper vision. Studies show that improved nutrition may reduce vision loss associated with aging and be particularly helpful in the prevention of cataracts, age-related macular degeneration and other diseases that affect your eyes. New Roots Herbal ForSight provides a unique synergistic blend of antioxidants, minerals, vitamins, carotenoids, nutraceuticals all standardized to provide valuable support for vibrant healthy eyes and eyesight. New Roots ForSight combines traditional knowledge and experience with current cutting-edge products. High-quality nutrient complexes are specifically designed to sustain important eye functions. New Roots ForSight is a virtually sideeffect-free option to fighting the progression of several very serious eye diseases that could affect your sight. This formula is especially important for people who work at a computer, frequently drive at night, or focus on detail-oriented tasks.

What's in New Roots ForSight?

Lutein 5%, Zeaxanthin 20%, Astaxanthin 2% & Lycopene 5%

Carotenoids extracted from plants have shown to reduce the risk of vision problems. The most common problem is age-related macular degeneration. **The macula is a spot in the eye that processes details in the center of everything we see. It is protected from the damaging effects of light by pigment, which is comprised mainly of lutein.** Light exposure causes oxidative damage and macular

degeneration, which causes spots blocking out the center of our vision. A lack of lutein in the diet or in over-farmed produce today can lead to low levels of macular pigment, which is what contributes to macular degeneration. Lycopene is found in high concentrations in ocular tissues, with the exception of neural retina and the lens. At the International Scientific symposium, Frederick Khachik, from the University of Maryland presented new preliminary information that suggests that carotenoids, particularly lycopene, may protect the eye against oxidative damage and thereby play a critical role in visual function. Dr. Khachik's research review builds on the well established knowledge that lutein and zeaxanthin are also the two main dietary carotenoids in ocular tissues and may provide protection against age-related macular degeneration (AMD), the leading cause of blindness in those 65 and older. Astaxanthin protects the eyes from UV A and UV B damage by quenching singlet and triplet oxygen molecules.

Multi-Anthocyanidins 20%

Anthocyanidins are a group of bioflavonoids that contain especially powerful antioxidant capabilities. They are derived from many different fruits including strawberries, bilberries, blueberries, cherries, cranberries, elderberries, grapes and raspberries. **Multi-Anthocyanidins derived from flavonoid-rich fruits are powerful free radical scavengers, which protect the eye's retina.**

Beta Carotene

A lack of vitamin A, in rare conditions, may cause

blindness. It may also cause dry eyes, eye infections, skin problems, and slowed growth. In the body, Beta-Carotene is converted into Vitamin A and has been reported to prevent cataracts from forming, as well as play a role in preventing blindness from macular degeneration, the leading cause of blindness in the world today. Our Beta-Carotene is a natural antioxidant that we source from algae that contain carotenoids. Carotenoids are simply red to yellow pigments in plants and animals that act as antioxidants.

Vitamin E (Non GMO)

Like vitamins A and C, vitamin E may reduce your risk of cataracts and macular degeneration. The mineral selenium and zinc help your body to absorb antioxidant vitamins and have their own protective effects as well.

Grape Seed Extract OPC 95%, Bilberry 25% & Ginkgo 24% / 6%

Grape Seed Extract has a strong affinity for the portion of the retina that is responsible for visual acuity. It prevents free radical damage and reinforces the collagen structures of the retina. **The blood flow to your retina decreases with age. Ginkgo extract significantly increases blood flow to the ophthalmic artery by 23% and is used in treatment of glaucomatous optic neuropathy as well as other ischemic ocular diseases.**

The anthocyanidins in bilberry, which have the ability to protect and regenerate retinal purple (rhodopsin), are the primary agents responsible for healing the eyes. These anthocyanidins also decrease vascular permeability and interact with blood vessel collagen in such a way as to slow down enzymatic attack of the blood vessel walls. This prevents leakage of capillaries, decreases ocular pressure and relieves painful edemas.



Vitamins B1, 2, 3, 6 and C

A full spectrum of B vitamins and active B vitamins helps maintain the health of eyes, nerves and skin. Conjunctivitis can be triggered by a vitamin B2 deficiency, but supplementing with the entire B complex can increase the availability of vitamin B2 without inducing deficiencies of the other B vitamins. Studies suggest that high levels of vitamin C can reduce the risk of cataracts, which are caused by a buildup of protein that results in cloudy vision. Antioxidant vitamins C and E also play a role in delaying age-related macular degeneration, which currently has no cure.

Alpha Lipoic Acid

Alpha Lipoic Acid is an antioxidant, and is widely used in prevention of various diseases. Its main function is to increase production of glutathione, which helps dissolve toxic substances in the liver. As an antioxidant, it helps neutralize free radicals in our bodies and protects our cells from damage. **Alpha Lipoic Acid helps maintain normal fluid pressure of the eyes, protects the lens and retina from degeneration and helps alleviate glaucoma.** Diabetics have a much higher risk of developing a host of

serious disorders affecting vision. Alpha Lipoic Acid has been used in Europe for over 30 years for the treatment of diabetic neuropathy, retinopathy and cataracts.

Zinc Citrate, Selenomethionine, Copper Gluconate

Recent studies from The National Eye Institute show some modest benefits from taking just the zinc or just antioxidants. But it is really the combination of the two that makes the difference. **A zinc-antioxidant combination meets the statistical tests for reducing the odds of developing advanced macular degeneration.** Zinc deficiency is often a cause of night blindness, which is concentrated in the retina. The essential minerals zinc and copper are crucial for general eye function and to produce the antioxidant enzyme superoxide dismutase (SOD). Copper gluconate also helps to reduce puffiness by promoting better microcirculation. Selenium is essential for the function of the antioxidant enzyme, glutathione peroxidase, which protects against damage to cells. Hydrogen Peroxide is neutralized by selenium, which is dependent on the antioxidant enzyme glutathione peroxidase.

Glutathione Reduced

Glutathione Reduced is a natural antioxidant present in all cells and in high concentration in healthy eye tissues. Glutathione levels and the synthesis of this antioxidant is reduced in the eyes of older individuals when cataracts are present, resulting in excessive free radical damage. **Reduced Glutathione has been shown to counteract the progression of cataracts in some forms of lens opacities.** Nutritional intervention to enhance the glutathione antioxidant capacity may provide an effective way to prevent or treat age-related macular degeneration.

Clearly, overall health, lifestyle and light exposure plays a crucial role in the development of lens opacities. With antioxidant protection, cataracts and macular degeneration can be prevented, delayed, slowed and possibly even reversed if caught in the early stages by aggressively addressing the underlying causes of the disease. The typical North American diet high in fat and sugar leaves deficiencies in vitamins, minerals, antioxidants and essential fatty acids. Thus, supplementing, exercise, stress management, bloodsugar control and toxin avoidance contributes to help maintain one's vision.



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- Increase energy



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- Rebuilds energy
- A good source of Electrolytes
- Charge up before and after sports/activities
- 30mg of 75% EGCG/capsule, equals approximately 3 cups of green tea



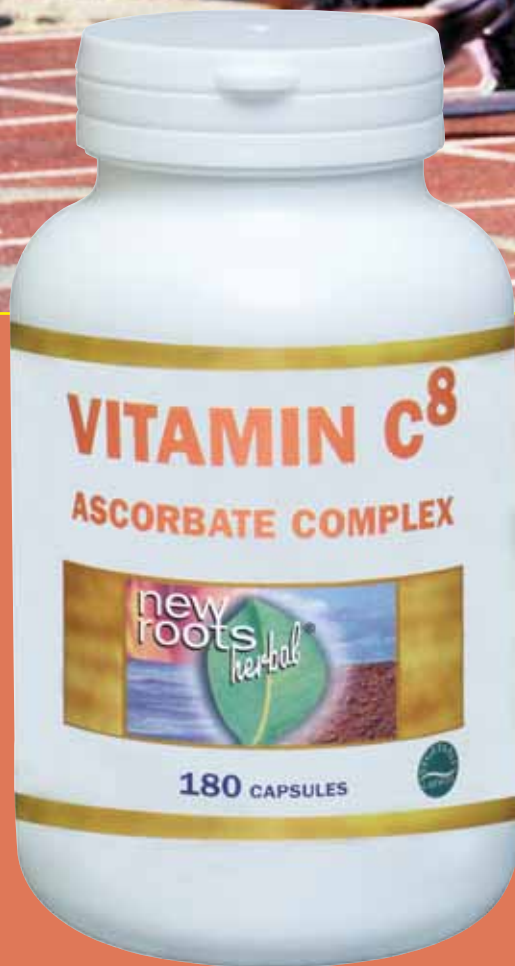
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- Buffered forms of Vitamin C
- A good source of Electrolytes
- Charge up before and after sports/activities
- Rebuilds energy
- Enhances immune functions
- 30mg of 75% EGCG/capsule, equals approximately 3 cups of green tea

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