

ProOptical®

DuoLife **CLINICAL FORMULA PROOPTICAL®** is a dietary supplement supporting the processes of vision and correct eye microcirculation. The composition of natural ingredients has been enclosed in innovative biphasic capsules with modified, prolonged release, which improve the absorption of active compounds.



DuoLife CLINICAL FORMULA PROOPTICAL® contains antioxidant health-supporting carotenoids: lutein, zeaxanthin and astaxanthin, as well as natural lycopene, rutin and valuable plant extracts. The preparation is a source of many active compounds, which support optimal processes of vision, help to protect retina photoreceptors against harmful UV radiation and support the functions of small blood vessels within the organ of vision.

When?

Eye fatigue, microcirculation disorders of the retina, deterioration of vision acuity at dusk, are among others the effects of many hours of work at a computer or watching a TV screen or a mobile phone screen¹. Only very young and healthy people can easily bear such overload. With age, the eye's defence mechanisms and its ability to cope with adverse factors gradually deteriorate, leading to more and more severe visual ailments. Deteriorating eye condition may also result from nutrient deficiencies. The correct vision processes are supported by rational supplementation. DuoLife CLINICAL FORMULA PROOPTICAL® will prove to be a supportive preparation for people:

- ▶ wishing to support the optimum eye function;
- ▶ with a problem of breaking small vessels in the eye and frequent eye congestion;
- ▶ who, for professional reasons, may be exposed to visual problems, e.g. people working in front of a computer screen;
- ▶ who should take special care of their eye-sight: e.g. vehicle drivers;
- ▶ elderly people/seniors.

How?

DuoLife CLINICAL FORMULA PROOPTICAL® supports:

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| <ul style="list-style-type: none"> ▶ normal vision, also at night and in poor light; ▶ optimum function of the macula; ▶ eye accommodation processes; ▶ antioxidative processes; ▶ protecting the eyes against the harmful effects of UV radiation, helping to reduce photochemical | <ul style="list-style-type: none"> damage; ▶ body detoxification processes; ▶ maintaining the optimum osmotic pressure of body fluids; ▶ intracellular homoeostasis. |
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DuoLife CLINICAL FORMULA PROOPTICAL® NEW – usage:

1 capsule per day.



Composition table

Ingredient amount per daily serving of the product	1 capsule
organic perilla seed oil (<i>Perilla frutescens</i>)	335 mg
acerola fruit juice extract (<i>Malpighia glabra</i>) with vitamin C	82 mg 26 mg (33% NRV*)
micronized lutein and zeaxanthin crystals extracted from Mexican marigold (<i>Tagetes erecta</i>) in saffron oil extracted from safflower fruit (<i>Carthamus tinctorius</i>) with lutein with zeaxanthin	50 mg 10 mg 0,5 mg
green microalgae aplanospore extract <i>Haematococcus pluvialis</i> with astaxanthin	20 mg 2 mg
Carotenoids extracted from tomato fruit with microencapsulated natural lycopene	10 mg 0,5 mg
Organic zinc salts with organic zinc	10 mg 3 mg (30% NRV*)
schisandra fruit extract (<i>Schisandra chinensis</i>) with schisandrin	10 mg 0,5 mg
grape seed extract (<i>Vitis vinifera</i>) with 95% of proanthocyanidin	10 mg 9,5 mg
billberry extract (<i>Vaccinium myrtillus</i>) with 25% of anthocyanin	10 mg 2,5 mg
elderberry fruit extract (<i>Sambucus nigra</i>) with 30% of polyphenols	10 mg 3 mg
black currant leaf extract (<i>Ribes nigrum</i>) with rutin	10 mg 0,1 mg
black chokeberry fruit extract (<i>Aronia melanocarpa</i>) with 40% of polyphenols (<i>catechins</i>)	10 mg 4 mg
carotenoids extracted from Mexican marigold flowers (<i>Tagetes erecta</i>) in soy oil extracted from soybeans (<i>Glycine max Merr</i>) with zeaxanthin	7,5 mg 1,5 mg
extract from saffron stamens (<i>Crocus sativus</i>)	5 mg

*NRV – reference daily intake for an average adult (8400 kJ/2000 kcal)

Ingredients: organic perilla seed oil (*Perilla frutescens*) standardized for α-linolenic acid content of above 60%, acerola fruit juice extract (*Malpighia glabra*) 12-15:1 standardized for vitamin C content, micronized lutein and zeaxanthin crystals extracted from Mexican marigold (*Tagetes erecta*) in saffron oil extracted from safflower fruit (*Carthamus tinctorius*), green microalgae aplanospore extract (*Haematococcus pluvialis*) standardized for astaxanthin content, a mixture of carotenoids extracted from tomato fruit with microencapsulated natural lycopene, organic zinc salts (*zinc citrate*), schisandra fruit extract (*Schisandra chinensis*) 3:1 standardized for 5% schisandrin content, grape seed extract (*Vitis vinifera*) 120:1 standardized for 95% proanthocyanidin content (with 92% of polyphenols), billberry extract (*Vaccinium myrtillus*) standardized for 25% anthocyanin content, elderberry fruit extract (*Sambucus nigra*) 4:1 standardized for 30% polyphenol content, black currant leaf extract (*Ribes nigrum*) standardized for 1% rutin content, black chokeberry fruit extract (*Aronia melanocarpa*) standardized for 40% polyphenol content (*catechin*), concentrated mixture of carotenoids extracted from Mexican marigold flowers (*Tagetes erecta*) in soy oil extracted from soybeans (*Glycine max Merr*) with zeaxanthin, extract from saffron stamens (*Crocus sativus*) 2-4:1 standardized for 2% crocin and 2% safranal content. Capsule shell ingredients: gelatin from sea fish skin – outer capsule, organic cellulose derivative (HPMC) – inner capsule. Anti-caking agent: silica.

Do not exceed the recommended daily intake. The product should not be used as a substitute for a varied diet. Balanced diet and a healthy lifestyle are the basis for proper functioning of human body.

The outer liquid capsule contains: oils (from the seeds of beefsteak plant, saffron oil and soybean oil) and lutein, zeaxanthin and astaxanthin.

The inner capsule contains lycopene, organic zinc and all other plant extracts.



The herbal extracts contained in the preparation have **a ratio of 12-15:1 and 3:1, 4:1 and 120:1 written next to their names - this is the so-called DER. What does it mean?**

DER (drug extract ratio) specifies a number of milligrams of plant material used to obtain one milligram of the extract. If the capsule contains 82 milligrams of acerola (or other extract) DER 12-15:1, this means that 984 -1230 milligrams of raw material were used to obtain the capsule.

What are the health-supporting properties of PROOPTICAL® carotenoids: lutein, zeaxanthin, astaxanthin and lycopene?

- ▶ Lutein and zeaxanthin are natural compounds of purely plant origin (and therefore must be supplied with food), found in the macula of human retina, helping to protect the retinal photoreceptors (rod cells and cone cells) from the harmful effects of UV light. Both of the carotenoids have strong antioxidant properties, inactivating free oxygen radicals produced under exposure to light^{2,3}. In addition, they have a clinically proven effect in helping to prevent macular degeneration (AMD); as eye health-supporting constituents, they have been the subject of dozens of clinical studies⁴⁻⁷. The quantitative ratio of lutein to zeaxanthin in the whole preparation is 5:1; this is the optimal ratio, considered in clinical trials and recommended worldwide⁸⁻¹⁰.
- ▶ Astaxanthin is a strong natural antioxidant, neutralizing free oxygen radicals. Astaxanthin's antioxidant properties protect cells from the destructive effects of oxidative stress, contributing to the prevention of macular degeneration (AMD) and other retinal diseases as well as cataracts; the antioxidant effect is also a protection for the eye against the harmful effects of UV radiation¹¹. The raw material has a clinically proven effect to alleviate the symptoms of asthenopia (eye fatigue) and to support eye accommodation processes¹².
- ▶ Lycopene is a natural carotenoid found in large quantities in tomato fruit; it has strong antioxidant properties, protecting retinal photoreceptors from harmful sunlight and oxidative stress. It also has a positive effect on blood circulation, protects against atherosclerosis¹³. It contributes to prevention of cataract¹⁴.

Why do lutein and zeaxanthin appear in the preparation in crystalline form and are suspended in vegetable oils?

The crystalline form of lutein and zeaxanthin used as well as the fatty environment (presence of fatty acids contained in vegetable oils) promote their bioavailability¹⁵. It was found that crystal lutein, used in dietary supplements, is absorbed by the body more easily than that of food¹⁶. After being absorbed into the bloodstream, both carotenoids accumulate mainly in the lens of the eye and the central part of the retina - macula¹⁷.

Lutein and zeaxanthin suspended in safflower oil and soybean oil are stable and close to their natural environment¹⁸.

What is the effect on sight of α-linolenic acid contained in beefsteak plant seed oil?

Beefsteak plant is an oily plant, rich in essential unsaturated fatty acids, especially the very important, rare in plants, acid from the omega-3 series: α-linolenic (ALA)¹⁹. ALA derivatives are the main building blocks of cell membranes of rod and stem cells of the eye, responsible for night vision and colour vision; they are particularly

valuable for the elderly^{20,21}. The deficiency of omega-3 fatty acids promotes the development of macular neurodegenerative diseases and retinopathy²².

Beefsteak oil also provides a biological background, improving the assimilability of active ingredients contained in the external capsule of DuoLife CLINICAL FORMULA PROOPTICAL® (lutein, zeaxanthin and astaxanthin).

Why can vitamin C from acerola fruit extract support vision processes?

Acerola fruits contain a very high dose of vitamin C²³; this vitamin is essential for the synthesis of collagen in connective tissue (collagen occurs, among others, in the cornea and vitreous body of the eye²⁴); as a strong antioxidant it provides natural protection for the eyes against the harmful effects of UV²⁵. The raw material also contains minerals such as potassium and phosphorus to help maintain an optimal osmotic pressure of the intraocular fluid²³.

How does organic zinc in the supplement work?

Zinc is one of the main microelements of the body, involved in catalytic, structural and regulatory functions. The supply of zinc in food products is generally insufficient; as many as one in three people in the world may be suffering from zinc deficiency, so zinc supplementation is advisable. Zinc is a structural component of 10% of the body's enzymes and proteins, minimizes the toxic effects of heavy metals on the functions of systems and organs, protects the retina of the eye, contributing to maintaining good eyesight. Zinc is also a valuable antioxidant, protecting retinal cells from oxidative stress. Of all the trace metals that are essential for man, only iron plays a more important role than zinc²⁶⁻²⁸.

The antioxidants contained in plant extracts of Chinese citrus fruit, grape seeds, European blueberry, elderberry and chokeberry synergistically support each other's effect.

- ▶ The most important ingredients of Chinese citrus fruit are lignans, among them schisandra. These compounds show hepatoprotective, adaptogenic and antioxidant effects^{29,30}. In addition, clinical trials have shown the supportive effect of citrine on visual acuity and adaptation to dark vision²⁹.
- ▶ Among the polyphenols found in grape seeds, proanthocyanidins and resveratrol are the most important. These compounds are strong antioxidants with free radical neutralizing properties that can protect the retina and its photoreceptors (rod and cone cells) from damage caused by solar radiation. They also have a protective effect on blood vessels, including ocular microcirculation, and maintain optimal intraocular pressure^{31,32}. Thanks to this they contribute to cataract prevention, prevention of diabetic retinopathy, and help relieve eye congestion and inflammation³³. Proanthocyanidins also have a protective effect for vitamin C contained in the preparation³¹.
- ▶ The European blueberry fruit is one of the most valuable anthocyanins; anthocyanins help to maintain optimal functions of small blood vessels in the eye, reduce vessel fragility and stimulate microcirculation. They support correct vision after dark, adapt eyes to seeing in the dark, and help prevent congestion and inflammation associated with eye strain. The raw material has extensive clinical documentation³⁴⁻³⁶.
- ▶ Polyphenols (anthocyanins and flavonoles) contained in elderberries have a strong antioxidant effect - they contribute to maintaining normal functions of the retina and blood vessels, they also support the removal of harmful metabolites from the body³⁷.
- ▶ The most important active ingredients of chokeberry fruit are also polyphenols. The material helps protect the retina from degeneration caused by oxidative stress (also caused by UV radiation) and helps support the condition of blood vessels within the eye³⁸.

Why can blackcurrant leaf extract support eye microcirculation?

Blackcurrant leaves are a valuable source of bioactive compounds with antioxidant properties; they include quercetin, myricotin and rutin. Rutin reduces permeability of blood vessels, helps prevent microhaemorrhages in the eye, prevents breaking of blood vessels and eye congestion associated with the eye strain. The compound also prevents the decomposition of vitamin C and increases its bioavailability^{39,40}. Blackcurrant leaves also con-

tain significant amounts of macro-, microelements and trace elements that affect the body's mineral economy, help maintain optimal osmotic pressure of body fluids, including ocular fluid, and ensure the acid-base balance of these fluids (maintaining physiological pH)⁴¹.

How does the saffron rods extract contained in the preparation work?

Saffron has been known as a health-supporting plant for many thousands of years. The active ingredients of the plant include glycosides: crocithin, crocin and safranal. These active compounds enable saffron to support the condition of the eyes, helping to protect them against diseases such as cataract or inflammatory conditions⁴². The material has a clinically proven efficacy: it supports metabolic processes in eye tissues, supports visual processes⁴³ and promotes the prevention of macular degeneration (AMD)⁴⁴.

What makes DuoLife CLINICAL FORMULA PROOPTICAL® different?

- ▶ **Biphasic capsules with modified, prolonged release.** The innovative biphasic form of the preparation is a combination of two capsules - external liquid and internal, in solid form. The process of absorption of the active substances contained in the liquid phase starts already in the stomach, while the solid components are released only in the small intestine. The two-stage process of absorption of active substances promotes their bioavailability. Lutein, zeaxanthin and astaxanthin, which are best absorbed in the presence of fats, are dissolved in the oil phase obtained from natural vegetable oils forming the liquid content of the external capsule. These ingredients are assimilated as first, in the stomach and the initial section of small intestine. On the other hand, plant extracts which are poorly fatsoluble and compounds sensitive to hydrochloric acid are solid components of the internal capsule. They bypass the stomach environment and are released in further sections of the intestine, at a pH that favours their assimilation.
- ▶ **100% natural ingredients**, including as many as 14 standardized ingredients, of which are also numerous clinically tested ones.
- ▶ **Complete ingredients, with their biological background maintained**, improving their bioavailability. The crystalline form of lutein and zeaxanthin used and the fatty environment (presence of fatty acids contained in the oils constituting the outer capsule environment) promote their bioavailability. It was found that lutein and zeaxanthin in crystalline form are absorbed by the body more easily than those from food¹⁶. The quantitative ratio of lutein to zeaxanthin in the whole preparation is 5:1; this is the optimal ratio, considered in clinical trials and recommended worldwide⁸⁻¹⁰.
- ▶ **Formulation prepared in consideration of the principles of synergy and antagonism.**
- ▶ **Packaging free of bisphenol A (BPA)**, a compound with controversial health effects⁴⁵.
- ▶ **The product DOES NOT CONTAIN preservatives and artificial fillers, and IS GMO FREE** – the raw materials used to develop the supplement ARE NOT DERIVED from genetically modified plants.
- ▶ **The product IS GLUTEN-FREE** - can be used by people with gluten intolerance.
- ▶ **Concentrated formula** – making the supplement easy to use: once or twice a day.

 The references for DuoLife Clinical Formula ProOptical® can be found on a separate binder sheet.