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A
New
Alternative
to
Injectable Glutathione

**An In-Depth Look at the Function and Efficacy of Oral
Glutathione for Skin Care**

What is Glutathione?

Glutathione is an extremely powerful antioxidant with numerous applications within the realms of health and nutrition. Its antioxidant and detoxifying properties safeguard cells from damage caused by reactive oxygen species and heavy metals. Because of its essential role in protecting the human body, it has earned the nickname "The Master Antioxidant".

For years, doctors have treated their patients with glutathione to relieve ailments ranging from liver disease to cancer.

Doctors and patients began to notice an interesting side effect; patients receiving glutathione looked brighter and more radiant. Dark, sallow skin lightened up giving a healthy glow. Glutathione is now at the forefront of skin lightening esthetics due to its virtually nonexistent risk of side effects and astonishing natural results.

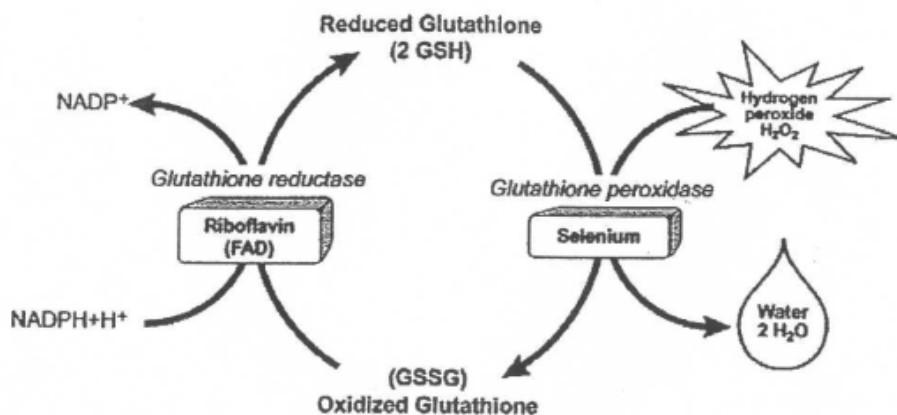
Glutathione for Skin Whitening

Glutathione skin whitening



Whitening effect of 4 weeks of 500mg/day oral glutathione during clinical study

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The glutathione cycle is the process in which reduced glutathione neutralizes reactive oxygen species and is oxidized in the process. Selenium and Riboflavin (vitamin B2) form essential enzymes that facilitate the function and restoration of glutathione.

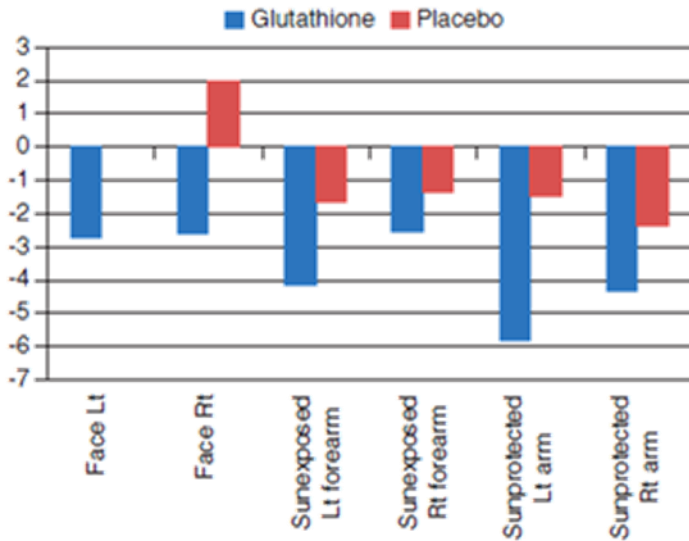
works by interrupting melanin synthesis¹. Melanin is the pigment that gives the skin its color, so by preventing it from developing, glutathione whitening brings the skin back to its purest, fairest tone. It is clinically shown to reduce dark spots and whiten skin by inhibiting melanin synthesis³. It is often said that one's health is reflected in the condition of his or her skin, and that is notably true when it comes to this method of skin whitening. Glutathione benefits the skin by boosting overall health. Since it is an antioxidant, it neutralizes and eliminates the free radicals that damage the skin at the cellular level to cause aging and discoloration.

'The Master Antioxidant'

Glutathione acts on a number of biological pathways in the skin. Its primary purpose is protection from skin's greatest enemy, oxidation. By acting as an antioxidant, glutathione can reduce skin damage from acne or sun exposure before it creates unsightly dark spots⁴.

This is part of the glutathione cycle, a perpetual cycle in which active glutathione is expended and restored to neutralize free radicals and other damaging oxidative chemicals.

The two enzymes within the glutathione cycle are glutathione peroxidase and glutathione reductase. Glutathione peroxidase allows reduced glutathione to efficiently neutralize free radicals and peroxides. At the end of this reaction, glutathione is left in its inactive, oxidized, form.



Changes in melanin (negative numbers denote a decrease in melanin indices) after 4 weeks of 500mg/day oral glutathione

Oxidized glutathione is reduced back to its active state by glutathione reductase. The enzymatic regeneration of active glutathione allows for it to be highly effective even against chronic stressors like sun exposure.

A 2010 publication by Reuter et. al, details the close

link between these oxidative stresses with chronic inflammation and, ultimately, diseases such as cancer and diabetes. Oxidative stress activates a number of pro-inflammatory mediators, notably NF-κB and PPAR-γ, which cause the expression of inflammatory genes.

Melanin & Tyrosinase

Most people are already familiar with melanin, the pigment responsible for brown and yellow skin tones. It is born in the melanocyte, deep in the epidermis, and travels to the outer epidermis

where it is expressed as darkened skin tone. But, the real driving force of skin darkening is the enzyme tyrosinase. Tyrosinase catalyzes the formation of melanin during three separate stages of synthesis. Therefore, in the resistance of skin darkening, tyrosinase inhibition is key.

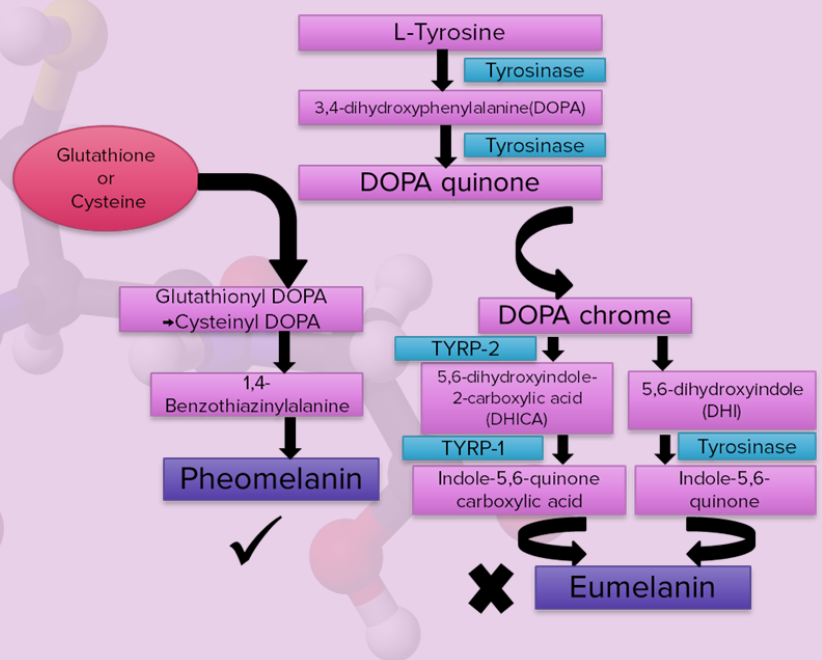
Many molecules have been found to possess a tyrosinase inhibiting effect. Unsurprisingly, glutathione is a powerful inhibitor². This may be due to glutathione's ability to prevent a chain reaction in which reactive oxygen species induce tyrosinase.

How to Supplement Glutathione

Cellular glutathione can be supplemented through injection, oral ingestion and

“The Pink Glow”

Fans of glutathione rave about the pink glow they achieve from using it. This phenomenon is actually completely real! The human body produces two types of melanin: eumelanin and pheomelanin. Eumelanin, the dark pigment, is responsible for brown and yellow coloration. Pheomelanin, on the other hand, causes red and pink pigmentation, such as that found on lips and areolas. Glutathione and N-Acetyl-Cysteine contain cysteine groups which shift melanin production from eumelanin to pheomelanin², lightening skin and giving a beautiful pink glow.





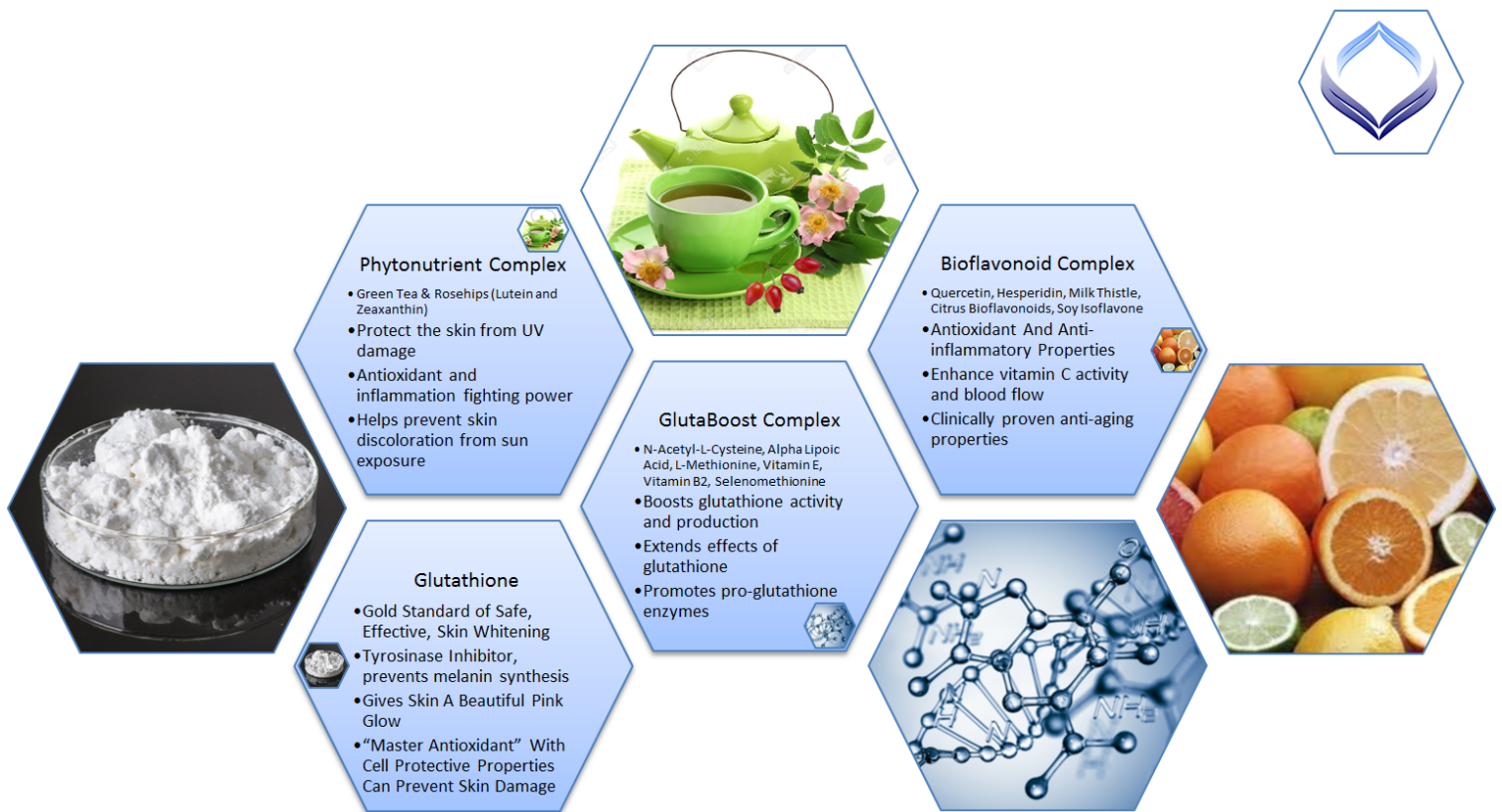
- Glutathione
 - N-Acetyl-L-Cysteine
 - Alpha Lipoic Acid
 - L-Methionine
 - Vitamin E
 - Vitamin B2
 - Selenomethionine
 - Milk Thistle
 - Green Tea Extract
 - Rosehips
 - Citrus Bioflavonoids
 - Hesperedin
 - Quercetin
 - Soy Isoflavone
-
- Whitening blend contains glutathione and many natural antioxidants to maximize potency, synergy and skin support
 - Powerful age-fighting ingredients including Green Tea, Rosehips and flavonoids
 - Promotes and protects collagen and elastin
 - Reduces inflammation and cell damage from internal or external stresses
 - Bolsters natural skin immunity

sublingual administration. Injection is popular among people looking for rapid results. When glutathione is introduced directly into the bloodstream, it can quickly reach the melanocytes and keratinocytes where melanin is produced and stored.

Sublingual administration is

capsules are becoming increasingly popular due to the ease of use compared to the other methods. Daily oral doses of glutathione have been clinically proven to lighten skin. Additionally, glutathione capsules can come with an array of glutathione boosting

glutathione, but actually produce a sustained level of elevated glutathione due to supporting ingredients and precursors. This is thanks to the 4 key elements of the supplement blend: High Dose Glutathione, Phytonutrient Complex, GlutaBoost Complex, and Bioflavonoid



very similar to intravenous. A glutathione solution is held under the tongue where it diffuses through the mucous membrane into underlying capillaries. This causes it to rapidly enter circulation and allows the glutathione to bypass the digestive tract. Many brands have begun to offer sprays or drops of liquid glutathione for the purpose of sublingual administration.

Lastly, glutathione

ingredients that help the body maintain high levels of cellular glutathione.

Relumins 15X Glutathione Complex

Relumins Labs is now offering the first ever full-spectrum skin support and whitening supplement, the 15x Glutathione Complex. The ingredients in this blend not only rapidly increase cellular

Complex.

Phytonutrient Complex

Natural plant ingredients contain some of the best skin protective and whitening compounds in the world. The Relumins Phytonutrient Complex contains Green Tea Extract, a powerful antioxidant with natural sunburn protection, and Rosehips which are rich in Vitamin C as

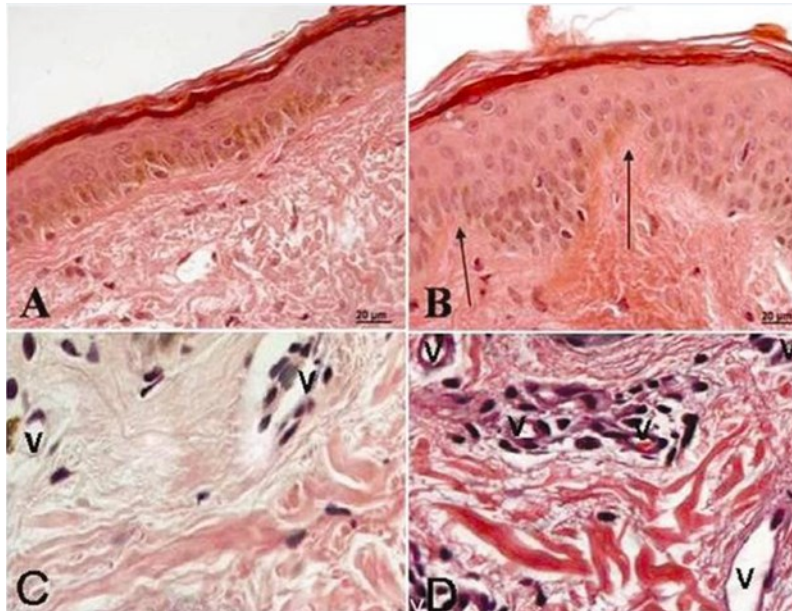
well as the carotenoids Lutein and Zeaxanthin. These ingredients demonstrate anti-inflammatory effects on the skin to help protect against the aging and darkening effects of acne and sun related skin damage. Furthermore, their antioxidant properties support sustained glutathione levels.

Green tea is a known tyrosinase inhibitor¹⁰ which may be due to its ability to quench free radicals and peroxides⁴. Furthermore, green tea polyphenols possess the unique ability of reducing the severity of sunburn when taken orally¹⁷. This is especially important due to the aging and darkening effects of sunburn.

Rosehips also demonstrate a unique and powerful skin protecting effect. Lutein and Zeaxanthin, carotenoids found in rosehips, inhibit the amount and activity of matrix metalloproteinases (MMPs)¹⁶. MMPs are enzymes that are released into the dermis following exposure to UV. They break down important structural proteins, destroying collagen and elastin and aging skin¹⁹.

Glutaboo Complex

High dose glutathione will



Soy isoflavone improves papillary depth (A → B) and increases number of dermal blood vessels (C → D)²¹

only go so far, as it is limited by its slow accumulation in cells. To combat this factor, the Relumins 15x Glutathione Complex contains ingredients that increase the body's own glutathione production and activity. This glutathione is produced *inside* your cells, so it does not need to pass through the stomach, intestines or blood.

N-acetyl-L-cysteine and Alpha Lipoic Acid supplement the body's available cysteine⁸, an essential precursor of cellular glutathione. This creates a sustained production of glutathione to minimize fluctuations between doses. Furthermore, Alpha Lipoic Acid was shown to protect against the depletion of reduced glutathione in irradiated cells⁷. This effect indicates that these boosters may prevent glutathione fluctuations even when stressors such as sun

exposure are present.

The Glutaboo Complex also contains Selenomethionine and Vitamin B2. Each molecule contributes a benefit to the enzymes of the glutathione cycle. Selenomethionine provides the selenium needed to form glutathione peroxidase, which maintains glutathione

activity⁹, while Vitamin B2 is a cofactor of glutathione reductase.

Bioflavonoid Complex

The Bioflavonoid Complex consists of a number of antioxidant and anti-inflammatory ingredients including carotenoids to combat skin damage. This complex exhibits clinically proven anti-aging effects by promoting collagen, reducing under eye circles and improving blood flow.

Hesperidin and other citrus bioflavonoids strengthen blood vessels and reduces dark circles under eyes²². Soy Isoflavone improves the appearance of fine wrinkles and increases dermal blood vessels and papillae while also supporting collagen production^{20, 21}. The citrus bioflavonoids have been observed to synergistically

increase the effect of vitamin C and improve capillary strength.

Effects and Efficacy

The skin benefits of Relumins 15x Glutathione Complex fall into 6 main categories:

1. Glutathione Support
2. Tyrosinase Inhibition
3. Antioxidation
4. Anti-inflammation
5. Protection from Environmental Damage
6. Anti-Aging

Glutathione Support

This new synergistic formula is designed for maximum absorption, utilization and efficacy of glutathione. Quercetin⁵, Vitamin B2⁶ and Alpha Lipoic Acid⁷ aid in the maintenance of glutathione activity. N-acetyl-L-cysteine and Alpha Lipoic Acid supplement available cystein⁸, an essential precursor of cellular

glutathione. Selenomethionine provides the selenium needed to form glutathione peroxidase, which maintains glutathione activity⁹.

Reduced glutathione is oxidized by reactive oxygen

species (ROS) including free radicals and peroxides. Because reduced glutathione is active in inhibiting the melanogenic pathway⁴, it is important to keep levels high. Quenching ROS will maintain a higher reduced:oxidized glutathione ratio⁴. Every ingredient in this formula contains potent antioxidants that protect and prolong glutathione activity.

Tyrosinase Inhibition

Tyrosinase is the master enzyme in melanogenesis, by inhibiting it, melanogenesis is slowed. This formula contains many tyrosinase inhibitors, including: glutathione, vitamin E, quercetin, hesperidin, citrus bioflavonoids, green tea extract and soy isoflavones¹⁰. Tyrosinase activity can also be

Uneven Skin Tone

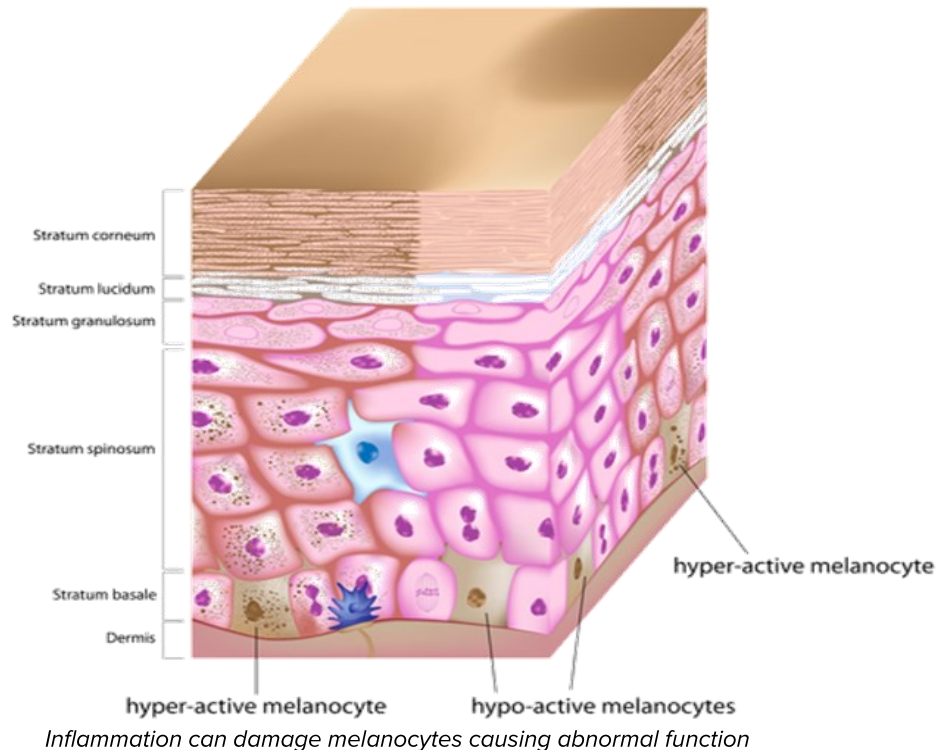
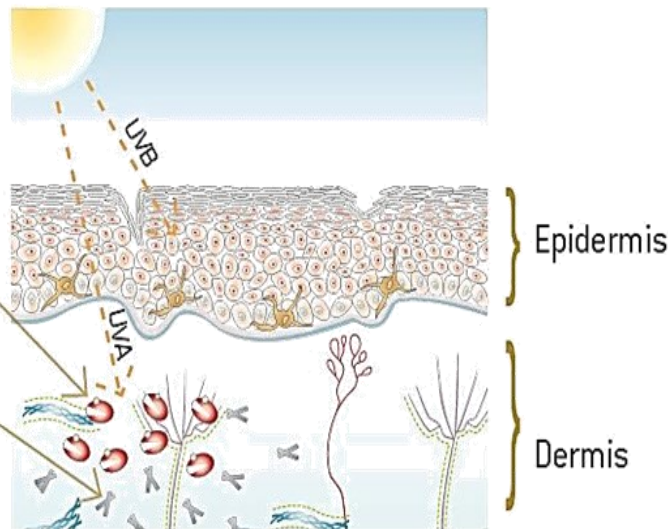


Photo-aged skin

UVA = aging
UVB = burning

Increase in free radicals

Over-production of enzymes



Skin damage from UV radiation and the resulting increase in free radicals and matrix metalloproteinases and other protein destroying enzymes

induced by free radicals and peroxides⁴, so antioxidants will demonstrate an inhibitive effect on tyrosinase.

Antioxidation

Each ingredient in the formula was thoughtfully chosen for its effect and synergy. It is no surprise that all 15 of them are antioxidants. These protective molecules have an extremely broad range of skin protective benefits that aid in whitening and anti-aging.

Anti-Inflammation

Postinflammatory hyperpigmentation is common among darker skinned individuals¹¹. This is a phenomenon in which inflammatory injury, such as sunburn or acne, causes skin discoloration. Preventing or inhibiting inflammation can minimize discoloration from injuries¹². We achieved the desired effect through the inclusion of milk thistle¹³, quercetin¹⁴, hesperidin¹⁵, rose hips¹⁶, green tea¹⁷, and vitamin E¹⁸.

Protection from Environmental Damage

Sunlight can damage skin by increasing oxidative stress, but antioxidants will effectively reduce UV induced ROS in the skin. UV radiation also causes an influx of matrix-metalloproteinases and neutrophils containing proteolytic enzymes into the dermis. These enzymes destroy collagen and elastin

and age skin¹⁹. Lutein & Zeaxanthin, carotenoids found in rosehips, inhibit the amount and activity of these enzymes¹⁶.

Many of the naturally occurring phytochemicals in Relumins 15x Glutathione Complex protect against UV induced inflammation, oxidative stress, immunosuppression and skin cancer¹³. These ingredients include vitamin E, green tea polyphenols, silymarin and lutein.

Anti-Aging

Relumins 15x Glutathione Complex helps to reverse the signs of aging by supporting collagen production. We have included L-methionine & soy isoflavone²⁰ for their scientifically proven effects on collagen production. Boosting collagen is essential in older skin, where reduced collagen levels cause wrinkles and sagging skin.

Soy Isoflavone is a phytoestrogen which improves the appearance of fine wrinkles and increases dermal blood vessels and papillae^{20, 21}. This is a huge benefit to overall skin health, as older skin receives less nourishment from the blood and loses the structural support of papillae. Furthermore, hesperidin and other citrus bioflavonoids strengthen blood vessels and reduce dark circles under eyes²².

Summary

Relumins 15x Glutathione Blend is the first oral glutathione product to truly rival the effectiveness of intravenous or sublingual administration. By balancing high dose glutathione with sustained natural production, users can experience an immediate boost to cellular glutathione levels that won't dwindle as quickly as other products. The effects are a total spectrum of skin whitening, repair and anti-aging. This is truly the perfect formula!

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