



AOM

THE PURITY OF NATURAL

HELPING YOUR SKIN LOOK YOUNGER, NATURALLY FROM AOM

Women and men of all ages know that putting their best faces forward will help them build self-confidence. Cosmetics are formulated to enhance the visual appearance of skin, making it look more youthful, glowing, dewy and fresh. These are adjectives that consumers respond to, and view as desirable attributes. In order to satisfy the ever-increasing consumer demand for more natural and healthy products, a vast natural ingredients industry has emerged. Under this context, mixed tocopherols and vitamin E, as antioxidant natural solutions, are well-recognized ingredients to prevent cell aging and protect cosmetic formulations.



GROWING DEMAND FOR SKIN CARE PRODUCTS

The global Cosmetic Skin Care market was valued at US\$ 55070 million in 2020 and is expected to reach US\$ 89550 million by the end of 2027, growing at a CAGR of 7.1% during 2021-2027.

THE FULL RANGE OF NATURAL

AOM supports the cosmetics industry by helping to protect and fortify their formulations.

Starting from a by-product from vegetable oil refining, and through a complex extraction and purification, we produce the most complete range of tocopherols.

- Advantiox is the range of natural antioxidants that protects ever more complex and fragile natural ingredients from deterioration caused by oxidation, eliminating the need for any synthetic antioxidants.
- In order to deliver maximum skincare performance, our Sun E range of natural Vitamin E and Advasterol plant sterols deliver active principles for multiple applications.
- As the newest addition to the AOM portfolio, Nutripherol delivers both Vitamin E fortification and antioxidant performance in a single clean-label product.

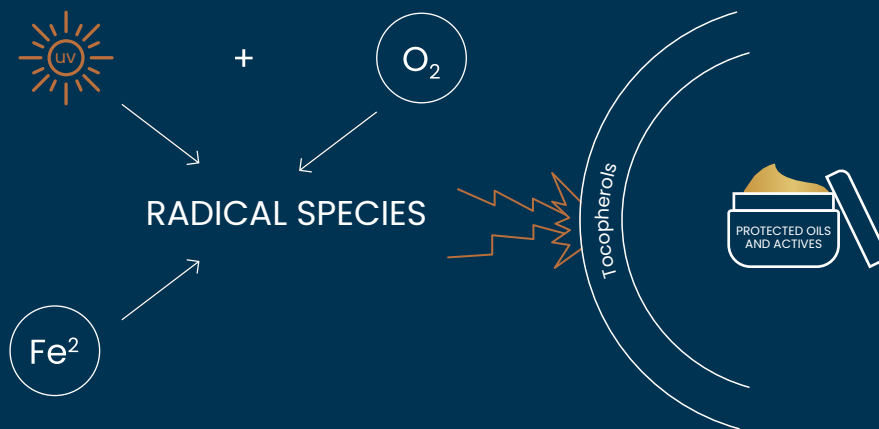
We take serious thinking in all our processing lines, to make sure that all of our final products are as natural as our raw materials. With our physical separation processes and non-chemical techniques, we sell the molecule exactly as produced by the plant, and as Nature intended.



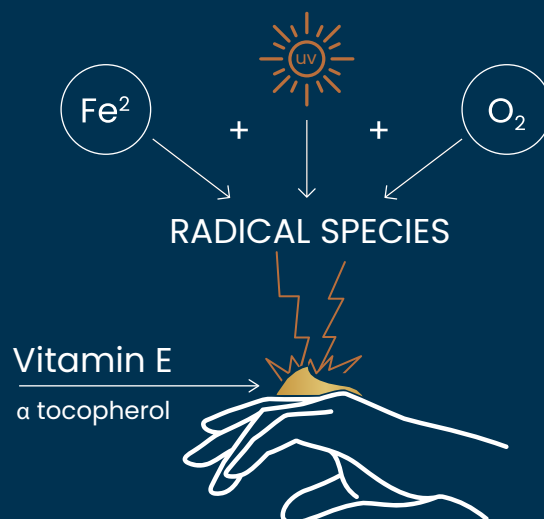
OXYGEN AND RADICALS

TWO RISK FACTORS FOR COSMETIC PRODUCTS AND THE SKIN

Oxidation is one of the main causes for deterioration of cosmetic products. Oxidative degradation of fatty acids not only has a negative impact on the esthetic perception of a formulation, but also active substances defining the function of the cosmetic product can be destroyed.



Also, inside the human skin oxygen and radical species can attack biomolecules and impair their biological function. Radical oxidation reactions can induce micro-inflammations and subsequently lead to premature aging of the skin as a visible result.



Ingredients which prevent the harmful effects of radical species in a cosmetic formulation therefore belong to the standard toolbox of functional ingredients for the formulator.



IDENTITY PRESERVED
ANTIOXIDANTS

TOCOPHEROLS - NATURAL PROTECTORS AGAINST OXIDATIVE DETERIORATION

Tocopherols are the first-choice antioxidants to protect cosmetic formulations and the skin against oxidative damages. Highly soluble in the oil phase they capture noxious molecules right where they are generated and by this protect value and function of the cosmetic formulation. Although accessible as dl-racemats by chemical synthesis, the efficacy of naturally derived tocopherols exceeds the one of synthetic dl-tocopherol by a factor of two.

In addition, plant derived tocopherols are usually mixtures of four molecular species with distinct antioxidant properties. AOM offers a complete range of natural tocopherols from different origins and of characteristic composition, guaranteeing the absence of genetic manipulation. By choosing a tocopherol from the right source, these different properties can be explored selectively, and desired cosmetic functions can be realized in the most natural way .





 **Advantiox**

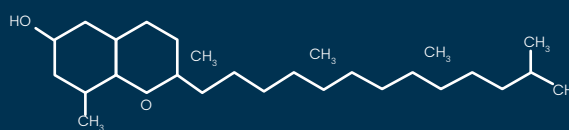
PLANT-BASED SOLUTIONS

Rich in d- β -, d- γ - and d- δ -tocopherols, Advantiox has a high capacity to capture the oxidative radicals. Complementing the rapid efficacy of Vitamin E with this longer-lasting capacity makes mixed tocopherols perfect antioxidants to protect cosmetic formulations from deterioration.

Through long years presence in the market AOM has established reliable relationships to suppliers of identity proved Non-GMO sources for soy derived tocopherols.

With Advantiox Non GMO OC, AOM provides valuable antioxidants which comply with all relevant demands towards natural and sustainable cosmetic raw materials.

INCI: Tocopherol, Helianthus Annuus (Sunflower) Seed Oil

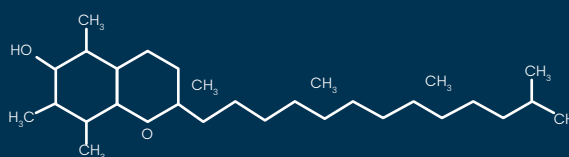


d- β -Tocopherol

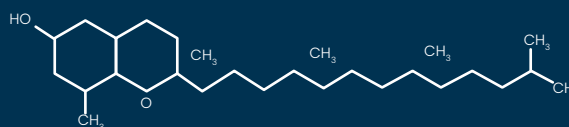
→ All-natural mixed tocopherols

→ Non-GMO: Hard IP certification at individual lot level

→ Kosher and Halal certified



d- γ -Tocopherol



d- δ -Tocopherol





Sun E

SUN E SUN E SUN E SUN E

SUNFLOWER DERIVED TOCOPHEROLS FOR THE SKIN

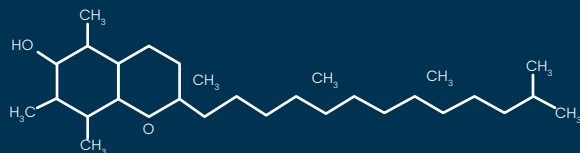
d- α -tocopherol, also known as Vitamin E shows the fastest reaction with radical species generated from oxygen. Nature therefore integrates d- α -tocopherol into cell membranes to protect them against oxidation and a loss of function.

However, Vitamin E is consumed rapidly and needs to be regenerated. In the physiological environment of the skin this regeneration is effected by vitamins and other biomolecules. That's why pure d- α -tocopherol is unsurpassed to protect the skin against effects of aging and UV induced damages.

As one of only few vegetable oils, sunflower oil contains mainly d- α -tocopherol. With Sun E, AOM makes this treasure available in pure and natural form.

INCI: Tocopherol, Helianthus Annuus (Sunflower) Seed Oil

- Sunflower-sourced: clean label
- Non-allergen
- All-natural mixed tocopherols
- Non-GMO: Hard IP certification at individual lot level
- Kosher and Halal certified



d- α -Tocopherol



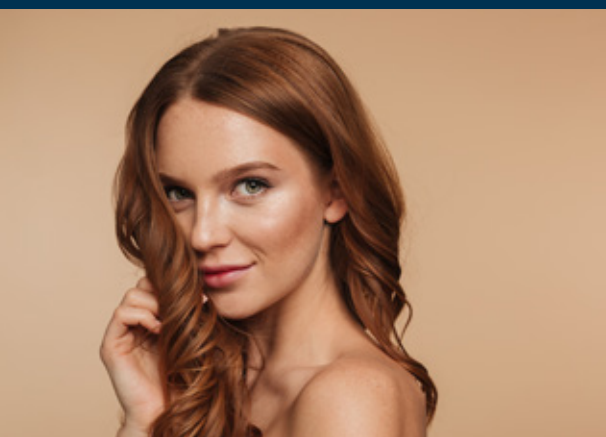
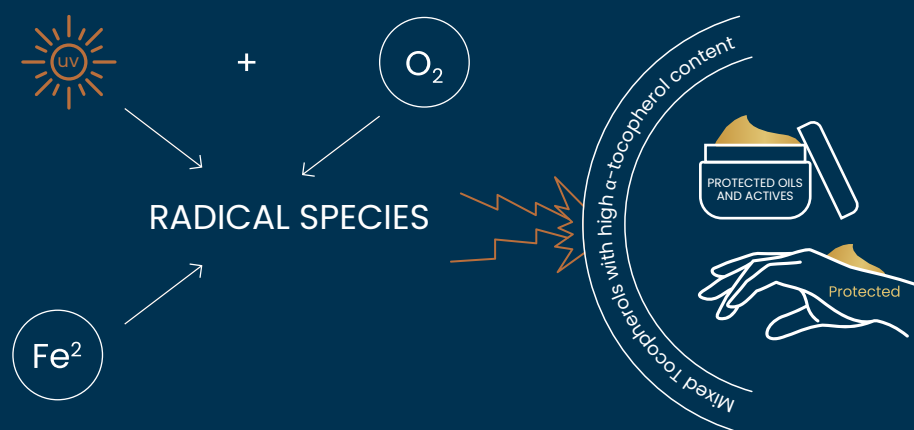


 **Nutripherol**

NUTRI
NUTRIPHEROL
NUTRIPHEROL

ONE PRODUCT, TWO EFFECTS

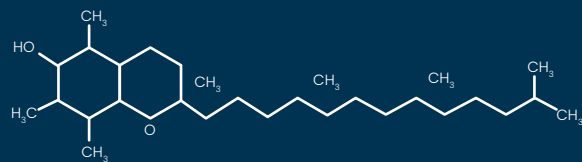
Mixed tocopherols from rapeseed are composed of a unique combination of d- α and d- γ -tocopherol. Almost at a 1:1 ratio Nutripherol furnishes cosmetic formulations with a sufficient level of Vitamin E to supplement skin with protective antioxidants and at the same time ensures stability of the product against oxidative degradation.



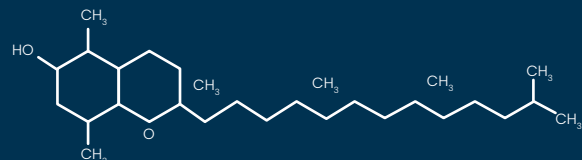
Deriving exclusively from European Rapeseed 00 makes Nutripherol the most clean label high performance antioxidant in the market.

INCI: Rapeseed Tocopherols.

- All-natural mixed tocopherols
- Kosher and Halal certified
- Rapeseed-sourced: clean label
- Non GMO by definition
- Non-allergen
- High alpha tocopherol concentration delivers Vitamin E fortification



d- α -Tocopherol



d- γ -Tocopherol



MIXED TOCOPHEROLS PRODUCT LIST

Widest range from different sources: Plant Based, Sunflower, EU Rapeseed

| | | |
|-------------------------|--------------------------------------|--------------|
| Advantiox 90 non GMO OC | Mixed Tocopherols Non GMO – COSMOS | Liquid / PB |
| Advantiox 70 non GMO OC | Mixed Tocopherols Non GMO – COSMOS | Liquid / PB |
| Advantiox 50 non GMO OC | Mixed Tocopherols Non GMO – COSMOS | Liquid / PB |
| Nutripherol 70 OC | Mixed Tocopherols rapeseed – COSMOS | Liquid / UER |
| Nutripherol 50 OC | Mixed Tocopherols rapeseed – COSMOS | Liquid / UER |
| Sun E 1000 OC | Mixed Tocopherols sunflower – COSMOS | Liquid / SF |

PB = Plant Based

UER = European Rapeseed

SF = Sunflower

PHYTOSTEROLS

PREVENT SKIN FROM DRYING OUT

SKIN COMPOSITION

The skin is a complex organ that receives a lot of attention by consumers – and brand marketers appealing to them. To understand how phytosterols enhance its appearance. It is worth reviewing the composition of skin. There are three key layers that comprise skin: epidermis, dermis and subcutaneous fat. The epidermal layer is the topmost and is composed of five sublayers wherein phytosterols are active:

- **Stratum corneum**
(the water-repellent topmost layer)
- **Stratum lucidum**
(found only on palms and soles)
- **Stratum granulosum**
(responsible for keratin production; keratin is the key skin protein)
- **Stratum spinosum**
(responsible for the skin's elasticity)
- **Stratum basale** (responsible for forming keratinocytes that move up through to the Stratum corneum, and melanocytes that give skin its hue and cluster to form freckles)

When keratinocytes emerge into the Stratum Corneum, they transform into corneocytes and are devoid of almost all water and have lost their nuclei. Corneocytes are mostly composed of keratin and serve to protect the layers underneath from the environment. This layer also includes fats such as cholesterol, which helps to bind water and act as a barrier. Phytosterols provide support to the Stratum Corneum.

COLLAGEN AND SKIN AGING

Skin aging encompasses key reactions from exogenous and endogenous influences. Youthful skin is that which is relatively unblemished, smooth, elastic, hydrated and plump. It is determined by genetics as well as other factors such as smoking, diet, dramatic weight loss, and exposure to the sun or chemicals. Another key driver is the decreased production of collagen, one of the primary components in connective tissue and responsible for hydration, water retention and volume.



For skin care applications, phytosterols are used in anti-ageing formulations to help prevent skin from drying out. In esterified form they act as an emollient, thickening agents that retain water, promote hydration and add to a “plump” look.

HOW PHYTOSTEROLS BENEFIT SKIN

Phytosterols stimulate collagen production and support moisture retention. They are also applied in topical products to keep the structural integrity of the cell membrane, reducing inflammation in the skin, improving skin metabolism, and further supporting moisture retention. Research studies support collagen-restoring abilities of phytosterols.

An in vitro study found that skin cells exposed to stigmasterol and beta-sitosterol showed lower levels of enzymes that degrade collagen, which resulted in increased collagen secretion.³ This help the skin retain its youthful appearance and can help delay wrinkle development. Beta-sitosterol is used in sun care formulas (during and after) to support skin inflamed by sun exposure.

It also has been shown to provide relief of atopic dermatitis, and even helps accelerate healthy wound repair, scar reduction, and in improving barrier function (the skin's ability to retain moisture.)^{4, 5, 6, 7}



APPLICATIONS

The anti-aging benefits delivered by phytosterols make them applicable for a range of beauty products – eye serums, moisturizing lotions and creams for face, body and feet, makeup foundations with UV protection, cleansers and exfoliants for body and face, and also shampoos and scalp conditioners.



Even color cosmetics such as eyeshadows and lipsticks can include phytosterols. Typical dosage, depending on the type of product and desired function, is between 0.5 to 3% phytosterol esters.

REFERENCES

1. Wilt, et al. "Beta-sitosterol for the treatment of benign prostatic hyperplasia: a systematic review" BJU Int. 1999 Jun;83(9):976-83.

2. P R Berges, et al. The Lancet 345, 1529-1532 1995).

3 N.-R. Han, et al "The β -sitosterol attenuates atopic dermatitis-like skin lesions through down-regulation of TSLP." Exp. Biol. Med. Maywood NJ. vol. 239, no. 4, pp. 454-464, Apr. 2014.

4 E. S. Ang, et al. "Evaluating the role of alternative therapy in burn wound management: randomized trial comparing moist exposed burn ointment with conventional methods in the management of patients with second-degree burns," MedGenMed Medscape Gen. Med., vol. 3, no. 2, p. 3. Mar. 2001.

5 B. S. Atiyeh, et al. "Improving scar quality: a prospective clinical study, Aesthetic Plast. Surg., vol. 26, no. 6, pp. 470-476, Dec. 2002.

6 B. S. Atiyeh, et al. "Scar quality and physiologic barrier function restoration.

AOM'S PHYTOSTEROLS RANGE:

PLANT-BASED PHYTOSTEROLS AND SUNFLOWER PHYTOSTEROLS

ADVASTEROL FORMATS AND APPLICATIONS

| | | Advasterol All-Natural | Advasterol IP IP-Certified | Advasterol S Sunflower |
|------------------------|-----------------------------------|---------------------------|--|---------------------------|
| FEATURES | All-Natural, vegetable-oil source | ✓ | ✓ | ✓ |
| | Non-GMO | | ✓ | ✓ |
| | Non-Allergen Labelling | | | ✓ |
| | High Beta Sitosterol | | | ✓ |
| FORMATS & APPLICATIONS | Powder and Prill format | | Bakery Cereals / Snacks Pills & Tablets Pharma API's | |
| | Fat Soluble Ester | | Dairy Beverages Fats and Spreads Salad Dressings Safegel caps | |
| | Water-dispersible | | Water-based drinks and juices Liquid and powder instant products | |

ADVASTEROL S

Perfectly suits these attributes desired in skincare products. It is produced exclusively from sunflower rich in beta-sitosterol. It is also vegan and non-GMO, as well as non-allergenic (no soy, tree nuts, wheat or animal products). According to the Cosmetic Ingredient Review Report (January 2014), Advasterol Ester S can be safely used as a skin conditioning agent, hair conditioning agent, viscosity increasing agent, skin protectant, and antioxidant. According to UE 257/2006 they are included in approved inventory for cosmetic products as an emollient.



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