Beauty from Within

EVNol SupraBio™

EVTene™

ExcelVite

Your Preferred Partner In
Palm Nutraceutical Excellence

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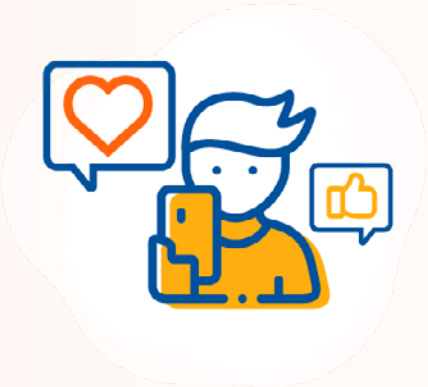
Summary

Is it true that "Beauty is in the eye of the beholder"? While there are many factors and perceptions that shaped our beauty definition, one has to agree that people tend to naturally gravitate towards things, places, and people they find beautiful. The wide usage of social media has also revolutionised our "beauty" perceptions.



Digital technology and social media are more often and fluently used by younger generations. Both Millennial and Generation Z post more pictures and videos of themselves than previous generations. They are more diverse, educated, idealistic and connected. Some have even become Key Opinion Leaders (KOL) or influencers who provide personal experiences and opinion in a specific industry to push certain products. This has created new business opportunities and reshaped the beauty & cosmetic industry.

Notably, Millennial and Gen Z are also expected to have a longer life expectancy and marry late or even remain single. Thus, making them even more conceited and conscious of the way they appear or present themselves, especially when they are single.

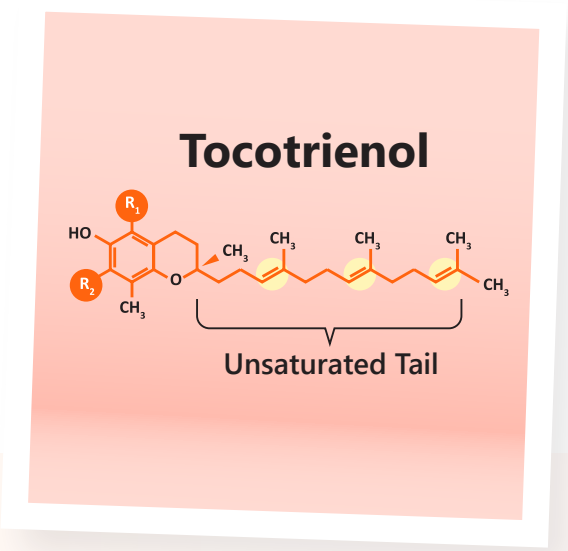
Hence, it's not surprising to see the rise of the "beauty-from-within" market – as people are looking for the notion of "wellness beauty" from within – which include nutricosmetic products that can help bolster skin and hair health.

This whitepaper describes the unique benefits and clinical studies of these branded-ingredient of Vitamin E Tocotrienols and natural Mixed-Carotenes in nutricosmetics.

"Wellness Beauty"

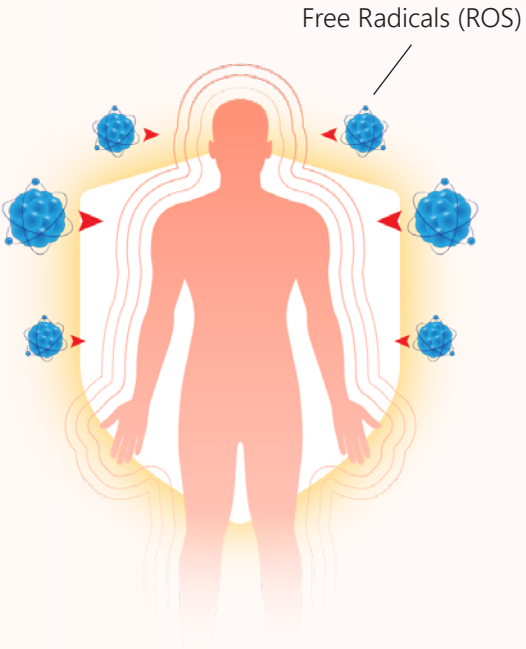
ExcelVite's clinically-researched **EVNol SupraBio™** and **EVTene™** are well-positioned to provide scientifically-substantiated resolution (skin and hair) for oral beauty or nutricosmetic products.

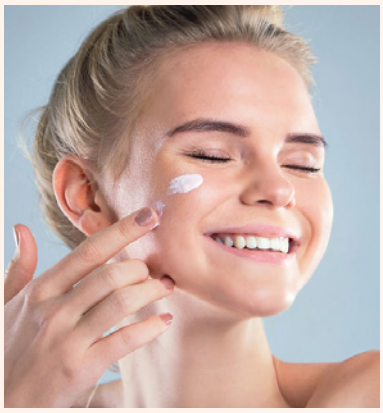
Tocotrienol "Super" Vitamin E Beyond Antioxidant



The vitamin E family consists of eight different compounds - four tocopherols and four tocotrienols. While most people recognize tocopherols, not many have heard of tocotrienols.

Tocotrienols have been proven scientifically to exhibit 40-60 times stronger antioxidative property than tocopherols. Tocotrienol differs structurally from tocopherols by the presence of three double bonds in the side chain, which enables tocotrienols to exhibit efficient penetration into cell membranes for biological actions [1]. Additionally, tocotrienol preferentially accumulates in the upper most layer of the skin (stratum corneum) naturally to protect from free radical- and UV-induced damages. A published peer-reviewed tissue distribution human clinical study [4] showed that our body preferentially accumulates tocotrienols form of vitamin E in the skin. The poly-unsaturated isoprenoid side chain of tocotrienols allows them to move efficiently and effectively across the unsaturated cell bilayer membrane when compared to alpha-tocopherol. As such, it is not surprising that being a more potent antioxidant, tocotrienol is the skin's first line of defence against these damaging free radicals and sun light [2].



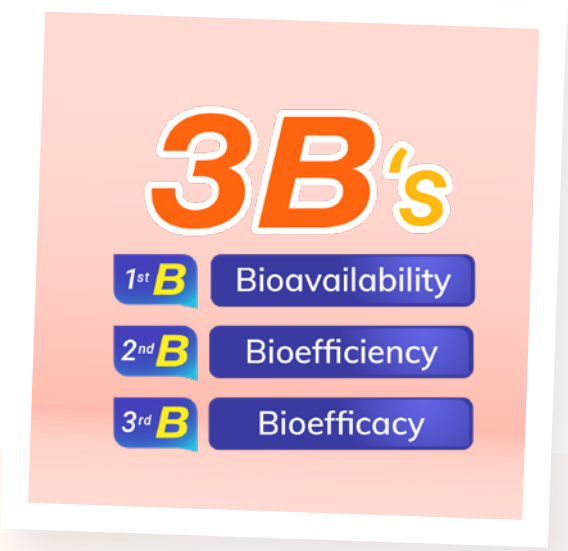


> Due to these unique attributes and benefits, tocotrienols (the unsaturated form of Vitamin E) has been called the "Super Vitamin E" in the cosmetic and personal care industries.

The renowned Dr. Nicholas Perricone (Dermatologist at the Yale Medical Centre), in his NY Times' best seller book - "The Wrinkle Cure ", advocated the use of tocotrienols (ie : High Performance Vitamin E) in cream to promote skin health and prevent skin aging.

EVNol SupraBio™

Patented and Bioenhanced Full Spectrum Palm Tocotrienol/Tocopherol Complex



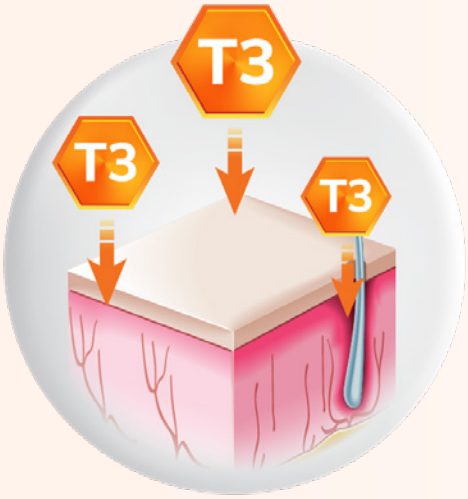
While there are different kinds of tocotrienol in the market to choose from, one must be mindful that the oral absorption of tocotrienol (as a fat-soluble compound) is poor and erratic in nature. Hence, it is crucial to choose the right tocotrienol that could overcome this poor absorption issue.

EVNol SupraBio™ is a patented and bioenhanced natural full spectrum palm tocotrienol/tocopherol complex that ensures consistent and enhanced absorption of each individual tocotrienols up to 300% compared to regular tocotrienol extract [3].

EVNol SupraBio™

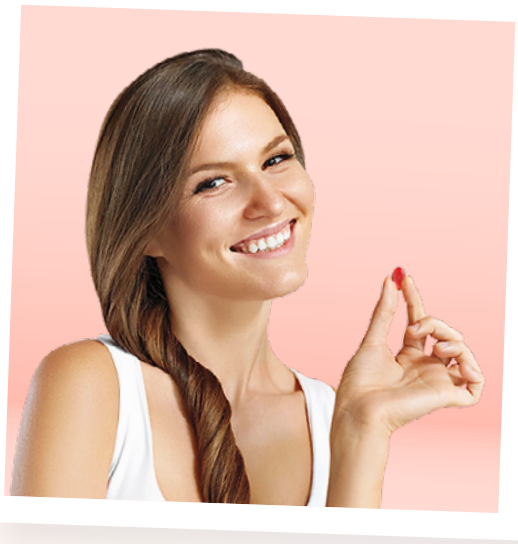
Patented and Bioenhanced Full Spectrum Palm Tocotrienol/Tocopherol Complex

> In a human clinical study published by researchers at the Ohio State University Medical Center, supplementation of tocotrienol (**EVNol SupraBio™**) shows that tocotrienols are taken up efficiently and deposited at vital human organs, including skin [4].



The fact is that - taken together with other published clinical studies in relation to hair growth, skin health and other unique benefits, **EVNol SupraBio™** is the most clinically-researched tocotrienols in the market, due to its bioenhanced absorption property. **EVNol SupraBio™** exhibits these 3 unique attributes – **Bioavailability, Bioefficiency** and **Bioefficacy (3 B's).**

Tocotrienol
& Healthy Hair Volume



Hair is considered an essential part of overall identity, especially women. It is a symbol of attractiveness and beauty. Hence, hair thinning and baldness are sensitive issues. A ground-breaking study was conducted at the School of Pharmaceutical Sciences, University of Science Malaysia that recruited twenty-one volunteers suffering from hair loss were given 100 mg daily of mixed palm tocotrienol supplementations while at the same time another 17 volunteers were administered with placebo. All 38 participants, aged from 18 to 60 years, with varying hair loss condition had a 2 x 2 cm area marked on the scalp. Number of hairs were observed in this pre-determined scalp area for all volunteers, before and after supplementation. At the end of the 8-months supplementation, the number of the hairs in the volunteers in the tocotrienol supplementation group increased significantly for a value of 34.5%. The group of volunteers receiving placebo showed a 0.1% decrease in the number of hairs.

> The researcher credited this efficacy of tocotrienol in improving hair coverage due to its antioxidant activity [5].

An average of 34.5% increase in the number of hair was observed after 8-month **EVNol SupraBio™** supplementation.

Figure 1a. Before treatment

Figure 1b. After **EVNol SupraBio™** supplementation (50mg b.i.d)

Hair Growth Mechanism : Beyond Antioxidant Activity

Elucidation of the pathway of tocotrienol acting on hair loss has further enhanced the understanding and thus demonstrate the effectiveness of tocotrienol in managing hair loss. A recently published study in 2017 observed that tocotrienol rich fraction (TRF) from oil palm induce the anagen hair cycling [6]. Anagen is the active phase of hair follicles during which the root of the hair is dividing rapidly, adding to the hair shaft, while telogen is the resting phase of the hair follicle lasting for 1 – 4 months before the hair falls out. The administration of TRF was in the form of **EVNol SupraBio™**. The **EVNol SupraBio™**-treated mice showed growth of black hair shaft of anagen hairs in an area that has been depilated. This diabetic mice has an impaired anagen induction thus the process of growing new hair which is supposed to be a bit difficult were made easier after topical application of **EVNol SupraBio™**. The skin of the mice in the placebo group on the other hand remained in telogen phase. Topical application of **EVNol SupraBio™** for 7 days consecutively also resulted in the manifestation of hair follicle developments i.e. placode, hair germ and hair peg; all features that are absent in adult skin. Taken together with the earlier human clinical trials, it is evident that **EVNol SupraBio™** is effective in promoting healthy hair growth and hair volume .

CLINICALLY EVNol SupraBio RESEARCHED

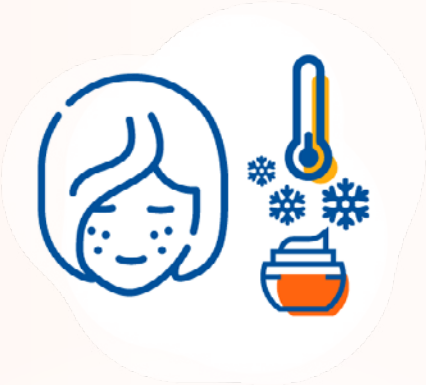
Patented and Bioenhanced Full Spectrum Palm Tocotrienol/Tocopherol Complex

> These studies resulted in ExcelVite being granted a US Patent No: 7,211,274 for tocotrienol's unique effect in promoting hair growth [7].

Tocotrienol & Astaxanthin

Improve Skin Characteristics in Harsh Winter Condition

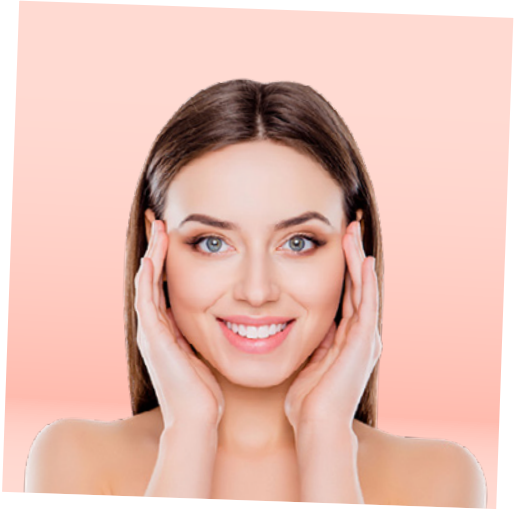
In 2002, researchers in Japan conducted a clinical study during winter season with a synergistic combination of 2mg astaxanthin and 40mg **EVNol™** in Japanese women with dry skin characteristics. After 4 weeks of supplementation of this synergistic combination and placebo softgels, the supplemented group showed an increased moisture level, consistent sebum level, improved elasticity, and reduction of fine wrinkles, pimples and swelling under the eyes. On the other hand, the skin condition of subjects receiving placebo are generally worsened during the test period [8].



A noticeable improvement on the skin condition was observed with synergistic combination of **EVNol™** and astaxanthin.

Tocotrienol Improves

Skin Moisture and Antioxidant Level



Scientists at the Malaysian Palm Oil Board (MPOB) have developed a formulation for facial gel masks infused with tocotrienol (**EVNol™**) in 2014 and subsequently conducted a clinical study to evaluate the efficacy commercial versus **EVNol™**-infused gel mask and placebo in skin health of 20 healthy volunteers. **EVNol™**-infused gel mask showed the most significant hydration benefits, compared to commercial gel mask and placebo by maintaining about 50% of skin moisture compared to untreated area. The skin permeates fluids collected from the treated group also contain high amount of tocotrienols and exhibited potent antioxidant activity via DPPH-scavenging analysis [9].

> **EVNol™**-infused gel mask showed significant hydration benefits compared to commercial gel mask.

Tocotrienol & Photo-Protection
of the Skin

Researchers at the University of Milan recruited 30 subjects with photosensitivity and evaluated the efficacy of a new topical antioxidant formulation containing tocopherols and tocotrienols on preselected areas (2x2cm) on the subjects' buttock after a double dose exposure of UVB light. The UVB exposure was given according to predetermined minimal UVB erythema dose (MED). On the forearms of 15 of the subjects, 2 similar areas were selected on each subject, applied with a simple vehicle on one area and vitamin A on the other. These areas are then exposed similarly to the two-fold MED after 30 minutes.

Results showed that pre-treatment with this full spectrum vitamin E topical formulation (containing both tocopherols and tocotrienols) significantly protected against photosensitivity in the 30 subjects, compared to vitamin A or simple vehicle.

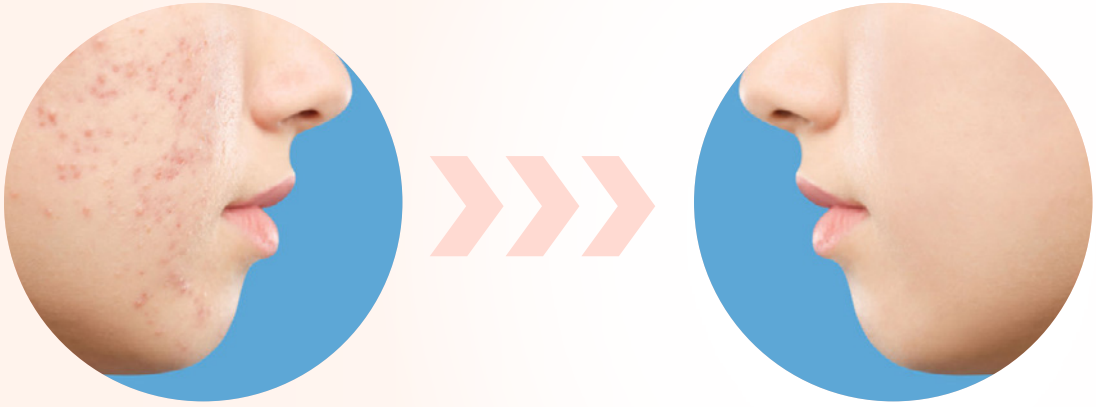
> The researchers also noted that "sufficient level of protection to photo-provocation test was achieved with a single application", and that the new formulation was safe and did not cause any side effects on the subjects [10].

On-Going Clinical Trial

with Tocotrienol and Scar Treatment

Researchers at The Ohio State University Medical Center discovered that tocotrienol helps to increase rete ridges formation in burned wound in response to topical **EVNol™** treatment. This is an exciting finding – as rete ridge interlocking connection between the dermis and epidermis is important for healthy skin function.

> They are now conducting the first ever clinical study to investigate the efficacy of tocotrienol in the treatment of surgical scar and wounds [11].



These images are for illustration purpose.

Mixed-Carotenoids

Your Next Favourite Beauty Ingredient

Carotenoids are well-known colours and pigments naturally found in plants and vegetables. In nature, crude palm oil is the richest source of mixed-carotenoids. Carotenoids, apart from possessing provitamin A activity and natural pigment, they are crucial to the antioxidant defence system in humans and thereby, exhibit many health beneficial effects.

EVTene™ is a natural mixed-carotene complex derived from Non-GMO palm fruits. In fact, palm fruits (Elaeis guineensis) is the world's richest natural plant source of carotenes in terms of retinol (provitamin A) equivalent. It contains up to 300 times as many retinol equivalents as carrots, leafy green vegetables, and tomatoes.

EVTene™

TRUE Mixed-Carotene Complex
(high in alpha- and beta-carotene)

Beta-Carotene
In The Market

There are 4 main commercial sources of carotenoids, namely

1) **Synthetic beta-carotene from petroleum**
2) **Fermentative beta-carotene from fungus**
3) **Algae beta-carotene**
4) **Palm mixed-carotene complex**

Synthetic beta-carotene is commonly known as "nature-identical beta-carotene" as it is chemically synthesized, that is made up of 100% beta-carotene. On the other hand, carotene derived from yeast fermentation and algae predominantly contain only ONE single isomer - more than 96% - 98% beta-carotene. The true natural carotene derived from carrots and palm fruits possesses a mixture of alpha (α)- and beta (β)-carotene.

Another interesting fact is that **EVTene™**- natural palm mixed-carotene complex has similar carotene composition as found in carrots, i.e. ~33% α-carotene and ~65% β-carotene and ~2% of other carotenes (e.g. gamma-carotene, lycopene). It is the only true mixed carotene complex in the market.

Mixed-Carotenoids Boosts Skin's

Resistance Against UVB and UVA Radiation

A randomized, double-blind, placebo-controlled study has shown that daily supplementation with mixed-carotenoids protects human skin against both UVB-induced erythema and UVA-induced pigmentation. The study which was conducted at the Leibniz Research Institute for Environmental Medicine, Germany, in collaboration with Amway Corporation and published in the journal of *Photodermatology, Photoimmunology & Photomedicine*.

Sixty volunteers were randomized into 2 groups; (i) mixed-carotenoids supplement containing 4.25 mg β-carotene and 1.10 mg α-carotene (from **EVTene™**), 1.12 mg lutein, 0.053 mg zeaxanthin, per softgel, or (ii) placebo. The supplements were taken three times a day with meal.

After 12 weeks of supplementation, the minimal persistent pigmentation dose (MPPD) of each volunteer was assessed (Note: the increase in MPPD reading indicates increased protection against UVA-induced skin pigmentation). MPPD was determined by visual grading 20-24 hours after irradiation with a Dermalight 80 MPD test and the minimum PPD dose is defined as the smallest UVA dose required to produce brown pigmentation. It was found that daily oral intake of such carotenoids-complex, but not of placebo, increases UVA-induced MPPD values and hence protects human skin against UVA-induced pigmentation and UVA radiation. This is the first clinical evidence that oral intake of such carotenoids complex can protect human skin against UVA radiation.

Besides measuring UVA (320-400 nm) radiation, this study also measures the photoprotective effect of carotenoids against UVB (290-320 nm) radiation by measuring minimal erythema dose (MED). MED is the minimal amount of energy required to induce visible erythema

(redness of the skin), which can be defined as a uniform, clearly demarcated redness at 16-24 hours after UV exposure. Significant differences were observed between the placebo and intervention group at 4, 8, and 12 weeks. In the intervention group – a significant increase was observed in UVB-induced MED. Thereby, indicating that supplementation with a true bouquet of carotenoids complex protects human skin against UVB-induced erythema [12].

Nourishing Skin with Mixed-Carotenoids

Randomized control trial shows that daily supplementation of mixed-carotenoids (containing EVTene™) nourishes skin. Increased intake of carotenoids also promotes skin yellowness and reduces the appearance of discoloration and wrinkles.

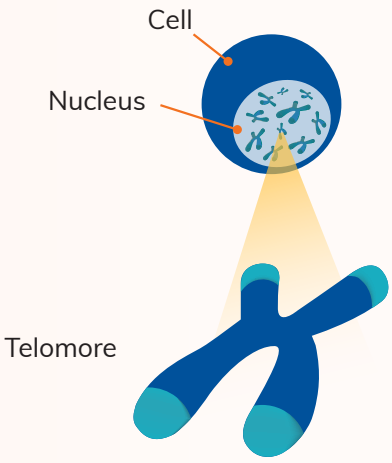
Additional Benefits
of Mixed-Carotenoids - Dietary or Supplemental

High consumption
of Mixed-Carotenoids
Promotes Healthy Ageing

Telomeres are specialized structures at the end of the chromosomes to protect the loss of human's genetic data during cell division. Unfortunately, the length of the telomere shortens each time after cell division. The shortening process is associated with accelerated aging, higher risk of cancer development and death.

In the 1999-2002 National Health and Nutrition Examination Survey (NHANES), the concentration of plasma carotenoids (alpha-carotene, beta-carotene (trans + cis), beta-cryptoxanthin, combined lutein/zeaxanthin and trans-lycopene) of 3,660 participants aged 20-year-old and above US adults were measured. DNA samples were extracted from whole blood and the leukocyte telomere length (T/S ratio) were determined.

From the results, it was found that blood alpha-carotene, beta-carotene (trans+ cis) and beta-cryptoxanthin were significantly associated with 1.76%, 2.22% and 2.02% longer telomeres respectively. Additionally, when comparing to the lowest carotenoid (alpha-carotene, beta-carotene (trans+ cis) and beta-cryptoxanthin quartiles, the telomere length increased from 5-8% in the highest carotenoid quartiles.



> Hence, it is suggested that high consumption of carotenoid-rich food increases telomere length [13].

Mixed-Carotenoids
and Children's Weight Management

In a randomized, double-blind, placebo-controlled intervention study, 20 children with simple obesity at a mean age of 10.5 years are given either 2 tablets of MCS (Mixed Carotenoid Supplement) or Placebo daily for 6 months. The supplement consists of 600 µg beta-carotene, 500 µg alpha-carotene (derived from **EVTene™**), 10 mg lutein, 2 mg zeaxanthin, 10 mg lycopene, 500 µg astaxanthin and 10 mg gamma-tocopherol per capsule). Physical examinations such as waist circumference measurement, blood tests (ie: serum carotenoids, total adiponectin, leptin, insulin, triglycerides, high-density lipoprotein cholesterol) and percentage change in visceral adipose tissue (VAT) and subcutaneous adipose tissue (SAT) are performed in both MCS and placebo groups at baseline and after the supplementation period

When comparing to placebo group after 6 months of supplementation, MCS group demonstrates reduced BMI (Body Mass Index) z-score, WHtR (waist to height ratio), stable HOMA-2 (homeostatic model assessment of insulin resistance-2), elevated level of beta-carotene, total adiponectin and HMW-ADI (high molecular weight adiponectin).

> Beta-carotene does not only show unique positive association with total adiponectin at baseline, but also negative association with waist circumference, WHtR, visceral adipose tissue (VAT), and subcutaneous adipose tissue (SAT) among obese children [14].

EVTene™

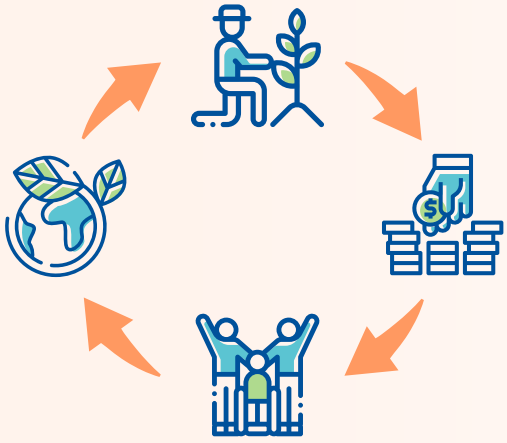
TRUE Mixed-Carotene Complex
(high in alpha- and beta-carotene)

ExcelVite's Commitment
Towards Sustainability

ExcelVite is committed to maintaining a balance between the Economic, Social, and Environmental sustainability and thereby achieving a Sustainable & Responsible Business model for ourselves, our suppliers and our customers worldwide.

In carrying out these commitments, ExcelVite has initiated a huge collaboration with government agencies, our suppliers (i.e. mills) and NGOs in Malaysia to embark on a new chapter of our commitments to Sustainable Palm Oil. This collaboration covers several objectives primarily associated with commitment to sustainable palm oil production, through assisting local oil palm small farmers in Malaysia to adopt sustainable practices and eventually achieving the Certified Sustainable Palm Oil (CSPO) production status.

> We firmly believe that this important initiative will uplift the livelihood of these small farmers that rely on palm oil and ultimately, to get them over the poverty line through sustainable practices.



Sustainability is an integral part of our supply chain and we are aware that sustainability does not only apply to the environment, but also towards the people, economically and socially as well as strong governance. We will continue to collaborate with our customers, stakeholders, and NGOs, to ensure that we continue to advance towards a more sustainable future, be it in terms of the environment, social, economy governance or people around us.

Conclusions

The beauty trends these days have been increasingly emphasized on the naturalness and origin of the products, leading to an escalation of demand for transparency in the ingredient used in the formulation and labelling. In addition, the public demands for skincare products that preferably use whole fruits and vegetables or fruit- or vegetable-based ingredients – something that remind them of the skincare regime of their grandmothers when grandma put cucumber over her eye-lids!

While it might be difficult to put a whole fruit on the face, it is wise to formulate nutricosmetic products containing ingredients and vitamins from nature. This is to ensure the product reflects the latest science and addresses market's needs in order for them to have loyal and returning customers.

> No other ingredients could fit better into this overall wholesome purpose other than **EVNol SupraBio™** and **EVTene™**.

EVNol SupraBio™

Patented and Bioenhanced Full Spectrum Palm Tocotrienol/Tocopherol Complex

EVTene™

TRUE Mixed-Carotene Complex (high in alpha- and beta-carotene)

Both **EVNol SupraBio™** and **EVTene™** can be formulated in the form of stand-alone or with other ingredients providing synergistic effects. Besides that, the versatility of products is wide – **EVNol SupraBio™** and **EVTene™** can be formulated into various delivery dosages of ingestible beauty products such as softgels, tablets, capsule, powdered beverage and ready-to-drink formula, and even for topical applications!

> Formulation of beauty care products (topical or ingestible) with **EVNol SupraBio™** and **EVTene™** enables companies to have a double-pronged approach as a health and beauty product that nourishes the body.

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ExcelVite

Your Preferred Partner in Palm Nutraceutical Excellence

Full Spectrum Palm Tocotrienol/Tocopherol Complex

Patented and Bioenhanced Full Spectrum Palm Tocotrienol/Tocopherol Complex

Natural Mixed-Carotene Complex

Approved by ECOCERT RAW MATERIAL

COSMOS APPROVED

EVNol 50% C(L) Full Spectrum Palm Tocotrienol/Tocopherol Complex
is an approved ECOCERT Raw Material complies with the COSMOS Standard.

Current Pharmaceutical Inspection Co-Operation Scheme (PIC/S)

MS ISO IEC/17025 Accreditation

London Beth Din Kashrut Division (KLBD)

Department of Islamic Development Malaysia (JAKIM)

MSPO Supply Chain Certification

RSPO Supply Chain Certification

Wildlife-Friendly Palm Products

Non-GMO Ingredient

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