



The Taste Of Good Health

Functional Foods With The Power Of Natural Tocotrienol



Want



Natural e³
DAVOS Tocotrienols

Purified Tocotrienol From A Natural Source

Using state-of-the-art extraction technologies, Davos Life Science isolates, concentrates and purifies Tocotrienol from palm oil to create Natural e³, a range of food ingredients that deliver diverse and immense functionalities for human health and well-being.

The Natural e³ Tocotrienol range offers a trusted choice for manufacturers to design and market a new generation of functional foods, supplements and nutraceuticals.



From Heart To Head:

The Healing Power

What Is Tocotrienol?

Tocotrienol, along with tocopherol, are forms of Vitamin E. But differences in their chemical structure confer Tocotrienol with superior antioxidant properties. What's more, recent studies have shown that apart from an excellent ability to scavenge free radicals, Tocotrienol possesses a further array of functional properties that can help improve our health and quality of life.

Tocotrienol occurs in certain plants such as barley and rice. But the humble oil palm (*Elaeis guineensis*) is probably the richest source of these compounds. Palm fruits contain the highest amounts of gamma- and delta-tocotrienol, forms that exhibit the most potent levels of antioxidant activity. In comparison, rice bran has negligible quantities of delta-tocotrienol and high levels of alpha-tocopherol, which is known to inhibit the beneficial effects of Tocotrienol.

Heart Health And Cholesterol Reduction

In addition to superior antioxidative properties, Tocotrienol plays a role in protecting the cardiovascular system through a preconditioning-like effect.

Ischemia occurs when the blood supply to the heart is temporarily restricted. When blood flow is restored, this

ed: Foods That *Help And Heal, Naturally*

Who doesn't want to live life to the fullest? With vigor and the energy to pursue our passions and realize our dreams. Young or old, we seek the strength to chase our goals and enjoy the fruit of our labors.

But the pressures of modern life often sap us of the ability to work and play, as we fall prey to chronic diseases and oxidative damage. How can we ensure that our body and mind retain their health through the years?

More than ever, consumers, from young adults and new families to baby-boomers entering the best years of their

lives, are watching what they eat. When they shop, they seek out products that can assure them of real and recognizable benefits.

'Healthy households' top the list of rising food trends observed by the Institute of Food Technologists in 2008. Cholesterol, high blood pressure and brain health were among the key concerns cited by adults as they scan the supermarket aisles. At the same time, buyers are placing a greater premium on products that promise health, naturally, using ingredients grown and harvested from the very earth they love.

's Of Tocotrienol

causes damage known as reperfusion injury. In both acute perfusion experiments and chronic models, Tocotrienol has shown the ability to attenuate ischemia-reperfusion injury. Tocotrienol also inhibits atherosclerosis (cholesterol build-up on artery walls) and reduces the impact of ventricular arrhythmia (irregular heart beats caused by abnormal electrical pulses).

As a result, Tocotrienol could function as a pharmacological preconditioning agent with an important role in cardiovascular therapy and maintaining a healthy heart. Tocotrienol has been shown to lower serum total cholesterol and low-density lipoprotein cholesterol (LDL or 'bad' cholesterol) by suppressing the activity of HMG CoA Reductase, an enzyme vital to cholesterol formation.

Cancer Inhibition And Therapy

Tocotrienol adds to our quality of life by helping to lower the risk and impact of cancers such as prostate, breast and pancreatic cancer.

Palm oil Tocotrienol has been found to inhibit the growth of human breast cancer cells and hinder the proliferation of prostate cancer cells by interfering with the tumors' ability to obtain nutrients from healthy blood vessels.



In human cell lines trials, Tocotrienol has also induced apoptosis (cell suicide) in colorectal cancer cells, making them a potential treatment for cancer alongside chemotherapy. Given Tocotrienol's low toxicity, researchers hope that Tocotrienol may help in reducing the toxicity of several anticancer therapies.

Protecting The Body And Mind

Other biological functions of Tocotrienol uncovered by studies from around the world include helping the body to resist and reduce high blood pressure, protection from inflammation and prevention of diabetic retinopathy (eye problems related to diabetes).

Tocotrienol has also found promise in treating certain neurodegenerative defects and improving bone density in association with Vitamin D. Various studies have also found moderate oral doses of Tocotrienol to be effective in preventing neurological damage after a stroke.



Tocotrienol At A Glance

- ◆ Superior antioxidant properties (x60) in biological system compared to Vitamin E tocopherol
- ◆ Protects the body from damage by free radicals
- ◆ Supports cardiovascular and circulatory health
- ◆ Lowers LDL cholesterol
- ◆ Reduces the severity of atherosclerosis
- ◆ Lowers the risk of a second heart attack
- ◆ Inhibits cancer cells
- ◆ Supports the immune system
- ◆ Increases the bioavailability and absorption of Vitamin A
- ◆ Highly bioavailable and safe when administered orally

Davos Life Science: A World Leader In Tocotrienol Research And Applications

The world's leader in Tocotrienol, Davos Life Science owns and operates a state-of-the-art manufacturing facility in Singapore to produce top-grade natural Tocotrienol. Under the Natural e³ brand, we offer both active single ingredients as well as signature formulations premixed for market-ready applications.

Our parent company, KLK Berhad, is a Malaysian conglomerate with 150,000 hectares of sustainable palm plantations managed to the highest quality and environmental standards. This assures Davos Life Science of a continuous supply of feedstock to support our clients worldwide.

Supporting Our Customers With Science

We also operate the world's largest R&D centre for Tocotrienol, located near the Tuas Biomedical Park in Singapore. Manned by a team of senior scientists, this custom-build laboratory is equipped for advanced work in analytical chemistry, organic chemistry, biochemistry and cell biology. There is also a pilot lab to isolate and purify natural ingredients for bioactivity testing.

Our laboratory reviews, archives and offers access to the most current journals in chemical, biochemical and medical research on Tocotrienol and other valuable plant lipid extracts. We also provide technical support to help you communicate the latest science and benefits of natural Tocotrienol to your consumers.

To learn about the functional properties of Natural e³ Tocotrienol and its use in food and nutraceutical products, please contact us at:

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