Tocotrienol: Matters Of The Heart

Instead of focusing on treating the symptoms of heart disease, people are seeking strategies to prevent heart disease from developing in the first place. By Dr Tieh Koun Koh, director of sales & marketing, Davos Life Sciences.

ONE of the most obvious criteria of design for heart wellness beverage is the product's efficacy based on solid science. In this way, the product launched will be successful and can be enjoyed by as many people as possible.

Every year, an estimated 16.7 million people succumb to heart disease, which now accounts for 29.2 percent of total global deaths. Many who survive continue to suffer painful symptoms or disabilities, in addition to reduced life expectancy.

Medical science has made much progress in reducing heart disease globally. However, other than the sound advice of 'eat right and exercise', many people obtain little information from their doctors on ways to prevent heart disease.


Cienpies Design, Uruguay

Therefore, it is not surprising why many are now making an effort to learn how to ward off heart disease by monitoring new breakthroughs in medicine and natural remedies. Instead of focusing on treating the symptoms of heart disease, people are seeking strategies to prevent heart disease from developing in the first place.

NATURAL SOLUTION

Tocotrienol and tocopherol are members of the vitamin E family commonly accepted as powerful fat-soluble antioxidants. In the last decade, the ingredient has become increasingly recognised as a natural compound that plays a number of roles in supporting a healthy cardiovascular system. This reduces the likelihood of heart disease and maintains healthy cholesterol levels.

The basis of these beneficial properties is thought to be via tocotrienol's down-regulation of the enzyme 3-Hydroxy-3-methylglutaryl Coenzyme A (HMG-CoA) reductase, which in turn limits cholesterol synthesis in the liver. Recent research indicates that isomeric tocotrienol displays a more varied tissue distribution and response pattern compared to tocopherol.

Further studies show that alpha-tocopherol present in mixed vitamin E preparations may actually compete with tocotrienol for binding sites on the alpha-T transfer protein, a protein that transports vitamin E around the human body.

As a result, alpha-tocopherol may interfere with, and reduce the bioavailability of tocotrienol by limiting the distribution of tocotrienol to the body's tissues. As such, its ability to help support healthy cholesterol is compromised.

It is important to recognise that tocotrienol preparations that are high in alpha-tocopherol (>30 percent) and low in gamma and delta-tocotrienol, such as those derived from rice bran, may be inferior in maintaining healthy cholesterol levels. This is in comparison with preparations derived from palm oil that are naturally low in alpha-tocopherol, while containing higher amounts of both gamma and delta-tocotrienol.

CARDIOVASCULAR DISEASE MANAGEMENT

Studies through oral administration of tocotrienol have shown an impact on cholesterol levels, with total cholesterol levels falling by over 30 percent, and a reduction in LDL cholesterol of almost 70 percent.

In contrast, standard vitamin E (alpha-tocopherol) has little or no effect on cholesterol levels. In one study, HDL/LDL cholesterol ratios improved by up to 150 percent following administration of tocotrienol.

Numerous clinical studies on the oral administration of tocotrienol have shown effect on known cardiovascular disease factors, including reduction of cholesterol levels, cardiovascular inflammation, arterial hardening and triglyceride levels.


Walter Groesel, Vienna, Austria

However, the most commonly used vitamin E (alpha-tocopherol) has through various clinical studies been shown to have little or no beneficial effect towards reducing cardiovascular disease.

Clinical studies have generated strong evidence of the benefits that tocotrienol can bring to the human cardiovascular system. In one study, after supplementation of 100 mg per day, trial subjects' saw their total cholesterol drop by up to 22 percent together, as well as a 20 percent reduction in their LDL cholesterol levels.

Furthermore, another study found a significant improvement in arterial compliance, a factor that may have promising implications on reducing arterial hardening and hypertension. Triglyceride levels, which are also strongly associated with heart disease, have also been shown to fall by almost 20 percent.

There is additional evidence that the ingredient may assist in reducing premature aging associated with advanced glycosylation end-products (AGEs) as well as support healthy blood pressure levels, and blood sugar regulation.

AGEs are formed when high blood sugar levels react with proteins, resulting in a cross-linking process linked to premature aging, tissue stiffness and decreased cellular function.


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DELTA & GAMMA

Compared to tocopherol and alpha-tocotrienol isomers, delta-tocotrienol has shown a strong inhibitory effect on monocyte cell adherence. This is due to its ability to inhibit vascular cell adhesion molecules (VCAM-1) that play a key role in helping monocytes bind to artery walls, and causing inflammation and arterial hardening.

The ingredient's impact on hypertension has also been confirmed in human clinical studies, where tocotrienol-rich vitamin E resulted in reductions of aortic systolic blood pressure, and an improvement in total antioxidant status of almost 10 percent. APFI