



⇒ Product Review ⇐

April 2019 #324

COMPLET-E SUPRABIO™ SELECT OUR NEW VITAMIN E PRODUCT - INTRODUCTION

Since the introduction of our Moss Nutrition Select line almost 10 years ago, one of the most popular requests from you, our customers, has been a high-quality vitamin E product.

However, over the years I have learned that the research on vitamin E makes it clear that a quality vitamin E supplement is much more than just alpha tocopherol. In fact, research makes it clear that vitamin E is actually a complex of eight different vitamin E forms – alpha, beta, gamma, and delta tocopherol and alpha, beta, gamma, and delta tocotrienol. However, if this is true, you may wonder why the vast majority of nutritionists and manufacturers of nutritional supplements tend to focus almost exclusively on alpha tocopherol. Interestingly, until the last 10-20 years it has been assumed by many in the nutritional community that the other seven members of the vitamin E family had little or no importance to human health. In contrast, as I will point out, more and more research has made it clear that all eight members of the vitamin E family play a role in human health, most especially, as I will also demonstrate, gamma tocopherol.

However, the story of the interrelationship between the eight vitamin E forms does not end there. As you will also see, supplementation of large amounts of alpha tocopherol can actually impede utilization of the other vitamin E forms, especially gamma tocopherol. Therefore, knowing this, we at Moss Nutrition have been reluctant to provide to you a standard vitamin E product that is very high in alpha tocopherol.

Unfortunately, we experienced a great deal of difficulty finding a good, reasonably priced vitamin E product that contained all eight members of the vitamin E family in a balanced format so that the alpha tocopherol would not overwhelm utilization of the others.

Fortunately, after years of searching, we found a vitamin E product that fulfilled our requirements for vitamin E subfraction balance – **Compleat-E SupraBio™ Select.**

WHY THE CONCERN ABOUT GAMMA TOCOPHEROL?

As I suggested above, while all the eight vitamin E fractions play a role in human health, I am placing particular emphasis on gamma tocopherol. Why? To answer this question, I would now like to present selected quotes from the paper “How an increased intake of alpha tocopherol can suppress the bioavailability of gamma-tocopherol” by Wolf (Wolf G. *Nutr Rev*, Vol. 64, No. 6, pp. 295-299 2006). The first quotes I would like to feature present some general information on vitamin E with emphasis on alpha and gamma tocopherol:

“Vitamin E occurs in plant sources in eight different analogs. α -Tocopherol (α -T) is the predominant form of the vitamin found in mammalian plasma and tissues.”

Does this mean that alpha tocopherol is the most important? The next quote would suggest that the answer to this question may be no:

“Another form of vitamin E, γ -tocopherol (γ T – gamma tocopherol), is the principal vitamin E form in the US diet, being about 2.5 times as abundant in food as α T. Its source is principally vegetable oils...”

If gamma tocopherol is of lesser importance than alpha tocopherol, why is there so much

gamma in the diet? Might it be there for a reason? I will answer this question shortly.

Of course, many in the nutrition community have maintained over the years that, even though gamma tocopherol is more prevalent in the American diet than alpha tocopherol, it is still of lesser importance because alpha tocopherol has a stronger antioxidant effect compared to gamma tocopherol. Wolf states:

“[gamma tocopherol] is less active as an antioxidant than α T.”

Should the discussion on the relative value of gamma tocopherol end with the fact that it is not as powerful an antioxidant as alpha tocopherol? Wolf emphatically demonstrates that the answer to this question is no:

“In view of the much larger amount of γ T than α T in the human diet, the question arose, does γ T have a function in the animal organism other than as a weak antioxidant? Though the level of γ T in human plasma is low (α T, 32 μ M; γ T, 1.9 μ M), the two forms are present in comparable concentrations in human muscle (α T, 155 nmol/g; γ T, 107 nmol/g) and human skin (α T, 127 nmol/g; γ T, 180 nmol/g).”

However, even more importantly from a clinical standpoint, gamma tocopherol, unlike alpha tocopherol, has powerful activities as an anti-inflammatory compound:

“ γ T, in contrast to α T, can act as an anti-inflammatory agent by virtue of a dose-dependent reduction of the synthesis of the mediator of inflammation, prostaglandin E₂, through inhibition of the enzyme cyclooxygenase (COX-2).”

In addition, unlike alpha tocopherol, gamma tocopherol can quench the powerful free radical, peroxynitrite:

“Due to an unsubstituted position on its benzene ring, γ T, in contrast to α T, can react with reactive nitrogen species such as peroxynitrite. Peroxynitrite is formed in macrophages from reactive oxygen and the stable nitric oxide free radical during inflammation, and can damage protein, lipids, and DNA. γ T readily mops up peroxynitrite by forming 5-nitro- γ T. Reactive

nitrogen species are especially abundant in cigarette smoke, and smokers have twice the level of 5-nitro- γ T in their plasma compared to nonsmokers.”

What is the potential clinical impact of the ability of gamma tocopherol to quench peroxynitrite? Wolf continues:

“The anti-inflammatory action may also explain the influence of γ T in lowering the incidence of coronary heart disease, shown by both animal and clinical data. The most striking result was obtained in a 7-year study of 34,486 women that revealed a significant inverse relationship between γ T intake (dietary vitamin E, mostly γ T) and the risk of cardiovascular disease. This was not the case when vitamin E was consumed from supplements (mostly α T). Other studies confirmed this result by showing a strongly significant inverse relationship between serum γ T and the risk of coronary heart disease.”

Other studies have demonstrated a relationship between gamma tocopherol and prostate cancer:

“In an important prospective, 7-year case-control study of the association of prediagnostic blood levels of γ T among 10,458 males, Huang et al. found γ T concentrations strongly and inversely associated with subsequent risk of prostate cancer.”

THE IMPACT OF ALPHA TOCOPHEROL SUPPLEMENTATION ON GAMMA TOCOPHEROL LEVELS

As I suggested above, the story about the relationship between alpha tocopherol and gamma tocopherol does not end with the fact that gamma tocopherol has physiologic impacts not possessed by alpha tocopherol. Large amounts of alpha tocopherol can actually have an adverse impact on gamma tocopherol activity:

“After supplementation of a group of middle-aged volunteers with 400 IU of α T three times daily for 2 months, plasma α T increased to 200%-400% and γ T decreased to 30%-50% of initial levels. In later work by Handelman’s

group, tocopherols in the adipose tissue of 10 male human subjects were assayed. After a 1-year supplementation with α T (800 mg/d), followed by another year without supplementation, γ T had declined by about 50%, whereas α T had remained unchanged. Similarly, Traber and Kayden found that 24 hours after a single dose of 1000 mg of α T given to six human subjects, plasma α T increased, whereas γ T declined precipitously. A most convincing recent study by Huang and Appel demonstrated that supplementing the diet of 184 adult nonsmokers with 296 mg/d of α -tocopheryl acetate for 2 months reduced the serum γ T level by 58%.”

The above data led Wolf to conclude:

“Clearly, the α form of the vitamin in the organism can somehow suppress the γ form.”

What is the mechanism by which alpha tocopherol supplementation reduces both serum and tissue levels of alpha tocopherol? While several mechanisms have been suggested in the published literature, such as competition for the intestinal transport protein, Wolf seems to favor research that suggests alpha tocopherol increases the metabolic breakdown of gamma tocopherol:

“...increased α T, by causing an increase in Cyp3a, stimulates the metabolic breakdown of γ T. This mechanism explains the decline in plasma and adipose γ T in humans whose diets contain high levels of α T.”

SOME FINAL THOUGHTS

With all the above in mind, Wolf concludes:

“In conclusion, it appears that the reduction in plasma γ T during enhanced intake of α T can be explained by the more rapid metabolism of γ T occurring when α T intake is increased. Recent experiments with mice have suggested that competition for an intestinal transporter protein may also play a part in the reduction of γ T by large doses of α T.”

Am I suggesting that there is no value to the time-honored practice by many if not most nutritional practitioners to supplement with alpha tocopherol? No, I am not. For, it has

important free radical quenching properties, particularly lipid-based free radicals. However, what I am suggesting is what I have been suggesting about so many different supplements over the years, that there is a hormetic “dose makes the poison” aspect to alpha tocopherol supplementation that has been, for the most part, completely ignored by most in both the allopathic and nutritional communities as well as the public at large.

Having been made aware of not only the value of gamma tocopherol but the “dose makes the poison” impact of alpha tocopherol on gamma tocopherol, I was reluctant to incorporate a vitamin E product into the Moss Nutrition line until I found a product that had the right balance of alpha and gamma tocopherol. **Compleat-E SupraBio™ Select** has an excellent balance of gamma and alpha tocopherol. Therefore, I am both proud and excited to introduce it to you.

Compleat-E SupraBio™ Select – 60 Vegetarian Softgels

