American Medical Association Discovers Gamma Tocopherol

The Journal of the American Medical Association (JAMA) is one of world’s leading scientific publications. Since the early 1990s, JAMA has published articles about the benefits of dietary supplements, including folic acid, ginkgo, vitamins E, B6, and B12, among others. JAMA has also published studies showing that vitamin E (alpha tocopherol) by itself has not always reduced heart-attack risk factors.

In January 1998, the Life Extension Foundation introduced the world to the multiple benefits of gamma tocopherol. Until that time, the only form of vitamin E that consumers knew about was alpha tocopherol.

On August 11, 2004, JAMA published an extensive review article extolling the benefits of gamma tocopherol. While there were similarities to the Life Extension and JAMA articles, the big difference is that readers of JAMA had to wait six years longer than Life Extension members to find out about the virtues of gamma tocopherol.

Vitamin E Alone Is Not Enough

In its article, JAMA discusses the inconsistent findings about alpha tocopherol and presents compelling evidence that gamma tocopherol is the form of vitamin E most likely to reduce the risk of degenerative disease.

The JAMA article reviewed the scientific basis for vitamin E’s cardioprotective effects. It then went on to describe why studies that showed no efficacy to vitamin E supplementation might have been flawed. The reasons cited for why these studies failed to provide reliable results include selection of subjects, stage of disease, end points, dosage, and source of the vitamin E.

Another issue raised in the JAMA review is that vitamin E’s mechanism of preventing heart disease is most likely related to its ability to suppress LDL oxidation. A more targeted approach, JAMA asserts, would be to include only patients with enhanced levels of oxidative stress and low plasma levels of vitamin E in order to determine those most likely to benefit from antioxidant treatment.

As Life Extension members are well aware, a wide range of toxic factors—including excess blood levels of homocysteine, C-reactive protein, fibrinogen, insulin, glucose, and triglycerides—causes atherosclerotic heart disease. It is impractical to expect vitamin E by itself to prevent atherosclerosis. If healthy arteries are to be maintained, other pathological mechanisms have to be addressed as well.
Gamma Tocopherol's Cancer-Preventive Effects

The *JAMA* article notes that most clinical trials designed to examine vitamin E’s ability to prevent disease have used alpha tocopherol. The article then considers recent molecular and epidemiological studies that have prompted researchers to examine the potential benefits of the **gamma tocopherol** form of vitamin E.

One study cited by *JAMA* showed that increased levels of gamma tocopherol were associated with a significantly reduced risk of prostate cancer. The *JAMA* article goes on to note that the anti-cancer effects of high concentrations of selenium and alpha tocopherol were observed when gamma tocopherol concentrations were also high.

Another group of researchers interviewed by *JAMA* are investigating whether gamma tocopherol can inhibit the growth of colon cancer. These researchers hypothesize that vitamin E levels inside cells are more important than blood levels in protecting DNA genes against mutations that can lead to cancer. Part of this rationale is that colon cancer cells take up gamma tocopherol much more effectively than alpha tocopherol. Furthermore, according to the *JAMA* article, when alpha and gamma tocopherol are taken up together into cells, the presence of gamma tocopherol increases the level of alpha tocopherol.

The researchers interviewed by *JAMA* point out that gamma tocopherol has unique properties that alpha tocopherol does not have, including the ability to neutralize certain free radicals and suppress expression of a gene (ras-p21) that is known to cause cancer.

The *JAMA* article reports on a rat study that showed gamma tocopherol provides antioxidant protection to the cells lining the colon and to fecal material (possibly decreasing the production of mutagens).

Another study cited by *JAMA* examined the influence of gamma tocopherol on the expression of another gene called peroxisome proliferator activated receptor y (PPARy). This gene (PPARy) is a promising target for the prevention and treatment of colon and other cancers. Activation of PPARy with certain drugs such as Rezulin®, the *JAMA* article points out, can reduce tumor growth by inhibiting cellular proliferation and inducing programmed cell death (apoptosis).

Life Extension members may remember that Rezulin® was taken off the market because of fatal liver toxicity. Other drugs in its class such as Avandia® and Actos®, however, have not demonstrated this type of liver toxicity. The comforting news is that **gamma tocopherol** may function safely in a manner similar to these drugs, favorably influencing PPAR-y and thereby reducing cancer risk.

Others Journals Recognize Gamma Tocopherol

In addition to the *JAMA* article, other scientific journals published favorable studies in 2004 concerning gamma tocopherol's effects on disease prevention and treatment.

In March, the *Archives of Biochemistry Biophysics* reported on a study that compared the effects of alpha tocopherol, gamma tocopherol, and other forms of vitamin E in inhibiting the spread of prostate cancer cells. Gamma tocopherol and its metabolite were the most effective inhibitors of the proliferation of prostate cancer cells. Other forms of vitamin E were much less effective.

In July, the *Annals of Nutrition Metabolism* published an article (“Gamma tocopherol—an underestimated vitamin?”) showing that gamma tocopherol has higher trapping activity against dangerous nitrogen radicals than does alpha tocopherol. The study authors note that low-level gamma tocopherol correlates with increased risks of cardiovascular disease and
cancer, and that gamma toco-
opherol—but not alpha toco-
opherol—provides beneficial natri-
uretic activity. Natriuretic agents
enhance renal excretion of sodium
and can help facilitate pressure/vol-
ume homeostasis in multiple tis-
sues. Natriuretic agents may thus
have applications in managing con-
ditions such as hypertension and
congestive heart failure.

In January 2004, the journal Free
Radical Biology and Medicine
reported on “new and unexpected bio-
logical activities” with regard to
gamma tocopherol. The scientists
stated that “these other tocopherols”
possess anti-inflammatory, anti-cancer,
and natriuretic functions. Epidemiological data were cited
suggesting that gamma tocopherol
helps prevent certain types of can-
cer and heart attack better than
alpha tocopherol. The scientists
concluded by warning that the:

“... potential public health implica-
tions are immense, given the extreme
popularity of alpha tocopherol supple-
mentation which can unintentionally
deplete the body of gamma toco-
pherol.”

What Doctors
Don't Yet Know

While doctors are slowly being
educated about the value of gamma
tocopherol, Life Extension has dis-
covered a method to increase the
antioxidant and anti-inflammatory
properties of gamma tocopherol. It
turns out that when sesame seed lig-
nans are added to gamma toco-
pherol in controlled laboratory
studies, lipid peroxidation rates
are lowered by 50% compared to
gamma tocopherol alone.

Equally important are stud-
ies showing that sesame lignans
increase tissue levels of gamma
tocopherol as much as 833%
compared to no sesame. The sig-
nificance of this finding is that
while gamma tocopherol in the
blood can help protect against
LDL-induced oxidation in the
arterial wall, free-radical damage
can still run rampant in the brain,
kidneys, and other organs. Increasing
levels of gamma tocopherol is critical to neutralizing
destructive free radicals generated
in cells outside the vascular sys-
stem. Sesame lignans have been
shown to specifically increase tis-
ue levels of gamma tocopherol.

In a brief, two-week study on
human subjects, Life Extension
measured various indicators of
free radical and inflammatory
damage. Gamma tocopherol plus
sesame lignans was shown to be 25% more effective on average
than the same amount of gamma
tocopherol combined with toco-
trienols. The significance of this
finding is that tocotrienols are one
of nature’s most potent antioxi-
dants, yet low-cost sesame was
found to work even better.

While progressive doctors
might soon be recommending
gamma tocopherol-tocotrienol
supplements to their patients,
data uncovered by Life Extension
indicate that the combination of
gamma tocopherol and sesame
lignans is a more effective anti-
oxidant and anti-inflammatory
approach to preventing degener-
ative disease.

How Much Is
Your Life Worth?

If you wanted to learn about the
lifesaving benefits of gamma toco-
pherol back in 1998, you needed to
be a member of the Life Extension
Foundation. No one else offered
the benefits of gamma tocopherol
back then.

Dedicated supplement users
have been consuming lots of alpha
tocopherol and thinking they were
protecting themselves against des-
tructive free radicals. The Life
Extension Foundation, on the other
hand, long ago warned that those
who take regular vitamin E supple-
ments should also take gamma toco-
pherol, since alpha tocopherol can
displace gamma tocopherol in the
body. The most prestigious scientif-
ic journals in the world now agree
with what Life Extension advocated
more than six years ago.

Each month, members read about
new ways of staving off aging and
death in Life Extension magazine.
It costs $75 a year to be a member of the Life Extension Foundation. Some people think that is a lot of money, but if the only benefit of membership were finding out about the critical importance of gamma tocopherol, this alone would have been well worth the membership fee.

The good news for price-conscious consumers is that gamma tocopherol with sesame lignans costs a lot less than gamma tocopherol-tocotrienols and has been shown to better fend off toxic oxidative and inflammatory reactions in the body.

**Life Extension Awarded NIH Research Grant**

Every time you purchase a supplement that might add years of healthy life, you help support the world’s most ambitious scientific research program to abolish the scourge of age-related disease.

I want to personally thank our 100,000+ members who have so generously supported our scientific efforts. The Life Extension Foundation funded a record-breaking amount of research in 2004, and has been awarded a $900,000 grant from the National Institutes of Health to further our pioneering scientific endeavors.

For longer life,

William Faloon

**References**
