Ultra Gamma E Complex is a full-spectrum vitamin E product which provides all 8 naturally occurring isomers that are found in nature: the tocopherols (alpha-, beta-, gamma- and delta) and the tocotrienols (alpha-, beta-, gamma- and delta).

Medium chain triglycerides for superior absorption
This product is in a base of MCT oil (medium chain triglycerides) for enhanced bioavailability of vitamin E. GI absorption of this fat soluble vitamin is dependent on the simultaneous digestion and absorption of the particular fat it is accompanied with during the digestive process. Research shows that medium chain triglycerides have the distinct capability of helping to increase the solubility and thus improving the absorption of vitamin E, whereas long chain triglycerides do not have this same effect.

Why include Tocotrienols?
Research shows that each member of the vitamin E family is functionally unique, and that both the molecular and therapeutic targets of the tocotrienols are distinct from those of the tocopherols. Dr. Aggarwal of The University of Texas, M.D. Anderson Cancer Center, refers to tocotrienols as “The vitamin E of the 21st Century.” Taken orally, tocotrienols are bioavailable to all vital organs. They have been shown to exhibit neuroprotective properties such as improving brain damage due to stroke. Tocotrienols also demonstrate anti-cancer properties and help to protect the skin from UVB damage. Research suggests that tocotrienols have a more potent anti-inflammatory effect than alpha-tocopherol.

The Teamwork of Vitamin E
While Ultra Gamma E Complex contains the complete cast of the vitamin E family, gamma tocopherol and gamma tocotrienol are the highlights because of the vast positive research on these isomers. Among the tocopherols, alpha-tocopherol is by far the most popular and widely used in supplements, so much so that until recently, vitamin E is almost synonymous with alpha-tocopherol. However, it is actually gamma-tocopherol which represents about 70% of vitamin E consumed in a typical US diet. As further explained below, it is also the form that works most effectively intracellularly to reduce peroxidation of LDL and other lipids.

Supplementing with alpha-tocopherol alone reduces gamma-tocopherol
We have recently learned that taking alpha-tocopherol by itself significantly decreases the serum levels of gamma-tocopherol. In a randomized controlled trial, daily supplementation with 400 IU of alpha-tocopheryl acetate for two months reduced serum gamma-tocopherol by about 60%. Supplementation with 400 IU twice a day of either dl-alpha or d-alpha tocopheryl acetate for 28 days resulted in a significant decreased plasma gamma tocopherol to 1/3 of initial levels. Daily supplementation with 1,200 IU of synthetic alpha-tocopherol for 8 weeks decreased plasma gamma-tocopherol in all subjects to 30-50% of initial values. Supplementation with 800 mg per day of synthetic alpha-tocopherol decreased gamma-tocopherol concentrations in adipose tissue to about 50% of baseline values over a 1-year supplementation period. In summary, supplementation with alpha-tocopherol only may deplete other critical tocopherol compounds, including gamma-tocopherol, and result in sub-optimal vitamin E function and protection in the body. Amounts of alpha tocopherol found to lower gamma tocopherol were 400 IU to 1200 IU daily. Ultra Gamma E Complex contains only 60 IU (40 mg).

Benefits
- Antioxidant
- Cardiovascular support
- Blood lipid support
- Neuroprotective
- Skin support
- Anti-inflammatory properties
**Gamma-tocopherol supplementation increases both gamma- and alpha-tocopherol**

While supplementation with alpha-tocopherol reduces serum levels of gamma-tocopherol, supplementation with gamma-tocopherol increases both gamma- and alpha-tocopherol levels in the serum. It was found that the higher the gamma/alpha ratio (more gamma and less alpha), the more the alpha-tocopherol concentration increased. Furthermore, gamma-tocopherol supplements resulted in marked increase in alphatocopherol levels in the serum and tissues.\(^\text{11}\) Gamma-tocopherol in the tissues significantly accumulated with continuous supplementation of gamma-tocopherol but not with alpha-tocopherol.\(^\text{12}\) Gamma-tocopherol promoted cellular uptake of alpha-tocopherol.\(^\text{13}\)

**Gamma-tocopherol is associated with numerous health benefits**

While there are many previous positive trials on reducing cardiovascular risk and mortality using alpha-tocopherol,\(^\text{14,15}\) several more recent clinical trials and meta-analyses failed to show that dietary supplementation with alpha-tocopherol results in lower risk of cardiovascular diseases and cancer.\(^\text{16-19}\) It has been proposed that this is partly due to the reduction of gamma-tocopherol levels in serum and tissues by alpha-tocopherol.\(^\text{20-22}\) Research is showing gamma-tocopherol to be more of a powerhouse in the areas of cardiovascular protection\(^\text{23-26}\) and chemoprevention\(^\text{27-31}\) when compared to alpha-tocopherol.

Plasma concentrations of gamma tocopherol, but not alpha tocopherol, are inversely associated with the incidence of coronary heart disease. Swedish male patients with coronary heart disease had lower serum levels of gamma tocopherol and a higher alpha-to-gamma ratio than healthy age-matched subjects.\(^\text{24}\) In a cross sectional study of men aged 50 in Lithuania, those with coronary heart disease had lower plasma concentrations of gamma tocopherol.\(^\text{32}\) The decrease in plasma gamma tocopherol was significantly associated with coronary heart disease and may be a marker of atherosclerosis.\(^\text{25}\)

Gamma-tocopherol is significantly more effective than alpha-tocopherol in inhibiting the oxidizing agent peroxynitrite.\(^\text{33}\) While alpha-tocopherol can to some extent inhibit free radical generation, gamma-tocopherol is able to trap and remove existing free radicals.\(^\text{34}\) Gamma tocopherol is thought, therefore, to protect cells against the mutagenic and carcinogenic effects of reactive nitrogen species.

Recently, it was found that gamma-tocopherol possesses anti-inflammatory activity by inhibiting prostaglandin E2 synthesis in lipopolysaccharide-stimulated macrophages and in interleukin 1β (IL-1β)-activated epithelial cells by directly inhibiting cyclooxygenase-2 (COX-2) activity. In contrast, alpha-tocopherol has no similar effect.\(^\text{34}\) Gamma tocopherol also decreases PGE2 and TNF-alpha.\(^\text{36}\)

Other studies found that gamma-tocopherol supplementation led to a more potent decrease in platelet aggregation and delay of arterial thrombogenesis than did alpha-tocopherol supplementation.\(^\text{37}\) Gamma-tocopherol supplementation also resulted in stronger ex vivo inhibition of superoxide generation, lipid peroxidation, and LDL oxidation. In a follow-up study, this same group reported that gamma-tocopherol was significantly more potent than was alpha tocopherol in enhancing superoxide dismutase (SOD) activity in plasma and arterial tissue and in increasing the arterial protein expression of both manganese SOD and Cu/Zn SOD.\(^\text{38}\)

Furthermore, although both tocopherols increased nitric oxide generation and endothelial nitric oxide synthase activity, only gamma-tocopherol supplementation resulted in increased protein expression of this enzyme.\(^\text{39}\) Because endothelium-derived nitric oxide is a key regulator of vascular homeostasis, up-regulation of endothelial nitric oxide synthase and nitric oxide formation by gamma-tocopherol could be important in preventing vascular endothelial dysfunction. Gamma-tocopherol is metabolized in the human body to a compound called gamma-CEHC which was shown to have a natriuretic effect (inhibiting the resorption of sodium ions, thus allowing more sodium to be excreted with the urine) and may be of importance in regulating blood pressure.\(^\text{40}\)

**Recommended Use:** As a dietary supplement, take one softgel per day with a meal, or as directed by your health care practitioner.

**Caution:** Consult your health care practitioner before use if you are taking blood thinning medication.

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**Supplement Facts**

**Serving Size 1 softgel**

<table>
<thead>
<tr>
<th>Amount Per Serving</th>
<th>% Daily Value</th>
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<tbody>
<tr>
<td>Vitamin E (as d-alpha tocopherol)</td>
<td>90 IU</td>
</tr>
<tr>
<td>High-Gamma Mixed Tocopherols (as d-gamma, d-delta, d-alpha, d-beta)</td>
<td>450 mg</td>
</tr>
<tr>
<td>High-Gamma Mixed Tocotrienols (as d-gamma, d-delta, d-alpha, d-beta)</td>
<td>20 mg</td>
</tr>
</tbody>
</table>

*Daily Value not established.

**Other Ingredients:** MCT oil (medium chain triglycerides); bovine gelatin, glycerine, purified water (softgel ingredients).

**For a list of references cited in this document:** [https://mkt.s.designsforhealth.com/techsheets/Ultra Gamma_E_Complex_References.pdf](https://mkt.s.designsforhealth.com/techsheets/Ultra Gamma_E_Complex_References.pdf)