

# Annatto Tocotrienols



## Unique tocopherol-free, high delta tocotrienol formula

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### TOCOTRIENOLS CAN SUPPORT:

- Lowering elevated total and LDL cholesterol, triglycerides, and Apolipoprotein b
- Thrombosis and Carotid Artery Stenosis (stroke)
- Hypertension<sup>12</sup>
- Breast Cancer
- Neuroprotection
- Suppressed Immune System/Allergies
- Protecting cell membranes and LDL from lipid peroxidation

Tocotrienols are naturally occurring sisters of tocopherols in the Vitamin E family. Tocopherols have four isomers namely alpha, beta, gamma and delta. Tocotrienols have the same four isomers. Tocotrienols and tocopherols are considered the most important antioxidants in fats, oils, and cell membranes.

### WHAT IS UNIQUE ABOUT DESIGNS FOR HEALTH'S ANNATTO TOCOTRIENOLS?

Numerous studies prove that the two most potent forms of tocotrienols are delta and gamma tocotrienol. Annatto Tocotrienols contain 90% delta-tocotrienol and 10% gamma-tocotrienol. This unique make-up is not found in rice bran or palm oil. Most tocotrienols on the market are derived from rice bran and palm oil.

Tocotrienol plus tocopherol concentrates, referred to as "tocotrienol-rich fractions" or TRF's, from rice bran or palm oil usually contain 30-50% tocopherols. When TRF's contain more than 20% tocopherol, the cholesterol lowering effect is greatly reduced.<sup>1</sup> The most effective concentrates shown to lower plasma cholesterol and oxidative indicators in numerous human studies were those with LOW tocopherols and HIGH tocotrienols.

The generalized potency of tocotrienols in decreasing order is:

### Delta T3 > Gamma T3 > Alpha T3 > TRF > Tocopherol

Annatto Tocotrienols are tocopherol-FREE because these tocotrienols are extracted from food grade ANNATTO. Annatto is the most commonly used carotenoid in foods, added for natural coloring. Colorful foods are known for their high antioxidant concentrations.

Delta T3 is also the most protective of breast cancer as far as being more potent apoptosis inducers and inhibitors of pre-neo and neoplastic and malignant cells.<sup>1</sup> Tocotrienols control

production of the potent estrogen, estradiol, and inhibit growth of the Estrogen Receptor (ER) positive MCF-7 and ER-neg MDA-MB-231 human breast cancer cells.<sup>2,3,4</sup>

Tocotrienols show many positive benefits to humans. They are potent antioxidants.<sup>5,6,7</sup> They inhibit oxidation of unsaturated lipids in cell membranes. As potent lipophilic antioxidants, it is thought that tocotrienols reduce foam cell formation by inhibition of LDL oxidation and inhibition of adhesion molecules' surface expression. They also inhibit platelet aggregation via thromboxane production shunt. They are capable of reducing apolipoprotein b, thromboxane B2 (vasoconstrictor), and platelet aggregation.<sup>9</sup> They protect against glutamate-induced cell deaths making them neuroprotective!<sup>10</sup> Preliminary research is looking positive for tocotrienols' ability to lower C-Reactive Protein. Results will be released soon.

### HOW DO TOCOTRIENOLS LOWER CHOLESTEROL?

Research has clearly proven their ability to lower cholesterol and inhibit liver cholesterol synthesis in a manner that is not likely to cause side effects. Like statins, tocotrienols are HMG CoA Reductase inhibitors, however tocotrienols do this in a different manner. They increase the conversion of Farnesyl (a mevalonate derived product which usually goes on to make cholesterol) to Farnesol. This prevents Farnesyl from being synthesized into squalene and then into cholesterol.

Instead, the Farnesol then signals the proteolytic degradation and downregulation of HMG-CoA Reductase.<sup>11</sup> Tocotrienols also upregulate LDL receptor and LDL clearance. They impressively inhibit the progression of carotid artery stenosis that leads to stroke.<sup>7,8</sup>

Toxicity of tocotrienols has been adequately tested in mice with no toxicity seen.<sup>13,14</sup>

According to a 2002 study on diabetic rats, tocotrienols added to rat chow effectively prevented increase in advanced glycosylation end-products in normal rats, and caused a decrease in blood glucose and glycated hemoglobin in diabetic rats.<sup>16</sup>



## Suggested Usage:

1 DFH Annatto Tocotrienol softgel contains 50 mg tocotrienols. The therapeutic dosage for tocotrienols is 100 mg per day, or 2 Annatto Tocotrienols daily. It should not be taken with a Vitamin E supplement (reduces its potency) and is more effective at lipid lowering when taken at night due to elevated diurnal biosynthesis of cholesterol.<sup>15</sup> Ox bile may increase absorption of tocotrienols. DFH suggests taking Annatto Tocotrienols with Digestzymes since it contains ox bile. Annatto Tocotrienols can work synergistically with other cholesterol lowering medications.

Since Annatto Tocotrienols have a natural blood thinning effect, lower doses of Coumadin or Warfarin (blood thinners) may be needed. Annatto Tocotrienols supplementation should be stopped directly prior to and post-surgery. Do not take with olestra. Do not take at the same time as these medications: Cholestyramine, Colestipol, Isoniazid, Mineral Oil, Neomycin, Orlistat, or Sucralfate.

## References

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