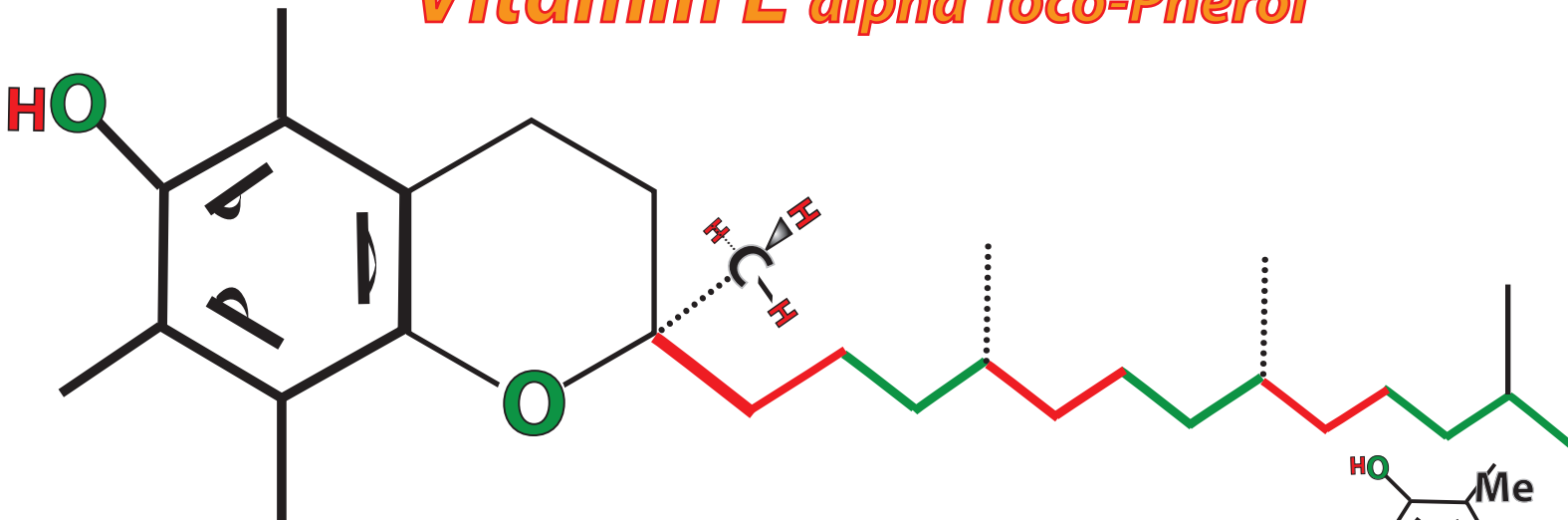


Vitamin E alpha Toco-Pherol



Vitamin E is a generic term for tocopherols and tocotrienols. Vitamin E is a family of α -, β -, γ -, and δ -tocopherols and corresponding four tocotrienols. Vitamin E is a fat-soluble antioxidant that stops the production of reactive oxygen species formed when fat undergoes oxidation. Of these, α -tocopherol (also written as alpha-tocopherol) has been most studied as it has the highest bioavailability.

It has been claimed that α -tocopherol is the most important lipid-soluble antioxidant, and that it protects cell membranes from oxidation by reacting with lipid radicals produced in the lipid peroxidation chain reaction. This would remove the free radical intermediates and prevent the oxidation reaction from continuing. The oxidised α -tocopheroxyl radicals produced in this process may be recycled back to the active reduced form through reduction by other antioxidants, such as ascorbate, retinol or ubiquinol.

However, the importance of the antioxidant properties of this molecule at the concentrations present in the body are not clear and it is possible that the reason why vitamin E is required in the diet is unrelated to its ability to act as an antioxidant. Other forms of vitamin E have their own unique properties. For example, γ -tocopherol (also written as gamma-tocopherol) is a nucleophile that can react with electrophilic mutagens.

However, the roles and importance of all of the various forms of vitamin E are presently unclear, and it has even been suggested that the most important function of vitamin E is as a signaling molecule, and that it has no significant role in antioxidant metabolism.

So far, most studies about vitamin E have supplemented using only the synthetic alpha-tocopherol, but doing so leads to reduced serum gamma- and delta-tocopherol concentrations.

Compared with tocopherols, tocotrienols are poorly studied. Less than 1% of PubMed papers on vitamin E relate to tocotrienols. Current research directions are starting to give more prominence to the tocotrienols, the lesser known but more potent antioxidants in the vitamin E family. Tocotrienols have specialized roles in protecting neurons from damage, cancer prevention, and cholesterol reduction by inhibiting the activity of HMG-CoA reductase; δ -tocotrienol blocks processing of sterol regulatory element binding proteins (SREBPs)