

# Tocopherols



## TOCOPHEROLS

Tocopherols, molecular formula  $C_{29}H_{50}O_2$ , are a class of chemical compounds that occur in a variety of plant species, especially green vegetables, grains and oils such as safflower and sunflower. A group of lipophilic phenolic antioxidants, many tocopherols have vitamin E activity.

A pale yellow oil, with little odor or taste, tocopherols are structurally similar compounds that occur in nature in four forms: alpha-, beta-, gamma-, and delta-tocopherol. Tocopherols that are derived from plant products are often referred to as “mixed tocopherols” because they contain all four forms of tocopherol. These mixed tocopherols (forms of Vit-E), can help maintain the freshness and shelf life of products and provide a desirable alternative to time-tested synthetic antioxidants.

### HISTORY

Tocopherol was isolated from vitamins B and C in wheat germ in 1936, and found to react like an alcohol, concluding that one of the oxygen atoms was part of an OH (hydroxyl) group.

### PRODUCTION

Tocopherols are fat-soluble antioxidants that protect from damage caused by free radicals. When used in foods, tocopherols provide protection from color and flavor degradation.

### APPLICATIONS

In **fried and extruded snacks, fats and oils, tocopherols** can be used:

- in high-temperature processed food applications
- to extend shelf life without contributing flavor
- to support consumer-friendly labeling

**Tocopherols can be combined with:**

- rosemary extract
- ascorbyl palmitate
- oil-soluble green tea extract

**Format**

- liquid or dry, oil-soluble

Sources:

<https://en.wikipedia.org/wiki/Tocopherol>

<https://www.sciencedirect.com/topics/food-science/tocopherol/pdf>

<https://www.ams.usda.gov/sites/default/files/media/tocopherols%20report%202015.pdf>

<https://pubchem.ncbi.nlm.nih.gov/compound/alpha-Tocopherol#section=Use-and-Manufacturing>

