

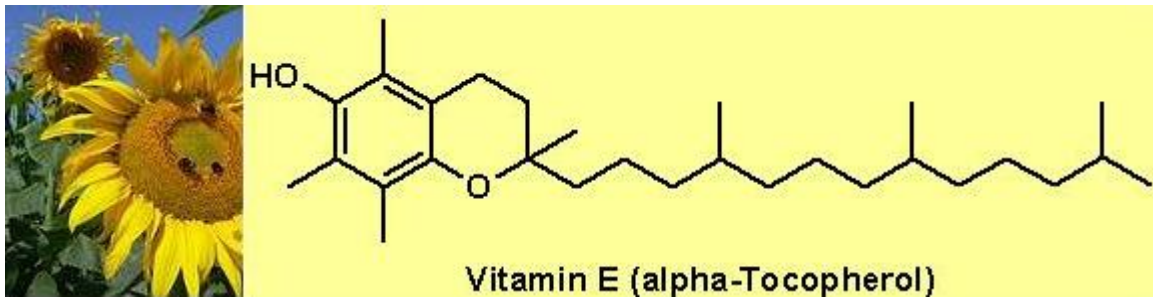
Approval of a new medication invented at BOKU Vienna, Department of Chemistry

The European Medicines Agency (EMA) and the U.S. Food and Drug Administration (FDA) have approved and authorized a medicine for human use in the EU and the USA which was first synthesized at Vienna's University of Natural Resources and Applied Life Sciences (BOKU), Department of Chemistry, in the group of Thomas Rosenau. The development project was then further advanced in cooperation with US partners from pharmaceutical industries and healthcare.

The new drug releases nano-dispersed vitamin E components which can also be absorbed by patients in which the conventional vitamin E uptake is dysfunctional, e.g. those with malabsorption conditions, defective antioxidant status, vitamin E deficiency or impaired lipid metabolism. After passing all stages of pre-clinical and clinical testing, the medication will be available for hospital-only treatment of inflammatory intestinal diseases (e.g. Morbus Crohn, enterocolitis, enteritis), or disorders that interfere with the normal absorption of fat and fat-soluble vitamins from food (abetalipoproteinemia, conditions after intestinal resection or surgery).

This development is an illustrative example that the term "renewable resources" covers much more than what people commonly think. There are not only conventional bulk products from wood, such as cellulose, lignin, paper and textile fibers, but also less prominent renewables which are often neglected: plant extractives, lipids, oils, antioxidants and plant drugs still offer many unknown structures, fascinating chemistry, surprising biological activities and functions, and thus ample fields for scientific endeavour and versatile applications, not only in healthcare.

(Press release)



Was sind eigentlich Vitamin E und α -Tocopherol?

Vitamin E ist eigentlich ein Stoffgemisch aus vier Tocopherolen und vier Tocotrienolen. Häufig wird damit jedoch auch ausschließlich α -Tocopherol (**1a** in Abb. 1) bezeichnet. Die vier Formen α -, β -, γ - und δ -Tocopherol unterscheiden sich nur durch Anzahl und Position der Methylsubstituenten am aromatischen Ring. Die drei Chiralitätszentren der isoprenoiden Seitenkette sind RRR-konfiguriert. Tocotrienole unterscheiden sich von den Tocopherolen durch ihre ungesättigte Seitenkette. Grundkörper der Tocopherole ist das Benzopyran (Chroman-6-ol). Der Name „Tocopherol“ stammt aus dem Griechischen: $\tau\omicron\kappa\omicron\varsigma$ – Geburt, $\phi\epsilon\rho\epsilon\iota\nu$ – tragen.

In der Natur findet man Vitamin E in allen grünen Pflanzen, in hohen Konzentrationen jedoch in (Keim)ölen, aus denen es auch gewonnen wird. Die größte Menge an Vitamin E wird jedoch synthetisch hergestellt. Als phenolisches Antioxidans wird α -Tocopherol in der Tierernährung, Nahrungsmittelindustrie, Pharmazie und Kosmetik sowie als Polymer-Stabilisator in der Kunststoffindustrie verwendet.

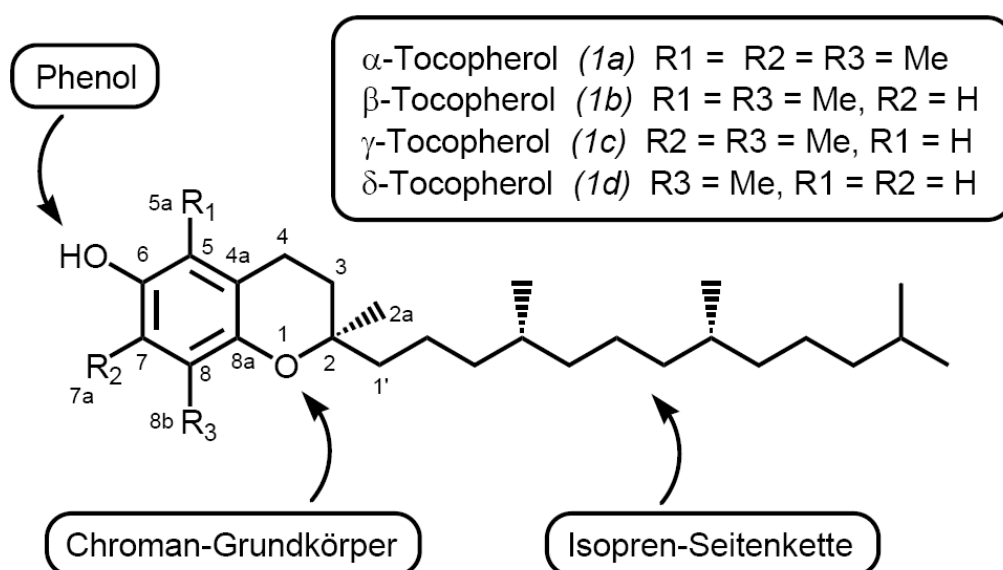


Abb. 1. Chemische Struktur der Tocopherole.