Oral tocotrienols are transported to human tissues and delay the progression of the model for end-stage liver disease score in patients.


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OBJECTIVE: The natural vitamin E family is composed of 8 members equally divided into 2 classes: tocopherols (TCP) and tocotrienols (TE). A growing body of evidence suggests TE possess potent biological activity not shared by TCP. The primary objective of this work was to determine the concentrations of TE (200 mg mixed TE, b.i.d.) and TCP [200 mg α-TCP, b.i.d.] in vital tissues and organs of adults receiving oral supplementation.

METHODS: Eighty participants were studied. Skin and blood vitamin E concentrations were determined from healthy participants following 12 wk of oral supplementation of TE or TCP. Vital organ vitamin E levels were determined by HPLC in adipose, brain, cardiac muscle, and liver of surgical patients following oral TE or TCP supplementation (mean duration, 20 wk; range, 1-96 wk).

RESULTS: Oral supplementation of TE significantly increased the TE tissue concentrations in blood, skin, adipose, brain, cardiac muscle, and liver over time. α-TE was delivered to human brain at a concentration reported to be neuroprotective in experimental models of stroke. In prospective liver transplantation patients, oral TE lowered the model for end-stage liver disease (MELD) score in 50% of patients supplemented, whereas only 20% of TCP-supplemented patients demonstrated a reduction in MELD score. This work provides, to our knowledge, the first evidence demonstrating that orally supplemented TE are transported to vital organs of adult humans.

CONCLUSIONS: The findings of this study, in the context of the current literature, lay the foundation for Phase II clinical trials testing the efficacy of TE against stroke and end-stage liver disease in humans.

PMID: 22298568