SIMULTANEOUS MEASUREMENT OF TOCOTRIENOLS AND TOCOPHEROLS IN HUMAN SERUM BY HPLC

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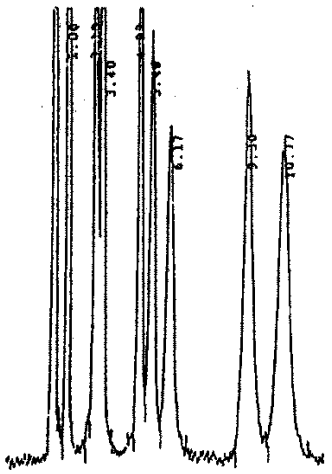
Vitamin E might have a beneficial role in cardiovascular disease and cancer because of its natural antioxidant capabilities (Duthie *et al.* 1989; Knekt *et al.* 1988; Riemersma *et al.* 1991). Little is known about the antioxidant capabilities of individual isomers. In the present study we sought to develop an HPLC method for the simultaneous assessment of vitamin E isomers status, applicable to clinical and population based studies.

A sensitive, specific and simple method for simultaneous evaluation of α, β, γ, δ-tocopherols and α, γ, δ-tocotrienols in human serum by normal phase HPLC with fluorescence detection has been developed. The coefficients of variation (CV) of α, β, γ, δ- tocopherols and α, γ, δ-tocotrienols for 8 replicate analysis of serum were 2.3%, 7.8%, 5.2%, 5.8%, 5.0%, 3.2%, and 8.2%, respectively. Tocopheryl acetate was used as an internal standard, to allow for extraction recovery. Twenty-eight healthy subjects fasted overnight and serum samples obtained the next morning.



Simultaneous determination of α-T (RT3.10), α-T3 (RT3.40), β -T (RT4.97), γ -T (RT5.46), γ -T3 (RT6.17), δ -T (RT9.30) and δ-T3 (RT10.77) with tocopheryl acetate (RT2.00) as an internal standard. Column μporasil 10 μm 30 cm x 0.46 cm I.D.

Eluent, Hexane-Isopropyl alcohol (99.5/0.5, V/V)

Flow rate 2.2ml/min, detection, fluorescence

EX 298 nm, EM 325 nm. Attenuation 8

Temperature 20-25 C

Table shows vitamin E isomer levels in the subjects' sera.

μg%	N	α-T	α -T3	β-T	γ-T	γ-T3	δ-T	δ -T3
Men	14	1187 ± 47	17.1 ± 2.8	20.9 ± 1.7	36.4 ± 5.2	31.9 ± 5.9	6.9 ± 1.1	5.1 ± 0.3
Women	14	1205 ± 98	27.8 ± 6.2	20.0 ± 1.7	43.3 ± 6.5	31.5 ± 11.0	8.1 ± 0.8	8.6 ± 1.1

Conclusions: The vitamin E isomers are measurable in physiological concentrations in human serum by this method. There are no significant differences in human serum α, β, γ, δ- tocopherols and α, γ, δ-tocotrienols between men and women.

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