Electronic Supplementary Material (ESI) for Analytical Methods.

Supporting Information For

Electrochemical Detection of Tocopherols in Vegetable Oils by Supercritical Fluid Chromatography Equipped Carbon Fiber Electrode

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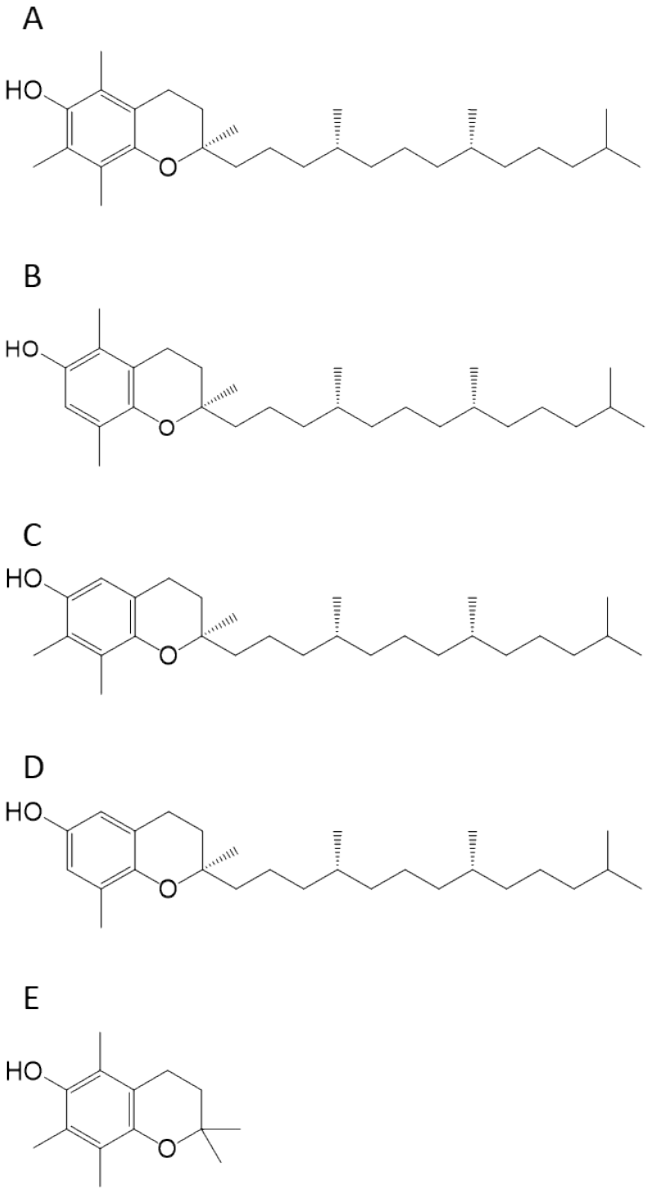

Figure S1. Chemical structure of (A) α-tocopherol, (B) β-tocopherol, (C) γ-tocopherol, (D) δ-tocopherol and (E) 2,2,5,7,8-pentamethyl-6-hydroxychroman.

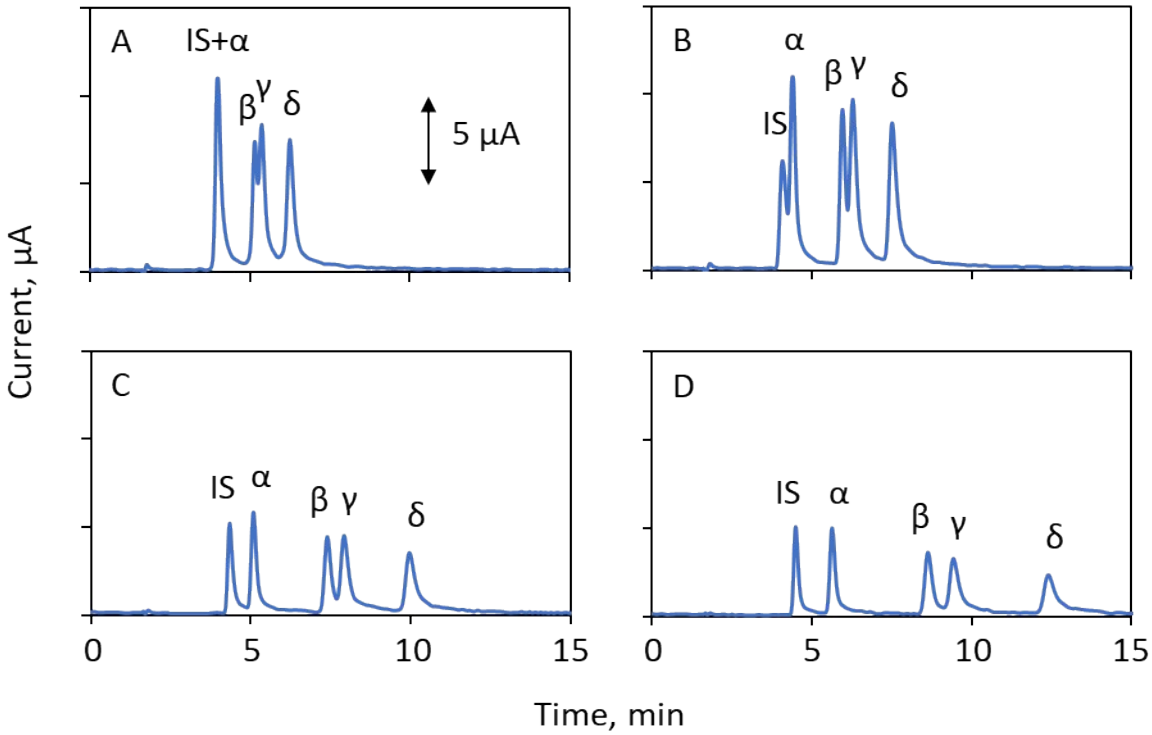

Figure S2. Chromatograms of 2,2,5,7,8-pentamethyl-6-hydroxychroman, α-, β-, γ- and δ-tocopherol standard solution obtained by the SFC-ECD system. A 100 µmol/L of tocopherol standard mixture was injected. The ratio of mobile phase and modifier solvent were (A) 95:5, (B) 96:4, (C) 97:3 and (D) 98:2. Other analytical conditions of SFC-ECD system and the peak labels were the same as in Fig. 2.

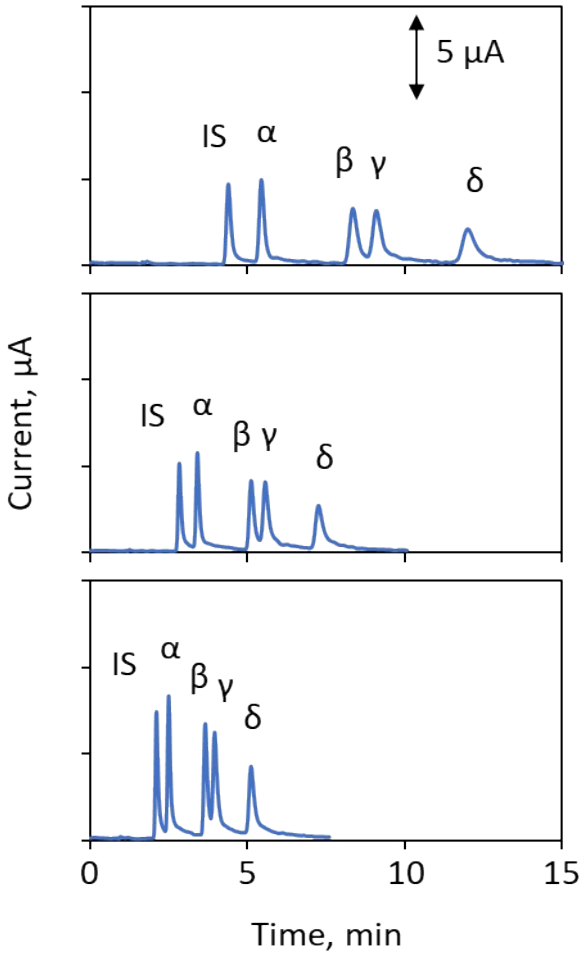

Figure S3. Chromatograms of tocopherol standard solution obtained by the SFC-ECD system. (A) 1.0 mL/min, (B) 1.5 mL/min and (C) 2.0 mL/min. The SFC-ECD system conditions except for the total flow rate and the peak labels were the same as in Fig. 2.

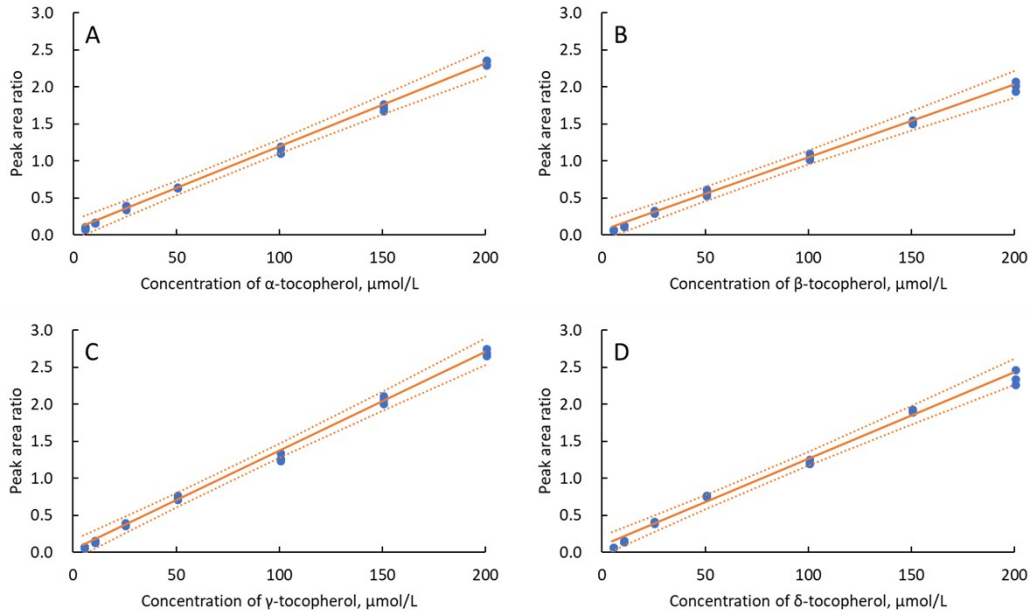

Figure S4. Calibration curve of (A) α-tocopherol, (B) β-tocopherol, (C) γ-tocopherol and (D) δ-tocopherol. Blue dots show each data point. Orange solid lines show the calibration curve and orange dashed lines show the upper and lower 95% confidence interval of calibration curve.

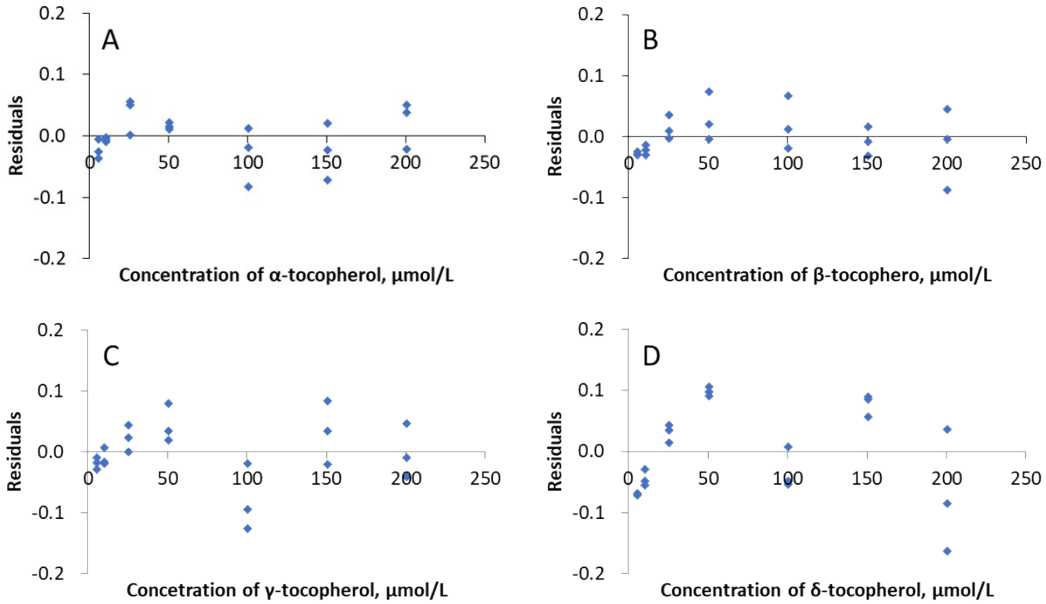

Figure S5. Residuals in (A) α-tocopherol, (B) β-tocopherol, (C) γ-tocopherol and (D) δ-tocopherol.

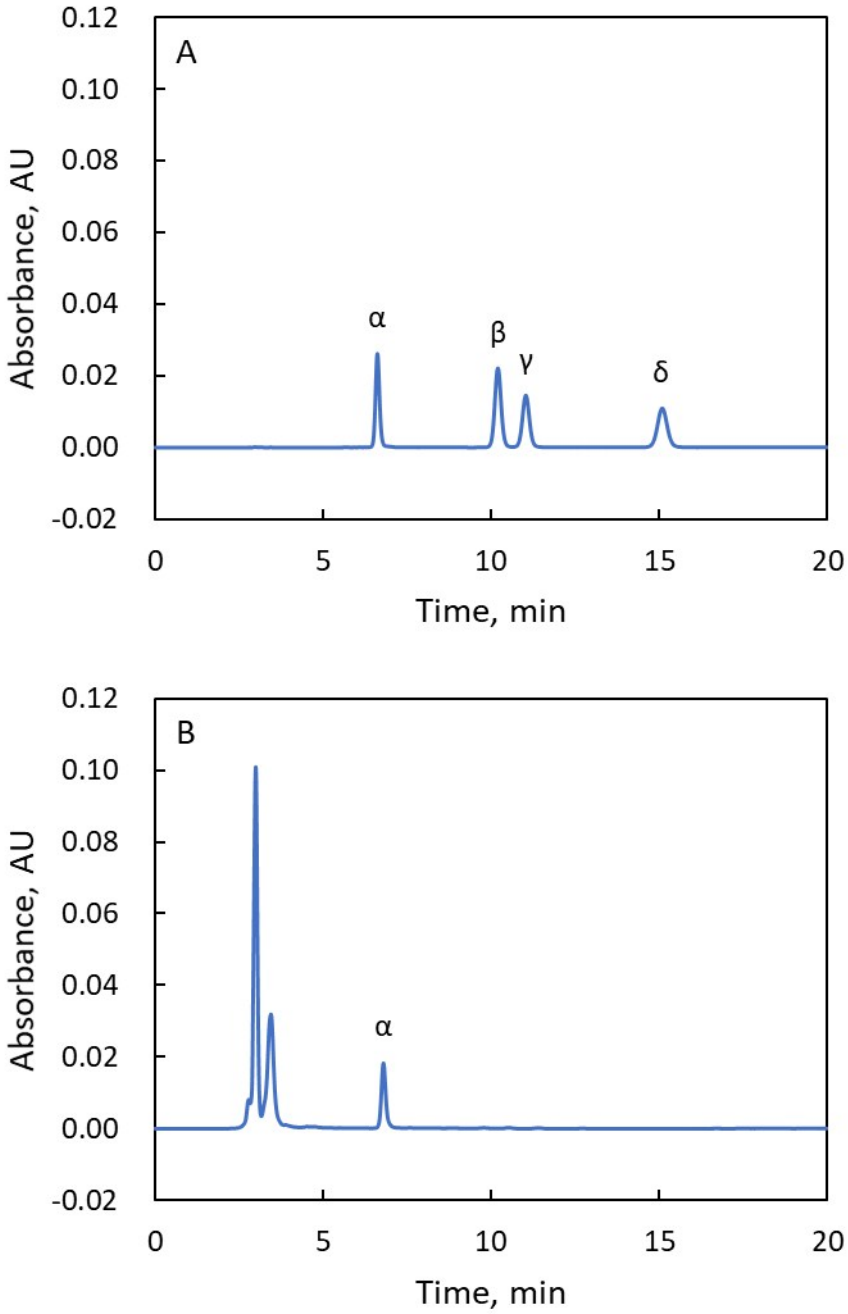

Fig. S6 Chromatograms of (A) 100 μmol/L tocopherol standard mixture and (B) safflower oil obtained by HPLC-UV method. Sample preparation was performed as described in "Materials and methods" except for the addition of internal standard. Chromatographic conditions were shown in Table S1.

Table S1. HPLC-UV conditions

Mobile phase	Hexane / 2-propanol (98:2, v/v)
Flow rate	1.0 mL/min
Column	Inertsil NH2 (4.6 mm × 150 mm, 5 μm, GL Sciences Inc.)
Detection wavelength	290 nm
Injection volume	10 μL

These HPLC conditions were set in accordance with “Methods of Analysis in Health Science” of the Pharmaceutical Society of Japan. This method is regarded as a standard method.

Table S2. α-tocopherol content in safflower oil (mg/g).

	SFC-ECD (Presented method)	HPLC-UV (Standard method)
α-tocopherol	0.39±0.04	0.42±0.01

Values indicate the content (mg/g) ± SD (n=3).