

Analysis of Vitamin E Acetate on the Hitachi LaChrom Elite® Liquid Chromatography System Using the SofTA 400 ELSD Detector

Hitachi High Technologies America, Inc.

Vitamin E (tocopherol) is a common antioxidant formulated into topical remedies. The acetate form of alpha-tocopherol is used as a standard analyte for the evaporative light scattering detector (ELSD). The goal of this study was to show reproducibility and suitability in detecting Vitamin E Acetate on the Hitachi LaChrom Elite® liquid chromatography system using the SofTA 400 ELSD detector.

The ELSD is considered a “universal” detector because it can detect analytes that do not have chromophores or fluorophores. It responds to a wide variety of analytes to accurately compare the component ratios with excellent baseline stability. All ELSD detectors must divert part of the aerosol cloud; however, SofTA’s patented Thermo-Split Technology has the unique ability to vary the split ratio smoothly over a wide range (approximately 99% to 1%) by utilizing a temperature controlled spray chamber. The ratio is optimized for increased sensitivity in consideration of flow rate and gradient composition¹.

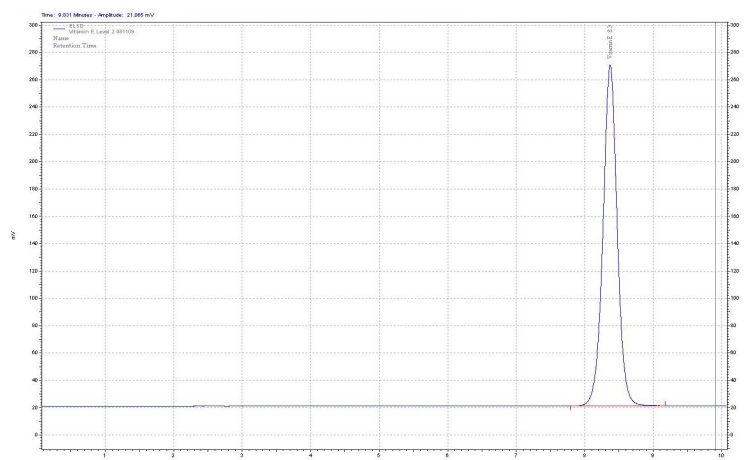
Experimental Conditions

Module	Conditions
Pump (L-2130)	Mobile Phase: Isocratic ACN:MeOH:water (90:18:2)
Autosampler (L-2200)	Injection Volume: 3, 5, and 7µL of a 100µg/mL solution of each component
Oven (L-2300)	Temperature: 30°C
SofTA 400 ELSD	Drift Tube Temperature: 65°C Spray Chamber Temperature: 40°C
Column	Hitachi LaChromUltra® C18 5µm 4.6x150 mm
Standard	(±)-α-Tocopherol Acetate (Vitamin E acetate): Fluka ≥ 97% purity for HPLC Prepared at 100 µg/mL in mobile phase

Results – Reproducibility of Standards (n=3)

	3 µL injection	5 µL injection	7 µL injection
Mean Area	1351003	3895312	6804685
Std Dev	17973	73151	52692
%RSD	1.3	1.9	0.8

Results – Chromatogram of Vitamin E Acetate 5 µL injection volume



Results – System Suitability 5 µL injection volume

Peak #	Name	Retention Time	Area	Theoretical Plates	Asymmetry
1	Vitamin E	8.30	3810951	7518	1.00

Discussion

Hitachi’s LaChrom Elite liquid chromatography system, equipped with a 5µm particle size Hitachi C18 column, is effective at analyzing Vitamin E Acetate using the SofTA 400 ELSD detector. The system is suitable, and reproducibility of the standards is shown. Reproducibility (<2 %RSD) and system suitability (theoretical plates: N > 1000 and tailing factor: T < 2.0) are shown at the 5µL injection volume standard.

Reference:

1 – SofTA Corporation ELSD 400 Series Literature. SofTA Corporation, 2008.

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